ICONE 2018
International Conference on Nuclear Engineering

26th International Conference on Nuclear Engineering

Conference: July 22 – 26, 2018
Exhibition: July 23 – 26, 2018

Novotel London West
London, England

ASME SETTING THE STANDARD | JSME | CNS | Institution of MECHANICAL ENGINEERS

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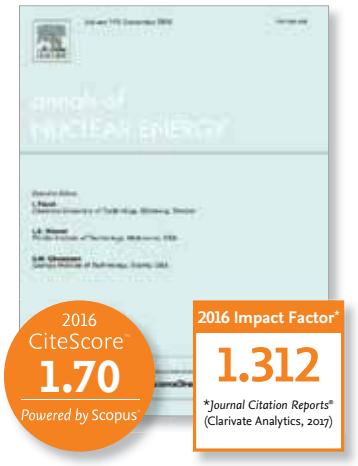
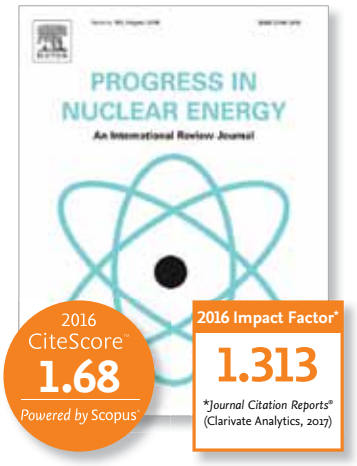
JOURNALS

Annals of Nuclear Energy



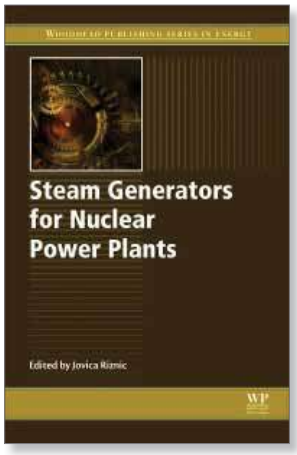
Nuclear Engineering and Design

Progress in Nuclear Energy

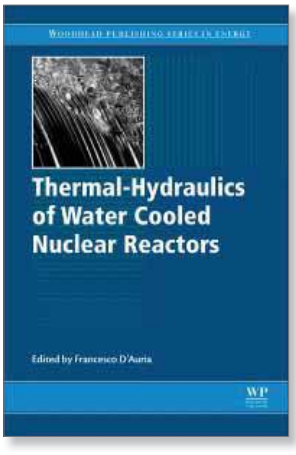


BOOKS

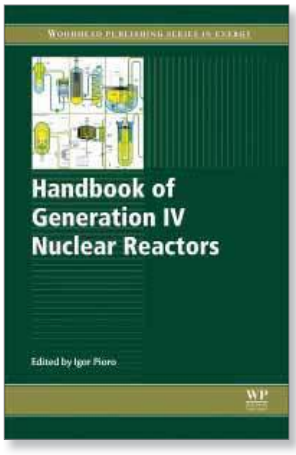
Steam Generators for Nuclear Power Plants



Thermal-Hydraulics of Water Cooled Nuclear Reactors



Handbook of Generation IV Nuclear Reactors



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Sunday, July 22 (pg 27)

Full Day Workshops 09:00 – 15:00

- **Computational Fluid Dynamics (CFD)**
  Bouzy, 1st Floor
- **Thermal-Hydraulics Methods, Experimentation and Benchmarking**
  Epernay. 1st Floor
- **Nuclear Codes and Standards**
  Reims, 1st Floor

Half Day Workshops AM
09:00 – 12:00

- **Waterhammer Analysis**
  Chalon, 1st Floor
- **Part 1 - Communication for Nuclear Professionals**
  Alsace, Mezzanine Floor

Half Day Workshops PM
12:30 – 15:00

- **Probability Safety Assessment and Severe Accidents**
  Chalon, 1st Floor
- **Part 2 - International Communication about Nuclear Power Operation and Safety Monitoring Technologies**
  Alsace, Mezzanine Floor

Technical Sessions 16:00 – 18:00

O&M	1-4	System and Equipment Operation
NFM	2-4	Reactor Physics: Methodology Development I
NFM	2-5	Reactor Physics: Methodology Development II
NFM	2-8	Zirconium-based Materials and Zirconium Compounds
NFM	2-10	Nuclear Fuel Safety and Performance Analysis II
NFM	2-12	Reactor Physics: Methodology Development III
CFD	9-3	Single-phase Flow
D&D	10-10	D&D General Session II
MSB	11-2	Containment Issues: Cooling, Hydrogen, Fission Products
SPC	16-6	Neutronics Analysis and Reactor Physics I
SPC	16-11	Nuclear Safety and Accident Analysis I
SPC	16-14	Thermalhydraulics I

Monday, July 23 (pg 34)

Opening Ceremonies & Keynote Plenary Session 08:30 – 10:00 — **Cremant, 1st Floor**

Welcome and Opening Remarks
Marc Goldsmith, *Past President, ASME*
Zengguang Lei, *Co-Chair ICONE26, Vice President CNS, Chief Engineer of CNNC*
Naoya Sasaki, *President, JSME*
The President of IMechE

Keynote Speaker One
The UK's Future Power Mix – the Role for Nuclear
Tom Greatrex, *The Nuclear Industry Association, UK*

Keynote Speaker Two
New Nuclear Plants can Compete Against Fossil Energy (and Complement Renewables) if Best Practices Used
Kirsty Gogan, *Energy for Humanity, UK*

Coffee Break 10:00 – 10:30 — **Chablis Suite, Ground Floor**

Plenary Session 10:30 – 12:30 Industry Leadership Forum — **Cremant, 1st Floor**

Keynote Speaker One
Nuclear Energy Powering China's Green Development
Zengguang Lei, *China National Nuclear Corporation, CNS, China*

Keynote Speaker Two
Overcoming Economic Challenges and Building Enduring Value: A U.S. Nuclear Plant Operator's Perspective
Christopher Mudrick, *Exelon Nuclear, USA*

Keynote Speaker Three
Public Engagement on Nuclear Energy
Andrew Sherry, *National Nuclear Laboratory, UK*

Keynote Speaker Four
Japan's Nuclear Energy Policy
Shinjiro Takeda, *Ministry of Economy, Trade and Industry, Japan*

Lunch 12:30 – 14:00 — **Chablis Suite, Ground Floor**

Technical Sessions 14:00 – 16:00

O&M	1-1	System Transient Analysis
NFM	2-1	Nuclear Fuel Safety and Performance Analysis I
PSS	3-6	Experimental Design
I&C	4-1	Design and Reliability of DCS
ARF	5-1	Fusion Technology I
NSS	6-1	Nuclear Safety
CSL	7-1	Regulatory Interactions with Codes and Standards I
THS	8-1	Boiling Heat Transfer and Behavior I
SPC	16-2	Computational Fluid Dynamics I
SPC	16-7	Neutronics Analysis and Reactor Physics II
SPC	16-12	Nuclear Safety and Accident Analysis II
SPC	16-15	Thermalhydraulics II

Panel Session 14:00 – 16:00
Panel #1: Leak Before Break (LbB) and Leakage Through Cracks
(Cremant, 1st Floor)

Poster Session and Coffee Break 16:00 – 16:30 — **Chablis Suite, Ground Floor**

Technical Sessions 16:30 – 18:30

O&M	1-3	Equipment and System Design
NFM	2-2	Reactor Physics: Sensitivity and Uncertainty Analysis
PSS	3-11	Materials for advanced reactors
I&C	4-2	Safety of I&C Systems
ARF	5-2	Fission Reactors Design and Analyses
NSS	6-2	Nuclear Security- Security Culture
CSL	7-2	Regulatory Interactions with Codes and Standards II
D&D	10-9	D&D General Session I
NEP	12-1	Nuclear Education and Public Acceptance I
SPC	16-3	Computational Fluid Dynamics II
SPC	16-8	Nuclear Fuels and Materials I
SPC	16-13	Nuclear Safety and Accident Analysis III
SPC	16-16	Thermalhydraulics III

Opening Reception 18:30 – 20:30 — **Chablis Suite Ground Floor**

Tuesday, July 24 (pg 46)

Plenary Session 8:30 – 10:00 Current Status of Nuclear Power — **Cremant, 1st Floor**

Keynote Speaker One
Current Status of Nuclear Power in China
Dongshan Zheng, *General Nuclear International Ltd., China*

Keynote Speaker Two
Transformative Efficiency: Innovation to Improve Operations and Maintenance
Ken Canavan, *Westinghouse Electric Company, USA*

Keynote Speaker Three
Nuclear Energy in a Clean Energy Future
King Lee, *Harmony Programme, China*

Keynote Speaker Four
Hitachi-GE's Challenges to Continuous Supply of Advanced Nuclear Technology
Yasunori Inada, *Hitachi-GE Nuclear Energy, Japan*

Poster Session and Coffee Break 10:00 – 10:30 — **Chablis Suite, Ground Floor**

Technical Sessions 10:30 – 12:30

NFM	2-3	Reactor Physics: Monte Carlo Methods and Calculations I
NFM	2-6	Nuclear Fuel Safety and Performance Analysis IV
PSS	3-8	High Temperature Components I
ARF	5-5	Fusion Technology II
CSL	7-3	New Methodology for Codes and Standards
THS	8-2	Supercritical Fluids I
CFD	9-1	Vibration Analysis
CFD	9-4	Thermal Mixing I
CFD	9-8	Turbulent and Transient Flow
SPC	16-1	Advanced Reactors and Fusion Technologies
SPC	16-5	Nuclear Components, Nuclear Waste and Radiation II
SPC	16-10	Nuclear Fuels and Materials II
SPC	16-17	Thermalhydraulics IV

Lunch 12:30 – 14:00 — **Chablis Suite, Ground Floor**

Panel Sessions 14:00 – 16:00

Panel #2: Experience Feedback of New Nuclear Power Plant Construction	Cremant, 1st Floor
Panel #3: Robust Fuel Development	Bouzy, 1st Floor
Panel #4: Communication with Nuclear Stakeholders	Chalon, 1st Floor
Panel #5: Fukushima-Daiichi Nuclear Power Plant Decommissioning R&D	Reims, 1st Floor
Panel #6: V&V of Software Used to Analyze Thermal-Hydraulics in Nuclear Systems	Epernay, 1st Floor

Poster Session and Coffee Break 16:00 – 16:30 — **Chablis Suite, Ground Floor**

Technical Sessions 16:30 – 18:30

O&M	1-2	Equipment Reliability
PSS	3-9	High Temperature Components II
I&C	4-4	Control of SMR and Advanced Reactors
NSS	6-4	Nuclear Accidents I
CSL	7-4	The Importance of Codes and Standards
THS	8-24	Advanced Reactors
CFD	9-6	Bubbles
CFD	9-7	Flow Through Complex Structures I
D&D	10-1	Radiation Detection and Protection
IPD	12-2	Nuclear Education and Public Acceptance II
SPC	16-4	Nuclear Components, Nuclear Waste and Radiation I
SPC	16-18	Thermalhydraulics V
SPC	16-22	Measurement, Instrument and Control II

Conference Banquet 19:00 – 22:00 — **Twickenham Stadium, Rose Suite**

Wednesday, July 25 (pg 57)

Plenary Session 08:30 – 10:00 — **Cremant, 1st Floor**
Future of Nuclear Power

Keynote Speaker One
Industrialization Application of the 3rd Generation Nuclear Power Technology
Fengxue Wang, *State Nuclear Power Technology Corporation, China*

Keynote Speaker Two
Nuclear Infrastructure and Capacity Building: Collaboration with the Next Generation of Young Professionals
Nathan Paterson, *ENS YGN Chairman & Customer Account Manager – Civil Nuclear, Rolls-Royce*

Keynote Speaker Three
Research and Development for Post-Fukushima Nuclear Systems
Koji Okamoto, *The University of Toyko, Japan*

Keynote Speaker Four
Tera of Nuclear Gas Turbines to Improve Economics and Meet Decarbonisation Targets by 2050
Pericles Pilidis, *Cranfield University, UK*

Poster Session and Coffee Break 10:00 – 10:30 — **Chablis Suite, Ground Floor**

Technical Sessions 10:30 – 12:30

PSS	3-7	Fracture and Failure
I&C	4-5	I & C Simulation Models and Systems
ARF	5-4	Advanced Reactors General
NSS	6-6	Emergency Preparedness
CSL	7-5	Personnel Certifications, Regulatory Influence, and Computer Codes
THS	8-9	Modeling NPPs Using System Analysis Software I
THS	8-12	Scaling and Seismic: Methodology, Development, and Application
THS	8-15	Natural Circulation Experiments, Phenomena, and Analyses I
THS	8-21	Instability Experiments and Analyses
THS	8-23	Fast Reactors: Experiments and Analyses I
CFD	9-2	Multi-phase flow Analysis I
CFD	9-14	Thermal Mixing II
IPD	13-1	Small Modular Reactors-SMR Water Cooled

Lunch 12:30 – 14:00 — **Chablis Suite, Ground Floor**

Panel Sessions 14:00 – 16:00

Panel #7: Education and Human Resources Development	Cremant, 1st Floor
Panel #8: Advanced Manufacturing	Bouzy, 1st Floor
Panel #9: SMRs & Advanced Technologies	Epernay, 1st Floor
Panel #10: Intelligent Technology Application in Nuclear Power Plants	Chalon, 1st Floor

Poster Session and Coffee Break 16:00 – 16:30 — **Chablis Suite, Ground Floor**

Technical Sessions 16:30 – 18:30

PSS	3-10	Impact and Vibration Analyses
I&C	4-6	I &C Modeling and Software
ARF	5-3	Modeling and Simulation I
NSS	6-8	Radiation Source and Field Detection I
THS	8-5	Gas-cooled Reactor Experiments and Analyses
THS	8-11	Containment Related Experiments and Analyses
THS	8-13	Aerosols and Spent Fuel Pool Related Experiments and Analyses
THS	8-16	Fluid-Structure Interactions: Experiments and Analyses
THS	8-19	Condensation Phenomena, Experiments, and Analyses
CFD	9-11	Multi-phase Flow Analysis II
D&D	10-2	Radioactive Waste
IPD	13-2	Sodium Cooled Reactors
RAM	14-1	Risk Assessment and Management I

Thursday, July 26 (pg 69)

Technical Sessions 08:30 – 10:30

NFM	2-7	Future Reactor Concepts and Innovative Nuclear Applications
PSS	3-12	Seismic and Transient Analyses
NSS	6-5	Security of SMRs and Advanced Reactors I
THS	8-6	Thermal-hydraulic Experiments I
THS	8-14	Core Experiments, Phenomena, and Modeling
THS	8-30	Thermal-hydraulic Experiments III
THS	8-36	Equipment Design Studies II
CFD	9-5	Heat Transfer
CFD	9-12	Multi-phase Flow Analysis III
MSB	11-1	Core Cooling, Core Degradation and In-Vessel Melt Retention
IPD	13-3	Advanced Reactors I
RAM	14-2	Risk Assessment and Management II
CVV	15-1	Methodologies, Protocols, and Strategies for Conducting V&V

Coffee Break 10:30 – 11:00 — **Chablis Suite, Ground Floor**

Technical Sessions 11:00 – 13:00

NFM	2-11	Nuclear Fuel Safety and Performance Analysis III
PSS	3-13	Structural Materials
NSS	6-9	Radioactive Material Transport and Management
NSS	6-10	Security of SMRs and Advanced Reactors II
THS	8-27	Boiling Heat Transfer and Behavior II
THS	8-28	Supercritical Fluids II
THS	8-31	Thermal-hydraulic Modeling: 1st Principle Physics and Correlations II
THS	8-33	Modeling NPPs Using System Analysis Software II
CFD	9-9	Phase Change
D&D	10-3	Decommissioning and Sources
IPD	13-4	Advanced Reactors II
RAM	14-3	Risk Assessment and Management III
CVV	15-2	V&V of High Fidelity Numerical Tools

Lunch 13:00 – 14:00 — **Chablis Suite, Ground Floor**

Technical Sessions 14:00 – 16:00

PSS	3-3	Design Analyses I
ARF	5-6	Fission Reactors Design and Analyses II
NSS	6-7	Nuclear Accidents II
THS	8-3	Severe Accident Experiments and Analyses I
THS	8-29	Thermal-hydraulic Experiments II
THS	8-32	Thermal-hydraulic Modeling: 1st Principle Physics and Correlations III
THS	8-35	Modeling NPPs Using System Analysis Software IV
THS	8-38	Fast Reactors: Experiments and Analyses II
CFD	9-10	Flow Through Complex Structures II
MSB	11-3	Ex-Vessel Phenomena
IPD	13-5	Molten Salt and Supercritical CO2 Cooled Reactors
RAM	14-4	Risk Assessment and Management IV
CVV	15-3	V&V of Systems Analysis Numerical Analysis Tools I

Coffee Break 16:00 – 16:30 — **Chablis Suite, Ground Floor**

Technical Sessions 16:30 – 18:30

O&M	1-5	Equipment Operation and Failure Analysis
PSS	3-4	Design Analyses II
ARF	5-7	Modeling and Simulation II
THS	8-4	Severe Accident Experiments and Analyses II
THS	8-7	Thermal-hydraulic Modeling and Probabilistic Risk Assessment Related Analyses
THS	8-20	Equipment Design Studies I
THS	8-39	Thermal-hydraulic Modeling: 1st Principle Physics and Correlations IV
D&D	10-6	Dose and Radiation Effects
D&D	10-7	Decommissioning
MSB	11-4	Accident Analysis, Prevention and Mitigation
IPD	13-6	Small Modular Reactors II
RAM	14-5	Risk Assessment and Management V
CVV	15-5	V&V of Systems Analysis Numerical Analysis Tools III

Note: All events take place at the Novotel West London except for the Gala Banquet which takes place at Twickenham Stadium.

Wi Fi Network

Complimentary WiFi is available throughout the meeting space. Connect to the 'Novotel' network and follow the instructions in your browser. No password is required.

Registration — Champagne Suite Foyer, 1st Floor

Sunday, July 22	08:00 – 19:00
Monday, July 23	07:00 – 18:30
Tuesday, July 24	08:00 – 17:30
Wednesday, July 25	08:00 – 17:30
Thursday, July 26	08:00 – 17:00

Exhibition — Chablis Suite, Ground Floor

Monday, July 23	10:00 – 20:30
Tuesday, July 24	09:30 – 19:30
Wednesday, July 25	09:30 – 19:30
Thursday, July 26	09:30 – 16:30

Key to Track Abbreviations

ARF	Advanced Reactors and Fusion Technologies
CSL	Codes, Standards, Licensing, and Regulatory Issues
CFD	Computational Fluid Dynamics (CFD)
CVV	Computer Code Verification and Validation
D&D	Decontamination & Decommissioning, Radiation Protection, and Waste Management
IPD	Innovative Nuclear Power Plant Design and SMRs
I&C	Instrumentation and Control (I&C) and Influence of Human Factors
MSB	Mitigation Strategies for Beyond Design Basis Events
NEP	Nuclear Education and Public Acceptance
NFM	Nuclear Fuel and Material, Reactor Physics and Transport Theory
NSS	Nuclear Safety, Security, and Cyber Security
O&M	Operations & Maintenance, Engineering, Modifications,Life extension, Life Cycle and Balance of Plant
PSS	Plant Systems, Structures, Components and Materials
RAM	Risk Assessments and Management
SPC	Student Paper Competition
THS	Thermal-Hydraulics and Safety Analyses

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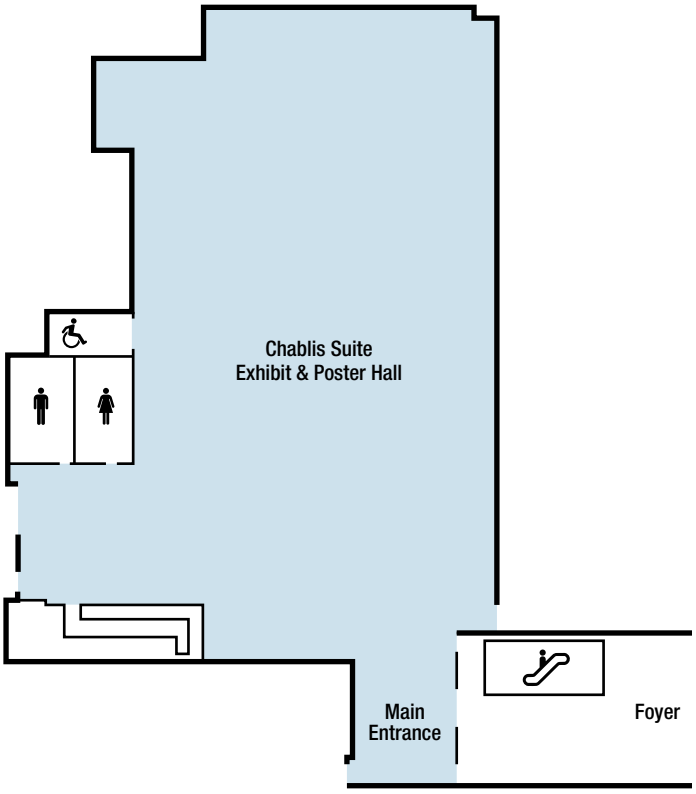
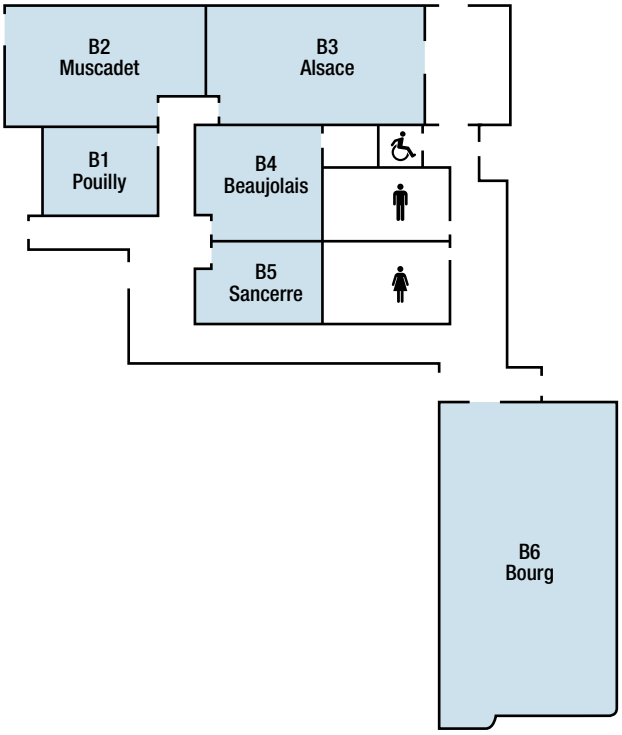
Chablis Suite – Exhibit & Poster Hall (Ground Floor)

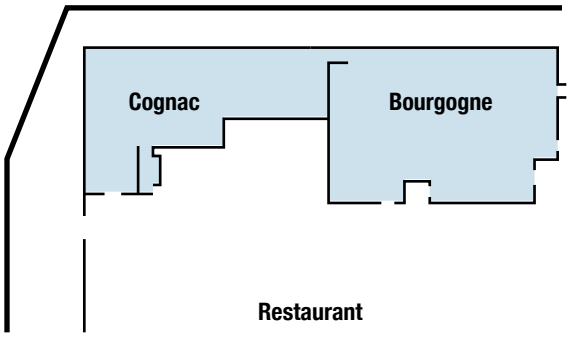


Mezzanine Floor

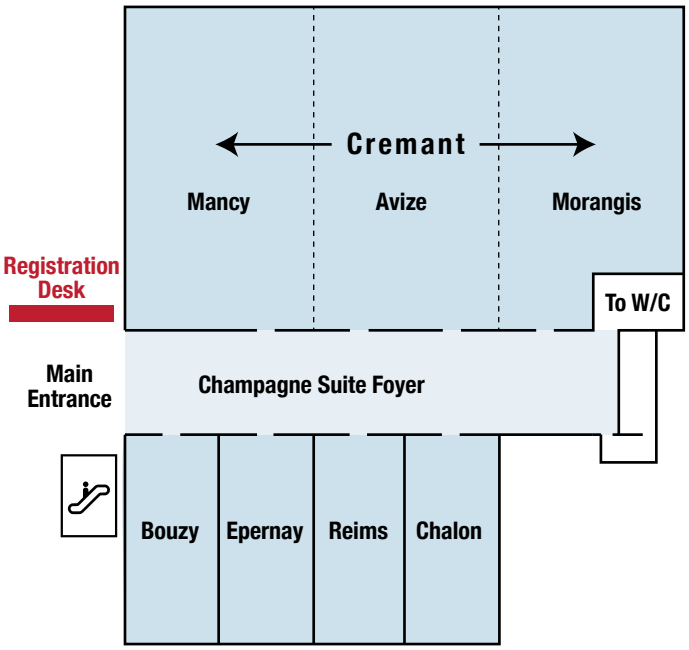


First Floor

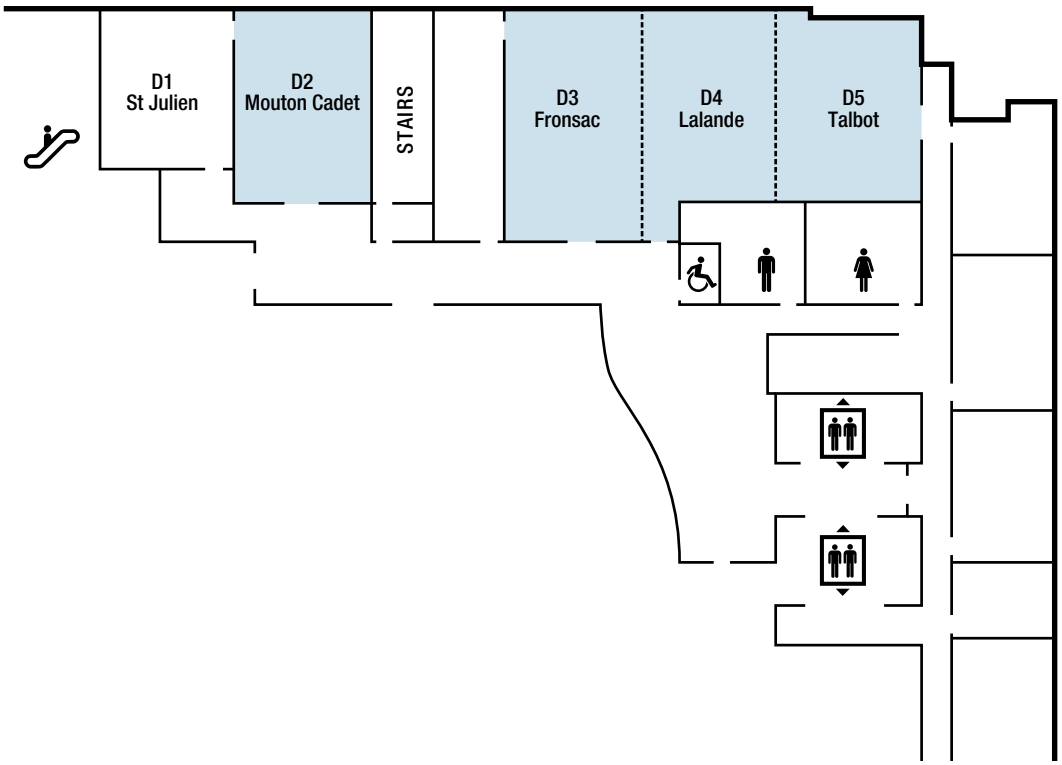
Lobby Rooms



Champagne Suite



Second Floor




Dr Guoqiang Wang


Dr Nobuyuki Ueda


Dr Zengguang Lei

Welcome from the Conference Chairs

On behalf of the organizers, we would like to welcome you to the premier nuclear event in London, United Kingdom — the 26th International Conference On Nuclear Engineering (ICONE-26), with the theme of ***Nuclear Power — Powering the World, One Atom at a Time***. Over the years, this conference has served as an important platform for nuclear professionals to engage in academic discussions and broaden their knowledge in this field. We are honored to organize such a grand conference to facilitate more effective communication among professionals who devote themselves to the nuclear engineering field.

ICONE-26 will cover a wide range of sessions including: opening and plenary sessions, ten panels, 16 technical tracks, six workshops and three technical tours. In our opening and plenary sessions, we are fortunate to have prominent officials, leading scholars and industry leaders participate and provide their valuable perspectives on nuclear engineering issues. In addition, during our panel sessions, nearly 70 experts will strengthen your understanding in the nuclear engineering fields through their in-depth observations on research and development activities as well as nuclear power plant licensing, construction and operation experiences.

The technical tracks will present diverse topics including: operations & maintenance, engineering, modifications, life extension, life cycle and balance of plant; nuclear fuel and material, reactor physics and transport theory; plant systems, structures, components and materials; I&C and influence of human factors; advanced reactors and fusion technologies; nuclear safety, security, and cyber security; codes, standards, licensing, and regulatory issues; thermal-hydraulics and safety analyses; computational fluid dynamics (CFD); decontamination & decommissioning, radiation protection, and waste management; mitigation strategies for beyond design basis events; nuclear education, and public acceptance; innovative nuclear power plant design and small modular reactors; risk assessments and management; computer code verification and validation as well as student paper competition.

Through the student paper competition (TRACK-16), you will witness the progress of a number of outstanding students. Based on the competition results, some of them will receive financial support from the organizers. We encourage you to show your support and provide constructive feedback during or after their presentation time. The goal of the student program is to raise the students' awareness and fully engage them in their nuclear engineering career and also keep them updated on the current situation and future trends in the nuclear industry. In addition, we will hold workshops to expand our knowledge in our professions before our conference starts. Lectures will be presented about the research, development and challenges we are confronted with.

Again, for the success of the conference, the steering committee, the organization committee and the technical program committee have been working hard for more than one year. We would like to express our sincere thanks to the reviewers for ensuring the highest quality of technical papers are presented. Special thanks are also extended to the sponsors. Finally, we show high regard to all the authors and speakers in the technical, panel and plenary sessions.

On behalf of all committee members, we wish you a pleasant stay in London — this dynamic and metropolitan city of royal culture and modern art. Furthermore, we are looking forward to seeing you at ICONE-27 to be held at the Tsukuba International Congress Center in Tsukuba, Ibaraki, Japan, May 19–24, 2019.

Guoqiang Wang, Ph.D., ASME Fellow
Chairman, ASME Nuclear Engineering Division
Chairman, ASME ICONE-26 Conference

Nobuyuki Ueda, Ph.D.
Vice President, CRIEPI
Chairman, JSME ICONE-26 Conference

Zengguang Lei, Ph.D.
Vice President, Chinese Nuclear Society
Chairman, CNS ICONE-26 Conference

Jenifer Baxter, Ph.D.
Head of Engineering
IMechE ICONE-26 Conference

Laura Citron

Welcome from the CEO of London & Partners

I'm delighted to welcome you to London for your conference. With over 300 languages spoken here, London is the world in one city. It is a uniquely diverse place and a city full of energy.

In recent years, we've been welcoming record numbers of business and leisure visitors, who come to experience our great range of ever growing and evolving venues, restaurants, parks and cultural attractions; as I hope you will do.

I wish you a productive and enjoyable conference and hope your time here will inspire you to visit us again.

Laura Citron
Chief Executive Officer
London & Partners

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Richard Schultz, *Treasurer*

ICONE Awards

Student and Track Leader Awards Presentation

Wednesday, July 25
18:45 – 20:30
Chablis Suite, Ground Floor

Akiyama Medal

Best Student Award in ICONE Student Competition

At every ICONE conference, the Akiyama Medal is presented to the best paper award winner from the student paper competition of ASME, CNS, and JSME. The award was established in memory of Prof. Mamoru Akiyama (1935-2009). Prof. Akiyama was a professor emeritus at the Department of Nuclear Engineering at the University of Tokyo, and he was one of the founding members of the ICONE conference.

Student Awards

Five 'Best Paper' and five 'Best Poster' awards in each of the following regions will be presented during this session: North America, Japan/Asia, China and Europe.

ICONE Awards

Conference Banquet
Tuesday, July 24
19:00 – 22:00
Twickenham Stadium, Rose Suite

ICONE Award

The Nuclear Education Division presents the ICONE Award to the following individuals in recognition of their many years of service and contribution to the ICONE series of International Conferences on Nuclear Engineering. The ICONE Awards will be presented during the Conference Banquet.

Guoqiang Wang, ICONE26 Conference Chair, ASME

Yanping Huang, ICONE26 Technical Program Committee Co-Chair, CNS

Kazuyuki Takase, Nagaoka University of Technology, ASME

ASME Nuclear Engineering Division Special Long Service Award in Nuclear Engineering

The Nuclear Engineering Division presents the 2018 Service Award to the following recipient for his pioneering and outstanding contributions to nuclear engineering and technology and for his peaceful use of nuclear energy for the betterment of the world. The Service Award will be presented at the Conference Banquet.

Dr Frederick Moody, GE Nuclear and Professor, San Jose State University, USA

Organizers and Reviewers Recognition

Track & Session Organizers Recognition

The Nuclear Engineering Division recognizes the following individuals for their contributions in arranging the technical program, reviewing abstracts, organizing technical tracks and sessions and working with colleagues from around the world. These contributions were major factors in the success of ICONE26.

Ahmed A.Y. Al-Waaly
Asif Arastu
Xuewu Cao
Paul K. Chan
Leon Cizelj
Brian Edmonds
Mohamed El-Genk
Jianbing Guo
Wolfgang Hansen
Yassin Hassan
Anthony Hechanova
Hideki Horie
Antony Hurst
Tomohiko Ikegawa
Chikako Iwaki
Kazuhiro Kamei
Ivo Kljenak
Dongsheng Li
Elia Merzari
Alexei Miassoedov
Shuichiro Miwa
Akemi Nishida
Hakan Ozaltun
Liang-ming Pan
Mathew M Panicker
Patricia Paviet
Ross Peel
Shripad Revankar
Jovica Riznic
Takaaki Sakai
Daisuke Sato
Carsten Schroer
Richard Schultz
Afaque Shams
Takashi Shimomura
Koji Shirai
Robert Stakenborghs
Joerg Starflinger
Vladimir Stevanovic
Guanghui Su
John Sulley
Xiaodong Sun
Shiro Takahashi
Masaaki Tanaka
Kazuyuki Tsukimori
Takashi Wakai
Guoqiang Wang
Minglu Wang
Zeyun Wu
Min Xiao
Koji Yamada
Takeshi Yamada
Hidemasa Yamano
Suyuan Yu
Wenzhong Zhou
HuaDong Zhu

Paper Reviewers Recognition

The Nuclear Engineering Division recognizes the following paper reviewers for their outstanding contribution to the technical program and ICONE series of International Conferences on Nuclear Engineering.

Kwang-Il Ahn
Miltos Alamaniotis
Claire Allison
Kenji Arai
Asif Arastu
Hamza Ayyash
Yongjun Bai
Paolo Balestra
Paul Bardsley
Giacomo Busco
Rong Cai
Mauro Cappelli
Laure Caronini
Paul K. Chan
Ronghua Chen
Marco Cherubini
Leon Cizelj
Zhang Dan
Rich Davey
Andrea De Santis
Dante De Santis
Kazuyuki Demachi
Tinashe Dhliwayo
Yikang Dou
Allen Edwards
Mohamed El-Genk
Thomas Galioto
JongWook Go
Wade Grant
Jianbing Guo
Wolfgang Hansen
Yassin Hassan
Yinbiao He
Anthony Hechanova
Sung Deok Hong
Hideki Horie
Lihua Huang
Antony Hurst
Tomohiko Ikegawa
Milica Ilic
Relu Istrate
Gonzalo Jimenez
Daeseong Jo
Kazuhiro Kamei
Ivo Kljenak
Hajime Koikegami
Zafar Koreshi
Satoshi Kurata
Jonathan Lai
Matja Leskovar
Dongsheng Li
Weichao Li
Yunzhao Li
Jun Liao
Qian Lin
HUA Liu
Rong Liu
Rosa Lo Frano
Elia Merzari
George Mesina
Yoshinori Mihara
Blaz Mikuz
Mohammad Pourgol Mohammad
Shoji Mori
Victor Morokhovskyi
Heinrich Muscher
Susumu Naito
Thien Nguyen
Akemi Nishida
Omid Noorikalkhoran
Hakan Ozaltun
Liang-ming Pan
Patricia Paviet
Ross Peel
Jinghan Peng
Alessandro Petruzzi
Alexandru Pop
Jamie Powers
Bill Press
Andrew Prudil
Nan Qian
Shripad Revankar
Jovica Riznic
Dan Robertson
Takaaki Sakai
Daisuke Sato
Hiroyuki Sato
Marcel Schienbein
Joshua Schlegel
Carsten Schroer
Subash Sharma
Wei Shen
Guobao Shi
Goran Simeunovic
Igor Simonovski
Gyanender Singh
Danrong Song
Robert Stakenborghs
Joerg Starflinger
Vladimir Stevanovic
Daxue Sun
Licheng Sun
Peiwei Sun
Xiaodong Sun
Hideharu Takahashi
Shiro Takahashi
Masahiro Takei
Jian-Ping Tan
Masaaki Tanaka
Nhu Cuong Tran
Kazuyuki Tsukimori
Rodolfo Vaghetto
Arun Veeramany
Andrija Volkanovski
Takashi Wakai
Dingqu Wang
Guoqiang Wang
Jinkai Wang
Jun Wang
Mingjun Wang
Yahui Wang
James Wilson
Wenbin Wu
Zeyun Wu
Min Xiao
Xiaojun Xiao
Zhenhua Xu
Takeshi Yamada
Hidemasa Yamano
Bao-Wen Yang
Suyuan Yu

Attendee Information

Acknowledgement

The 26th International Conference on Nuclear Engineering is sponsored by the American Society of Mechanical Engineers (ASME), the Chinese Nuclear Society (CNS), the Japan Society of Mechanical Engineers (JSME) and the Institute of Mechanical Engineers (IMechE). The conference is hosted by the ASME Nuclear Division. Conference organizers would also like to acknowledge the cooperation of the following organizations: Atomic Energy Society of Japan, Canadian Nuclear Society, Canadian Standards Association, European Nuclear Society, International Atomic Energy Agency, Korean Society of Mechanical Engineers, Korean Nuclear Society and the Nuclear Society of Slovenia.

Conference Proceedings

The official proceedings of the 26th International Conference on Nuclear Engineering will be produced at the conclusion of the conference and published online. Papers that were not presented on site in London will not be published in the conference proceedings and cannot be cited or indexed.

Registration

The Registration Desk is located in the Champagne Suite Foyer, 1st Floor, Novotel London West and is open during the following hours:

Sunday, July 22:	08:00 – 19:00
Monday, July 23:	07:00 – 18:30
Tuesday, July 24:	08:00 – 17:30
Wednesday, July 25:	08:00 – 17:30
Thursday, July 26:	08:00 – 17:00

Name Badges: In addition to being a means of identification to colleagues, you are required to wear your name badge for admission to conference sessions and events. Room monitors will check name badges before allowing anyone into the session or event. Replacement badges are available at the Registration Desk at a cost of £20 per badge.

Daily Registration: Attendees who have paid the one-day registration fee qualify for a badge representing the day they have selected to attend. Attendees wearing this badge are entitled to the following on the day they have selected to attend: admission to conference sessions, refreshment breaks, the Exhibition, food and beverage served on the specified day, excluding the Conference Banquet. Daily attendees will also receive a conference bag, a program and online paper access.

Accompanying Person: Guests tickets are available for purchase for the Opening Reception and Conference Banquet only. Pre-purchased tickets will be included in the registration package of the attending registrant.

Exhibitors: Exhibit staff have access to the Exhibition Hall only and may participate in the Opening Reception and the four Lunches.

Dietary Requirements

If you advised the Conference Secretariat of your special dietary needs during the registration process, dietary tickets for each Lunch (Monday, Tuesday, Wednesday and Thursday) and the Conference Banquet have been included in your registration envelope if necessary. If you have not advised the Conference Secretariat of your special dietary needs, please inform the staff at the Registration Desk at your earliest convenience.

Conference Hotel

All meetings and social events take place at the Novotel London West with the exception of the Conference Banquet. The hotel is 100% smoke free. Parking fees are £1.50 per hour for hotel guests and £3.50 per hour for non-guests.

Wifi

Complimentary Wifi is available throughout the Novotel London West meeting space. To access the Wifi service log onto the Novotel network and follow the prompts in your browser. No password is required.

ASME Conference App

Engage with sessions, speakers, and organizations, watch social networking in action, including posting on the in-app feed or sharing outside it. Download the "Crowd Compass Attendee Hub" App from your app store. After installation, search for ICONE and download. The password to access the ICONE26 app is 'icone2018'. Once ICONE is downloaded, you can set up a login. You will then receive a verification email with a code you need to enter in the app. Once you have entered the code in the app, this will grant you access to the event. Alternatively you can access the app via a web browser at https://event.crowdcompass.com/ICONE.

Visit London App

The Visit London App is available for iphone and Android devices and is free to download with no roaming charges. The app has everything you need to explore London like a local including 'around me' functionality which allows users to discover restaurants, shopping, and attractions in close vicinity. Search 'Visit London app' in your app store.

First Aid

The Hotel has trained first aiders on site. In the event of the need of first aid, please contact Security directly on 02082377188 (or on ext. 7188 from an in-house phone). First Aid supplies are available throughout the hotel. The nearest first aid boxes for the Champagne and Chablis Suites are available in the conference suite's organiser's offices.

Continued

Attendee Information (Continued)

Smoking

Smoking is not permitted anywhere within the Novotel London West. Smoking is permitted outside.

Tipping Etiquette

It is customary to leave 10–15% of the bill when eating out. However, restaurants often add on a service charge (usually 12.5%), especially if you're in a large group, so it's worth checking your bill if you don't want to tip twice. Tipping is not required for any of the official Conference meal events.

Authors Briefing & Breakfast Sessions

On the morning of their session, authors, panelists, session chairs and co-chairs are invited to attend the 'Authors' Briefing' to discuss session protocol and get acquainted. The briefing will take place in the Beaujolais room from 8:15am – 8:45am on Sunday and 7:45am – 8:15am Monday through Thursday. Continental breakfast will be available.

Speaker Practice Room

If you are a presenter, please be in the session room 30 minutes prior to the start of the first presentation of your session in order to upload your presentation.

Beaujolais on the Mezzanine Floor will be available to all conference participants as a presentation "practice" room. The room will be equipped with (2) LCD projectors, (2) computers, and (2) screens, and will be open during the following hours. Authors are encouraged to use this facility to meet with their co-authors and review presentations.

Sunday, July 22	14:00 – 17:30
Monday, July 23	07:00 – 17:30
Tuesday, July 24	07:00 – 17:30
Wednesday, July 25	07:00 – 17:30
Thursday, July 26	07:00 – 17:00

Meeting Room Protocol

Every effort will be made to ensure that all sessions start and end on time. Presenters and attendees are all asked to work together to achieve this. This may mean having to cut short a valuable discussion; however, conference organizers request your cooperation for the benefit of all attendees. Please turn your cell phone and other noise making devices off or set to vibrate.

Social Events

Opening Reception

Monday, July 23
18:30 – 20:30
Chablis Suite, Ground Floor

Join your friends and colleagues as we kick off ICONE 26! The Opening Reception will be held amongst the Exhibits and Posters. Appetizers and drinks will be served. Guest tickets are available for purchase at the registration desk.

Lunches

Monday, July 23 to Thursday, July 26
12:30* – 14:00
**Thursday lunch starts at 13:00*
Chablis Suite, Ground Floor

Lunch will be provided from Monday to Thursday and is included in your registration. Pre-confirmation during the registration process is required to access the lunches.

Poster Sessions & Coffee Breaks

Monday, July 23 to Thursday, July 26
10:00 – 10:30* and 16:00 – 16:30
**The Thursday morning coffee break is from 10:30-11:00*
Chablis Suite, Ground Floor

Conference Banquet

Wednesday, July 25
19:00 – 22:00
Twickenham Stadium

Twickenham Stadium (known as 'Twickers' by the locals) is the home of England Rugby and is the largest dedicated rugby union venue in the world. Owned by the governing body of rugby union in England, the Rugby Football Union (RFU), the stadium hosts home test matches for the England National Rugby Union Team. The Stadium has also hosted American Football as part of the NFL London Games in 2016 and 2017 and hosts concerts by some of today's biggest stars including The Rolling Stones and Lady Gaga.

Join us for a 'Sparkling Wine Reception' in the Rose Suite which will feature a buffet dinner with wine included. A ticket is not included in a full Conference registration but may be available for purchase at an additional cost. Please see the registration desk to inquire about availability.

Twickenham Stadium

Sponsors

HOSTS

GOLD

Westinghouse Electric Company
westinghousenuclear.com

At Westinghouse, we are solely focused on nuclear energy technology. Our goal is simple—to provide solutions to our customers to keep their plants safe, reliable and efficient. Helping our customers support the needs of their customers is why we are committed to quality, safety, and innovation at every turn.

SILVER

Nuclear Power Institute of China
npic.ac.cn

As a subsidiary of the China National Nuclear Corporation (CNNC) the Nuclear Power Institute of China (NPIC) is a nuclear reactor engineering R&D base and high-tech research and design institute in China incorporating nuclear reactor engineering research, design, test, operation and small batch production.

BRONZE

Siemen's Industry Software
siemens.com

Siemens PLM Software, a business unit of the Siemens Digital Factory Division, is a leading global provider of product lifecycle management (PLM) and manufacturing operations management (MOM) software, systems and services. Within Siemens PLM Software, the Simcenter™ solutions portfolio helps engineering departments develop today's smart products.

EXHIBITORS

AFCEN
afcen.com

AFCEN is an International Standard Developing Organization who produces up-to-date codes offering accurate rules for the design, construction and in-service inspection of components for use in industrial or experimental nuclear facilities (RCC codes), ensures certified training programs enabling code users to achieve skills in using AFCEN codes.

Institute of Nuclear Energy Safety Technology
fds.org.cn

Institute of Nuclear Energy Safety Technology, CAS
Key Laboratory of Neutronics and Radiation Safety, CAS

Super multi-functional Calculation Program for Nuclear Design and Safety Evaluation - SuperMC is a large-scale integrated software system for neutronics design. Taking neutron transport calculation as the core, SueprMC supports the whole process neutronics calculation containing deletion, radiation source term/dose/bilhazard, material activation and transmutation and the multi-physics coupling calculation of the thermol-hydraulics, structural mechanics, chemistry, biology, etc.

Exhibitor Listing

Exhibition

Visit the exhibits to discover new products and services from some of the industry's leading organizations. Coffee and tea will be served amongst the exhibits during the coffee breaks.

Dates & Times:

Monday, July 23	10:00 – 20:30
Tuesday, July 24	09:30 – 19:30
Wednesday, July 25	09:30 – 19:30
Thursday, July 26	09:30 – 16:30

Location: Chablis Suite, Ground Floor

Exhibitors:

ACFEN

Elsevier

Institute of Nuclear Energy Safety Technology

Nuclear Power Institute of Technology

Siemens Industry Software

Westinghouse Electric Company

Nuclear Division & Committee Meetings Schedule

Sunday, July 22

Steering Committee Pre-Meeting (Invitation only)
18:15 – 20:15
Check the conference app for room location (app information on page 11)

Tuesday, July 24

NED Executive Committee Meeting (Invitation only)
12:30 – 14:00
Chablis Private Office, Ground Floor

Wednesday, July 25

Combined Technical Committee Meeting
(Invitation only)
12:45 – 13:45 (lunch will be provided)
Muscadet, Mezzanine Floor

Thursday, July 26

Steering Committee Exit Meeting (Invitation only)
18:45 – 19:30
Chablis Private Office, Ground Floor

ASME/CNS/JSME/IMechE Committee Dinner Meeting (Invitation only)
19:30 – 21:30
Off-Site, contact herreral@asme.org for location

ACES-2019 Committee Meeting (Invitation only)
21:30 – 22:30
Check the conference app for room location (app information on page 11)

Authors Briefing & Breakfast Sessions

Beaujolais Room

Sunday, July 22	Monday, July 23 through Thursday, July 26
08:15 – 08:45	07:45 – 08:15

On the morning of their session, authors, panelists, session chairs and co-chairs are invited to attend the 'Authors' Briefing' to discuss session protocol and get acquainted. The briefing will take place in Beaujolais room on the Mezzanine Floor from 8:15am – 8:45am on Sunday and 7:45am – 8:15am Monday through Thursday. Continental breakfast will be available.

Technical Program

Panel Sessions

Monday, July 23

14:00 – 16:00 Cremant, 1st Floor

Leak Before Break (LbB) and Leakage through Cracks

Chair: Jovica Riznic, *CNSC*

Panelists: Dr Peter Gill, *Consultant*
John Sharples, *Wood PLC*
Dr Gery Wilkowski, *MC2*
Dr Klaus Heckman, *GRS*
Dr Jinya Katsuyama, *JAEA*
Dr David Rudland, *USNRC*

Leak-before-Break (LbB) is a structural integrity assessment methodology which provides a means of justifying safe operation of Nuclear components through the concept of large break preclusion. This can be achieved through the application of fracture mechanics to determine limiting defect sizes and crack opening areas, along with fluid mechanics to determine leakage rates. LbB has been successfully applied in many different countries to meet the relevant regulatory requirements.

The objectives of this expert panel session are as follows:
- Introduce the fundamental concepts of LbB
- Highlight the latest research in this topic
- Outline how the regulatory environment shapes the requirements of LbB procedures

PANELISTS:

Dr Peter Gill *is a Chartered Mechanical Engineer, specializing for the last 8 years in Structural Integrity within the Materials Science and Structural Integrity (MSSI) business of Wood. Peter works on plant assessment methodologies, and performs research and development on Leak-before-Break and environmental fatigue. He completed a Nuclear Engineering doctorate entitled "Investigating leak rates for Leak-before-Break assessments" at the University in Manchester in 2013. Since then he has had a lead role in developing the Leak-before-Break section of the R6 structural integrity assessment procedure. Peter has also developed sessions at the ASME Pressure Vessels and Piping conference and is a visiting researcher at the Dalton Nuclear Institute at the University of Manchester.*

John Sharples *is a Technical Manager and Chief Technologist in the field of structural integrity at Wood. He has worked in the nuclear industry for over 30 years, mainly on developing, validating and applying structural integrity assessment procedures. A large part of his work has been associated with the R6 fracture mechanics procedures, the BS7910 fitness-for-purpose code and numerous European projects, including STYLE+ and the NULIFE Network of Excellence, focused on plant life management and plant life extension issues. John sits on the NUGENIA Executive Committee.*

Dr Gery Wilkowski *has been involved in conducting experimental and analytical pipe fracture mechanics projects since 1974. He received his bachelor's and master's degrees in mechanical engineering from University of Michigan and his PhD in Nuclear Engineering from University of Tokyo. He has published over 400 papers on oil and gas pipelines, as well as nuclear pressure vessels and piping systems and fracture toughness testing. He was involved with the technical basis of the original NRC Draft Standard Review Plan 3.6.3 on LBB, and conducted large project on piping fracture behavior for the NRC and the International Piping Integrity Research Group Program (IPIRG). He has been a technical editor of several journals, and is an ASME Fellow since 1997. He was the Chairman or Vice-Chairman of the ASME PVP Division's Materials and Fabrication Committee for 8 years, has been a member of the ASME B&PV Code Section XI Committee since the early 1980's, and is the current secretary of the Section XI Working Group on Pipe Flaw Evaluation since about 1990. He founded Engineering Mechanics Corporation of Columbus in 1998 after being at Battelle-Columbus for 23 years. He has developed the Lie-Balanced Putter System that is USGA/R&A approved, patented, and went into commercial production in 2016. He enjoys golf, drinking beer, eating fresh oysters, and drinking beer.*

Dr Klaus Heckmann *studied physics in Darmstadt (Germany) and Grenoble (France). He earned his PhD in Nuclear Physics in 2011. Since 2012 he works for Gesellschaft für Anlagen- und Reaktorsicherheit (GRS) gGmbH in Cologne/Germany, in the structural mechanics group. His professional interest is focus on Leakage rates, fracture mechanics, probabilistic methods and techniques, and software development.*

Dr Jinya Katsuyama *is a Principal Researcher in Nuclear Safety Research Center of Japan Atomic Energy Agency (JAEA). In 2004, he started research on the structural integrity assessment method based on weld residual stress analysis at Osaka University. From 2006, he has been engaged in research on the aged degradation of nuclear components such as neutron irradiation embrittlement in reactor pressure vessel, stress corrosion cracking and fatigue in piping welds at JAEA. In addition, he has been developing deterministic and probabilistic fracture mechanics methodologies for reactor pressure vessel and primary piping in light water reactors. Currently, he contributes to development of a guideline on probabilistic fracture mechanics analysis methodology focusing on its practical use in Japan.*

Dr David Rudland *is a Senior Technical Advisor for Nuclear Materials in the Office of Nuclear Reactor Regulations at the U.S. Nuclear Regulatory Commission where he has worked for ten years. He is the Division of Materials and License Renewal subject matter expert in the area of nuclear materials and component integrity with an emphasis on probabilistic fracture mechanics, solid mechanics and materials aging management. He is also the NRC representative on the ASME Board of Nuclear Codes and Standards and heavily involved in both the ASME Section XI code committees and the ASME PVP Division. Before joining the NRC, he worked as an NRC contractor at Engineering Mechanics Corporation of Columbus and Battelle Memorial Institute. Dr Rudland received a Bachelor's and Master's degree in Mechanical Engineering from the University of Illinois, and a Ph.D. in Materials Engineering from Yokohama University in Japan through a visiting scholar program.*

Tuesday, July 24

14:00 – 16:00 Cremant, 1st Floor

Experience Feedback of New Nuclear Power Plant Construction

Chair: Yanping Huang, *NPIC*

Co-Chair: Kohei Hisamochi, *Hitachi GE*

Panelists: Fengwei Song, *China Zhongyuan Engineering Corporation*
Tai Jiang, *CNPE*
Yusuke Amma, *Hitachi*
Cuifang Wang, *SNERDI*
Donghai Wang, *CNPE*

PANELISTS:

Fengwei Song *is Vice President of China Zhongyuan Engineering Corporation, a subsidiary of China National Nuclear Corporation. He is also working as General Manager of Karachi Nuclear Power Project Unit 2& Unit 3 in Pakistan. Mr. Song received a bachelor's degree in welding processing from Jiangsu University of Science and Technology in 1985. He has been working at the frontier of nuclear power projects for over 30 years and contributed to many nuclear power projects in China such as Qinshan NPP, Daya Bay NPP, Haiyang NPP, Tianwan NPP. He has worked as general manager for five different nuclear power projects and is well known for his expertise in M310, VVER, AP1000 and HPR1000 as well as his safety management methodology and produced innovative construction methods. He is the sole author of Pre-introduction of HPR1000 Primary Loop Equipment and first author of Research on Chemical Treatment of Marine Organism for Coastal Nuclear Power Plant as sole author and Modular Construction of Reactor Pit Pool for a Nuclear Power Plant and Application of MVC on a Nuclear Power Plant Seawater Desalination Design.*

Tai Jiang *is Deputy Chief Engineer of China Nuclear Engineering Co., Ltd (CNPE), he is also Chief Engineer of the Fuqing Nuclear Power Project department of CNPE.*

Tai Jiang had worked at Beijing Institute of Nuclear Engineering as Material Engineer for 17 years from 1987 to 2004. Tai Jiang had taken part in Lingao Nuclear Power Project Phase 2 , Fuqing Nuclear Power Project Phase 1 And Fangjiashan Nuclear Power Project as Manager of the Design department from 2005 to 2013.

From 2013 to present, Tai Jiang has worked in the Fuqing Nuclear Power Project department of CNPE, which is in charge of managing Fuqing unit 5&6, Fuqing unit 5 is first unit of htr1000.

Yusuke Amma *is the Construction engineer of Nuclear Plant Department of Hitachi-GE Nuclear Energy, LTD. He started work as a welding engineer in the Nuclear Manucturing Department. He worked at Shimane Nuclear Power Plant Construction Project for 3 years as installation supervisor from 2008 to 2011. After that he also took part in Fukushima nuclear power plant as a supervisor after the Fukushima disaster. From 2012 to present, he has worked at Wylfa Newydd nuclear power station project on the construction planning team.*

Cuifang Wang *is the Deputy Director of Project Management Department of Shanghai Nuclear Engineering Research & Design Institute (SNERDI), and is the deputy Project Manager of CAP1000 standard design project and Sanmen Phase-2 design project.*

She has 15 years experience of I&C system design and 8 years of project management experience for the nuclear power plants.

Beginning from 2010, Mrs. Cuifang WANG contributed herself on the development and operation of experience feedback system in SNERDI. Her team built the procedures and software platform, established relations with owners, engineering company, manufacturers to collect experience feedback to optimize the design of CAP project.

Donghai Wang *is the director of the quality assurance department of CNPE (China Nuclear Power Engineering Co., Ltd). He has worked in BINE and CNPE for 25 years (BINE-Beijing Institute of Nuclear Engineering). From 1993 to 2015, he was responsible for the design of ultimate heat sink, water intake and discharge, water supply and drainage, fire fighting, water treatment, cooling tower for nuclear power plants. Since 2016, he has been in charge of quality assurance of CNPE. Donghai Wang received a Bachelor's degree in Water Treatment from Wuhan University, and a Master's degree in Nuclear Energy Science and Engineering from Harbin Engineering University.*

14:00 – 16:00 Bouzy, 1st Floor

Robust Fuel Development

Chairs: Sumit Ray, *Westinghouse*
Min Xiao, *CGN*
Hisaki Sato, *Toshiba*

Panelists: Sumit Ray, *Westinghouse*
Nicolas Vioujard, *Framatome*
Dr Min Xiao, *CGN*
Hisaki Sato, *Toshiba Energy Systems & Solutions Corporation*
Dave Goddard, *UK National Nuclear Laboratory*

The development of Robust or Accident Tolerant Fuel (ATF) has become an international area of interest and effort in the last few years. Conceptually ATF would provide leap-ahead improvement in LWR fuel safety during beyond design basis accidents and commercial benefit to nuclear utilities. Accelerated by the severe accident at the Fukushima Daiichi nuclear power plant in Japan, a variety of research and commercial analysis of ATF is presently underway globally. The goal of this effort is insertion of ATF lead test rods into a commercial PWR within the next couple of years.

This panel will present and discuss the state-of-art knowledge of ATF from the point of view of industry, government, non-profit research agencies, and academic representatives currently leading global ATF development. The significant challenges in development and implementation of ATF, such as large scale ATF fabrication, acceptance by nuclear utilities, the role of government and inter-government agencies in ATF research oversight, and the engineering and scientific challenges to develop ATF will be presented. The goal of this panel is to communicate the current understanding of the commercial and technical challenges faced in ATF development.

PANELISTS:

Sumit Ray *is currently Director of Fuel Technology & Product Development in the Westinghouse Global Technology organization. In this position, he is responsible for the development of all new fuel related technologies and fuel designs for Westinghouse. Sumit has been with Westinghouse for over thirty five years, in increasing positions of responsibility. He has held various director level positions in Fuel Development & Core Design, and has held a variety of management positions in Reactor Core Design, Fuel Development and Regulatory Licensing.*

Sumit is currently the Westinghouse executive lead on the DOE CASL program and is also a member of the CASL Board of Directors. He currently also leads the Accident Tolerant Fuel program for Westinghouse. Sumit is a member of the American Nuclear Society, and participates as a member of the ANS rewards committee. Sumit holds a Bachelor's Degree in Chemical engineering from the Indian Institute of Technology in Kanpur, India, a Master's Degree in Chemical Engineering from West Virginia University, and an MBA from the University of Pittsburgh. In addition, Sumit has taken post Graduate level classes in Nuclear Engineering at Carnegie Mellon University.

Nicolas Vioujard *started his career in Framatome in November 1999 as Thermal-Hydraulic Engineer responsible of the CATHARE GB code (code used for Large Break LOCA safety studies).*

In 2003, he joined the Fuel Design Business Unit of the former AREVA group and hold various management position in the fields of Fuel Assembly Design, Fuel Rod Design, Materials Development. In particular, from 2008 to 2013, he was Worldwide Manager, Materials and Thermal-Mechanics.

In 2013, he joined a subsidiary of the former AREVA group, now renamed Orano Projet, as Manager General Arrangement to lead a Department in charge of Layout, Piping, Civil work and HVAC Design, serving Fuel cycle facilities of the Orano group.

In 2016, he was appointed Deputy Engineering Manager for Flamanville 3 Project and then in 2017 for Taishan Project in both cases for the scope of activities under the responsibility of AREVA/Framatome.

Since beginning of 2018, Nicolas Vioujard came back to the Framatome Fuel Business Unit as Materials Line Senior Manager in the Products and Technology Division.

Dr Min Xiao, *Ph.D, Professor, Deputy Chief Engineer, China Nuclear Power Research Institute (CNPRI)/China General Nuclear Power(CGN)*

Min Xiao has been a great contributor to the field of reactor core design, fuel management and PWR fuel industry in China. He has organized and implemented a series of advanced core design and fuel management projects for China 1000MWe PWRs including:

- *Daya Bay NPP 18 Month Fuel Cycle, first in China;*
- *Severe Accident Management Guideline Implementation in Daya Bay NPP, first in China;*
- *Ling Ao Advanced Fuel Management (1/4 refueling) project, first in China; and*
- *PWR Initial Core 18 Month Project with Gadolinia-bearing Fuel, first in the world.*

He has won multiple awards including; first prize of National Defense Science and Technology, first prize of China National Nuclear Industry Science and Technology Achievements, and the Grand ICONE AWARD (ICONE25, in Shanghai, China, 2017).

His academic activities include; Vice-Chairman of Shenzhen Science-Technology Expert Association, Expert of International Cooperation Experts Group of the China Atomic Energy Agency(CAEA), Contact Expert of China-Euratom Nuclear Cooperation on Nuclear Reactor Safety for Euratom Working Programme 2018 in Horizon 2020, and Track 2 Chair of ICONE25.

Hisaki Sato, *Toshiba Energy Systems & Solutions Corporation, Kanagawa, Japan*

Hisaki Sato is a group manager of Nuclear Core & Fuel group in Nuclear Safety System Design & Engineering Department at Toshiba Energy Systems & Solutions Corporation. He has 17 years experience in nuclear industry, 10 years in Nuclear Core & Fuel group and 7 years

in Nuclear Safety System group. In 2001, He joined Toshiba to work for neutronics and thermal-hydraulics engineering of Nuclear Core & Fuel. After Fukushima Daiichi NPPs accident, He engaged in work of R&Ds for nuclear safety enhancement technologies for several years. Since 2016, He has been in charge of an Accident Tolerant Fuel development project of Toshiba.

Dave Goddard *is the Laboratory Fellow for Nuclear Fuel Manufacturing at the UK National Nuclear Laboratory. He has over 25 years' experience providing specialist technical support to fuel manufacturing operations in the UK. He is currently leading work on developing fuels with enhanced accident tolerance including the investigation of novel fabrication routes for high uranium density fuels, such as uranium silicide, that could lead to a step change in the next generation of nuclear fuels. This work is being supported through collaborations with a number of leading universities. Dave is a Fellow of the Institute of Materials, Minerals and Mining and a Royal Academy of Engineering Visiting Professor at the University of Manchester.*

14:00 – 16:00 Chalon, 1st Floor

Communication with Nuclear Stakeholders

Chairs: Dr Leon Cizelj, *Jozef Stefan Institute*
Dr Hiroyuki Yamada, *CRIEPI*

Co-Chair: Asif Arastu, *Unisont Engineering, Inc*

Panelists: Dr Hiroyuki Yamada, *CRIEPI*
Dr Leon Cizelj, *Jozef Stefan Institute*
Kirsty Gogan, *Energy for Humanity*
Nathan Paterson, *ENS YGN Chairman, Rolls-Royce*

Why would nuclear professionals need communication skills? We may start with the fact that nuclear professionals communicate a lot in their daily work. This is communication between peers, is part of the training and is superbly mastered by most of the professionals. Then, in the everyday life, better communication skills could lead to better and more satisfying relations with the people that we interact with. Finally, the nuclear professionals could further develop their already considerable communication skills to communicate about the nuclear technologies beyond their peers. The panelists will provide the insight in the basic communication techniques and traps that might then be used by the participants in the real-life situation.

PANELISTS:

Dr Hiroyuki Yamada *is a Senior Research Scientist in Nuclear Risk Research Center of Central Research Institute of Electric power Industry (CRIEPI). He has been engaged in nuclear safety research on the seismic PRA since 1996 in Japan Atomic Energy Research Institute (JAERI). In 2002, he started to research on the disaster mitigation and communication based on the spatial temporal information system in National Research Institute for Earth Science and Disaster Prevention (NIED). From 2007, he has been engaged in research on the nuclear risk communication in Japan Nuclear Energy Safety Organization (JNES). He was involved in IAEA project of Tsunami EBP from 2007 to 2010. He has developed TiPEEZ (Tsunami and Post Earthquake Response in the External Zone) system, and TiPEEZ system for disaster management was implemented in Member States. From 2014, he has been engaged in research on risk communication and seismic/tsunami PRA in order to assist nuclear operators and nuclear industry to continually improve the safety of nuclear facilities. He is a Specially Appointed Professor in Graduate School of Engineering of Niigata Institute of Technology since 2016.*

Dr Leon Cizelj *is head of Reactor Engineering Division of the Jožef Stefan Institute, Ljubljana, Slovenia (http://r4.ijs.si/en). He is responsible for the strategic and operational leadership of the division active in the field of nuclear engineering and safety of nuclear installations. Activities include research, postgraduate education, technical and scientific support to the Slovenian nuclear regulatory body and technical and scientific consulting to end users. Full professor of nuclear engineering at the University of Ljubljana, Slovenia, Faculty of mathematics and physics. President of the ENEN (European Nuclear Education Network www.enen.eu) Association in 2016, 2017 and 2018.Associate editor of Journal of Nuclear Engineering and radiation Science ASME. Member of the editorial board of Science and Technology of Nuclear Installations. Ph. D. in Physics 1993, University of Ljubljana, Slovenia. Author or coauthor of more than 690 publications more than 100 interviews in the Slovenian mainstream media.*

Kirsty Gogan *is co-founder and executive director of Energy for Humanity (EFH), a UK-and Switzerland-based non-profit organisation with a global outlook focused on solving climate change and enabling universal access to modern energy services. Future leaders will need all tools at their disposal to solve global challenges including air pollution and energy security, whilst providing low cost, clean power to billions of people and improving life chances for women and children throughout the world.*

In pursuit of these goals, Energy for Humanity (EFH) strongly advocates for evidence-based, whole-system, and technology-inclusive solutions in pursuit of the best (meaning, fastest, most cost-effective, most feasible) outcomes for people and nature. Our work includes running projects in multiple countries, including oversight of a successful campaign to prevent premature closure of the Swiss nuclear fleet in 2016. EFH led a delegation of the world's most highly regarded climate scientists to Paris COP21 in order to make the case for nuclear to be recognised as a climate solution. EFH was subsequently shortlisted for the Business Green Leaders "Green NGO of the Year" Award in 2016.

In 2017, at COP23, EFH published a new report on European Climate Leadership 2017 and presented a new study on Decarbonizing Cities with Advanced Nuclear. Ms. Gogan is also founding director of CleanTech Catalyst (a consultancy specialising in climate and energy), recently commissioned by the Energy Technologies Institute to lead the

Nuclear Cost Drivers Study in partnership with Lucid Strategy (based in Cambridge, MA). Ms. Gogan is regularly invited as an expert speaker on science communication, nuclear competitiveness and innovation to high profile events around the world. She has more than 15 years' experience as a senior advisor industry, non-profits and Government, including at 10 Downing St, the Office of the Deputy Prime Minister, and the Department of Energy and Climate Change.

Nathan Paterson *is responsible for management, business development, engagement and deployment for key civil nuclear accounts in Europe and International areas at Rolls-Royce Civil Nuclear.*

Previously he has been part of the delivery of new reactor designs for Naval Prolusion covering engineering governance and delivery of V&V strategy areas.

Prior to that he lead aspects of safety design, internal and external hazard analysis, and harsh environmental assessment for Through-life nuclear safety justifications

He is the Chairman of the European the European Nuclear Society (ENS) Young Generation Network (YGN) which brings together the YGNs of 21 member countries of ENS. He leads the committee's operation and strategy covering a number of activities to help support the sustainable growth of the nuclear industry and associated academic communities.

He collaborates on programmes including: the nuclear skills delta; infrastructure and capacity building; diversity within the industry; nuclear as part of the solution to fight climate change and public engagement on nuclear technologies to name a few.

14:00 – 16:00 Reims, 1st Floor

Fukushima-Daiichi Nuclear Power Plant Decommissioning R&D

Chair: Yasuo Koizumi, *JAEA*

Panelists: Kazuhito Takeda, *TEPCO*
Hideo Soneda, *Hitachi GE*
Dr Koji Okamoto, *JAEA/CLADS*
Hiroshige Kikura, *Tokyo Tech*
Dr Claire Corkhill, *University of Sheffield*
Yasuo Koizumi, *JAEA*

This panel will discuss the current status, lessons learned, and actions of post Fukushima Daiichi accident.

PANELISTS:

Kazuhito Takeda *is a manager of International Relations and Strategy Group, D&D Promotion Office, Fukushima Daiichi D&D Engineering Company of TEPCO since 2017. He's been working for TEPCO since 1995 at various departments such as Nuclear Fuel Engineering department, Fuel Transport Engineering department, Nuclear Fuel Cycle Engineering department and London Office of International department. He received his bachelor's and master's degrees in mechanical engineering from University of Niigata.*

Hideo Soneda *is a Senior Project Manager of Hitachi-GE Nuclear Energy. He has thirty years of experience in BWR area of reactor system design, core and fuel design, and safety analysis. He engaged himself on ABWR reactor system design, startup test in Japan, and the project of UK ABWR General Design Assessment mainly in fuel area. He worked on the benchmark study of the accident at the Fukushima Daiichi NPP and has been associated with the program of criticality control technique for Fukushima.*

Dr Koji Okamoto *got his Master Degree of Engineering from the University of Tokyo in 1985. He worked at Mitsubishi Heavy Industries Ltd. as a researcher for Fast Breeder Reactor, Monju. In 1988, he returned to the University of Tokyo as a research associate at Department of Nuclear Engineering. After he got Ph.D in 1992, he had been promoted to be an Associate Professor in 1993. In 2004, he was a full professor at Department of Quantum Engineering and Systems Science, the University of Tokyo. His major is Thermal-Hydraulics and Nuclear Safety. He published more than 100 referred papers in the field of Fluid Engineering and Nuclear Engineering. He had several patents related to nuclear systems in US and Japan. He is an editor of Measurement Science and Technology, Institute of Physics, for more than 10 years. After Fukushima-Daiichi NPP accidents, he moved to Nuclear Professional School of the University of Tokyo. He explained to the public about the detail of the accident at several TV programs, including NHK and so on. He was a member of accident evaluation committee at Atomic Energy Society of Japan.Current his research interests include Safety Improvements of Nuclear Power Plants, Advanced Nuclear Systems, Severe Accident Researches and Decommissioning activities of normal shutdown NPP and/or Fukushima-Daiichi NPP. He was a chair of the Nuclear System Decommissioning sub-working group at Ministry of Education, Science, Sports and Culture (MEXT). He also worked as an executive committee member of Nuclear Damage Compensation and Decommissioning Facilitation Cooperation (NDF). He was a Division Head of Power Energy Systems, Japanese Society of Mechanical Engineers (JSME). From April, 2018, he also works as a Director General of Collaborative Laboratory for Advanced Decommissioning Sciences (CLADS) in Japan Atomic Energy Agency (JAEA).*

Dr Claire Corkhill *is a Reader in nuclear materials science at the University of Sheffield (UK) and currently holds an EPSRC Early Career Research Fellowship. Her research focuses on understanding the relationship between surface chemistry, microstructure and dissolution kinetics in nuclear waste materials. Her particular focus is oxide ceramics (e.g. UO2), aluminoborosilicate glass and cement materials. Within the context of UK-Japan collaboration on Fukushima research, Claire leads the UK side of a project to simulate realistic nuclear fuel debris and understand its evolution (corrosion) within the reactor building. She is also is a key partner in projects aimed to develop immobilisation matrices for ion exchange resin materials and is a project partner of the EPSRC funded Japan-UK Nuclear Opportunities (JUNO) Network.*

14:00 – 16:00 Epernay, 1st Floor

V&V of Software Used to Analyze Thermal-Hydraulics in Nuclear Systems

Chair: Richard Schultz, *Texas A&M University*

Panelists: Dr Yassin Hassan, *Texas A&M University*
Shuo Li, *State Nuclear Power Technology Corp.*
Elia Merzari, *Argonne National Laboratory*
Dr Hideo Nakamura, *Japan Atomic Energy Agency*
Sam Treasure *(or other participant from Rolls-Royce Ltd)*

The panelists will discuss the importance, scope, and techniques fundamental to verifying and validating software used to analyze thermal-hydraulics in nuclear systems. Of particular interest are the techniques used to define the matrix of experiments used to validate the software (both systems analysis and CFD) over the nuclear system operational and accident domains. The various scaling techniques employed to design experimental facilities and to achieve the V&V objectives will likely be discussed.

PANELISTS:

Dr Yassin Hassan *is Professor and Head of the Department of Nuclear Engineering, Sallie and Don Davis'61 Professor of Engineering and also Professor of the Department of Mechanical Engineering at Texas A&M University. Prior to joining Texas A&M September 1986, he worked for seven years at Nuclear Power Division, Babcock & Wilcox Company, Lynchburg, Virginia. His research is in computational and experimental thermal hydraulics, reactor safety, laser-based flow visualization and diagnostic imaging techniques, system modeling, multiphase flow, transient and accident analyses and advanced nuclear reactors.*

Shuo Li *works for State Power Investment Corporation Research Institute (SPICRI) and National Energy Key Laboratory of Nuclear Power Software in China. The software package COSINE (Core and System Integrated Engine for design and analysis) is developed by SPICRI. He mainly researches in the development and V&V of NPP design software.*

Dr Hideo Nakamura *is Technical Associate of Nuclear Safety Research Center, Japan Atomic Energy Agency (JAEA) since April 2018. He joined former Japan Atomic Energy Research Institute (JAERI) in 1981 to work for the ROSA (Rig-of-Safety Assessment) program to study thermal-hydraulic phenomena during reactor accidents for both of BWR & PWR with large-scale experiments under reactor prototypical conditions. In 2001, he became a head of Thermo-hydraulic Safety Research Group dedicated for both of severe accident and beyond design-basis accidents. Since 2005, he was a director of operating agent (JAEA) of the OECD/NEA ROSA and ROSA-2 Projects with LSTF experiments. He is an executive editor of Nuclear Engineering and Technology since 2015.*

Wednesday, July 25

14:00 – 16:00 Cremant, 1st Floor

Education and Human Resources Development

Chairs: Asif Arastu, *Unisont Engineering, Inc.*
Yassin Hassan, *Texas A&M University*
Leon Cizelj, *Jozef Stefan Institute*
John Roberts, *The University of Manchester*
Hideharu Takahashi, *Tokyo Institute of Technology*
Kan Wang, *Tsinghua University*

Panelists: Dr Yassin Hassan, *Texas A&M University*
Dr Guanghui Su, *Xi'an Jiaotong University*
Dr Leon Cizelj, *Jozef Stefan Institute*
Dr Akihide Kugo, *JANSI*
Dr Kan Wang, *Tsinghua University*
Hiroshige Kikura, *Tokyo Institute of Technology*

PANELISTS:

Dr Yassin Hassan *is Professor and Head of the Department of Nuclear Engineering, Sallie and Don Davis'61 Professor of Engineering and also Professor of the Department of Mechanical Engineering at Texas A&M University. Prior to joining Texas A&M September 1986, he worked for seven years at Nuclear Power Division, Babcock & Wilcox Company, Lynchburg, Virginia. His research is in computational and experimental thermal hydraulics, reactor safety, laser-based flow visualization and diagnostic imaging techniques, system modeling, multiphase flow, transient and accident analyses and advanced nuclear reactors.*

Dr Guanghui Su *is a professor of Xi'an Jiaotong University, and he is the winner of the National Science Foundation for Distinguished Young Scholars of China, Yangtze river scholars Distinguished Professor. He is the co-editor of ASME Journal of Nuclear Engineering and radiation Science and as TPC Chair of ICONE18 held in Xi'an 2010.*

Dr Leon Cizelj *is head of Reactor Engineering Division of the Jožef Stefan Institute, Ljubljana, Slovenia (http://r4.ijs.si/en). He is responsible for the strategic and operational leadership of the division active in the field of nuclear engineering and safety of nuclear installations. Activities include research, postgraduate education, technical and scientific support to the Slovenian nuclear regulatory body and technical and scientific consulting to end users. Full professor of nuclear engineering at the University of Ljubljana, Slovenia, Faculty of mathematics and physics. President of the ENEN (European Nuclear Education Network www.enen.eu) Association in 2016, 2017 and 2018.Associate editor of Journal of Nuclear Engineering and radiation Science ASME. Member of the editorial board of Science and Technology of Nuclear Installations. Ph. D. in Physics 1993, University of Ljubljana, Slovenia. Author or coauthor of more than 690 publications more than 100 interviews in the Slovenian mainstream media.*

Dr Akihide Kugo *is Executive Officer and General Manager for International Department of Japan Nuclear Safety Institute.*

Dr Kugo dedicated himself in developing leadership educational programs for nuclear operators such as from the CEOs to the first-line managers. Dr Kugo is also a member of Working Group on Human and Organizational Factors (WGHOF) of CSNI OECD/NEA. From the aspects of human attributes, Dr Kugo established the program of a crisis management drill and exercise based on the episodic memories of Fukushima Accident. He also applied the methodology of psychological model of Johari-Window to the assessment of leadership training for shift supervisors of nuclear power station. Dr Kugo received a bachelor's degree in Mechanical Engineering from Tokyo University in Japan, and Master degree of Arts in International Study from Leeds University in U.K., and Ph.D. in Energy Science from Kyoto University in Japan. Dr Kugo currently looks after the international business of JANSI.

Dr Kan Wang, *PhD, Professor of Nuclear Engineering and Director of Institute of Nuclear Energy Science and Engineering Management (INESEM)at Department of Engineering Physics in Tsinghua University, Beijing. Main research interests include: Development of nuclear numerical reactors, Monte Carlo methods and multi-physics coupling applied in reactor analysis, New and advanced thorium-based nuclear energy system, Safety analysis. About 680 journal and conference papers have been published, 35 PhD have been fostered while 20 PhD students are at study. Consulting work include: China Nuclear Power Society (Vice President), China Nuclear Education Society (Vice President), Beijing Nuclear Society (Vice President), Academic Committee of Reactor Design Technology Key Lab (Vice Director), etc.*

14:00 – 16:00 Bouzy, 1st Floor

Advanced Manufacturing

Chairs: Craig Stover, *EPRI*
Tomofumi Yamammoto, *Mitsubishi Heavy Industries*

Panelists: Craig Stover, *EPRI*
Dr Michael Preuss, *Nuclear Rolls-Royce University Technology Centre at the University of Manchester*
Dr Will Kyffin, *Nuclear Advanced Manufacturing Research Centre*
Eleonora Lambridis, *Westinghouse*
Naoki Suda, *Mitsubishi Heavy Industries*

Advanced Manufacturing technologies have the capability to significantly improve the cost, schedule, and quality associated with manufacturing nuclear components. This panel will feature presentations from 6 panelists that are leading work around the world to progress the development of Advanced Manufacturing technology.

PANELISTS:

Craig Stover *is a Senior Technical Leader in the Advanced Nuclear Technology (ANT) program at the Electric Power Research Institute (EPRI). In his role, Craig is responsible for managing materials, component, and advanced manufacturing research to support new nuclear plant construction. Craig's prior work within EPRI has included managing heat exchanger and thermal performance research. Craig joined EPRI after spending 6 years with South Carolina Electric & Gas (SCE&G). During his time at SCE&G, Craig worked on the VC Summer Project licensing and constructing 2 new nuclear power plants. Craig holds a BS degree in Mechanical Engineering from the University of South Carolina and a MBA from Ohio University.*

Dr Michael Preuss *is Deputy Director of the Nuclear Rolls-Royce University Technology Centre at the University of Manchester and champions the Materials Systems for Demanding Environment theme within the Henry Royce Institute, UK's National Institute for Materials Science Research and Innovation. He is also associated editor for Journal of Nuclear Materials and led an EPSRC Programme grant focusing on advanced nuclear manufacturing (NNUMAN), which involved academics from the University of Manchester and the Nuclear-AMRC. Michael obtained his PhD from the Technical University Hamburg-Harburg and joined the University of Manchester in 1999. In 2003, he was appointed as Lecturer in Materials Performance and became a core member of the Materials Performance Centre, which focuses on nuclear materials research. Michael was appointed as Chair in Metallurgy in 2010 and has served on a number of scientific advisory boards at large scale research facilities. Currently, he chairs the Scientific Advisory Council of the European Spallation Source (ESS) based in Lund, Sweden and is SAC member of UK's Neutron and Muon Source ISIS.*

Dr Will Kyffin *is responsible for the powder metallurgy activities within the Nuclear AMRC. This focuses on the consolidation of metallic powders via HIP for nuclear applications. Prior to the Nuclear AMRC, Dr Kyffin spent 8 years in a technical role at TWI researching solid state joining techniques. Before this, Dr Kyffin was a product metallurgist responsible for ensuring quality of wrought nickel based products such as Inconel 718, 625 and 825. His degree and PhD are from the University of Sheffield based on materials science and metallurgy respectively.*

Eleonora Lambridis *is the manager of Westinghouse's global open innovation program* WeLink. *In her role, she has the mission to explore and develop new technologies to the nuclear industry through collaboration with startups, small and medium sized enterprises (SMEs), and research centers. Eleonora has been an innovation leader for Europe Engineering for the past 3 years, and since 2010 has worked as an engineer and project manager for Westinghouse in various roles of increasing responsibility. She has an M.B.A. degree from the Solvay Brussels School of Management and Economics (Belgium) and a master degree in nuclear engineering from the University of Rome La Sapienza (Italy).*

Naoki Suda *is a research engineer of MHI (Mitsubishi Heavy Industries, LTD.). He performs research and development of welding technology. He has developed welding sensing and automatic welding technology. He was a manufacturing and welding engineer about nuclear power plant equipment before he became current job position. He obtains international welding engineer, IWE.*

14:00 – 16:00 Epernay, 1st Floor

SMRs & Advanced Technologies

Chairs: Robert Stakenborghs, *ILD Inc.*
Tian Lin, *SNERDI*
Kohei Hisamochi, *Hitachi GE*

Panelists: Xujia Wang, *SNERDI*
Dr Yu Liu, *NPIC*
Dr Paolo Ferroni, *Westinghouse*
Dr Kazuaki Kito, *Hitachi GE*

This panel will consist of seven global nuclear technology leaders in advanced and small modular reactors. They will present and discuss technology development progress and status on SMR, advanced reactors, High Temperature Gas Cooled (HTGC) Reactor, and other advanced reactor technologies.

PANELISTS:

Xujia Wang, *CHINA. Director of General Technology Department, SNERDI.*

He graduated from Tsinghua University with master degree of nuclear science and technology. He has over ten years working experience in the fields of new reactor development/core thermal hydraulic design/ accident analysis. He participated the project of CNP300/CAP1000 design, and is engaged on CAP1400/CAP1700 development. Now, he is also in charge of the development of advanced SMRs in SNERDI.

Dr Yu Liu *is a Senior Research Engineer of NPIC (Nuclear Power Institute of China), and acts as the leader of thermal-hydraulic group at the design sub-institute. He obtained his BA and PhD in Nuclear Science and Technology from Tsinghua University, China in 2005 and 2010. He mainly works on thermal-hydraulic design and safety analysis of nuclear power plant. His interesting includes multi-physics and multi-scale coupling, CFD analysis and DNBR online monitoring. Also he is a member to develop self-reliant software of NPIC, which has been used for ACP100 (Small Modular Reactors of China) design.*

Dr Paolo Ferroni *is a Fellow Engineer in the Advanced Reactor Development group at Westinghouse Electric Company LLC. He is the technical lead for the Westinghouse Lead Fast Reactor that the company is pursuing as its Next Generation of high-capacity nuclear power plant technology. While at Westinghouse, Dr Ferroni has worked on several programs focused on the development of advanced technologies for both LWRs and non-LWRs, particularly in the area of advanced fuels and advanced reactor concepts. Dr Ferroni received a MS in Nuclear Engineering from Turin Polytechnic (Italy) and a PhD in Nuclear Engineering from the Massachusetts Institute of Technology (USA).*

Dr Kazuaki Kito *is a senior engineer of Hitachi-GE Nuclear Energy. He has been developing the plant system and thermal-hydraulics of BWRs and other innovative reactors, and he now mainly works on plant system design of a small modular BWR. He received Ph.D degree of engineering from the University of Tokyo in 1998.*

14:00 – 16:00 Chalon, 1st Floor

Intelligent Technology Application in Nuclear Power Plants

Chairs: Ke Tan, *China Nuclear Power Engineering Co., Ltd*
Ken Canavan, *Westinghouse*

Panelists: Qingwei Shi, *China Nuclear Control Engineering Co., Ltd.*
Ke Tan, *China Nuclear Power Engineering Co., Ltd*
Dr Guanghui Su, *Xi'an Jiaotong University*
Ken Canavan, *Westinghouse*

PANELISTS:

Qingwei Shi *is currently the General Manager of China Nuclear Control Engineering Co., Ltd. and he is the Researcher-level senior engineer. Mr.Shi has long been engaged in the nuclear instrumentation industry and has extensive experience in nuclear instrumentation. He graduated from Huabei Electric Power University with a major in power system relay protection and automatic remote technology.*

From 2000 to 2017, Mr. Shi worked as the Director of Instrument Control Office, Director of the Instrumentation Management Division, Assistant to the General Manager and Chairman of the Labor Union of Jiangsu Nuclear Power Co.,Ltd..

Since 2017, he has been the General Manager of China Nuclear Control System Engineering Co., Ltd.

Ke Tan *is the Deputy Director of State Key Laboratory of Nuclear Power Safety Monitoring Technology and Equipment and a Member of Artificial Intelligence 2.0 National Science and Technology Major Special Item Hybrid Enhancement Expert Committee. He is the Director Human Factors Engineering Laboratory Founded by NEA. He is the Deputy Director of the Joint Laboratory of Human Reliability and Human-Computer Interaction founded by China Astronaut Research and Training Center and China Guangdong Nuclear Power Engineering Co., Ltd. He is also in charge of HPR1000 MCR R&E.*

Dr Guanghui Su *is a professor of Xi'an Jiaotong University, and he is the winner of the National Science Foundation for Distinguished Young Scholars of China, Yangtze river scholars Distinguished Professor. He is the co-editor of ASME Journal of Nuclear Engineering and radiation Science and as TPC Chair of ICONE18 held in Xi'an 2010.*

Ken Canavan *is the chief technology officer (CTO) for Westinghouse Electric Company. He has strategic responsibility to drive next-generation technology and innovation solutions that align with the company's global business strategy, and leads the effort to strengthen Westinghouse with regard to technology leadership development.*

Previously, Ken served as director, Engineering, for Electric Power Research Institute (EPRI). While at EPRI, he turned industry needs into compelling research and development plans. These plans resulted in solutions to improve the safety and performance of the global nuclear fleet.

Prior to his work at EPRI, Ken was responsible for risk applications at Data Systems and Solutions, ERIN Engineering and Research, and GPU Nuclear. He also was a safety analysis engineer with Davis-Besse Nuclear Power Station in Ohio (USA).

Canavan has a bachelor's degree in chemical engineering, with a nuclear engineering minor, from Manhattan College, New York.

Sunday, July 22

TIME	TITLE	LOCATION
Full Day Workshops		
09:00 – 15:00	Computational Fluid Dynamics (CFD)	Bouzy, 1st Floor
09:00 – 15:00	Thermal-Hydraulics Methods, Experimentation and Benchmarking	Epernay, 1st Floor
09:00 – 15:00	Nuclear Codes and Standards	Reims, 1st Floor
Half Day Workshops		
09:00 – 12:00	Waterhammer Analysis	Chalon, 1st Floor
09:00 – 12:00	Part 1 – Communication for Nuclear Professionals	Alsace, Mezzanine Floor
12:30 – 15:00	Part 2 – International Communication about Nuclear Power Operation and Safety Monitoring Technologies	Alsace, Mezzanine Floor
12:30 – 15:00	Probability Safety Assessment and Severe Accidents	Chalon, 1st Floor
Technical Sessions		
16:00 – 18:00	Technical Sessions	See pages 29 to 33 for session titles, authors and locations

FULL DAY WORKSHOPS

09:00 – 15:00 Bouzy, 1st Floor

Computational Fluid Dynamics (CFD)

Chair: Yassin Hassan, *Texas A&M University, USA*

Co-Chairs: Hiroyuki Yoshida, *Japan Atomic Energy Agency, Japan*

Speakers:
Naoyuki Onodera, *JAEA, Japan*
Masahiro Furuya, *CRIEPI, Japan*
Yassin Hassan, *Texas A&M University, USA*
Frederick Moody, *Retired: GE Nuclear and Professor: San Jose State University, USA*
Richard Schultz, *ISU TAMU, USA*
Elia Merzani, *Argonne National Laboratory, USA*
Sofiane Benhamadouche, *EDF, France*
Sam Treasure, *Rolls-Royce, UK*
Hiroyuki Yoshida, *Japan Atomic Energy Agency, Japan*

The CFD seminar will target young researchers and engineers to provide the basis and results for selection of several CFD applications for certain thermal-hydraulic problems. Wide variety knowledge and up-to-date information on CFD will be presented by foreign CFD specialists. The presentations may begin with the fundamental equations and numerical solution methods, and then continues to recent developments and some practice guidelines of CFD for nuclear engineering applications. Informal discussions and questions will be conducted.

09:00 – 15:00 Epernay, 1st Floor

Thermal-Hydraulics Methods, Experimentation and Benchmarking

Chair: Guoqiang Wang, *Westinghouse Electric Company, USA*

Co-Chairs: Jovica Riznic, *Canadian Nuclear Safety Commission, USA*
Shripad Revankar, *Purdue University. USA*

Speakers:
Jovica Riznic, *Canadian Nuclear Safety Commission, USA*
Shripad Revankar, *Purdue University, USA*
Guanghui Su, *Xi'an Jiaotong University, China*
Hiroaki Son, *Japan Atomic Energy Agency, Japan*
Frederick Moody, *Retired: GE Nuclear and Professor: San Jose State University, USA*
Guoqiang Wang, *Westinghouse Electric Company, USA*
Peter Gill, *Wood, UK*
Asif Arastu, *Unisont Engineering, Inc., USA*
Robert Stakenborghs, *ILD Inc., USA*

This workshop will present an overview of some of the key Thermal-Hydraulic methodologies, experimentation procedures and their applications to nuclear power plants. The relevant computer code model and theory will be described and real experimental work will be presented and discussed. Meanwhile, computer code simulations of experiments and benchmarking will also be presented. For exchanging information and experience purposes, this workshop is applicable to both students/professors and engineers in the relevant industry fields.

09:00 – 15:00 Reims, 1st Floor

Nuclear Codes and Standards

Chair: Clayton Smith, *ASME Board of Nuclear Codes and Standards, USA*

Co-Chair: John Bendo, *ASME Nuclear Business Manager, USA*

Speakers: Masaki Morishita, *Japan Atomic Energy Agency, Japan*
Osamu Oyamada, *Japan Nuclear Safety Institute, Japan*
Clayton Smith, *ASME Board of Nuclear Codes and Standards, USA*
John Bendo, *ASME Nuclear Business Manager, USA*

This workshop will promulgate an open technical exchange of information and sharing of lessons learned in response to current codes and standards needs. All interested stakeholders will contribute toward the development and modification of codes, standards, and conformity assessment activities and help identify international collaboration efforts.

HALF DAY WORKSHOPS

09:00 – 12:00 Chalon, 1st Floor

Waterhammer Analysis

Chair: Asif Arastu, *Unisont Engineering, Inc., USA*

Co-Chair: Robert Stakenborghs, *ILD Inc., USA*

Speakers: Frederick Moody, *Retired: GE Nuclear and Professor: San Jose State University, USA*
Asif Arastu, *Unisont Engineering, Inc., USA*
Robert Stakenborghs, *ILD Inc., USA*

This workshop will present an overview of the fluid mechanics of classical waterhammer theory and its application to nuclear power plant systems. All known waterhammer mechanisms will be discussed together with the methods of simulating these. Real plant examples will be presented and discussed. Results of computer simulation of waterhammer solutions will be presented in the form of animations showing the movement of pressure and velocity waves. These greatly help in understanding the phenomena and the associated mechanisms. Fluid Structure Interaction (FSI) aspects will also be addressed.

09:00 – 12:00 Alsace, Mezzanine Floor

Part 1 – Communication for Nuclear Professionals

Chair: Leon Cizelj, *Jozef Stefan Institute, Slovenia*

Co-Chairs: Kirsty Gogan, *CEO and Cofounder Energy for Humanity, UK*
Asif Arastu, *Unisont Engineering, Inc., USA*

Speakers: Leon Cizelj, *Jozef Stefan Institute, Slovenia*
Nathan Paterson, *ENS YGN Chairman & Customer Account Manager – Civil Nuclear, Rolls-Royce*
Kirsty Gogan, *CEO and Cofounder Energy for Humanity, UK*
Steve Kidd, *East Cliff Consulting, UK*

Why would nuclear professionals need communication skills? We may start with the fact that nuclear professionals communicate a lot in their daily work. This is communication between peers, is part of the training and is superbly mastered by most of the professionals. Then, in the everyday life, better communication skills could lead to better and more satisfying relations with the people that we interact with. Finally, the nuclear professionals could further develop their already considerable communication skills to communicate about the nuclear technologies beyond their peers. The workshop will provide the insight in the basic communication techniques and traps that might then be used by the participants in the real life situation.

12:30 – 15:00 Alsace, Mezzanine Floor

Part 2 – International Communication about Nuclear Power Operation and Safety Monitoring Technologies

Chairs: Leon Cizelj, *Jozef Stefan Institute, Slovenia*
Ke Tan, *China Nuclear Power Engineering Co., Ltd*

Co-Chairs: Kirsty Gogan, *CEO and Cofounder Energy for Humanity, UK*
Asif Arastu, *Unisont Engineering, Inc., USA*
Fei-Yue Wang, *Institute of Automation, Chinese Academy of Sciences, China*

Speakers: Fei-Yue Wang, *Institute of Automation, Chinese Academy of Sciences*
Ke Tan, *China Nuclear Power Engineering Co., Ltd, China*
Jian-Guang Zhao, *China Nuclear Power Engineering Co., Ltd, China*
Yi-Ke Guo, *Imperial College London, UK*
Hidekazu Yoshikawa, *Kyoto University, Japan*
Mikael Mononen, *STUDSVIK, Sweden*
Shengke Zhi, *Wood, China*

Observing parameters and determining the operation safety state by people may lead to the failure in seeing the wood for the trees. There exist threshold definition risks, patrolling

risks and the "passivity in time and human negligence" during accident handing. The safe operation of the nuclear power plant highly relies on people, but it is unable to estimate the human reliability.

Learning Objectives:
This workshop will discuss the development of nuclear power operation safety state monitoring technology.

- Provide an overview of the research the nuclear safe state monitoring and evaluation technologies to reduce the probability of nuclear safety accidents
- Discuss new industry standards related to safe state monitoring and evaluation of nuclear power plants
- Discuss how to reduce human failures and anticipate equipment failures
- Discuss how to develop an intelligent, highly-reliable new generation of nuclear operation safety monitoring system

12:30 – 15:00 Chalon, 1st Floor

Probability Safety Assessment and Severe Accidents

Chair: Ivo Kljenak, *Jozef Stefan Institute, Slovenia*

Co-Chairs: Tian Wex, *Xi'an Jiaotong University, China*
Alexei Miassoedov, *Karlsruhe Institute of Technology, Germany*

Speakers: Ivo Kljenak, *Jozef Stefan Institute, Slovenia*
Tian Wex, *Xi'an Jiaotong University, China*
Yoshihisa Nishi, *Central Research Institute of Electric Power Industry, Japan*
Koji Okamoto, *University of Tokyo, Japan*
Guanghui Su, *Xi'an Jiaotong University, China*
Yapel Zhang, *Xi'an Jiaotong University, China*
Alexei Miassoedov, *Karlsruhe Institute of Technology, Germany*
Po Hu, *Shanghai Jiaotong University, China*
Park Huan Sun, *Pohang University of Technology, Korea*

This workshop contains two parts: Probability Safety Assessment and Severe Accidents. Development and application of PSA in NPPs will be introduced. The phenomenology of severe accidents will also be presented, including heat transfer in the melt pool and hydrogen generation and combustion in the containment. The treatment of severe accidents in nuclear engineering and corresponding management requirements will also be exchanged in this workshop. This workshop is applicable to students and engineers in the PSA and severe accidents fields.

16:00 – 18:00

TECHNICAL SESSIONS

Operations & Maintenance, Engineering, Modifications, Life Extension, Life Cycle and Balance of Plant

1-4 System and Equipment Operation

Sunday July 22 Room Muscadet | 16:00 – 18:00

Session Chair: Koji Yamada, Chubu Electric Power Co, Inc., Japan

Session Co-Chair: Xi Wang, CNNC China Nuclear Power Engineering Co., Ltd., China

Transient Reactor Test Facility Restart 23 Years Later
ICONE26-81833
Bradley Heath[1] Cody C Race[2] Lee Nelson[1]
1. Idaho National Laboratory, Idaho Falls, ID, USA; 2. Idaho National Laboratory, Pocatello, ID, USA

Study on the Operating Strategy Optimization of Moving to Remote Shutdown Station when Main Control Room is Un-inhabitable ICONE26-81480
Li Li, Shengtao Zhang, Zhao Xu, Yu Du
CNNC China Nuclear Power Engineering Co., Ltd., Beijing, China

Selection and Management of Organization for Implementing V & V Activities in Application Software of Digital Instrument Control System of Nuclear Power Plant ICONE26-81562
Qing Li, Xi Wang, Shaohua Wang
CNNC China Nuclear Power Engineering Co., Ltd., Beijing, China

Pump Bearing Fault Detection based on EMD and SVM
ICONE26-81584
Yi Feng, Xianling Li, Zhiwu Ke, Zhaoxu Chen, Mo Tao
Wuhan Second Ship Design and Research Institute, Wuhan, China

Nuclear Fuel and Material, Reactor Physics and Transport Theory

2-4 Reactor Physics: Methodology Development I

Sunday July 22 Room Bourg | 16:00 – 18:00

Session Chair: Hakan Ozaltun, Idaho National Laboratory, USA

Session Co-Chair: Ben Lindley, Wood, Dorchester, UK

Modelling and Simulation Activities in Support of the UK Nuclear R&D Programme on Digital Reactor Design ICONE26-81090
Ben Lindley[1] Dennis Allen[2] Mark Bankhead[3] Dave Bowman[4]
Simon de Haas[5] Jefri Draup[6] Lynn Dwyer[4] Matthew D. Eaton[7]
Erwan Galenne[6] Christopher Jackson[5] Ken Lai[4] Andrew Levers[4]
John Lillington[1] Dzianis Litskevich[8] Bruno Merk[8] Geoff Parks[9]
Edoardo Patelli[8] Eann Patterson[8] Aiden Peakman[3] Eugene Shwageraus[9]
Andy Smethurst[1] Paul Smith[1] Konstantin Vikhorev[4]
1. Wood, Dorchester, United Kingdom; 2. Wood, Gloucester, United Kingdom; 3. National Nuclear Laboratory, Warrington, United Kingdom; 4. Virtual Engineering Centre, University of Liverpool, Warrington, United Kingdom; 5. Rolls-Royce, Derby, United Kingdom; 6. EDF Energy, London, United Kingdom; 7. Imperial College London, London, United Kingdom; 8. University of Liverpool, Liverpool, United Kingdom; 9. University of Cambridge, Cambridge, United Kingdom

Development and Verification of a New Nuclear Data Processing System NECP-Atlas ICONE26-81516
Jialong Xu[1] Tiejun Zu[1] Liangzhi Cao[2] Hongchun Wu[1]
1. Xi'an Jiao Tong University, Xi'an, China; 2. School of Nuclear Science and Technology, Xi'an Jiao Tong University, Xi'an, China

Development and Application of a 2D/1D Fusion Code with Leakage Reconstruction Method ICONE26-81507
Liang Liang[1] Zhouyu Liu[2] Hongchun Wu[2]
Sheng Wang[2] Qian Zhang[1] Qiang Zhao[1]
1. Harbin Engineering University, Harbin, China;
2. Xi'an Jiao Tong University, Xi'an, China

A Neutron Transport Calculation Method for Deep Penetration and its Preliminary Verification ICONE26-81709
Wankui Yang[1] Baoxin Yuan[2] Songbao Zhang[2]
Haibing Guo[2] Yaoguang Liu[2] Li Deng[3]
1. China Academy of Engineering Physics, Mianyang, China; 2. Institute of Nuclear Physics and Chemistry, Mianyang, China; 3. Institute of Applied Physics and Computational Mathematics, Beijing, China

Development of Three-Dimensional Neutron Kinetics Code based on High Order Nodal Expansion Method in Hexagonal-Z Geometry ICONE26-81356
Chao Guo[1] Yu Liu[2] Hangxing He[2] Luguo Liu[2] Xiaoyu Wang[2]
Sufang Xin[2] Peiying Li[2] Hongsheng Yuan[3] Xiaoli Wu[2]
1. North China Electric Power University, Beijing, China; 2. Nuclear Power Institute of China, Chengdu, China; 3. Science and Technology on Reactor System Design Technology Laboratory, Nuclear Power Institute of China, Chengdu, China

Application of the Dynamic Rod Worth Measurement Method on WWER ICONE26-81055
Wenbo Zhao, Zhumin Jiang, Liangzi Wang, Chenlin Wang, Yingrui Yu, Zhaohu Gong, Minxiao Zhong, Tongxian Liu, Hongzhi Xiang
Nuclear Power Institute of China, Chengdu, China

Nuclear Fuel and Material, Reactor Physics and Transport Theory

2-5 Reactor Physics: Methodology Development II

Sunday July 22 Room Talbot | 16:00 – 18:00

Session Chair: Hany Abdel-Khalik, Purdue University, USA

The Preserving Neutron Flux Properties Discrete Scheme for Multi-media Time-dependent Neutron Transport Equations ICONE26-81519
Zhenying Hong, Guangwei Yuan, Junxia Wei
Institute of Applied Physics and Computational Mathematics, Beijing, China

Analysis and Improvement of Global-Local Self-Shielding Calculation Scheme for AIC Control Rods ICONE26-82196
Jikui Li[1] Tiejun Zu[1] Liangzhi Cao[2] Hongchun Wu[1] Qingming He[1]
1. Xi'an Jiao Tong University, Xi'an, China; 2. School of Nuclear Science and Technology, Xi'an Jiao Tong University, Xi'an, China

Multi-dimensional Heterogeneous Resonance Integral Tables Generated for Embedded Self-shielding Method Towards Irregular Lattices ICONE26-81041
Qian Zhang[1] Qiang Zhao[1] Hongchun Wu[2] Liangzhi Cao[3] Zheng Zheng[4]
1. Harbin Engineering University, Harbin, China; 2. Xi'an Jiao Tong University, Xi'an, China; 3. School of Nuclear Science and Technology, Xi'an Jiao Tong University, Xi'an, China; 4. Shanghai Nuclear Engineering Research and Design Institute Co. Ltd., Shanghai, China

Variational Optimization with Multi-Group Neutron Diffusion Equations: A Two-Group Diffusion Model Validated with Monte Carlo ICONE26-81648
Zafar Koreshi, Hamda Khan
Air University, Islamabad, Pakistan

A Space-time Parallel Method to Solve Space-Dependent Neutron Kinetics Equations in Hexagonal-Z Geometry ICONE26-81213
Zhizhu Zhang, Yun Cai, Xingjie Peng, Qing Li
Nuclear Power Institute of China, Chengdu, China

Parallel Computation of the Point Neutron Kinetic Equations using Parallel Revisionist Integral Deferred Correction ICONE26-81205
Yun Cai, Xingjie Peng, Qing Li, Zhizhu Zhang, Zhuming Jiang, Rui Guo
Nuclear Power Institute of China, Chengdu, China

Nuclear Fuel and Material, Reactor Physics and Transport Theory

2-8 Zirconium-based Materials and Zirconium Compounds

Sunday July 22 Room Cremant | 16:00 – 18:00

Session Chair: Carsten Schroer, Karlsruhe Institute of Technology (KIT), Germany

A Theoretical Model of the Stress Intensity Factor Threshold of DHC for Fuel Cladding Tube ICONE26-81665
Liang Chen, Lili Liu, Xiaoming Song, Hua Pang
Science and Technology On Reactor System Design Technology Laboratory, NPIC, Chengdu, China

Analyzing the Impact of Solutes on PKA Spectrum for Simulation of Neutron Induced-Radiation Damage in Zr-Based Metals ICONE26-82132
Guangbo Cai, Yadong Zhang, Yuxiang Han, Jiapei Yu
China Institute of Atomic Energy, Beijing, China

Strength Limit of Thimble Tube with Material Plasticity under Bending Moment and Axial Compression Force ICONE26-81468
Hisashi Koike[1] Masaji Mori[1] Daisuke Fujiwara[2] Takashi Shimomura[2]
1. Nuclear Development Corporation, Ibaraki, Japan; 2. Mitsubishi Nuclear Fuel Co., Ltd, Ibaraki, Japan

Effect of Final Annealing Temperature on Axial Creep Property of CZ Alloys ICONE26-81540
Lin Shi, Liutao Chen, Yang Xu, Changyuan Gao, Jun Tan, Yongjun Deng
China Nuclear Power Technology Research Institute Lo., Ltd, Shenzhen, China

Investigation on Breakaway Oxidation Behavior of CZ Alloys ICONE26-81541
Changyuan Gao, Liutao Chen, Lin Shi, Yang Xu, Jun Tan, Yongjun Deng
China Nuclear Power Technology Research Institute Co., Ltd, Shenzhen, China

Oxidation Kinetics and Oxide Properties of Zirconium Hydride ICONE26-81579
Mingwang Ma, Lei Wang, Binghua Tang
Institute of Electronic Engineering, China Academy of Engineering Physics, Mianyang, China

Nuclear Fuel and Material, Reactor Physics and Transport Theory

2-10 Nuclear Fuel Safety and Performance Analysis II

Sunday July 22 Room Cognac | 16:00 – 18:00

Session Chair: Rong Liu, City University of Hong Kong, Hong Kong

Thermal and Mechanics Analysis Code of the PWR Nuclear Fuel Performance based on FEM ICONE26-81295
Yongbo Hui, Bo Zhang, Wenhua Zhang, Di Yun, Peichao Zhai
Xi'an Jiao Tong University, Xi'an, China

First Steps Towards the Development of a 3D Nuclear Fuel Behavior Solver with OpenFOAM ICONE26-82381
Alessandro Scolaro[1] Ivor Clifford[2] Carlo Fiorina[1] Andreas Pautz[1, 2]
1. École polytechnique fédérale de Lausanne (EPFL), Lausanne, Switzerland; 2. Paul Scherrrer Institute, Villigen, Switzerland

Creation of an OpenFOAM Fuel Performance Class based on FRED and Integration into the GeN-Foam Multi-Physics Code ICONE26-81574
Carlo Fiorina[1] Konstantin Mikityuk[2] Andreas Pautz[3]
1. École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland; 2. Paul Scherrer Institute, Villigen, Switzerland; 3. École polytechnique fédérale de Lausanne (EPFL) and Paul Scherrer Institut (PSI), Lausanne, Switzerland

Analysis on the Dynamic Buckling Behavior of the Spacer Grid Structure ICONE26-82298
Yan Guo[1] Chenglong Gu[2] Wei Tian[1] Weicai Li[1]
1. China Nuclear Power Technology Research Insititute Co.,Ltd, Shenzhen, China; 2. China Nuclear Power Research Institute, Shenzhen, China

Analysis on Pellet-Cladding Interaction of Fuel Rod during Power Ramp of NHR200-II ICONE26-81596
Tianshan Kang, Songyang Li, Dingqu Wang, Yueyuan Jiang, Weihua Li
Tsinghua University, Beijing, China

Study on Variation of HPGE Detector Dead Layer Thickness and its Effect on the Measurements of the Detector Response and Samples Characterization using Monte Carlo Simulation ICONE26-82098
K. AbdElgawad[1] Song Yushou[2]
1. Egyptian Nuclear and Radiological, Cairo, Egypt; 2. Harbin Engineering University, Harbin, China

Nuclear Fuel and Material, Reactor Physics and Transport Theory

2-12 Reactor Physics: Methodology Development III

Sunday July 22 Room Bouzy | 16:00 – 18:00

Session Chair: Wei Shen, Xi'an Jiaotong University, China

Isogeometric Multi-Level Iterative Solution Algorithms with Applications in Nuclear Reactor Physics ICONE26-81316
Charlie Latimer, Jozsef Kópházi, Matthew D. Eaton
Imperial College London, London, United Kingdom

Interior Penalty Schemes for Discontinuous Isogeometric Methods with an Application to Nuclear Reactor Physics ICONE26-81322
Seth G. Wilson, Jozsef Kópházi, Matthew D. Eaton, Alex R. Owens
Imperial College London, London, United Kingdom

Polygonal Virtual Element Spatial Discretisation Methods for the Neutron Diffusion Equation with Applications in Nuclear Reactor Physics ICONE26-81317
John Ferguson, Matthew D. Eaton, Jozsef Kópházi
Imperial College London, London, United Kingdom

Fast Sub-Grid Scale Finite Element Method for the First Order Neutron Transport Equation ICONE26-82008
Chao Fang[1] Hongchun Wu[1] Liangzhi Cao[2] Yunzhao Li[1]
1. Xi'an Jiao Tong University, Xi'an, China; 2. School of Nuclear Science and Technology, Xi'an Jiao Tong University, Xi'an, China

Advances in FEMN: The Code for Nuclear Noise Analysis based on ICEM-CFD ICONE26-81169
Baoxin Yuan, Herong Zeng, Wankui Yang, Songbao Zhang
China Academy of Engineering Physics, Insititute of Nuclear Physics and Chemistry, Mianyang, China

The Design of Nuclear Noise Frequency Spectrum Analysis System and Helium Bubble Movement Behavior Computation for Narrow Channel Core ICONE26-81170
Herong Zeng, Baoxin Yuan
China Academy of Engineering Physics, Insititute of Nuclear Physics and Chemistry, Mianyang, China

Computational Fluid Dynamics (CFD)

9-3 Single-phase Flow

Sunday July 22 Room Chalon | 16:00 – 18:00

Session Chair: Kalyan Niyogi, Holtec International, USA

Session Co-Chair: Jinlan Gou, Wuhan 2nd Ship Design and Research Institute, China

Session Co-Chair: Shimpei Saito, University of Tsukuba, Japan

Prediction of Performance of Multi-stage Orifice Assembly using CFD Code ICONE26-81186
Kalyan Niyogi[1] Stefan Anton[2] Debabrata Mitra-Majumdar[2]
1. Holtec International, Voorhees, NJ, USA; 2. Holtec International, Camden, NJ, USA

Numerical Simulation of the Performance of an Axial Compressor Operating with Supercritical Carbon Dioxide ICONE26-81573
Jinlan Gou[1] Wei Wang[1] Can Ma[1] Yong Li[2] Yuansheng Lin[1] Huafeng Li[1]
1. Wuhan Second Ship Design and Research Institute, Wuhan, China; 2. Key Lab. on Steam Power System, Wuhan Second Ship Design and Research Institute, Wuhan, China

Large Eddy Simulations of a Coolant Flow in Spacer Grid Fuel Assemblies with a Spectral Element Solver ICONE26-81892
Haomin Yuan[1] Vakhtang Makarashvili[1] Elia Merzari[1]
Aleksandr Obabko[2] Yiqi Yu[1]
1. Argonne National Laboratory, Lemont, IL, USA; 2. Argonne National Laboratory, Argonne, IL, USA

The DOE-NE Center of Excellence for Thermal Fluids Applications in Nuclear Energy ICONE26-82672
Elia Merzari[1] Richard Martineau[2] Christopher Stanek[3]
1. Argonne National Laboratory, Lemont, IL, USA; 2. Idaho National Laboratory, Idaho Falls, ID, USA; 3. Los Alamos National Laboratory, Los Alamos, NM, USA

Decontamination & Decommissioning, Radiation Protection, and Waste Management

10-10 D&D General Session II

Sunday July 22 Room Reims | 16:00 – 18:00

Session Chair: Vicky Lange, University College London, United Kingdom

Weibull Parameter Calculation for Evaluation of Radiological Characteristics of Hanul NPP Decommissioning ICONE26-82692
Jongkuk Lee, Jungjoon Lee, Kwan-Hee Lee, Sangmyeon Ahn
Korea Institute of Nuclear Safety, Daejeon, Korea

Development of Water Leak Visualization System based on 3D Ultrasonic Velocity Profiler ICONE26-82614
Tomonori Ihara[1] Hideharu Takahashi[2] Hiroshige Kikura[2]
1. Tokyo University of Marine Science and Technology, Tokyo, Japan; 2. Tokyo Institute of Technology, Tokyo, Japan

Diffusion of Cs+ Ions in Hardened Cement Paste Samples Simulating Altered Concrete at Fukushima Daiichi NPP ICONE26-82570
Yuri Morishita[1] Hiroaki Takiya[2] Shingo Tanaka[1] Naoko Watanabe[1] Tamotsu Kozaki[1] Daisaku Shitara[1]
1. Hokkaido University, Sapporo, Japan; 2. JAEA, Tsuruga, Japan

Hydrodynamics of Two-Phase Ionic Liquid Solvent Systems in Countercurrent Chromatography for Nuclear Fuel Reprocessing ICONE26-82423
Vicky Lange[1] Panagiota Angeli[1] Leslie Brown[2]
1. University College London, London, United Kingdom; 2. AECS Quikprep Ltd., Newquay, United Kingdom

Mitigation Strategies for Beyond Design Basis Events

11-2 Containment Issues: Cooling, Hydrogen, Fission Products

Sunday July 22 Room Epernay | 16:00 – 18:00

Session Chair: Ivo Kljenak, Jozef Stefan Institute, Slovenia

Session Co-Chair: Yidan Yuan, CNNC China Nuclear Power Engineering Co.,Ltd., China

Hydrogen Ignition Test in a 12m3 Tank with Steam ICONE26-81729
Po Hu, Shuwei Zhai
Shanghai Jiao Tong University, Shanghai, China

Preliminary Analysis of Hydrogen Behavior using GASFLOW-MPI in the OPR1000 Containment under a Severe Accident Condition ICONE26-81788
JongWook Go, Taehyub Hong, MiRo Seo
Korea Hydro & Nuclear Power Co., Ltd, Daejeon, Korea

Study on Control Strategy of Hydrogen Risk in Small Containment under Severe Accident ICONE26-81899
Zhiqiang Zou[1] Ming Zhang[1] Huanhuan Peng[1] Liqiang Hou[2] Chunrui Deng[1] Xuedong Qiao[3]
1. Science and Technology On Reactor System Design Technology Laboratory, NPIC, Chengdu, China; 2. Nuclear Power Institute of China, Chengdu, China; 3. Nuclear and Radiation Safety Center, Ministry of Environment Protection of P.R.China, Beijing, China

Assessment of Radiological Source Term Releases for Potential Severe Accident Scenarios in a PWR SFP ICONE26-81633
Kwang-Il Ahn[1] Jae-UK Shin[2]
1. Korea Atomic Energy Research Institute, Daejeon, Korea; 2. RETech, Hwaseong, Korea

Investigation on Fission Products Release Mitigated by In-Containment Relief Valve under SGTR Accident ICONE26-82161
Taeseok Kim, Wonjun Choi, Joongoo Jeon, Nam Kyung Kim, Sung Joong Kim
Hanyang University, Seoul, Korea

Numerical Study of Water Droplet Heat Removal and Dynamics during its Impact onto the Micro-Pillar Array at Elevated Temperature ICONE26-81171
Beni Mehrdad Shahmohammadi, Shangzhen Xie, Jiyun Zhao
City University of Hong Kong, Kowloon, Hong Kong

Student Paper Competition

16-6 Neutronics Analysis and Reactor Physics I

Sunday July 22 Room Fronsac | 16:00 – 18:00

Session Chair: Fanny Vitullo, École polytechnique fédérale de Lausanne (EPFL) and Paul Scherrer Institute (PSI), Switzerland

Session Co-Chair: Kyle Britton, Virginia Commonwealth University, USA

The Deep-Coupling and Preprocessed Photon Transport based on RMC Codes ICONE26-81036
Qingquan Pan, Kan Wang
Tsinghua University, Beijing, China

Statistical Burnup Distribution of Moving Pebbles in HTR-PM Reactor ICONE26-81082
Fanny Vitullo[1] Jiri Krepel[2] Jarmo Kalilainen[2] Horst-Michael Prasser[3] Andreas Pautz[4]
1. École polytechnique fédérale de Lausanne (EPFL) and Paul Scherrer Institute (PSI), Villigen, Switzerland; 2. Paul Scherrer Institute (PSI), Villigen, Switzerland; 3. ETH Zürich, Zürich, Switzerland; 4. École polytechnique fédérale de Lausanne (EPFL) and Paul Scherrer Institut (PSI), Lausanne, Switzerland

EPR: Burnable Absorber Optimization ICONE26-81215
Michal Zeman, Jiri Zavorka, Radek Skoda
Czech Technical University, Prague, Czech Republic

Coupling Dependence of Multiple Operating Parameters on Burnup Credit Calculations for BWR Spent Fuel Assemblies ICONE26-82156
Shang-Chien Wu, Der-Sheng Chao, Jenq-Horng Liang
National Tsing Hua University, Hsinchu, Taiwan

A Neutronics Feasibility Study of the TRIGA LEU Fuel in the 20MWT NIST Research Reactor ICONE26-82433
Kyle Britton, Zeyun Wu
Virginia Commonwealth University, Richmond, VA, USA

Student Paper Competition

16-11 Nuclear Safety and Accident Analysis I

Sunday July 22 Room Lalande | 16:00 – 18:00

Session Chair: Jian Song, Xi'an Jiaotong University, China

Session Co-Chair: Qingwen Xiong, Xi'an Jiaotong University, China

Characterization and Experimental Investigation for the Dynamic Performance of the Hydraulically Suspended Passive Shutdown System in China Sodium-Cooled Fast Reactor ICONE26-81248
Jian Song[1] Yingwei Wu[1] Wenxi Tian[1] Suizheng Qiu[2] Guanghui Su[1]
1. Xi'an Jiao Tong University, Xi'an, China; 2. School of Nuclear Science and Technology, Xi'an Jiao Tong University, Xi'an, China

Study on Hydrogen Migration in Small Water Leak of Sodium-Cooled Fast Reactor ICONE26-81314
Xinjie Deng, Xuewu Cao
Shanghai Jiao Tong University, Shanghai, China

Investigation on Methods for Uncertainty Quantification of Constitutive Models and the Application in BEPU ICONE26-81425
Qingwen Xiong, Junli Gou, Jianqiang Shan
Xi'an Jiao Tong University, Xi'an, China

Study on Factors Affecting CHF based on Factorial Analysis in Narrow Rectangular Channel under Natural Circulation ICONE26-81863
Zichao Li[1] Zhou Tao[1] Shun Shi[1] Amir Haider[1] Bing Li[1] Zejun Xiao[2]
1. North China Electric Power University, Beijing, China; 2. Hualong Pressuried Water Reactor Technology Corporation, Ltd., Beijing, China

Experimental Research on the Flow Resistance and Heat Transfer Characteristics in Rod Bundle Channel ICONE26-82195
Zhiqiang Zhu, Chunping Tian, Changqi Yan,
Jianjun Wang, Tingting Ren, Zehua Guo
Harbin Engineering University, Harbin, China

Student Paper Competition

16-14 Thermalhydraulics I

Sunday July 22 Room Mouton Cadet | 16:00 – 18:00

Session Chair: Ayumi Kitano, Kobe University, Japan

Session Co-Chair: Elvira F. Tanjung, Kyungpook National University, Korea

Simulation Research on Thermal-Hydraulic Performance of a Natural Circulation Integrated Pressurized Water Reactor ICONE26-81059
Yanan Zhao, Minjun Peng, Genglei Xia, Lianxin Lv
Harbin Engineering University, Harbin, China

Numerical Investigation on the Heat Transfer Enhancement Behavior outside Longitudinal Finned Tubes ICONE26-81283
Yujia Zhou, Hanliang Bo, Jingyu Du
Tsinghua University, Beijing, China

Boiling Visualization and Critical Heat Flux (CHF) Phenomena on PCB in a Saturated Pool at Various Surface Orientations ICONE26-81382
Elvira F. Tanjung, Daeseong Jo
Kyungpook National University, Daegu, Korea

Transient Heat Transfer for Helium Gas at Various Flow Decay Time Constants and Heat Generation Rates ICONE26-81391
Qiusheng Liu[1] Ayumi Kitano[2] Katsuya Fukuda[1] Makoto Shibahara[1]
1. Kobe University, Kobe, Japan; 2. Kobe University, Amagasaki-shi, Japan

Heat Transfer and Fluid Flow Characteristics of One Side Heated Vertical Rectangular Channel Applied as Vessel Cooling System of VHTR ICONE26-81700
Kenta Fujikami, Tetsuaki Takeda, Shumpei Funatani
University of Yamanashi, Kofu, Japan

Monday, July 23

TIME	TITLE	LOCATION
08:30 – 10:00	Opening Ceremonies and Keynote Plenary Session	Cremant, 1st Floor
10:00 – 10:30	Coffee Break	Chablis Suite, Ground Floor
10:30 – 12:30	Plenary Session – Industry Leadership Forum	Cremant, 1st Floor
12:30 – 14:00	Lunch	Chablis Suite, Ground Floor
14:00 – 16:00	Technical Sessions	See pages 37 through 41 for session titles, authors and locations
14:00 – 16:00	Panel Session #1	Cremant, 1st Floor, see page 18 for details
16:00 – 16:30	Poster Session and Coffee Break	Chablis Suite, Ground Floor
16:30 – 18:30	Technical Sessions	See pages 41 through 45 for session titles, authors and locations
18:30 – 20:30	Opening Reception	Chablis Suite, Ground Floor

08:30 – 10:00 Cremant, 1st Floor

OPENING CEREMONIES & KEYNOTE PLENARY SESSION

OPENING CEREMONIES

Gouqiang Wang, *Chair ICONE26, ASME Fellow Chairman, ASME Nuclear Engineering Division Chairman*

Zhi Wang, *Co-Chair ICONE26, Deputy Secretary-General of CNS*

Nobuyuki Ueda, *Co-Chair ICONE26, Vice President, CRIEPI, JSME*

Yassin Hassan, *Technical Program Committee Co-Chair ICONE26, ASME, Texas A&M University*

WELCOME REMARKS:

Marc Goldsmith, *Past President, ASME*

Zengguang Lei, *Co-Chair ICONE26, Vice President CNS, Chief Engineer of CNNC*

Naoya Sasaki, *President, JSME*

The President of IMechE

KEYNOTE SPEAKER ONE:

The UK's Future Power Mix – the Role for Nuclear

Tom Greatrex, *CEO of the Nuclear Industry Association, UK*

The ongoing and ever-shifting debate about how to provide a secure, reliable, and affordable low carbon future power mix has got noisier, more entrenched and less objective as real decisions start having to be made – making it harder for industry, investors and government to deliver their part, and risking a more expensive outcome for consumers and taxpayers. With a putative industrial strategy aiming to drive jobs and growth in all parts of the country, deliver new energy infrastructure and exportable technology, this keynote will explore whether it now time to re-cast and renew the tired old debate of gas v nuclear v renewable v consumption into a coherent approach for the future and recognise the integral role civil nuclear power has to play in meeting energy, industrial and economic objectives alongside – not in place of – other forms of generating power.

Formerly MP for Rutherglen and Hamilton West, Tom was shadow energy minister from 2011 – 2015 and the opposition's lead spokesman on nuclear energy, electricity market reform, smart grid and metering, carbon capture and storage, interconnection and both onshore and offshore oil and gas.

Leading the scrutiny of the Energy Act and the Infrastructure Act in the last Parliament, he secured a number of amendments to the proposed legislation. He also served as a member of the Energy Select Committee from 2010 and from 2007-2010 was a policy adviser in the Scotland Office, including on energy.

Since 2015, he has been an independent policy analyst working in the energy sector for a range of clients, a frequent media commentator on energy issues, and a regular columnist for Utility Week. In a varied prior career, he was Director of Corporate Affairs for the NHS in Scotland, a chief officer in local government and a GMB trade union official in England. Outside of work his main interests are family, football (Fulham) and film.

KEYNOTE SPEAKER TWO:

New Nuclear Plants can Compete Against Fossil Energy (and Complement Renewables) if Best Practices Used

Kirsty Gogan, *CEO, Energy for Humanity, UK*

New nuclear plants can be a cost-competitive part of the solution to global warming if best in class planning and construction practices are followed, according to a new study released this week. No new technology is required, the study found, although new technologies could reduce the nuclear plant costs further.

The year-long study, commissioned by the UK-based Energy Technologies Institute, reviewed cost drivers at 33 nuclear plants recently built or under construction around the world. It concluded that best in class management and construction techniques alone could reduce the cost of new conventional water-cooled nuclear plants even in Europe and North America to $4,000/kw or $60/MWH – a level which the study shows has already been achieved or beaten by South Korea and Japan, as well as China and Russia. That would make new nuclear plants competitive with new gas fired plants even in the United States, which has the world's lowest gas electricity costs. Plants built to this price point could also provide competitively priced flexible power to complement wind, solar and other renewable energy, with no emissions.

Kirsty Gogan is co-founder and executive director of Energy for Humanity (EFH), a UK-and Switzerland-based non-profit organisation with a global outlook focused on solving climate change and enabling universal access to modern energy services. Future leaders will need all tools at their disposal to solve global challenges including air pollution and energy security, whilst providing low cost, clean power to billions of people and improving life chances for women and children throughout the world.

In pursuit of these goals, Energy for Humanity (EFH) strongly advocates for evidence-based, whole-system, and technology-inclusive solutions in pursuit of the best (meaning, fastest, most cost-effective, most feasible) outcomes for people and nature. Our work includes running projects in multiple countries, including oversight of a successful campaign to prevent premature closure of the Swiss nuclear fleet in 2016. EFH led a delegation of the world's most highly regarded climate scientists to Paris COP21 in order to make the case for nuclear to be recognised as a climate solution. EFH was subsequently shortlisted for the Business Green Leaders "Green NGO of the Year" Award in 2016.

In 2017, at COP23, EFH published a new report on European Climate Leadership 2017 and presented a new study on Decarbonizing Cities with Advanced Nuclear. Ms. Gogan is also founding director of CleanTech Catalyst (a consultancy specialising in climate and energy), recently commissioned by the Energy Technologies Institute to lead the Nuclear Cost Drivers Study in partnership with Lucid Strategy (based in Cambridge, MA). Ms. Gogan is regularly invited as an expert speaker on science communication, nuclear competitiveness and innovation to high profile events around the world. She has more than 15 years' experience as a senior advisor industry, non-profits and Government, including at 10 Downing St, the Office of the Deputy Prime Minister, and the Department of Energy and Climate Change.

10:00 – 10:30 Chablis Suite, Ground Floor

COFFEE BREAK

10:30 – 12:30 Cremant, 1st Floor

PLENARY SESSION: INDUSTRY LEADERSHIP FORUM

Plenary session sponsored by

NPIC 中国核动力研究设计院 NUCLEAR POWER INSTITUTE OF CHINA

Leon Cizelj, *Chair ICONE26 Steering Committee, Jožef Stefan Institute, ASME*

Zhi Wang, *Co-Chair ICONE26, Deputy Secretary-General of CNS*

Nobuyuki Ueda, *Chair ICONE26, Vice President, CRIEPI, JSME*

Robert Stakenborghs, *Chair ICONE26 Steering Committee, ASME*

SPEAKER ONE:

Nuclear Energy Powering China's Green Development

Zengguang Lei, *Vice President of Chinese Nuclear Society (CNS), Chief Engineer of China National Nuclear Corporation (CNNC), China*

Today, while Chinese entering new era, nuclear energy will play an irreplaceable role along with other green energy sources, and it is also considered as an important choice for promoting green development and building a beautiful China.

With the promotion of people living quality, the innovation and development of advanced nuclear energy technology are embracing a new round of precious historical opportunities.

During the process of developing the safe, efficient and innovative nuclear energy, the following achievements have been made such as the successful implementation of "Hualong One" (HPR 1000) nuclear power technology demonstration project, the public acceptance of innovative concepts and demonstration projects of the "Linglong One" (ACP 100) and "Yanlong" (DHR 400).

We believe that nuclear energy is a clean and green energy. The innovative development of nuclear energy technology will secure and sustain a beautiful ecological environment.

In 1986, he graduated from Tsinghua University, with a Master's Degree in Isotope Separation. And in 2006, Mr. Lei gained his doctor degree majoring in Nuclear Engineering and Technology in Department Of Engineering Physics, Tsinghua University.

Mr. Lei started his career at the Technology Section in Shaanxi Uranium Enrichment Company, holding positions including Assistant Engineer, Engineer and Senior Engineer. In 1997, Mr. Lei became Chief Engineer of the Company and was Vice President in 2001.

In 2002, he was President of Research Institute of Physical-Chemical Engineering of Nuclear Industry. In 2002, he joined Research Institute of Physical-Chemical Engineering of Nuclear Industry as its President. Since 2010, he has been Chief Engineer of CNNC and Vice President of CNS.

SPEAKER TWO:

Overcoming Economic Challenges and Building Enduring Value: A U.S. Nuclear Plant Operator's Perspective

Christopher Mudrick, *Senior Vice President, Exelon, USA*

U.S. nuclear plants are facing a perfect storm of economic challenges, including flat electricity demand, rising nuclear costs, increased natural gas supply, aging transmission system constrains and a lack of carbon policy. This presentation will provide an overview of these challenges, as well as the solutions nuclear operators are driving to build enduring value for struggling facilities.

Chris is responsible for the oversight of Exelon's Northeast nuclear facilities, Calvert Cliffs, James A. FitzPatrick, Nine Mile Point, and R.E. Ginna, which together produce 5,300 megawatts of clean, reliable energy. Exelon's 14 nuclear facilities in total generate more than 22,000 megawatts of zero-carbon electricity. Exelon Nuclear is the third largest nuclear fleet in the world and the largest in America with nearly 20 percent of the nation's nuclear generating capacity.

Chris has more than 30 years of progressive experience in plant operations in support of nuclear power stations, including his current responsibilities in Exelon Nuclear. Prior to his current position, Chris was the Senior Vice President Mid-Atlantic Operations for the Exelon Nuclear Sites: Limerick, Peach Bottom, Oyster Creek, and Three Mile Island. Previous positions include the Sr. Vice President Operations Support, Site Vice President and Plant Manager Limerick Generating Station.

Chris holds a Bachelor of Science degree in Electrical Engineering from Lehigh University. He was licensed by the NRC as a Senior Reactor Operator at Limerick. In 2008, he completed the Exelon Leadership Institute at Northwestern University. Chris completed the Harvard Business School Advanced Management Program in 2015. He is a licensed professional engineer in the state of Pennsylvania and is a member of the American Nuclear Society.

Chris lives in West Chester, PA with his wife Jeanne and their four children.

SPEAKER THREE:

Public Engagement on Nuclear Energy

Andrew Sherry, *Chief Scientist and Technology Officer, NNL, UK*

Access to affordable, reliable and clean energy is fundamental to modern life and there is now broad political support for nuclear power within a diverse low carbon energy mix. In the UK, public opinion polls reveal support for nuclear energy as part the mix, but factors including cost, environmental impact and waste management can influence this. In other countries, the public's views vary widely.

However, the challenge of public perception of an industry is not unique to nuclear. Often, large infrastructure projects generate public concern for all sorts of reasons. Safety is often a consideration, generally alongside other factors that can include the inconvenience of a construction project, the impact on house prices, trust in the developers, etc. Such issues arise with projects that include nuclear plants, fracking projects, railway lines, incinerators, prison construction and recycling facilities. Given this commonality, it is important that the nuclear sector not only learns from other sectors, but considers how to lead the way in public engagement.

This presentation will consider factors that can help the nuclear sector engage more effectively with the public: learning from the past and from other sectors regarding public engagement on large infrastructure projects; developing more effective and meaningful engagement with civil society to build confidence and trust; and the ongoing need to educate the nuclear workforce and ensure the younger generation enter our sector with the best understanding of, and attitude towards, public engagement.

Professor Andrew Sherry was appointed as NNL's Chief Scientist in January 2015, joining NNL from The University of Manchester where he was Director of the Dalton Nuclear Institute. Previously he was Director of the University's Materials Performance Centre, held a Royal Society Industry Fellowship, and was a senior consultant in the nuclear industry working within the field of materials and structural integrity.

Andrew led the establishment of the flagship Dalton Cumbrian Facility, a partnership with the Nuclear Decommissioning Authority to create a centre of excellence in radiation science and engineering decommissioning research, and led the collaboration with Sheffield University to create the Nuclear Advanced Manufacturing Research Centre. He was also Programme Director for the £8 million "New Nuclear Manufacturing" research programme funded by the Engineering and Physical Research Council, the Universities of Manchester and Sheffield and Rolls-Royce.

Andrew has been a member of both the UK Nuclear Industry Council

and the UK Nuclear Innovation Research Advisory Board. He provides independent advice on strategic and technical aspects of nuclear power and has advised international nuclear bodies including CEA, INL and the Korea Atomic Energy Research Institute

SPEAKER FOUR:

Japan's Nuclear Energy Policy

Shinjiro Takeda, *Ministry of Economy, Trade and Industry (METI), Japan*

The official view of the Japanese government on nuclear power is that it is an important base-load power source as a low carbon and quasi-domestic energy source, contributing to stability of energy supply-demand structure, on the major premise of ensuring of its safety, because of the perspectives; 1) superiority in stability of energy supply and efficiency, 2) low and stable operational cost and 3) free from GHG emissions during operation. The presentation will explain the current status of nuclear energy in Japan and some key challenges. Among them is nuclear innovation. Developing reactors with safety, economy, and flexibility is expected to be an important key.

Shinjiro Takeda is Director of Office for the International Nuclear Energy Cooperation and Office for Nuclear Technology and Human Resources Agency for Natural Resources and Energy Ministry of Economy, Trade and Industry (METI). Previously he was Director of Office for the Nuclear Technology, Safety and Human Resources Agency for Natural Resources and Energy. From 2014 to 2016 he was Deputy Director Policy Planning and Coordinator Division Minister's Secretariat. From 2012 to 2014 he was Deputy Director of the Nuclear Energy Policy Division for the Agency for Natural Resources and Energy. From 2011 to 2012 he was Deputy Director of the Nuclear Emergency Response Headquarters for the Fukushima accident. In 2000 he joined the Ministry of International Trade and Industry (MITI).

He received an MBA from SAID Business School at the University of Oxford in 2007. In addition he received an L.L.M. from the School of Law at Duke University. He also was Faculty of Law at the University of Tokyo from 1996 to 2000.

12:30 – 14:00 Chablis Suite, Ground Floor

LUNCH

14:00 – 16:00

PANEL SESSION

See pages 18 and 19 for panel session details.

14:00 – 16:00

TECHNICAL SESSIONS

Operations & Maintenance, Engineering, Modifications, Life Extension, Life Cycle and Balance of Plant

1-1 System Transient Analysis

Monday July 23 Room Bourg | 14:00 – 16:00

Session Chair: Robert Stakenborghs, ILD Power, USA

The Effects of Compressibility and Piping Geometry on Steamhammer Loads ICONE26-81003
Robert Stakenborghs[1] Frederick J Moody[2]
1. ILD Power, Baton Rouge, LA, USA; 2. Independent Consultant, Turlock, CA, USA

Residual Unbalanced Mass Determination of an AMBs Controlled Rotor based on Control Current Analysis of the Feedback Loop ICONE26-81575
Tianpeng Fan, Zhe Sun, Xiaoshen Zhang, Xunshi Yan, Jingjing Zhao, Zhengang Shi
Tsinghua University, Beijing, China

Research on Resistance Characteristics and Detailed Flow Field of Eccentric Orifice Plate ICONE26-81789
Gao Chang, Zhang Kun, li Xu Dong, Zhang Ao, Xu kaili
China Nuclear Power Operation Technology Corporation. Ltd, Wuhan, China

A New Method of Integrating the RELAP5 to the RINSIM Simulation Platform ICONE26-82016
Chao Tan[1] Victor Quiroga[2] Zheng Fu[2] Zhengquan Xie[1]
1. China Nuclear Power Operation Technology Corporation, Ltd, Wuhan, China; 2. Innovative Systems Software, Barcelona, Spain

Study on NPP Reactivity Accident Operating Strategy Design based on Function Analysis and Task Analysis Technology ICONE26-81478
Yu Aimin, Xu Zhao, Du Yu, Sun Qian
China Nuclear Power Engineering Co., Ltd., Beijing, China

Nuclear Fuel and Material, Reactor Physics and Transport Theory

2-1 Nuclear Fuel Safety and Performance Analysis I

Monday July 23 Room Muscadet | 14:00 – 16:00

Session Chair: Hakan Ozaltun, Idaho National Laboratory, USA

Royal Military College of Canada Contribution to IAEA CRP# T12027 "Use of Neutron-Absorbers to Improve CANDU Reactor Operating Margins" ICONE26-81013
Paul K. Chan
Royal Military College of Canada, Kingston, ON, Canada

Research on the Effect of Grid Clamping Failure on Flow Elastic Stability and Vortex Shedding of Fuel Rod ICONE26-81509
Huan-huan Qi, Zhi-peng Feng, Nai-bin Jiang, Qian Huang, Xuan Huang
Nuclear Power Institute of China, Chengdu, China

Experimental Research and Development of Safety Analysis Systems for Advanced Types of Fuel Rods ICONE26-82387
Alexander I. Maximkin, Ivan S. Kryukov, Alexander N. Ableev, Alexander V. Berestov, Ilya I. Rodko
National Research Nuclear University MEPhI (Moscow Engineering Physics Institute), Moscow, Russia

Influence of Xe-135 Dynamic Behavior on Core Operation Safety for a Molten Salt Reactor ICONE26-82352
Jianhui Wu, Xiaoxiao Li, Jifeng Hu, Chunyan Zou, Chenggang Yu, Xiangzhou Cai, Jingen Chen
Shanghai Institute of Applied Physics, Shanghai, China

Assessment of Failure Modes of Monolithic Fuel Plates ICONE26-82437
Hakan Ozaltun, Pavel G. Medvedev, Barry H. Rabin
Idaho National Laboratory, Idaho Falls, ID, USA

Finite Element Analysis for Fuel Assembly Structural Behavior ICONE26-81621
Youngik Yoo, Kyounghong Kim, Kyongbo Eom, Seongki Lee, Jongsung Yoo
KEPCO Nuclear Fuel, Daejeon, Korea

MONDAY

Plant Systems, Structures, Components and Materials

3-6 Experimental Design

Monday July 23 Room Chalon | 14:00 – 16:00

Session Chair: Qianfeng Liu, Institute of Nuclear and New Energy Technology, Tsinghua University,China, China

Session Co-Chair: William A. Byers, Westinghouse, USA

Experimental Study of Motion-Resistance Force of Hydraulic Cylinder of CRHDM ICONE26-81214
Qianfeng Liu[1] Yuzheng Li[2] Huang Zhang[2] HanLiang Bo[2]
1. Institute of Nuclear and New Energy Technology, Tsinghua University, Beijing, China; 2. Tsinghua University, Beijing, China

Experimental Study and Analysis of the Deformable Pipe of CRHDM ICONE26-81281
Yuzheng Li[1] Huang Zhang[1] Qianfeng Liu[2] HanLiang Bo[1]
1. Tsinghua University, Beijing, China; 2. Institute of Nuclear and New Energy Technology, Tsinghua University, Beijing, China

Grounded Control Rod Position Measurement with Two-Electrode Capacitance Sensor ICONE26-81362
Guang Hu[1] Benke Qin[2] HanLiang Bo[2]
1. Institute of Nuclear and New Energy Technology, Tsinghua University, Beijing, China; 2. Tsinghua University, Beijing, China

Demonstrative HEAF (High Energy Arcing Fault) Fire Tests of High and Low Voltage Switchgears of Nuclear Power Plants ICONE26-82177
Koji Shirai[1] Koji Tasaka[2] Ji Junghoon[2] Tsukasa Miyagi[3] Iwata Mikimasa[3]
1. CRIEPI, Tokyo, Japan; 2. CRIEPI, Abiko, Japan; 3. CRIEPI, Yokosuka, Japan

Experimental Research on the Fluid Induced Forces of Clearance Flow in Canned Motor Reactor Coolant Pump ICONE26-82296
Rui Xu, Yaoyu Hu, Yun Long, Junlian Yin, Wang Dezhong
Shanghai Jiao Tong University, Shanghai, China

WATCH Loop Development and Commissioning Tests ICONE26-82626
William A. Byers[1] Guoqiang Wang[2]
1. Westinghouse, Pittsburgh, PA, USA; 2. Westinghouse Electric Company LLC, Murrysville, PA, USA

Instrumentation and Control (I&C) and Influence of Human Factors

4-1 Design and Reliability of DCS

Monday July 23 Room Cognac | 14:00 – 16:00

Session Chair: Victor Morokhovskyi, Framatome GmbH, Germany

Session Co-Chair: Yong Huang, CNPRI, China

Internal Vibration Source Analysis of AMB-Rotor System in HTR-PM Primary Helium Circulator ICONE26-81339
Jinpeng Yu, Lei Zhao
Tsinghua University, Beijing, China

A Novel more Reliable and Extensible Architecture of Instrumentation and Control Systems ICONE26-81570
Shuqiao Zhou, Chao Guo, Duo Li, Xiaojin Huang
Tsinghua University, Beijing, China

Multi-Diversity for FPGA Platform Based NPP I&C Systems: New Possibilities and Assessment Technique ICONE26-82377
Vyacheslav Kharchenko[1] Andriy Kovalenko[1] Kostiantyn Leontiiev[1] Artem Panarin[1] Vyacheslav Duzhy[2]
1. RPC Radiy, Kropyvnytskyi, Ukraine; 2. National Aerospace University "KhAI" named after N.E. Zhukovskiy, Kharkiv, Ukraine

Design Optimization of Modernization of I&C System using Digital Technology in NPPs ICONE26-82498
Longqiang Zhang, Jiahong Yan, Weining Zhao, Weijun Huang
State Key Laboratory of Nuclear Power Safety Monitoring Technology and Equipment, Shenzhen, China

Design and Feasibility Analysis of the Electricity Generation System based on Residual Heat ICONE26-82558
Zhe Dong, Miao Liu, Yifei Pan
Tsinghua University, Beijing, China

Advanced Reactors and Fusion Technologies

5-1 Fusion Technology I

Monday July 23 Room Reims | 14:00 – 16:00

Session Chair: Mauro Cappelli, ENEA, Italy

Energy Calibration of Scintillator Detectors in Different Neutron Diagnostic System on Tokamak ICONE26-81190
Zhiqiang Cui
Tsinghua University, Beijing, China

Neutronic Study on a New Concept of Accelerator Driven Subcritical System in China ICONE26-81329
Jinyang Li, Long Gu, Cunfeng Yao, Dawei Wang, Tianji Peng, Yanlei Zhu
Institute of Modern Physics, Chinese Academy of Sciences, Lanzhou, China

A Mathematical Link between the Natural Energy of Stars and Fission ICONE26-81093
Brenda Bayles
Bayles Farms, Toronto, KS, USA

Systems Engineering Approach for Pre-Conceptual Design of DEMO Divertor ICONE26-82421
Domenico Marzullo[1] Danilo Nicola Dongiovanni[2] Jeong Ha You[3]
1. CREATE Consortium - University of Naples Federico II, Napoli, Italy; 2. ENEA, Frascati, Italy; 3. Max Planck Institute for Plasma Physics, Garching, Germany

Design, Research and Development of Vacuum Vessel for Chinese Fusion Engineering Testing Reactor ICONE26-82657
Shijun Qin, Kun Lu, Yuntao Song, Jiefeng Wu
Instiurte of Plasma Physics Chinese Academy Sciences (ASIPP), Hefei, China

Nuclear Safety, Security, and Cyber Security

6-1 Nuclear Safety

Monday July 23 Room Alsace | 14:00 – 16:00

Session Chair: Jovica Riznic, Canadian Nuclear Safety Commission, Canada

Nuclear Facility Safety Enhancement using Sandia National Laboratories' Computer Codes ICONE26-81097
David L.Y. Louie
Sandia National Laboratories, Albuquerque, NM, USA

Safety Analysis Model of DUCG based on FMEA/FTA ICONE26-81484
Zhenxu Zhou, Hao Nie, Chunling Dong, Qin Zhang
Tsinghua University, Beijing, China

A Critical Experimental Study of Bubble Effect in the Process of Spent Fuel Dissolving ICONE26-81644
Zhou Xiaoping, Liang Shuhong, Zhaodong Xia
China Institute of Atomic Energy, Beijing, China

Muon Tomography for Measuring Amount of Nuclear Materials in Fuel Debris ICONE26-82139
Tsukasa Sugita[1] Haruo Miyadera[2] Kenichi Yoshioka[1] Naoto Kume[2]
1. Toshiba Energy Systems & Solutions Corporation, Kawasaki, Japan; 2. Toshiba Energy Systems & Solutions Corporation, Yokohama, Japan

A New Safety Analysis Method of Control Rod Ejection Accident in PWR NPP based on the Failure of Causal Relationship ICONE26-81879
Shi-Yu Yan[1] Hua Liu[2] Zhaohui Liu[1] Xiao-hua Yang[1] Meng Li[3] Zhi Chen[4]
1. University of South China, Hengyang, China; 2. School of Electrical Engineering, University of South China, Hengyang, China; 3. School of Computer, University of South China, Hengyang, China; 4. Nuclear Power Institute of China, Chengdu, China

Numerical Research on Shock Resistance Safety Analysis of Ship Power Plant Valve ICONE26-82137
Jun Wu, Fan Bai, Yong Liu, Xingsheng Lao, Chunhui Dai
Wuhan Second Ship Design and Research Institute, Wuhan, China

Codes, Standards, Licensing, and Regulatory Issues

7-1 Regulatory Interactions with Codes and Standards I

Monday July 23 Room Epernay | 14:00 – 16:00

Session Chair: John Bendo, ASME, USA

The Role of the NRC in License Renewals ICONE26-81904
Samuel Miranda
Independent Author, Silver Spring, MD, USA

Technical Insights of SSR-2/1 Safety of Nuclear Power Plants: Design (Rev.1) ICONE26-81983
Hua Zheng, Shuhong Wei
China Nuclear Power Design Co., Ltd. (Shenzhen), Shenzhen, China

ACRS: Enduring Legacy Contributing to Reactor Safety
ICONE26-82275
Hossein Nourbakhsh
U.S. Nuclear Regulatory Commission, Washington, DC, USA

NQA-1 Certification: Distinction in the Nuclear Industry
ICONE26-82521
Chris Mahler[1] Clayton Smith[2]
1. ASME, New York, NY, USA; 2. Smith Associates Consulting Group LLC, Simpsonville, SC, USA

AFCEN RCC-F: A New Standard for the Fire Protection Design of New Built Light Water Nuclear Power Plants ICONE26-81893
Bernard Gautier, Mickael Cesbron, Richard Tulinski
EDF SEPTEN, Lyon, France

Regulatory Perspective on the Fitness-for-Service Requirements for the Pressure Tube to Calandria Tube Contact in CANDU Reactors ICONE26-82687
Sankar Laxman, John Jin
Canadian Nuclear Safety Commission, Ottawa, ON, Canada

Thermal-Hydraulics and Safety Analyses

8-1 Boiling Heat Transfer and Behavior I

Monday July 23 Room Bouzy | 14:00 – 16:00

Session Chair: Chuanxin Peng, Nuclear Power Institute of China, China

Experimental Investigation on Critical Heat Flux in Horizontal Tube ICONE26-81107
Chuanxin Peng, Yuanfeng Zan
Nuclear Power Institute of China, Chengdu, China

A Simplified Force-Balance Model to Predict Bubble Departure Diameter in Horizontal Flow Boiling ICONE26-81302
Jingyu Du, Chenru Zhao, HanLiang Bo, Yujia Zhou
Tsinghua University, Beijing, China

A Visual Experiment of Single Bubble Growth Processes in a Vertical Rectangular Channel ICONE26-81415
Ning Cheng, Yun Guo, Changhong Peng
University of Science and Technology of China, Hefei, China

Subcooled Flow Boiling Inception and Heat Transfer of Water in a Circular Tube under Pulsatile Flow ICONE26-81476
Hongsheng Yuan[1] Sichao Tan[2] Kun Cheng[2] Xiaoli Wu[1]
Chao Guo[3] Mingjun Zhong[1]
1. Science and Technology on Reactor System Design Technology Laboratory, Nuclear Power Institute of China, Chengdu, China; 2. Harbin Engineering University, Harbin, China; 3. North China Electric Power University, Beijing, China

Study on the Prediction of DNB-Type Critical Heat Flux in Rod Bundle under Motion Conditions ICONE26-81544
Siyang Huang[1] Xiaoyan Wang[1] Wenxi Tian[1] Ronghua Chen[1]
Junmei Wu[1] Guanghui Su[1] Suizheng Qiu[2]
1. Xi'an Jiao Tong University, Xi'an, China; 2. School of Nuclear Science and Technology, Xi'an Jiao Tong University, Xi'an, China

Experimental Study of Quench Temperature during Reflood Phase
ICONE26-81564
Jinyu Wang, Jun Wang, Yuanfeng Zan, Yanping Huang
Nuclear Power Institute of China, Chengdu, China

Student Paper Competition

16-2 Computational Fluid Dynamics I

Monday July 23 Room Talbot | 14:00 – 16:00

Session Chair: Anastasiia Zvorykina, Otto von Guericke University Magdeburg, Germany

Session Co-Chair: Xiaohan Zhao, Xi'an Jiaotong University, China

CFD Analysis of Supercritical-Water Flow and Heat Transfer in Vertical Bare Tube ICONE26-81045
Anastasiia Zvorykina[1] Nataliia Fialko[2]
Svitlana Stryzheus[2] Dmytro Khmil[2] Igor Pioro[3]
1. Otto von Guericke University Magdeburg, Magdeburg, Germany; 2. Institute of Engineering Thermophysics of National Academy of Sciences of Ukraine, Kiev, Ukraine; 3. University of Ontario Institute of Technology, Oshawa, ON, Canada

Reactor Baffle Cooling CFD Framework for Swelling Assessment ICONE26-82365
Yuliia Filonova, Vladislav Filonov, Yaroslav Dubyk
IPP-CENTRE Ltd., Kiev, Ukraine

Hydraulic Characteristics Research on SG under Tube Plugging Operations using Fluent ICONE26-81641
Xiaohan Zhao[1] Mingjun Wang[1] Wenxi Tian[1] Guanghui Su[1] Suizheng Qiu[2]
1. Xi'an Jiao Tong University, Xi'an, China; 2. School of Nuclear Science and Technology, Xi'an Jiao Tong University, Xi'an, China

A Criticality Evaluation of Fukushima Daiichi Unit 1 Fuel Debris ICONE26-81148
Maria Freiria Lopez, Michael Buck, Joerg Starflinger
University of Stuttgart, Stuttgart, Germany

Interface Tracking Simulations of Two-phase Flow Utilizing Adaptive Meshing Capabilities ICONE26-81247
Joseph J. Cambareri, Igor A. Bolotnov
North Carolina State University, Raleigh, NC, USA

Student Paper Competition

16-7 Neutronics Analysis and Reactor Physics II

Monday July 23 Room Fronsac | 14:00 – 16:00

Session Chair: Luca Ratti, S.U.R.O./ University of Pisa, Czech Republic

Session Co-Chair: Yanan He, Xi'an Jiaotong University, China

Neutronic Analysis for VVER-440 Type Reactor using PARCS Code ICONE26-82607
Luca Ratti[1] Guido Mazzini[2] Marek Ruscak[2] Valerio Giusti[3]
1. S.U.R.O./ University of Pisa, Prague, Czech Republic; 2. Centrum výzkumu Řež (Research Centre Rez), Husinec - Rez, Czech Republic; 3. University of Pisa - Dipartimento di Ingegneria Civile e Industriale, Pisa, Italy

A Universal Adjoint-Weighted Algorithm for Geometric Sensitivity Analysis of K-Eigenvalue based on Continuous-Energy Monte Carlo Method ICONE26-82494
Hao Li, Ganglin Yu, Shanfang Huang, Kan Wang
Tsinghua University, Beijing, China

A Selective Pn Approach for the Solution of Even Parity Forward and Adjoint Neutron Transport Equation ICONE26-82532
Mostafa Yousefi, E. Nouri, A. Zolfaghari, A. Minuchehr
Shahid Beheshti University, Tehran, Iran

Development of an Optimized Transport Solver in SARAX for Fast Reactor Analysis ICONE26-82380
Zhitao Xu[1] Hongchun Wu[1] Youqi Zheng[1] Mingtao He[2]
1. Xi'an Jiao Tong University, Xi'an, China; 2. China Nuclear Power Technology Research Institute, Shenzhen, China

Low-Cycle Strength of Elements of Constructions ICONE26-81860
Alexander Zvorykin[1] Roman Popov[2] Mykola Bobyr[3] Igor Pioro[2]
1. National Technical University of Ukraine, Kiev, Ukraine; 2. University of Ontario Institute of Technology, Oshawa, ON, Canada; 3. National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute", Kiev, Ukraine

Analysis of UO_2-BeO Fuel Performance during Normal Conditions and RIA ICONE26-82076
Yanan He[1] Yingwei Wu[1] Shihuai Wang[2] Bowen Qiu[1] Guanghui Su[1]
1. Xi'an Jiao Tong University, Xi'an, China; 2. China Nuclear Power Technology Research Institute, Chengdu, China

Student Paper Competition

16-12 Nuclear Safety and Accident Analysis II

Monday July 23 Room Lalande | 14:00 – 16:00

Session Chair: Yoshihisa Hiraki, Nagaoka University of Technology, Japan

Session Co-Chair: Derek Logtenberg, Canadian Nuclear Safety Comission, Physics and Fuel Division, Canada

Convective Heat Transfer in CANDU Spent Fuel Racks after a Loss of Coolant ICONE26-81461
Derek Logtenberg[1] Wade Grant[1] Paul K. Chan[2] Emily Corcoran[2]
1. Canadian Nuclear Safety Commission, Physics and Fuel Division, Ottawa, ON, Canada; 2. Royal Military College of Canada, Kingston, ON, Canada

Basic Experimental Study on Effectiveness of Nuclear Waste Long-term Storage Containers with PAR for Reducing Concentration of Hydrogen Gas: Part 2 - Hydrogen Behavior in a Small-Scale Modeled Container ICONE26-81704
Yoshihisa Hiraki[1] Gaku Takase[1] Yohta Suzuki[1]
Yuusei Tanaka[1] Kazuyuki Takase[2]
1. Nagaoka University of Technology, Nagaoka, Japan; 2. Nagaoka University of Technology, Niigata-Ken, Japan

Investigation of Flammability of Hydrogen Gas with Diluent Gases under Severe Accident Conditions using CNFT Model ICONE26-81773
Joongoo Jeon, Nam Kyung Kim, Wonjun Choi,
Taeseok Kim, Sung Joong Kim
Hanyang University, Seoul, Korea

Transient Modeling of Advanced High Temperature Reactor (AHTR) in RELAP5/SCDAPSIM/MOD 4.0 ICONE26-81874
Hsun-Chia Lin[1] Sheng Zhang[1] Shanbin Shi[1]
Xiaodong Sun[1] Richard Christensen[2]
1. University of Michigan, Ann Arbor, MI, USA;
2. University of Idaho, Idaho Falls, ID, USA

Numerical and Experimental Investigation on Core Assembly Thermal-Gradient-Induced Deformation of Sodium-Cooled Fast Reactor ICONE26-81891
Zehua Ma[1] Yingwei Wu[1] Guanghui Su[1] Wenxi Tian[1] Suizheng Qiu[2]
1. Xi'an Jiao Tong University, Xi'an, China; 2. School of Nuclear Science and Technology, Xi'an Jiao Tong University, Xi'an, China

Student Paper Competition

16-15 Thermalhydraulics II

Monday July 23 Room Mouton Cadet | 14:00 – 16:00

Session Chair: Victor Razumovskiy, National Technical University of Ukraine 'KPI', Ukraine

Session Co-Chair: Taro Sugimoto, University of Tsukuba, Japan

Modeling of Bubble Behavior in Low Void Fraction Subcooled Flow Boiling ICONE26-81173
Shintaro Sakamoto[1] Hiroki Ohori[2] Koji Enoki[2] Tomio Okawa[3]
1. The University of Electro-Communications, Chohu, Japan;
2. The University of Electro-Communications, Chiba, Japan;
3. The University of Electro-Communications, Tokyo, Japan

Numerical Analysis on Characteristic of Hydrogen Mixing and Stratification in a Containment Model ICONE26-81235
Cheng Peng, Lili Tong, Xuewu Cao
Shanghai Jiao Tong University, Shanghai, China

On Experimental and Computational Investigation of Heat Transfer Deterioration and Hydraulic Resistance in Annular Channel and SCWR 3-Rod Bundle ICONE26-81289
Vladislav Filonov[1] Yuliia Filonova[2] Victor Razumovskiy[1] Evgeniy Pis'mennyi[1]
1. National Technical University of Ukraine 'KPI', Kyiv, Ukraine; 2. IPP-CENTRE Ltd., Kiev, Ukraine

Research on Thermal Efficiencies of Various Power Cycles for GFRs and VHTRs ICONE26-81618
Mohammed Mahdi[1] Roman Popov[2] Igor Pioro[2]
1. Faculty of Energy Systems and Nuclear Science University of Ontario Institute of Technology, Oshawa, ON, Canada; 2. University of Ontario Institute of Technology, Oshawa, ON, Canada

Visualization Study on Droplet-Entrainment in a High-Speed Gas Jet into a Liquid Pool ICONE26-81695
Taro Sugimoto[1] Shimpei Saito[1] Akiko Kaneko[1] Yutaka Abe[1]
Akihiro Uchibori[2] Hiroyuki Ohshima[1]
1. University of Tsukuba, Tsukuba, Japan;
2. Japan Atomic Energy Agency, Oarai, Japan

Study on Thermal-Hydraulic Characteristics of Vertical Narrow Rectangular Channel with Large Aspect Ratio under Transverse Uneven Heating ICONE26-81757
Rulei Sun[1] Yichen Yang[1] Dalin Zhang[1] Jiawei Bian[1]
Suizheng Qiu[2] Guanghui Su[1]
1. Xi'an Jiao Tong University, Xi'an, China; 2. School of Nuclear Science and Technology, Xi'an Jiao Tong University, Xi'an, China

16:00 – 16:30 Chablis Suite, Ground Floor

POSTER SESSION & COFFEE BREAK

16:30 – 18:30

TECHNICAL SESSIONS

Operations & Maintenance, Engineering, Modifications,Life extension, Life Cycle and Balance of Plant

1-3 Equipment and System Design

Monday July 23 Room Bourg | 16:30 – 18:30

Session Chair: Ron Smith, Nuvia, United Kingdom

Study on Advanced PWR NPP Safety Related Equipment Qualification Function Requirement Design Methodology ICONE26-81212
Zhao Xu[1] Miao Zhuang[1] Yi Ke[2]
1. China Nuclear Power Engineering Co., Ltd., Beijing, China;
2. CNPE, Beijing, China

Classification Optimization for Waste Related Buildings and Structures of NPPS ICONE26-81408
Zongwen Hu, Yijie Qian, Li Fan
China Nuclear Power Engineering Co., Ltd., Beijing, China

Characteristic Tests on Transition Core of HTR-10 ICONE26-81797
Liqiang Wei, Dongmei Ding, Ling Liu, Yucheng Wang,
Xiaoming Chen, Feng Xie
Institute of Nuclear and New Energy Technology, Tsinghua University, Beijing, China

Calculational-Experimental Monitoring of Radiation Damage Parameters on VVER Equipment and Their Application during Equipment Residual Life-Time Estimation ICONE26-81708
Pavel Borodkin, Nikolay Khrennikov, Azamat Gazetdinov
Scientific and Engineering Centre for Nuclear and Radiation Safety, Moscow, Russia

High Power VVER Design for European Countries ICONE26-82640
Sergey Svetlov
JSC ATOMPROEKT, Saint Petersburg, Russia

Interim Spent Fuel Storage Facility (ISFSF) ICONE26-82709
Ron Smith[1] Chris Medlock[2]
1. Nuvia, Didcot, United Kingdom; 2. Nuvia, Warrington, United Kingdom

Nuclear Fuel and Material, Reactor Physics and Transport Theory

2-2 Reactor Physics: Sensitivity and Uncertainty Analysis

Monday July 23 Room Muscadet | 16:30 – 18:30

Session Chair: Wei Shen, Xi'an Jiaotong University, China

Enhancement of Stochastic Sampling Capability in RMC Code ICONE26-81982
Guanlin Shi[1] Yishu Qiu[2] Kan Wang[1]
1. Tsinghua University, Beijing, China; 2. Department of Engineering Physics, Beijing, China

Propagation of Nuclear Data Uncertainties in PWR Pin-Cell Burnup Calculations via Stochastic Sampling ICONE26-81711
Luigi Mercatali, Yousef Alzaben, Victor Hugo Sanchez Espinoza
Karlsruhe Institute of Technology, Eggenstein-Leopoldshafen, Germany

Towards Development of Uncertainty Library for Nuclear Reactor Core Simulation ICONE26-82385
Dongli Huang[1] Hany Abdel-Khalik[1] Ondrej Chvala[2] Guillermo Maldonado[2]
1. Purdue University, West Lafayette, IN, USA;
2. University of Tennessee, Knoxville, TN, USA

Uncertainty Evaluation and Sensitivity Analysis under Accident Scenarios ICONE26-81020
Daniel de Souza Gomes[1] Antonio Teixeira E Silva[2]
1. Energy and Nuclear Research Institute (IPEN), São Paulo, SP, Brazil;
2. IPEN/CNEN-SP, São Paulo, SP, Brazil

Uncertainty Analysis for the BEAVRS PWR Full-Core Simulation with Depletion ICONE26-82638
Chenghui Wan[1] Liangzhi Cao[2] Wei Shen[1]
1. Xi'an Jiao Tong University, Xi'an, China; 2. School of Nuclear Science and Technology, Xi'an Jiao Tong University, Xi'an, China

Uranium Enrichment Measurement using Enrichment-Meter Approach ICONE26-82101
K. AbdElgawad[1] Song Yushou[2]
1. Egyptian Nuclear and Radiological, Cairo, Egypt; 2. Harbin Engineering University, Harbin, China

Plant Systems, Structures, Components and Materials

3-11 Materials for advanced reactors

Monday July 23 Room Chalon | 16:30 – 18:30

Session Chair: Takashi Wakai, Japan Atomic Energy Agency, Japan

Session Co-Chair: Carsten Schroer, Karlsruhe Institute of Technology (KIT), Germany

Failure Assessment of Nuclear Graphite Component in TMSR ICONE26-82044
Y.T. Gao, Derek Zeng, Zhoutong He, Min Liu
Shanghai Institute of Applied Physics, Shanghai, China

Effect of Oxygen Concentration in Static Pb-Bi Eutectic on Corrosion Behavior of Aluminum-Alloyed Austenitic Steels at 550°C for 1000 H ICONE26-81713
Valentyn Tsisar[1] Carsten Schroer[1] Zhangjian Zhou[2] Olaf Wedemeyer[3]
Aleksandr Skrypnik[3] Jürgen Konys[1]
1. Karlsruhe Institute of Technology, Eggenstein-Leopoldshafen, Germany;
2. School of Material Science and Engineering, University of Science and Technology Beijing, Beijing, China; 3. Karlsruhe Institute of Techology (KIT), Institute for Applied Materials - Applied Materials Physics, Eggenstein-Leopoldshafen, Germany

Research of Weld Cladding of Vessel in Molten Salt Reactor ICONE26-81857
Zhijun Li
Shanghai Institute of Applied Physics, CAS, Shanghai, China

The Compatibility of Nuclear Graphite with Molten Salt in the Molten Salt Reactor ICONE26-82065
Zhoutong He[1] Hui Tang[2] Can Zhang[1] Y.T. Gao[1] Huihao Xia[2] Xingtai Zhou[2]
1. Shanghai Institute of Applied Physics, Shanghai, China; 2. Shanghai Institute of Applied Physics, Chinese Academy of Sciences, Shanghai, China

Practical Experience Gained from Operating the Lead-Bismuth Loop CORRIDA ICONE26-82513
Carsten Schroer[1] Olaf Wedemeyer[2] Valentyn Tsisar[1]
Aleksandr Skrypnik[2] Jürgen Konys[1]
1. Karlsruhe Institute of Technology, Eggenstein-Leopoldshafen, Germany;
2. Karlsruhe Institute of Techology (KIT), Institute for Applied Materials - Applied Materials Physics, Eggenstein-Leopoldshafen, Germany

Fretting Experiments with 15-15Ti Stabilized Fuel Cladding Material in PbBi ICONE26-82634
Annette Heinzel, Alfons Weisenburger, Fabian Lang, Georg Müller
Karlsruhe Institute of Technology, Eggenstein-Leopoldshafen, Germany

Instrumentation and Control (I&C) and Influence of Human Factors

4-2 Safety of I&C Systems

Monday July 23 Room Cognac | 16:30 – 18:30

Session Chair: Hidekazu Yoshikawa, Harbin Engineering University, China

Session Co-Chair: Eugene Babeshko, RPC Radiy, Ukraine

Research on Nuclear Power Plant Safety Functional Requirements Analysis and Function Allocation ICONE26-82230
Jia Ming, Huang Huan, Zhang Xuegang
China Nuclear Power Design Co., Ltd. (Shenzhen), Shenzhen, China

NPP I&C Safety Assessment by Aggregation of Formal Techniques ICONE26-82270
Eugene Babeshko[1] Vyacheslav Kharchenko[1] Kostiantyn Leontiiev[1]
Oleg Odarushchenko[2] Oleksiy Strjuk[2]
1. RPC Radiy, Kropyvnytskyi, Ukraine; 2. Radics LLC, Kropyvnytskyi, Ukraine

The Security Vulnerability Analysis of Nuclear Power Digital Instrument Control Platform NASPIC ICONE26-81486
Hua Liu[1] Zhaohui Liu[2] Xiao-hua Yang[2] Meng Li[3]
Zhigang Feng[2] Qing Zhao[2] Zhi Chen[4]
1. School of Electrical Engineering, University of South China, Hengyang, China;
2. University of South China, Hengyang, China;
3. School of Computer, University of South China, Hengyang, China;
4. Nuclear Power Institute of China, Chengdu, China

Integrated Defense-in Depth DiD Risk Analysis System for Safety Operation of Nuclear Power Plants ICONE26-82639
Hidekazu Yoshikawa[1] Yang Ming[2]
1. Harbin Engineering University, Harbin, China; 2. South China University of Science and Technology, Guangzhou, China

FMEDA and FIT-Based Safety Assessment of NPP I&C Systems Considering Expert Uncertainty ICONE26-82048
Alexander Yasko[1] Eugene Babeshko[2] Vyacheslav Kharchenko[2]
1. National Aerospace University, Kharkiv, Ukraine; 2. RPC Radiy, Kropyvnytskyi, Ukraine

Introduction of the Class1 FPGA Platform "Nu Coss S-Zero" for the UK ABWR ICONE26-82675
Shohei Nakamura, Hideo Harada, Masahiro Shiraishi,
Masashi Suenaga, Keisuke Yamamoto
Hitachi, Ltd., Hitachi-shi, Japan

Advanced Reactors and Fusion Technologies

5-2 Fission Reactors Design and Analyses

Monday July 23 Room Reims | 16:30 – 18:30

Session Chair: Ivan Di Piazza, ENEA C.R. Brasimone, Italy

Experimental Tests with Non-Uniformly Heated 19-Pins Fuel Bundle Cooled by HLM ICONE26-81216
Morena Angelucci[1] Ivan Di Piazza[2] Mariano Tarantino[2] Ranieri Marinari[1] Valerio Sermenghi[2] Giuseppe Polazzi[2]
1. University of Pisa, Pisa, Italy; 2. ENEA C.R. Brasimone, Camugnano, Italy

Research on Heat Transfer Characteristics of the Thermometric Sphere in HTR-10 ICONE26-81768
Shiyan Sun, Youjie Zhang, Yanhua Zheng, Xiang Fang, Xiaoyong Yang
Tsinghua University, Beijing, China

Core Design Study of Super FBR with Multi-Axial Fuel Shuffling and Different Coolant Density ICONE26-81501
Shogo Noda, Sukarman Sukarman, Akifumi Yamaji, Tetsuo Takei, Takanari Fukuda, Arisa Ayukawa
Waseda University, Shinjuku-ku, Japan

A Framework and Model for Assessing the Design Point Performance, Off-Design Point Performance, Control, Economics and Risks of Brayton Helium Gas Turbine Cycles for Generation IV Nuclear Power Plants ICONE26-81686
Arnold Gad-Briggs[1] Pericles Pilidis[2] Theoklis Nikolaidis[2]
1. Cranfield University & EGB Engineering UK, Cheshire, United Kingdom; 2. Cranfield University, Bedford, United Kingdom

Simulation of HTR-10 Anti-Compton HPGE Gamma-Ray Spectrometer with Geant4 ICONE26-81254
Cui Mao[1] Liguo Zhang[2] Yibao Liu[1] Bing Xia[3] Zaizhe Yin[4] Jiejuan Tong[2]
1. East China University of Technology, Nanchang, China; 2. Institute of Nuclear and New Energy Technology, Tsinghua University, Beijing, China; 3. Tsinghua University, Nanchang, China; 4. Tsinghua University, Beijing, China

Analysis of Enhanced Cooling for the EU-DEMO HCPB Breeding Blanket Modules using the GETTHEM Code ICONE26-82416
Antonio Froio[1] Fabio Cismondi[2] Laura Savoldi[3] Roberto Zanino[3]
1. Politecnico di Torino, Torino, Italy; 2. EUROfusion Consortium, Garching bei München, Germany; 3. Dipartimento Energia, Politecnico Di Torino, Torino, Italy

Nuclear Safety, Security, and Cyber Security

6-2 Nuclear Security- Security Culture

Monday July 23 Room Alsace | 16:30 – 18:30

Session Co-Chair: David L.Y. Louie, Sandia National Laboratories, USA

The Benefits of Security Culture for Improving Physical Protection Systems at Detection and Radiation Measurement Laboratory ICONE26-81054
Nia Febriyanti, Ari S. Prabowo, Haryono Budi Santosa, Herlina Zainal
University of Gadjah Mada, Yogyakarta, Indonesia

Development of Malicious Hand Behaviors Detection Method by Movie Analysis ICONE26-81643
Kazuyuki Demachi, Shi Chen
The University of Tokyo, Tokyo, Japan

Review and Security Assessment of Red Oil Explosions in Evaporator ICONE26-82221
Yiren Lian, Hongchao Sun, Chen Lei, Dongyuan Meng, Guoqiang Li, Dajie Zhuang, Shutang Sun, Jiangang Zhang
China Institute for Radiation Protection, Taiyuan, China

Online Adversarial Learning of Reactor State ICONE26-82372
Yeni Li, Elisa Bertino, Hany Abdel-Khalik
Purdue University, West Lafayette, IN, USA

Anomaly Detection for I&C Networks of NPPs based on Deep Packet Inspection ICONE26-82575
Jianghai Li[1] Chao Guo[2] Qianqian Jia[2] Xiaojin Huang[2] Huasheng Xiong[2]
1. Institute of Nuclear and New Energy Technology, Tsinghua University, Beijing, China; 2. Tsinghua University, Beijing, China

Study on Target Sets Identification Approach for Cyber-Attack against Nuclear Power Plants based on Vital Area Identification Method ICONE26-82578
Yoshiki Kimura[1] Kazuyuki Demachi[2] Hirofumi Tomikawa[1] Mistutoshi Suzuki[1]
1. Japan Atomic Energy Agency, Tokai-mura, Japan; 2. The University of Tokyo, Tokyo, Japan

Research on the Neutron Multiplicity Pulse Trains Computer Simulation ICONE26-82262
Sufen Li, Quanhu Zhang, Yonggang Huo, Man Zhou
Xi'an Research Institute of High-Technology, Xi'an, China

Codes, Standards, Licensing, and Regulatory Issues

7-2 Regulatory Interactions with Codes and Standards II

Monday July 23 Room Epernay | 16:30 – 18:30

Session Chair: Clayton Smith, Smith Associates Consulting Group LLC, USA

The Backfit Rule's Compliance Exception ICONE26-81905
Samuel Miranda
Independent Author, Silver Spring, MD, USA

KEPIC Code Case Review for Clamping Device and Weld-overy Technology of Small Diameter Pipe Socket Welds ICONE26-82603
So Young Jeon[1] Myoungsung Sohn[1] Geun-Suk Choi[1] Hyun Jae Joo[1] Lee Jong Eun[1] Sanghoon Lee[2] Cho Hongseok[3] Gi Ho Sung[4]
1. Korea Electric Association, Seoul, Korea; 2. Korea Institute of Materials and Science (KIMS), Changwon, Korea; 3. Kepco Kps, Seongnam-Si, Korea; 4. SUNG IL (SIM) Co., Ltd., Busan, Korea

Establishment of "Technical Guidelines for Watertight Facilities (JEAG4630-2016)" ICONE26-81208
Koji Yamada[1] Kyoichi Chuda[2] Akihiko Masu[3] Shoichi Goto[4] Isamu Nakazuka[5] Yohei Komiyama[6] Tatsumi Horiuchi[6] Tomokazu Iwata[7] Yasuhiro Tsumura[7] Shizuo Noda[8]
1. Chubu Electric Power Co, Inc., Nagoya, Japan; 2. The Japan Atomic Power Company, Ibaraki, Japan; 3. Electric Power Development Co., Ltd., Tokyo, Japan; 4. Obayashi Corporation, Tokyo, Japan; 5. Toshiba Energy Systems & Solutinos Corporation, Yokohama, Japan; 6. Hitachi-GE Nuclear Energy, Ltd., Hitachi, Japan; 7. Mitsubishi Heavy Industries, Ltd., Kobe, Japan; 8. Japan Nuclear Safety Institute, Tokyo, Japan

Nonlinear Analysis in Pressure Vessel Design Codes: Recommendations for Codified Rules Improvements ICONE26-81095
Claude Faidy
AFCEN-CF Integrity Engineering, Tassin, France

Discussion on Safety Classification for Equipment of Nuclear Power Plants ICONE26-82105
Dan He, Yue Zhang
China Nuclear Power Engineering Co., Ltd., Beijing, China

Decontamination & Decommissioning, Radiation Protection, and Waste Management

10-9 D&D General Session I

Monday July 23 Room Cremant | 16:30 – 18:30

Session Chair: Kenji Matsuzaki, IRID, Toshiba Energy Systems & Solutions Corporation, Japan

Development of ROV to Investigate inside of Primary Containment Vessel at Fukushima Daiichi Unit 3 ICONE26-82197
Kenji Matsuzaki[1] Norihito Nakamura[1] Daiki Maruyama[1] Yoichi Murai[2]
1. IRID, Toshiba Energy Systems & Solutions Corporation, Yokohama, Japan; 2. IRID, Tokyo, Japan

Process Study of Liquid Phase Catalytic Exchange Process for Water Detritiation ICONE26-81258
Li Peilong, Xiong Renjin, Luo Deli, Song Jiangfeng, Luo Junhong, Guo Li, Zhang Zhi, Tang Tao
Institute of Materials, Chengdu, China

Laser Decontamination of Metal Surfaces ICONE26-81864
Luisa Carvalho[1] Wilfried Pacquentin[1] Michel Tabarant[1] Morgan Dal[2] Alexandre Semerok[1] Hicham Maskrot[1]
1. CEA, Gif sur Yvette, France; 2. ENSAM, Paris, France

Intensified Extraction of Uranium(VI) in Impinging-Jets Reactors ICONE26-82361
Dimitrios Tsaoulidis, Eduardo Garciadiego Ortega, Wenyu Lyu, Panagiota Angeli
University College London, London, United Kingdom

Piezoelectric Nuclear Battery Driven by the Jet-flow: Reliable Dynamic Energy Conversion from Heat to Electricity ICONE26-82697
Yi Zhou, Jiaqing He
Southern University of Science and Technology, Shenzhen, China

Nuclear Education and Public Acceptance

12-1 Nuclear Education and Public Acceptance I

Monday July 23 Room Bouzy | 16:30 – 18:30

Session Chair: Asif Arastu, Unisont Engineering, Inc., USA

Session Co-Chair: Patricia Paviet, Department of Energy - Office of Nuclear Energy, USA

Generation IV International Forum Education and Training Webinars: Education Tools for the Next Generation Workforce ICONE26-81027
Patricia Paviet
Department of Energy - Office of Nuclear Energy, Germantown, MD, USA

Numerical Simulation for Nuclear Engineering Education: A Case Study in a Course "Advanced Nuclear Reactor Thermal Analysis" ICONE26-81042
Shanfang Huang, yaopeng Gong, Chao Li, Ruilong Liu, Jiageng Wang, Kan Wang
Tsinghua University, Beijing, China

The Nuclear Technology Education Consortium: UK Nuclear Education to Meet the Global Workforce Demand ICONE26-81044
John Roberts, *The University of Manchester, Manchester, United Kingdom*

Technical Workforce Education and Training Program at Abu Dhabi Polytechnic: Integration of Academia and Industry Requirements ICONE26-82094
Anthony Hechanova, *Abu Dhabi Polytechnic, Abu Dhabi, United Arab Emirates*

15 Years of the European Nuclear Education Network (ENEN Association) ICONE26-82611
Leon Cizelj[1] Joerg Starflinger[2] Veronique Decobert[3] Behrooz Bazargan-Sabet[4] Filip Tuomisto[5] Michèle Coeck[6] Pascal Anzieu[7] John Roberts[8] Tzanny Kokalova Wheldon[9] Pedro Dieguez Porras[10]
1. Jozef Stefan Institute, Ljubljana, Slovenia; 2. University of Stuttgart, Stuttgart, Germany; 3. Westinghouse Electrique France, Orsay, France; 4. École des Mines de Nancy, Nancy, France; 5. Aalto University, Alto, Finland; 6. SCK•CEN, Mol, Belgium; 7. CEA-INSTN Institut national del sciences & techniques nucleaires, Gif sur Yvette, France; 8. The University of Manchester, Manchester, United Kingdom; 9. School of Physics & Astronomy, University of Birmingham, Birmingham, United Kingdom; 10. ENEN Association, Gif sur Yvette, France

Student Paper Competition

16-3 Computational Fluid Dynamics II

Monday July 23 Room Talbot | 16:30 – 18:30

Session Chair: Wei Peng, Tsinghua University, China

Session Co-Chair: Mohammad A. Hawila, Texas A&M University, USA

CFD Investigation of Thermal-Hydraulic Behaviors in Full Reactor Core for Sodium-Cooled Fast Reactor ICONE26-81626
Jing Chen[1] Dalin Zhang[1] Suizheng Qiu[2] Kui Zhang[1] Mingjun Wang[1] Guanghui Su[1]
1. Xi'an Jiao Tong University, Xi'an, China; 2. School of Nuclear Science and Technology, Xi'an Jiao Tong University, Xi'an, China

Computational Simulation of Hydrogen Permeation Experiment ICONE26-82487
Xiao Wu[1] WaiLam Chan[2] Shanbin Shi[1] Xiaodong Sun[1] Richard Christensen[2]
1. University of Michigan, Ann Arbor, MI, USA; 2. University of Idaho, Idaho Falls, ID, USA

Numerical Research on Melt Pool Flow Characteristics under Rolling Condition ICONE26-81994
Simin Luo[1] Xin'an Wang[1] Yapei Zhang[1] Dalin Zhang[1] Suizheng Qiu[2] Guanghui Su[1]
1. Xi'an Jiao Tong University, Xi'an, China; 2. School of Nuclear Science and Technology, Xi'an Jiao Tong University, Xi'an, China

Numerical Simulation of Bubble Dynamic under Ocean Conditions ICONE26-81639
Chen Chong[1] Mingjun Wang[1] Wenxi Tian[1] Suizheng Qiu[2] Guanghui Su[1]
1. Xi'an Jiao Tong University, Xi'an, China; 2. School of Nuclear Science and Technology, Xi'an Jiao Tong University, Xi'an, China

A Numerical Study of Particle Deposition through Fuel Pebble Bed in HTGR ICONE26-81792
Qi Sun, Gang Zhao, Wei Peng, Suyuan Yu
Tsinghua University, Beijing, China

RCIC Turbo-Pump Scaling through CFD and Model Testing for the Texas A&M University NHTS Facility ICONE26-81119
Mohammad A. Hawila, Karen V. Kirkland
Texas A&M University, College Station, TX, USA

Student Paper Competition

16-8 Nuclear Fuels and Materials I

Monday July 23 Room Fronsac | 16:30 – 18:30

Session Chair: Wei Zhou, City University og Hong Kong, China
Session Co-Chair: Darrell Cheu, Purdue University, USA

Optimization of Fuel Storage in Spent Fuel Pool ICONE26-81084
Xinyu Wang[1] Richard Cable Kurwitz[2] Zhijian Zhang[1]
1. Harbin Engineering University, Harbin, China; 2. Texas A&M University, College Station, TX, USA

Derivation of Critical Parameters of Betavoltaics ICONE26-81109
Darrell Cheu[1] Thomas Adams[2] Shripad Revankar[1]
1. Purdue University, West Lafayette, IN, USA; 2. Naval Surface Warfare Center, Crane Division, Crane, IN, USA

Experimental Research on Energy Release and Fragments Characteristics under Molten Materials Discharged into Liquid Sodium ICONE26-81400
Liang Hu[1] Kui Ge[1] Yapei Zhang[1] Guanghui Su[1] Wenxi Tian[1] Suizheng Qiu[2]
1. Xi'an Jiao Tong University, Xi'an, China; 2. School of Nuclear Science and Technology, Xi'an Jiao Tong University, Xi'an, China

Multiphysics Modeling of Fabrication Methods Effect on UO_2-BeO Composite Fuels Performance ICONE26-81429
Wei Zhou[1] Wenzhong Zhou[2]
1. City University of Hong Kong, Hong Kong, China; 2. City University of Hong Kong, Kowloon, Hong Kong

The Influence of Pebble Placement on the Wake of Tandem Pebbles in a Free Stream ICONE26-81884
Gerrit Botha[1] Yassin Hassan[1] Richard Cable Kurwitz[1] Elia Merzari[2]
1. Texas A&M University, College Station, TX, USA; 2. Argonne National Laboratory, Lemont, IL, USA

Preliminary Research on the Oxidation Effect of the Carbon Steel Plate of Downward Facing Pool Boiling by Two-Dimensional Image ICONE26-82019
Kai Wang[1] Nejdet Erkan[1] Koji Okamoto[2]
1. University of Tokyo, Tokyo, Japan; 2. University of Tokyo, Ibaraki, Japan

Student Paper Competition

16-13 Nuclear Safety and Accident Analysis III

Monday July 23 Room Lalande | 16:30 – 18:30

Session Chair: Deeksha Gupta, Framatome GmbH, Germany
Session Co-Chair: Tangtao Feng, Xi'an Jiaotong University, China

Cyber Threat Scenarios for Electrical Systems of Nuclear Power Plants ICONE26-82411
Deeksha Gupta, Edita Bajramovic, Mithil Parekh, Karl Waedt
Framatome GmbH, Erlangen, Germany

CANDU 6 Accident Analysis using RELAP/SCDAPSIM with the Integrated Uncertainty Package ICONE26-82241
Roxana-Mihaela Nistor-Vlad[1] Daniel Dupleac[1] Ilie Prisecaru[1]
Chris Allison[2] M. Perez-Ferragut[2] Judith Hohorst[3]
1. Politehnica University of Bucharest, Bucharest, Romania; 2. Innovative Systems Software, Ammon, ID, USA; 3. Innovative Systems Software, Idaho Falls, ID, USA

Numerical Research on Fuel Rod Progression during Core Degradation Process using MELCOR ICONE26-81738
Tangtao Feng[1] Wenxi Tian[1] Ping Song[1] Jun Wang[2]
Mingjun Wang[1] Guanghui Su[1] Suizheng Qiu[3]
1. Xi'an Jiao Tong University, Xi'an, China; 2. University of Wisconsin, Madison, WI, USA; 3. School of Nuclear Science and Technology, Xi'an Jiao Tong University, Xi'an, China

Validation of CTF Void Predictions using the BFBT Database ICONE26-81869
Nathan Porter[1] Maria Avramova[1] Vincent Mousseau[2]
1. North Carolina State University, Raleigh, NC, USA; 2. Sandia National Laboratories, Albuquerque, NM, USA

Condition Fault Tree: An Extension of Traditional Fault Tree to Handle Uncertainty ICONE26-81243
Zhenxu Zhou, Qin Zhang
Tsinghua University, Beijing, China

Student Paper Competition

16-16 Thermalhydraulics III

Monday July 23 Room Mouton Cadet | 16:30 – 18:30

Session Chair: Anna Fortova, Czech Technical University in Prague, Czech Republic

Session Co-Chair: Yuki Nakamura, University of Tsukuba, Japan

Comparison of Drift-Flux Models for Void Fraction Prediction in Sub-Channel of Vertical Rod Bundles ICONE26-81435
Quan-yao Ren, Liang-ming Pan, Wen-xiong Zhou,
Ting-pu Ye, Hang Liu, Song-song Li
Chongqing University, Chongqing, China

Pressure Drop Experiments of Liquid Sodium Flowing in a 7-Rod Bundle ICONE26-81444
Yandong Hou[1] Liu Wang[1] Yingwei Wu[2] Wenxi Tian[2]
Guanghui Su[2] Suizheng Qiu[1]
1. School of Nuclear Science and Technology, Xi'an Jiao Tong University, Xi'an, China; 2. Xi'an Jiao Tong University, Xi'an, China

Two Phase Flow Behavior during Pool Scrubbing ICONE26-81497
Yuki Nakamura, Kota Fujiwara, Wataru Kikuchi, Shimpei Saito,
Tomohisa Yuasa, Akiko Kaneko, Yutaka Abe
University of Tsukuba, Tsukuba, Japan

TREAT Transient Modeling and Impact of Graphite Thermal Scattering ICONE26-81887
Nina C. Sorrell, Ayman I. Hawari
North Carolina State University, Raleigh, NC, USA

VVER 1000 Pressurizer System and Control Modelling in Dymola ICONE26-81263
Anna Fortova[1] Filip Jezek[2]
1. Czech Technical University in Prague, Prague, Czech Republic;
2. Czech Technical University in Prague, Faculty of Electrical Engineering, Prague, Czech Republic

Two-Phase Flow Regime Identification using Fluctuating Force Signals under Machine Learning Techniques ICONE26-81288
Yuta Saito, Shuichiro Miwa, Shuhei Torisaki
Hokkaido University, Sapporo, Japan

18:30 – 20:30 Chablis Suite, Ground Floor

OPENING RECEPTION

See page 13 for details.

Tuesday, July 24

TIME	TITLE	LOCATION
08:30 – 10:00	Plenary Session – Current Status of Nuclear Power	Cremant, 1st Floor
10:00 – 10:30	Poster Session & Coffee Break	Chablis Suite, Ground Floor
10:30 – 12:30	Technical Sessions	See pages 48 through 52 for session titles, authors and locations
12:30 – 14:00	Lunch	Chablis Suite, Ground Floor
14:00 – 16:00	Panel Sessions	See pages 19 through 23 for panel session details
16:00 – 16:30	Poster Session & Coffee Break	Chablis Suite, Ground Floor
16:30 – 18:30	Technical Sessions	See pages 52 through 56 for session titles, authors and locations
19:00 – 22:00	Conference Banquet	Twickenham Stadium, Rose Suite Whitton Road, Twickenham

08:30 – 10:00 Cremant, 1st Floor

PLENARY SESSION: CURRENT STATUS OF NUCLEAR POWER

Plenary Session sponsored by

Westinghouse

Shripad Revankar, *Technical Program Committee Chair ICONE26, Purdue University, ASME*

Dongshan Zheng, *CEO of General Nuclear Internal Ltd (CGN UK)*

Hiroshige Kikura, *Technical Program Committee Chair ICONE26, Tokyo Institute of Technology, JSME*

Asif Arastu, *Award Committee Chair and Steering Committee Member ICONE26, Unisont Engineering Inc, ASME*

SPEAKER ONE:

Current Status of Nuclear Power in China

Dongshan Zheng, *CEO of General Nuclear Internal Ltd (CGN UK)*

This speaker will provide a global perspective on CGN and prospects for the Chinese and United Kingdom nuclear sector.

In 1984 after graduation, Dongshan joined Guangdong Nuclear Power Joint Venture Company Ltd (GNPJVC) and trained in France to be a safety technical advisor. In 2003, Mr Zheng, was appointed Deputy General Manager of Daya Bay Nuclear Power Operations & Management Co., Ltd. In 2004, Dongshan, became General Manager of Yangjiang Nuclear Power Co., Ltd. In 2005, appointed General Manager of China Nuclear Power Engineering Co., Ltd. Throughout 2008-2017, Dongshan has been Senior Vice President of China General Nuclear Power Corporation. From 2016 to present, Mr Zheng has been CEO of General Nuclear International Ltd (also known as CGN UK).

SPEAKER TWO:

Transformative Efficiency: Innovation to Improve Operations and Maintenance

Ken Canavan, *Chief Technology Officer, Global Technology Services*

Now more than ever, the nuclear industry is under pressure to reduce costs and increase production to remain a competitive power generation source. As obsolescence concerns continue to grow, so do costs associated with operations and maintenance. Heavy regulations and public perception have contributed to the slow pace of innovative solutions, but the industry is starting to see signs of a paradigm shift.

Westinghouse has been through several transformations in its esteemed 132-year history. As we emerge from our most recent one we have refocused our attention to creating innovative technologies that will drive the nuclear industry of tomorrow. Disruptive technologies that enhance safety, reliability and efficiency will transform the way we do business and help us to continue to provide clean energy to our customers around the globe.

Ken Canavan is the chief technology officer (CTO) for Westinghouse Electric Company. He has strategic responsibility to drive next-generation technology and innovation solutions that align with the company's global business strategy, and leads the effort to strengthen Westinghouse with regard to technology leadership development.

Previously, Ken served as director, Engineering, for Electric Power Research Institute (EPRI). While at EPRI, he turned industry needs into compelling research and development plans. These plans resulted in solutions to improve the safety and performance of the global nuclear fleet.

Prior to his work at EPRI, Ken was responsible for risk applications at Data Systems and Solutions, ERIN Engineering and Research, and GPU Nuclear. He also was a safety analysis engineer with Davis-Besse Nuclear Power Station in Ohio (USA).

Canavan has a bachelor's degree in chemical engineering, with a nuclear engineering minor, from Manhattan College, New York.

SPEAKER THREE:

Nuclear Energy in a Clean Energy Future

King Lee, *Director, Harmony Programme, World Nuclear Association*

Nuclear energy has a vital role to play in the global Clean Energy Future. To meet the growing demand for reliable, affordable and clean electricity we will need all low-carbon energy sources to work together as part of a diverse 24/7 mix.

The nuclear industry has developed a Harmony goal to provide 25% of the global electricity supplied by nuclear energy in 2050, resulting in a tripling of nuclear generation from its present level. This would require the construction of around 1000 GW of new nuclear capacity.

There are several barriers standing in the way of achieving the Harmony goal. The Harmony programme set out three objectives to overcome these challenges. Firstly, we should establish a level playing field in energy markets which drives investment in future clean energy. Secondly, we need to ensure harmonized regulatory processes to provide a more internationally consistent, efficient and predictable nuclear licensing regime, to facilitate significant growth of nuclear capacity and timely licensing of innovative designs. Thirdly we should create an effective safety paradigm focusing on genuine public wellbeing, where the health, environmental and safety benefits of nuclear are better understood and valued when compared with other energy sources.

Harmony and other international initiatives are essential to ensure high level multilateral dialogue and engagement of policy makers on the role of nuclear energy, working with renewables, as part of the clean energy future.

King Lee is the Director of Harmony Programme at the World Nuclear Association leading the Harmony Programme, the nuclear industry's vision for the future of electricity. In this role Mr Lee heads a team promoting nuclear energy by working with the nuclear community and engaging with key stakeholders and policy makers for nuclear energy to play a crucial part in meeting the global energy challenge

Previously, Mr Lee was Head of Nuclear Development at Lloyd's Register, where he led strategic business development and provided technical and commercial oversight to major nuclear projects in UK, China, Korea and UAE. This includes advising governments and industry leaders on regulatory and safety issues concerning the challenges for the nuclear industry.

Mr Lee is a member of the Nuclear Energy Agency (NEA) Nuclear Innovation 2050 Advisory Panel.

SPEAKER FOUR:

Hitachi-GE's Challenges to Continuous Supply of Advanced Nuclear Technology

Yasunori Inada, *General Manager, Hitachi-GE Nuclear Energy, Japan*

Hitachi-GE has manufactured key nuclear components and constructed nuclear power plants for over fifty years. Current focused activities are 1) Safety enhancement and licensing for restart of existing nuclear power plants, 2) Recovery of Fukushima Daiichi Nuclear Power Station, 3) Decommissioning, 4) Fuel cycle, and 5) Construction projects of nuclear power plants including UK ABWR. In this presentation, summaries of these activities and the current status of HORIZON project are introduced. For the success of these projects, advanced technologies and skilled craft workers are keys. Examples of activities related to these keys are also shared in this presentation. In addition, Hitachi-GE's vision for future plants is shared.

Yasunori Inada has obtained a master's degree in Precision Mechanical Engineering from Tohoku University. He joined Hitachi, Ltd in1992 and currently holds the position of General Manager of the Nuclear Power Business Development and Management Division

10:00 – 10:30 Chablis Suite, Ground Floor

POSTER SESSIONS & COFFEE BREAK

10:30 – 12:30

TECHNICAL SESSIONS

Nuclear Fuel and Material, Reactor Physics and Transport Theory

2-3 Reactor Physics: Monte Carlo Methods and Calculations I

Tuesday July 24 Room Reims | 10:30 – 12:30

Session Chair: Paul K. Chan, Royal Military College of Canada, Canada

Development of a Spatial Domain Decomposition Scheme for Monte Carlo Neutron Transport ICONE26-82144
Manuel Garcia[1] Diego Ferraro[1] Victor Hugo Sanchez Espinoza[1]
Luigi Mercatali[1] Jaakko Leppänen[2] Ville Valtavirta[2]
1. Karlsruhe Institute of Technology, Eggenstein-Leopoldshafen, Germany;
2. VTT Technical Research Centre of Finland, Espoo, Finland

A Monte Carlo Method for Simulating Stochastic Neutron Fields in Criticality Transients ICONE26-81595
Qi Xu, Zhe Wang, Gang Xiao
IAPCM, Beijing, China

One Step Method for Multigroup Adjoint Neutron Flux through Continuous Energy Monte Carlo Calculation ICONE26-82185
Xiaotong Shang, Guanlin Shi, Kan Wang
Tsinghua University, Beijing, China

Foreseen Capabilities, Bottlenecks Identification and Potential Limitations of Serpent MC Transport Code in Large-scale Full 3-D Burnup Calculations ICONE26-82305
Diego Ferraro[1] Manuel Garcia[1] Luigi Mercatali[1]
Victor Hugo Sanchez Espinoza[1] Jaakko Leppänen[2] Ville Valtavirta[2]
1. Karlsruhe Institute of Technology, Eggenstein-Leopoldshafen, Germany;
2. VTT Technical Research Centre of Finland, Espoo, Finland

Research on Coupling Scheme of Monte Carlo Burnup Calculation in RMC ICONE26-81140
Wanlin Li, Kan Wang, Ganglin Yu, Yaodong Li
Tsinghua University, Beijing, China

Internal Coupling between Neutronics and Thermal-Hydraulics with RMC/CTF and Validation using VERA Benchmarks
ICONE26-82397
Kaiwen Li, Shichang Liu, Juanjuan Guo, Kan Wang
Tsinghua University, Beijing, China

Nuclear Fuel and Material, Reactor Physics and Transport Theory

2-6 Nuclear Fuel Safety and Performance Analysis IV

Tuesday July 24 Room Cognac | 10:30 – 12:30

Session Chair: Paul K. Chan, Royal Military College of Canada, Canada

Fuel Cycle Economy of Accident Tolerant Fuel Assemblies
ICONE26-81384
Duoting Xu, Tong Liu, Heng Huang
China Nuclear Power Technology Research Institute Co., Ltd, Chengdu, China

Greatly Enhanced Thermal Conductivity of Fully Inert Matrix Dispersion Pellet (IMDP) Produced by Spark Plasma Sintering (SPS) Technique ICONE26-82536
Zhaodandan Ma[1] Tong Liu[2] Rui Li[1] Maozhou Sun[1] Zhiwei Lu[1]
1. China Nuclear Power Technology Research Institute, Shenzhen, China;
2. China Nuclear Power Technology Research Institute Co., Ltd, Chengdu, China

Preliminary Study on Thermal Performance of Inert Matrix Disperse Pellet using FEA Method ICONE26-82191
Zhiwei Lu[1] Yun Li[2] Yongdong Zhang[3] Lei Li[1] Zhaodandan Ma[4] Tong Liu[5]
1. China Nuclear Power Technology Research Institute, Shenzhen, China;
2. CGN, Chengdu, China; 3. CGN, Shenzhen, China; 4. China General Nuclear Power Technique, Shenzhen, China; 5. China Nuclear Power Technology Research Institute Co., Ltd, Chengdu, China

Effect of AL2O3 and SIC Content in Pack Cementation Powders on the Microstructure of SIC Coatings on HTR Graphite Spheres
ICONE26-81174
Hongsheng Zhao, Ping Zhou, Ziqiang Li, Xiaoxue Liu,
Kaihong Zhang, Taowei Wang, Bin Wu, Bing Liu
Tsinghua University, Beijing, China

Severe Accident Analysis for Reactor Core Applying SiC to Fuel Claddings and Channel Boxes ICONE26-81923
Hideki Horie[1] Yutaka Takeuchi[1] Kenya Takiwaki[1]
Fumie Sebe[2] Kazuo Kakiuchi[3] Hisaki Sato[1]
1. Toshiba Energy Systems & Solutions Corporation, Yokohama, Japan;
2. Toshiba Corporation, Yokohama, Japan; 3. Toshiba, Yokohama, Japan

Experimental and Theoretical Investigation of Ignition Temperature and Vapor Explosion of the Aluminum-Water Reaction ICONE26-82077
Paul O. Biney[1] Kevin Lee[2]
1. Prairie View A&M University, Mechanical Engineering Dept., Prairie View, TX, USA; 2. Prairie View A&M University, Prairie View, TX, USA

Plant Systems, Structures, Components and Materials

3-8 High Temperature Components I

Tuesday July 24 Room Chalon | 10:30 – 12:30

Session Chair: Brahim Nadri, Engineering Analysis Services Limited, UK

The Influence of Thermal Deformation on the Dynamic Characteristics of AMB Rotor of HTR-PM Helium Blower
ICONE26-81132
Guowei Du, Jinpeng Yu, Hong Wang, Lei Zhao
Tsinghua University, Beijing, China

A Structural Integrity Assessment of a Nuclear Boiler Superheater Bifurcation at High Temperature ICONE26-81167
Brahim Nadri, Robert Wang
Engineering Analysis Services Limited, Altrincham, United Kingdom

Research on Structural Design and Analysis of S-CO_2 Turbine Impeller ICONE26-81267
Jun Wu, Can Ma, Chunhui Dai, Zhenxing Zhao, Lu Dai, Zhouyang Liu
Wuhan Second Ship Design and Research Institute, Wuhan, China

Research About the Uniform Field Breakdown Strength of Helium Gas at High Temperature and Pressure in Millimeter-Scale Gaps
ICONE26-81293
Qi You, Zhengang Shi, Xingnan Liu, Xunshi Yan, Guojun Yang
Tsinghua University, Beijing, China

Research on Auxiliary Bearing Structure with Buffer Shim based on LS-DYNA for Helium Circulator of HTR-10 ICONE26-81304
Guojun Yang, Zhe Sun, Xingnan Liu, Zhengang Shi
Tsinghua University, Beijing, China

Finite Element Analysis of AMB Eddy-Current Loss in HTR-PM Primary Helium Circulator ICONE26-81375
Jinpeng Yu, yan Zhou, Mo Ni, Guojun Yang, Lei Zhao
Tsinghua University, Beijing, China

Advanced Reactors and Fusion Technologies

5-5 Fusion Technology II

Tuesday July 24 Room Bourg | 10:30 – 12:30

Session Chair: Hong Yu, Chinese Institute of Atomic Energy, China
Session Co-Chair: Mauro Cappelli, ENEA, Italy

Conceptual Design of the Water Cooled Breeder Blanket for Both Phases of CFETR ICONE26-81816
Songlin Liu, Xuebin Ma, Kecheng Jiang, Min Li, Xiaokang Zhang
Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, China

The First CNS Commissioning Tests with Filling Deuterium with Reactor Power Operation in CARR ICONE26-82341
Jianlong Li
Chinese Institute of Atomic Energy, Beijing, China

The Characteristics Study of Helium-Xenon Mixture in Closed Brayton Cycle for Space Nuclear Reactor Power ICONE26-82220
Xie Yang, Lei Shi
Tsinghua University, Beijing, China

Recent Research Progress of CLF-1 Steel ICONE26-82119
Hongbin Liao
Southwestern Institute of Physics, Chengdu, China

Conceptual Design and Neutronics/Thermal-Hydraulic Coupling Optimization Analyses of Two Typical Helium Cooled Solid Breeder Blanket Modules for CFETR Phase II ICONE26-81539
Shijie Cui[1] Dalin Zhang[1] Wenxi Tian[1] Guanghui Su[1] Suizheng Qiu[2]
1. Xi'an Jiao Tong University, Xi'an, China; 2. School of Nuclear Science and Technology, Xi'an Jiao Tong University, Xi'an, China

First Principles Studies of Diffusion Behaviors of Tritium in HTR-PM Materials: from Framework to Preliminary Result ICONE26-81481
Chao Fang[1] Wenyi Wang[2] Hongyu Chen[2] Chuan Li[2]
1. Tsinghua University, Beijing, China; 2. Institute of Nuclear and New Energy Technology, Tsinghua University, Beijing, China

Codes, Standards, Licensing, and Regulatory Issues

7-3 New Methodology for Codes and Standards

Tuesday July 24 Room Epernay | 10:30 – 12:30

Session Chair: Claude Faidy, AFCEN-CF Integrity Engineering, France

New Needs of Fracture Mechanic Analysis at Design and Operation Level: Status of French Nuclear Mechanical Codes ICONE26-81096
Claude Faidy
AFCEN-CF Integrity Engineering, Tassin, France

Effect of Rolling Motion on Flow Instability of Parallel Rectangular Channels of Natural Circulation ICONE26-81849
Xiaoyan Wang[1] Siyang Huang[1] Wenxi Tian[1]
Lie Chen[1] Suizheng Qiu[2] Guanghui Su[1]
1. Xi'an Jiao Tong University, Xi'an, China; 2. School of Nuclear Science and Technology, Xi'an Jiao Tong University, Xi'an, China

Study on Supervision Mode of Floating Nuclear Power Plant with Small Modular Reactor ICONE26-82138
Lei Wan, Guiyong Li, Min Rui, Yong Kang Liu, Jue Yang
China Nuclear Power Technology Research Institute, Shenzhen, China

Development of a Standard for Fusion Needs: Example of Introduction of Eurofer in RCC-MRx ICONE26-82337
Jorge Enrique Muñoz Garcia[1] pierre Lamagnere[2]
Thierry Lebarbe[3] Cécile Petesch[4] Yves Lejeail[5]
1. French Alternative Energies and Atomic Energy Commission, Gif sur Yvette, France; 2. CEA Cadarache, Saint Paul Lez Durance, France; 3. CEA, Gif Sur Yvette, France; 4. CEA Saclay, Gif sur Yvette, France; 5. French Alternative Energies and Atomic Energy Commission, Saint Paul Lez Durance, France

Main Evolutions of the RCC-C Design and Construction Code for Fuel Assemblies since 2015 ICONE26-81436
Marc Ton-That[1] Christine Vauglin[2] Gilbert Trillon[3]
1. EDF, Lyon, France; 2. AREVA NP, Lyon, France; 3. EDF, Saint Denis, France

Thermal-Hydraulics and Safety Analyses

8-2 Supercritical Fluids I

Tuesday July 24 Room Bouzy | 10:30 – 12:30

Session Chair: Wenxi Tian, Xi'an Jiaotong University, China

Numerical Study of Deteriorated Convection Heat Transfer of Supercritical Fluid Flowing through Vertical Mini Tube at Relatively Low Reynolds Numbers ICONE26-81012
Chenru Zhao[1] Zhen Zhang[1] Qianfeng Liu[2] HanLiang Bo[1] Peixue Jiang[1]
1. Tsinghua University, Beijing, China; 2. Institute of Nuclear and New Energy Technology, Tsinghua University, Beijing, China

Experimental Study of Supercritical CO2 Critical Flow through Short Tubes ICONE26-81075
Yuan Zhou[1] Xing Fan[1] Yangle Wang[1] Jingtan Chen[1]
Yanping Huang[2] Junfeng Wang[2]
1. Sichuan University, Chengdu, China;
2. Nuclear Power Institute of China, Chengdu, China

Analytical Study of Supercritical Water Flow in Two Heated Parallel Channels with Wall Heat Effects ICONE26-81150
Dhanashree Ghadge, Vijay Chatoorgoon
University of Manitoba, Winnipeg, MB, Canada

Numerical Investigation on Maldistribution of Supercritical CO_2 Flow inside Printed Circuit Heat Exchanger ICONE26-81266
Qi Xiao[1] Hanbing Ke[2] Yongquan Li[2] Zhenxing Zhao[1] Meng-Ran Liao[2]
1. Wuhan Second Ship Design and Research Institute, Wuhan, China; 2. Key Lab. on Steam Power System, Wuhan Second Ship Des. & Res. Ins., Wuhan, China

Numerical Investigation on Conjugate Heat Transfer of Supercritical CO_2 in Rolling Motion ICONE26-81332
Zhenxing Zhao[1] Meng-Ran Liao[2] Yong Liu[1] Qi Xiao[1]
XingSheng Lao[1] Jun Wu[1] Wei Wang[1]
1. Wuhan Second Ship Design and Research Institute, Wuhan, China; 2. Key Lab. on Steam Power System, Wuhan Second Ship Des. & Res. Ins., Wuhan, China

Computational Fluid Dynamics (CFD)

9-1 Vibration Analysis

Tuesday July 24 Room Alsace | 10:30 – 12:30

Session Chair: Afaque Shams, Nuclear Research and Consultancy Group, Netherlands

Session Co-Chair: Junjie Dang, China Nuclear Power Engineering Co.,LTD, China

Session Co-Chair: Junrong Wang, Wuhan 2nd Ship Design and Research Institute, China

Study on Flow Induced Vibration Analysis and Evaluation for Heat Transfer Tube of Steam Generator in Two Phase Flow
ICONE26-81537
Xuan Huang, Huan-huan Qi, FengChun Cai, Zhi-peng Feng, Shuai Liu, Qian Huang
Nuclear Power Institute of China, Chengdu, China

Study on Dynamic Characteristics and Flow Induced Vibration of Tube Bundles based on the Fluid Structure Coupling Method
ICONE26-81342
Zhi-peng Feng, Qian Huang, FengChun Cai, Xi lv, Shuai Liu, Xiaozhou jiang
Nuclear Power Institute of China, Chengdu, China

CFD Numerical Simulation of Water Hammer in a Vortex Diode
ICONE26-81790
Junrong Wang[1] Zhiguo Wei[1] Jinlan Gou[1] Qi Xiao[1] Shao Dan Li[1] Yong Li[2]
1. Wuhan Second Ship Design and Research Institute, Wuhan, China;
2. Key Lab. on Steam Power System, Wuhan Second Ship Design and Research Institute, Wuhan, China

Seismic Analysis and Design of HPR1000 Degassing Tower Liquid Cooler ICONE26-82609
Junjie Dang[1] Wenmo Li[2] Chunming Wang[1] Xingling Tang[1]
1. China Nuclear Power Engineering Co., Ltd., Beijing, China; 2. SPIC China Power Complete Equipment Co.,LTD, Beijing, China

Computational Fluid Dynamics (CFD)

9-4 Thermal Mixing I

Tuesday July 24 Room Muscadet | 10:30 – 12:30

Session Chair: Afaque Shams, Nuclear Research and Consultancy Group, Netherlands

Session Co-Chair: Ivan Di Piazza, ENEA C.R. Brasimone, Italy

Session Co-Chair: Xiaomeng Dong, Harbin Engineering University, China

Synthesis of a CFD Benchmark for the Thermal Mixing in a Sharp Corner T-Junction with a Wall ICONE26-81024
Afaque Shams[1] Nicolas Edh[2] Kristian Angele[3]
1. Nuclear Research and Consultancy Group (NRG), Petten, Netherlands;
2. Forsmarks Kraftgrupp AB, Östhammar, Sweden; 3. Vattenfall AB, Solna, Sweden

Design of a Closely Spaced Rod Bundle for a Reference Direct Numerical Simulation ICONE26-81049
Afaque Shams[1] Tomasz Kwiatkowski[2]
1. Nuclear Research and Consultancy Group (NRG), Petten, Netherlands;
2. National Center for Nuclear Research, Otwock, Swierk, Poland

Numerical Investigation of the Effect of Spacer Grid and Mixing Vane on the Critical Heat Flux in Rod Bundle Channel
ICONE26-81284
Xiaomeng Dong, Guangliang Chen, Zhijian Zhang, Zhaofei Tian, Lei Li
Harbin Engineering University, Harbin, China

Post-Test CFD Analysis of Non-Uniformly Heated 19-Pin Fuel Bundle Cooled by HLM ICONE26-81307
Ranieri Marinari[1] Ivan Di Piazza[2] Morena Angelucci[1] Daniele Martelli[3]
1. University of Pisa, Pisa, Italy; 2. ENEA C.R. Brasimone, Camugnano, Italy;
3. University of Pisa - Dipartimento di Ingegneria Civile ed Industriale (DICI), Pisa, Italy

Analysis on Flow Behavior in the Plenum of RPV of PWR
ICONE26-81547
Lei Huang[1] Lu-lu Hao[2] Hong Chen[2] Jun Feng Xue[2] Lili Tong[1]
1. Shanghai Jiao Tong University, Shanghai, China; 2. Fujian Fuqing Nuclear Power Co., Ltd., Fuqing, China

Computational Fluid Dynamics (CFD)

9-8 Turbulent and Transient Flow

Tuesday July 24 Room Cremant | 10:30 – 12:30

Session Chair: Riccardo Puragliesi, Paul Scherrer Institut / Laboratory for Reactor Physics and Systems Behaviour, Switzerland

Session Co-Chair: Naoyuki Onodera, Japan Atomic Energy Agency, Japan

Session Co-Chair: Youyou Xu, Institute of Plasma Physics, Chinese Academy of Sciences, China

Large Eddy Simulation of 5-Tube Bundle Helical Coil Steam Generator Test Section ICONE26-82382
Mustafa A. Yildiz[1] Elia Merzari[2] Yassin Hassan[1]
1. Texas A&M University, College Station, TX, USA;
2. Argonne National Laboratory, Lemont, IL, USA

Assessment of Turbulence Models against Supercritical Hydrogen Flows in a Straight Tube ICONE26-82235
Zhipeng Wang, Yu Ji, Jun Sun, Lei Shi
Tsinghua University, Beijing, China

Computational Fluid Dynamics as a Tool for Deriving Subchannel Model Parameters: The PSBT Case Study ICONE26-81743
Riccardo Puragliesi[1] Roman Mukin[2] Ivor Clifford[2]
Hakim Ferroukhi[1] Marcus Seidl[3]
1. Paul Scherrer Institut / Laboratory for Reactor Physics and Systems Behaviour, Villigen, Switzerland; 2. Paul Scherrer Institute, Villigen, Switzerland;
3. PreussenElektra GmbH (former E.ON Kernkraft GmbH), Hannover, Germany

Acceleration of Plume Dispersion Simulation using Locally Mesh-Refined Lattice Boltzmann Method ICONE26-82145
Naoyuki Onodera, Yasuhiro Idomura
Japan Atomic Energy Agency, Chiba, Japan

CFD Modelling of Loss of Vacuum Accident (LOVA) for CFETR
ICONE26-81970
Youyou Xu, Songlin Liu, Xiaoman Cheng, Xuebin Ma
Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, China

Student Paper Competition

16-1 Advanced Reactors and Fusion Technologies

Tuesday July 24 Room Talbot | 10:30 – 12:30

Session Chair: Lorenzo Basili, DICI - University of Pisa, Italy

Session Co-Chair: Paul Wrigley, University of Derby, United Kingdom

Preliminary Design Considerations of He-Xe Mixture Cooled Space Nuclear Reactor ICONE26-81226
Tao Meng, Sichao Tan, Yuhao He, Kun Cheng, Dongdong Yuan
Harbin Engineering University, Harbin, China

CFD Thermal Analysis of ITER Pressure Suppression Tanks ICONE26-82550
Lorenzo Basili[1] Rosa Lo Frano[1] Marco Olcese[2]
Igor Sekachev[2] Donato Aquaro[3]
1. DICI-University of Pisa, Pisa, Italy; 2. ITER Organization, St Paul lez Durance, France; 3. UNIPI-DICI, Pisa, Italy

Multi-Fluid Gas Turbine Components Scaling for a Generation IV Nuclear Power Plant Performance Simulation ICONE26-82373
Emmanuel O. Osigwe[1] Arnold Gad-Briggs[2] Pericles Pilidis[1]
Theoklis Nikolaidis[1] Suresh Sampath[1]
1. Cranfield University, Bedford, United Kingdom; 2. Cranfield University & EGB Engineering UK, Cheshire, United Kingdom

Design for Plant Modularisation: Nuclear and SMR ICONE26-81760
Paul Wrigley[1] Paul Wood[1] Paul Stewart[1] Richard Hall[1] Dan Robertson[2]
1. University of Derby, Derby, United Kingdom;
2. Rolls-Royce, Derby, United Kingdom

Expected Accuracy Range of Cost Estimates for Small Modular Reactors at the Early Concept Design Stage ICONE26-81799
Amritpal Agar[1] Andy J Fry[2] Martin J. Goodfellow[2]
Yee Mey Goh[1] Linda Newnes[3]
1. Loughborough University, Leicestershire, United Kingdom; 2. Rolls-Royce, Derbyshire, United Kingdom; 3. University of Bath, Bath, United Kingdom

Student Paper Competition

16-5 Nuclear Components, Nuclear Waste and Radiation II

Tuesday July 24 Room Lalande | 10:30 – 12:30

Session Chair: Christina Petlowany, The University of Texas at Austin, USA

Session Co-Chair: Indarta Kuncoro Aji, Dept. of Mechanical Engineering and Intelligent Systems, The University of Electro-Communications, Japan

Dose Minimization Game for Smartphones ICONE26-82450
Nolan Stelter, Arnav Das, Zahra Hanifah, Rizwan Uddin
University of Illinois, Urbana, IL, USA

Cyclic Plasticity Behavior of 90° Back-to-Back Pipe Bends under Cyclic Bending and Steady Pressure ICONE26-82386
Nak-Kyun Cho, Haofeng Chen
University of Strathclyde, Glasgow, United Kingdom

Virtual Fixture Augmentation of Operator Selection of Non-Contact Material Reduction Task Paths ICONE26-82398
Andrew Sharp, Christina Petlowany, Mitch Pryor
The University of Texas at Austin, Austin, TX, USA

An Experimental Study on Freeze Valve Performance in a Molten Salt Reactor ICONE26-81679
Indarta Kuncoro Aji[1] Tokushima Tatsuya[1]
Motoyasu Kinoshita[2] Tomio Okawa[3]
1. Dept. of Mechanical Engineering and Intelligent Systems, The University of Electro-Communications, Tokyo, Japan; 2. Research into Artifacts, Center for Engineering, The University of Tokyo, Chiba, Japan; 3. The University of Electro-Communications, Tokyo, Japan

Electrochemical Measurement of Radio-Activated Metal under High Temperature Condition ICONE26-81727
Ryota Taguchi[1] Tomonori Ihara[1] Tatsuya Hazuku[1]
Tomoji Takamasa[1] Sho Kano[2] Hiroaki Abe[2]
1. Tokyo University of Marine Science and Technology, Tokyo, Japan; 2. The University of Tokyo, Ibaraki, Japan

Inlet Passageway Optimization of Immediate Heat Exchanger in an HTGR ICONE26-81801
Jingdan Cui[1] Kun Yuan[2] Qi Sun[2] Wei Peng[2] Jie Wang[3]
1. Institute of Nuclear and New Energy Technology, Beijing, China; 2. Tsinghua University, Beijing, China; 3. INET, Tsinghua University, Beijing, China

Student Paper Competition

16-10 Nuclear Fuels and Materials II

Tuesday July 24 Room Fronsac | 10:30 – 12:30

Session Chair: Rachel Connick, MIT, USA

Session Co-Chair: Ahmed Aly, North Carolina State University, USA

Multiphysics Analysis of CMC Silicon Carbide and Zircaloy Cladding ICONE26-81464
Muhammad Altahhan[1] Noah McFerran[2] Jonathan Morrell[3] Maria Avramova[4]
1. Nuclear Engineering Department, NCSU, Raleigh, NC, USA; 2. University of Florida, Gainesville, FL, USA; 3. Massachusetts Institute of Technology, Boston, MA, USA; 4. North Carolina State University, Raleigh, NC, USA

Particle Release during Laser Decontamination of Concrete Surfaces ICONE26-81578
Torsten Kahl, Georg Greifzu, Marion Herrmann,
Wolfgang Lippmann, Antonio Hurtado
Technische Universität, Dresden, Germany

Measuring Effects of Radiation on Precipitates in Aluminum 7075-T6 using Differential Scanning Calorimetry ICONE26-82457
Rachel Connick, Charles Hirst, Penghui Cao,
Kangpyo So, R. Scott Kemp, Michael Short
Massachusetts Institute of Technology, Cambridge, MA, USA

Evaluation of the Mixing Vanes Effect on the Hydrogen Diffusion and Hydride Formation in the Fuel Cladding ICONE26-82431
Ahmed Aly[1] Victor Petrov[2] Maria Avramova[1]
Annalisa Manera[2] Kostadin Ivanov[1]
1. North Carolina State University, Raleigh, NC, USA;
2. University of Michigan, Ann Arbor, MI, USA

Stress Monitoring of Sealing Materials in Electrical Penetration Assemblies ICONE26-82165
Zhichun Fan, Mingze Li, Feng Chen, Zhiyong Huang, He Yan
Tsinghua University, Beijing, China

Student Paper Competition

16-17 Thermalhydraulics IV

Tuesday July 24 Room Mouton Cadet | 10:30 – 12:30

Session Chair: Sarah Morgan, Virginia Commonwealth University, USA

Session Co-Chair: Jiawei Bian, Xi'an Jiaotong University, China

Experimental Study on Spray Pattern of Pressure-Swirl Nozzle in Reactor Containment ICONE26-81505
Jiawei Bian[1] Dalin Zhang[1] Rulei Sun[1] Yingwei Wu[1]
Wenxi Tian[1] Guanghui Su[1] Suizheng Qiu[2]
1. Xi'an Jiao Tong University, Xi'an, China; 2. School of Nuclear Science and Technology, Xi'an Jiao Tong University, Xi'an, China

Flow and Temperature Fields Measurement inside Rod Bundle by the Combined Use of PIV and LIF Technique ICONE26-81526
Li Xing, Sichao Tan, Zhengpeng Mi, Pei Yao Qi, Yunlong Huang
Harbin Engineering University, Harbin, China

Validation of a Code and Effect of Turbulence Model on Predicting Thermal Stratification Phenomena in the Upper Plenum of SFR ICONE26-81551
Shibao Wang[1] Dalin Zhang[1] Chenglong Wang[1] Ping Song[1]
Jing Chen[1] Suizheng Qiu[2] Guanghui Su[1]
1. Xi'an Jiao Tong University, Xi'an, China; 2. School of Nuclear Science and Technology, Xi'an Jiao Tong University, Xi'an, China

Thermal Stratification Modeling for Sodium-Cooled Fast Reactors: A Status Update ICONE26-82364
Sarah Morgan[1] Sama Bilbao y Leon[1] Matthew Bucknor[2] Mark Anderson[3]
Emilio Baglietto[4] James Schneider[3] Matthew Weathered[3] Liangyu Xu[4]
1. Virginia Commonwealth University, Richmond, VA, USA; 2. Argonne National Laboratory, Lemont, IL, USA; 3. University of Wisconsin, Madison, WI, USA; 4. Massachusetts Institute of Technology, Cambridge, MA, USA

Penetration Behavior of Liquid Jet Falling into a Shallow Pool ICONE26-81993
Fumihito Kimura[1] Hiroyuki Yoshida[2] Akiko Kaneko[3] Yutaka Abe[3]
1. Tsukuba University, Tsukuba, Japan; 2. Japan Atomic Energy Agency, Tokai-mura, Japan; 3. University of Tsukuba, Tsukuba, Japan

Rewetting Analysis of Hot Moving Surface by Round Water Jet Impingement ICONE26-81673
Avadhesh Kumar Sharma, Mayank Modak, Santosh Kumar Sahu
Indian Institute of Technology Indore, Indore, MP, India

12:30 – 14:00 Chablis Suite, Ground Floor

LUNCH

14:00 – 16:00

PANEL SESSIONS

See pages 19 through 23 for panel session details.

16:00 – 16:30 Chablis Suite, Ground Floor

POSTER SESSION & COFFEE BREAK

16:30 – 18:30

TECHNICAL SESSIONS

Operations & Maintenance, Engineering, Modifications,Life extension, Life Cycle and Balance of Plant

1-2 Equipment Reliability

Tuesday July 24 Room Reims | 16:30 – 18:30

Session Chair: Judith Carol Westphal, BEA, USA

Comprehensive Analysis of Main Feedwater Isolation Improvement in Tianwan NPP ICONE26-81172
Wang Cuiyun, Pi Yue, Zhao Jiaming
China Nuclear Power Engineering Co., Ltd., Beijing, China

Reliability Evaluation for Steam Generator in a Sodium-Cooled Fast Reactor ICONE26-81183
Yi Huang[1] Zhang Tian-yi[1] Wang Jun[1] Yuan Yu-chen[1] Dong Xin[2]
1. China Institute of Atomic Energy, Beijing, China;
2. Dongfang Electric, Chengdu, China

Research on Gamma Camera Imaging Characteristics ICONE26-81936
Quanhu Zhang[1] Wenming Zuo[2] Sufen Li[2]
Suxia Hou[1] Lin Zhuang[2] Wenheng Zhou[2]
1. Xi'an High-tech Research Institute, Xi'an, China; 2. Xi'an institute of High Tech Research, Xi'an, China

On the use of Robust Command Shaping for Vibration Reduction during Remote Handling of Large Components in Tokamak Devices ICONE26-82346
Stanislao Grazioso, Giuseppe Di Gironimo
University of Naples Federico II, Napoli, Italy

Replacement of a Hot Cell Window at the Hot Fuel Examination Facility ICONE26-82422
Judith Carol Westphal[1] Ronald Johansen[2] J. D. Kelly[1]
1. BEA, Idaho Falls, ID, USA; 2. Inl/battelle Energy Alliance, Idaho Falls, ID, USA

A Non-Contact Ultrasonic Sensor for General Corrosion Inspection of Thin Plates ICONE26-82560
Akinori Tamura[1] Masahiro Miki[1] Naoyuki Kono[1]
Hiroshi Okazawa[2] Shinobu Okido[2] Chenghuan Zhong[3]
Erik Fabre[3] Anthony J. Croxford[4] Paul D. Wilcox[4]
1. Hitachi Ltd., Hitachi, Japan; 2. Hitachi-GE Nuclear Energy Ltd., Hitachi, Japan;
3. Inductosense, Bristol, United Kingdom;
4. University of Bristol, Bristol, United Kingdom

Plant Systems, Structures, Components and Materials

3-9 High Temperature Components II

Tuesday July 24 Room Chalon | 16:30 – 18:30

Session Chair: Jinhua Wang, Tsinghua University, China

Filtration Technology Research of Graphite Dust produced in Spent Fuel Transportation Process in HTR-PM ICONE26-81022
Jinhua Wang, Bing Wang, Bin Wu, Yue Li, Haitao Wang
Tsinghua University, Beijing, China

Design of the Important Area Airborne Radioactivity Monitoring System and Calculation of the Alarm Threshold of HTR-PM ICONE26-81232
Wenqian Li[1] Chuan Li[2] Jianzhu Cao[2] Feng Xie[2]
1. Tsinghua University, Beijing, China; 2. Institute of Nuclear and New Energy Technology, Tsinghua University, Beijing, China

Super Critical Carbon Dioxide Brayton Cycle Based Heat Removal System in Nuclear Power Plants ICONE26-81986
Shuhong Wei, Hua Zheng
China Nuclear Power Design Co., Ltd. (Shenzhen), Shenzhen, China

The Influences of Arc Radius to the Failure Load of Graphite Component ICONE26-82128
Can Zhang, Zhoutong He, Y.T. Gao
Shanghai Institute of Applied Physics, Shanghai, China

Creep Deformation Analysis of a Pipe Specimen based on Creep Damage Evaluation Method ICONE26-82568
Jinya Katsuyama[1] Yoshihito Yamaguchi[2] Yinsheng Li[1]
1. Japan Atomic Energy Agency, Ibaraki, Japan; 2. Japan Atomic Energy Agency, Tokai-mura, Japan

Influence Factors on Moisture Absorption Process of Carbon Material in HTGR ICONE26-81412
Jun Li, Huaqiang Yin, Xuedong He
Tsinghua University, Beijing, China

Instrumentation and Control (I&C) and Influence of Human Factors

4-4 Control of SMR and Advanced Reactors

Tuesday July 24 Room Cognac | 16:30 – 18:30

Session Chair: Mauro Cappelli, ENEA, Italy

Session Co-Chair: Jie Huang, China Ship Development and Design Center, China

Design of Decoupled Mechanical Shim Control System for a Generation III+ Pressurized Water Reactor based on Feedforward Compensation and Multimodel Approach ICONE26-81142
Pengfei Wang, Xinyu Wei, Fuyu Zhao
Xi'an Jiao Tong University, Xi'an, China

Coordinated Control of a Small Pressurized Water Reactor ICONE26-81156
Peiwei Sun[1] Chong Wang[2]
1. Xi'an Jiao Tong University, Xi'an, China;
2. China Institute of Atomic Energy, Beijing, China

Analysis of the Alarm Generation and Display for the Reactor Accidents in HTR-PM ICONE26-82483
Chao Guo, Shuqiao Zhou, Duo Li, Xiaojin Huang
Tsinghua University, Beijing, China

Dynamic Model of a Seawater Desalination Plant based on the Nuclear Heating Reactor and MED-TVC ICONE26-82556
Zhe Dong, Yifei Pan
Tsinghua University, Beijing, China

Verification of Alarm Displays for the Nuclear Power Plant with Two Modular High-Temperature Gas-Cooled Reactors ICONE26-82561
Qianqian Jia[1] Chao Guo[1] Jianghai Li[2] Ronghong Qu[1]
1. Tsinghua University, Beijing, China; 2. Institute of Nuclear and New Energy Technology, Tsinghua University, Beijing, China

Reliability Index Assessment for Digital Instrumentation and Control Systems of High Temperature Gas-Cooled Reactors ICONE26-82636
Wei Wang[1] Jiejuan Tong[2] Jun Zhao[3]
1. Politecnico di Milano, Milano, Italy; 2. Institute of Nuclear and New Energy Technology, Tsinghua University, Beijing, China;
3. Tsinghua University, Beijing, China

Nuclear Safety, Security, and Cyber Security

6-4 Nuclear Accidents I

Tuesday July 24 Room Alsace | 16:30 – 18:30

Session Chair: TBA

Research on Source Inversion for Nuclear Accidents based on Variational Data Assimilation with the Dispersion Model Error ICONE26-81094
Yun Liu[1] Xinjian Liu[1] Hong Li[2] Sheng Fang[2] Yawei Mao[1] Jingyuan Qu[2]
1. China Nuclear Power Engineering Co., Ltd., Beijing, China; 2. Tsinghua University, Beijing, China

Comparison of Several Common Nuclear Accidents Consequences Prediction Models ICONE26-81268
Yuan Biao, Mei Xu, Xiaobing Geng, Wang Liangyu, Lijun Zhang
Institute of NBC Defense, PLA Army, Beijing, China

Development of Hydrogen Treatment System in Severe Accident: Part 5 - Effect of Steam Flow on Performance of a Hydrogen Treatment Unit with Metal Oxides ICONE26-81386
Chikako Iwaki[1] Tsukasa Sugita[2] Akira Yamada[2]
Motoshige Yagyu[2] Yoshiko Haruguchi[2] Masashi Tanabe[3]
1. Toshiba Energy Systems & Solutinos Corporation, Yokohama, Japan; 2. Toshiba Energy Systems & Solutions Corporation, Kawasaki, Japan; 3. Toshiba Corporation, Yokohama, Japan

Development of Hydrogen Treatment System in Severe Accident: Part 4 - Study of Fission Products and Steam Effect on Hydrogen Treatment Characteristics ICONE26-81759
Akira Yamada[1] Chikako Iwaki[2] Motoshige Yagyu[1]
Yoshiko Haruguchi[1] Masashi Tanabe[3] Tsukasa Sugita[1]
1. Toshiba Energy Systems & Solutions Corporation, Kawasaki, Japan;
2. Toshiba Energy Systems & Solutions Corporation, Yokohama, Japan;
3. Toshiba Corporation, Yokohama, Japan

Numerical Impact Simulation of Aircraft into Reinforced Concrete Walls with Different Thickness ICONE26-82616
Kazuma Hirosaka[1] Hidekazu Takazawa[1] Katsumasa Miyazaki[1]
Norihide Tohyama[2] Hiroyuki Nouji[2] Naomi Matsumoto[2]
1. Hitachi Ltd, Hitachi-shi, Japan;
2. Hitachi-GE Nuclear Energy, Ltd., Hitachi-shi, Japan

Study on Factors Influencing the Diffusion and Migration of Radionuclide Offshore in Nuclear Power Plant Accidents ICONE26-81865
Zichao Li, Zhou Tao, Xuemeng Qin, Amir Haider, Bing Li, Juan Chen
North China Electric Power University, Beijing, China

Codes, Standards, Licensing, and Regulatory Issues

7-4 The Importance of Codes and Standards

Tuesday July 24 Room Epernay | 16:30 – 18:30

Session Chair: Venesa Watson, Framatome GmbH, Germany

ASME Certification: Demand the Mark! ICONE26-82272
Jon Labrador[1] Paul Lang[1] Clayton Smith[2]
1. ASME, New York, NY, USA; 2. Smith Associates Consulting Group LLC, Simpsonville, SC, USA

Example of Graded and Lifecycle Phase-Specific Security Controls for Nuclear I&C and EPS Use Cases ICONE26-81601
Venesa Watson[1] Edita Bajramovic[2] Xinxin Lou[3] Karl Waedt[1]
1. Framatome GmbH, Erlangen, Germany;
2. Friedrich-Alexander-University Erlangen-Nuremberg, Erlangen, Germany;
3. Bielefeld University, Bielefeld, Germany

A Demonstration of Practical Elimination of Early or Large Fission Product Release for the UK ABWR Generic Design Assessment ICONE26-82045
Ming Leang Ang[1] Hiromasa Chitose[2] Hirokawa Naoki[3]
Nuh Mohamud[1] Ryusuke Kimura[2]
1. Horizon Nuclear Power, Gloucester, United Kingdom; 2. Hitachi-GE Nuclear Energy, Ltd., Hitachi-shi, Japan; 3. Hitachi-GE Nuclear Energy, Ltd., Ibaraki-ken, Japan

Introduction to KEPIC Nuclear Quality Assurance Certification Program ICONE26-82124
Jae Yoon Choi, Hyun Jae Joo, Lee Jong Eun, Myoungsung Sohn
Korea Electric Association, Seoul, Korea

What is a "Known and Established" Standard? ICONE26-81901
Samuel Miranda
Independent Author, Silver Spring, MD, USA

The Quality Experience Feedback in Nuclear Fuel Manufacture ICONE26-81374
MengYao Tong, Li FangGang
CNNC JianZhong Nuclear Fuel Co. Ltd., YiBin City, China

Thermal-Hydraulics and Safety Analyses

8-24 Advanced Reactors

Tuesday July 24 Room Talbot | 16:30 – 18:30

Session Chair: Francesco Di Lecce, Politecnico di Torino, Italy

CFD-Based Correlation for Forced Convection Heat Transfer in Circular Ducts of Internally Heated Molten Salts ICONE26-82507
Francesco Di Lecce[1] Antonio Cammi[2] Sandra Dulla[1]
Carlo Fiorina[3] Stefano Lorenzi[2] Piero Ravetto[1]
1. Politecnico di Torino, Torino, Italy; 2. Politecnico di Milano, Milano, Italy;
3. École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland

Numerical Study of Supersonic Film Cooling in Diverging Section of Nuclear Rocket Laval Nozzle ICONE26-81806
Xiaokai Sun[1] Ping Ye[2] Peixue Jiang[1] Wei Peng[1] Jie Wang[2]
1. Tsinghua University, Beijing, China; 2. INET, Tsinghua University, Beijing, China

A Computational Study of Strongly Heated Internal Hydrogen Flow under Non-Uniform Heat Flux ICONE26-82356
Yu Ji, Jun Sun, Lei Shi
Tsinghua University, Beijing, China

Sensitivity Analysis of the SBLOCA Induced Sever Accident for a Natural Circulation Small Modular Reactors ICONE26-82267
Longze Li[1] Yapei Zhang[2] Jue Wang[1] Guanghui Su[2]
1. Wuhan Second Ship Design and Research Institute, Wuhan, China;
2. Xi'an Jiao Tong University, Xi'an, China

Simulation of Core Thermal Response during a Station Blackout Initiated Severe Accident in China Small Modular Reactor by MELCOR ICONE26-82293
Shasha Yin[1] Suizheng Qiu[2] Wei Huang[1] Zhihui Chen[1] Ye Tian[1] Yajing Tian[1]
1. Nuclear Power Institute of China, Chengdu, China; 2. School of Nuclear Science and Technology, Xi'an Jiao Tong University, Xi'an, China

Computational Fluid Dynamics (CFD)

9-6 Bubbles

Tuesday July 24 Room Muscadet | 16:30 – 18:30

Session Chair: Yixiang Liao, Helmholtz-Zentrum, Germany

Session Co-Chair: Kei Ito, Kyoto University, Japan

Session Co-Chair: Mingjun Zhong, Nuclear Power Institute of China, China

Modeling of Submerged-Vortex Behavior Near Wall Boundary ICONE26-82586
Kei Ito[1] Toshiki Ezure[2] Daisuke Ito[1] Yasushi Saito[1]
1. Kyoto University, Kumatori, Japan; 2. Japan Atomic Energy Agency, Oarai, Japan

CFD Modelling of Flashing Instability in Natural Circulation Cooling Systems ICONE26-81787
Yixiang Liao[1] Christoph Schuster[2] Suqing Hu[3] Dirk Lucas[3]
1. Helmholtz-Zentrum, Dresden, Germany; 2. Technische Universität Dresden, Dresden, Germany; 3. Helmholtz-Zentrum Dresden - Rossendorf, Dresden, Germany

A More Consistent Formulation of Momentum Closures for Turbulent Bubbly Flow in CFD ICONE26-82436
Emilio Baglietto[1] Brian Casel[1] Nazar Lubchenko[1]
Ben Magolan[1] Rosemary Sugrue[2]
1. Massachusetts Institute of Technology, Cambridge, MA, USA;
2. Jensen Hughes, Rockville, MD, USA

A Multi-Fluid Model Coupled with Interface Tracking Method for Simulation of Liquid Jet Breakup ICONE26-82547
Mingjun Zhong[1] Yuan Zhou[2]
1. Nuclear Power Institute of China, Chengdu, China; 2. Sichuan University, Chengdu, China

Computational Fluid Dynamics (CFD)

9-7 Flow Through Complex Structures I

Tuesday July 24 Room Cremant | 16:30 – 18:30

Session Chair: Afaque Shams, Nuclear Research and Consultancy Group, Netherlands

Session Co-Chair: Matthew D. Eaton, Imperial College London, United Kingdom

Session Co-Chair: Elia Merzari, Argonne National Laboratory, USA

Assessments of Different Turbulence Models in Predicting the Performance of a Butterfly Valve ICONE26-82376
Yu Duan[1] Matthew D. Eaton[1] Michael J. Bluck[1] Christopher Jackson[2]
1. Imperial College London, London, United Kingdom; 2. Rolls-Royce, Derby, United Kingdom

Coupled Calculation on Fluid Structure Interaction in Plate-Type Fuel Element ICONE26-82418
Yiqi Yu[1] Elia Merzari[1] Jerome Solberg[2]
1. Argonne National Laboratory, Lemont, IL, USA; 2. LLNL, Livermore, CA, USA

Partially Averaged Navier-Stokes Turbulence Modeling of Flow in 5x5 PWR Fuel Assembly with Spacer Grid ICONE26-82366
Giacomo Busco, Yassin Hassan
Texas A&M University, College Station, TX, USA

A Second Generation STRUCTure Resolving URANS Model for Advanced Reactor Design Applications ICONE26-82435
Emilio Baglietto, Michael Acton, Jinyong Feng, Liangyu Xu
Massachusetts Institute of Technology, Cambridge, MA, USA

Numerical Simulation on the Flow through the Inlet Hole of Fuel Assembly in a Fast Reactor ICONE26-82605
Yu Wang, Daogang Lu, Yidan Han, Haiqi Qin, Dawen Zhong
North China Electric Power University, Beijing, China

Decontamination & Decommissioning, Radiation Protection, and Waste Management

10-1 Radiation Detection and Protection

Tuesday July 24 Room Bourg | 16:30 – 18:30

Session Chair: Anthony Hechanova, Abu Dhabi Polytechnic, United Arab Emirates

Session Co-Chair: Yan Li, China Institute of Atomic Energy, China

Modeling of Cerenkov-based Fiber-Optic Gamma-Ray Radiation Sensor using Monte Carlo Simulation ICONE26-81754
Hwa Jeong Han, Byung Gi Park, Beom Kyu Kim, Ji Hye Park, Won Ki Kim
Soonchunhyang University, Asan-si, Korea

Electric Field Simulation of Ionization Chamber used in Tritium Measurement in Tail Gas of Molten Salt Reactor ICONE26-82026
0 Qian, Guanghua Wang, Yu Huang, Youshi Zeng,
Guangliang Bao, Shengwei Wu, Wei Liu
Shanghai Institute of Applied Physics, Chinese Academy of Sciences, Shanghai, China

Buildup and Decay Analysis of Corrosion Products Activity in Primary Coolant Loop of AP-1000 ICONE26-81388
Fiaz Mahmood, Huasi Hu, Liangzhi Cao
School of Nuclear Science and Technology, Xi'an Jiao Tong University, Xi'an, China

The Radiation Protection Design of PWR Spent Fuel Dry Storage Facility ICONE26-81552
Liming Huang, Shouhai Yang, Jie Liu
China General Nuclear Power Group, Shenzhen, China

Radiation Protection Calculation and Optimization for Shielding Design around the Refueling Pipelines of HTR-PM ICONE26-82581
Sheng Fang, Hong Li, Wenqian Li
Tsinghua University, Beijing, China

Separation Area Head End Stack ICONE26-82707
John Ball[1] Chris Medlock[2]
1. Nuvia, Moor Row, United Kingdom; 2. Nuvia, Warrington, United Kingdom

Nuclear Education and Public Acceptance

12-2 Nuclear Education and Public Acceptance II

Tuesday July 24 Room Bouzy | 16:30 – 18:30

Session Chair: Yassin Hassan, Texas A&M University, USA

Session Co-Chair: Elia Merzari, Argonne National Laboratory, USA

The International Nuclear Management Academy ICONE26-81124
John Roberts
The University of Manchester, Manchester, United Kingdom

3D Immersive Display Application for Nuclear Education and Public Acceptance ICONE26-81161
B.L. Luk[1] Miu Ling Lam[1] Ting Hsuan Chen[1] Jiyun Zhao[1]
Suet Man Tsui[1] Ching-chang Chieng[2]
1. City University of Hong Kong, Kowloon, Hong Kong;
2. National Tsing Hua University, Hsinchu, Taiwan

The ENEN+ Project: Attracting, Retaining and Developing New Nuclear Talents beyond Academic Curricula ICONE26-82612
Leon Cizelj[1] Csilla Pesznyak[2] Behrooz Bazargan-Sabet[3]
Abdesselam Abdelouas[4] Filip Tuomisto[5]
Michèle Coeck[6] Pedro Dieguez Porras[7]
1. Jozef Stefan Institute, Ljubljana, Slovenia; 2. Budapesti Műszaki és Gazdaságtudományi Egyetem, Budapest, Hungary; 3. École des Mines de Nancy, Nancy, France; 4. IMT Atlantique Bretagne-Pays de la Loire, Nantes, France; 5. Aalto University, Alto, Finland; 6. SCK•CEN, Mol, Belgium; 7. ENEN Association, Gif sur Yvette, France

CORONA Academy - Nuclear Education and Training ICONE26-82661
Adela Klepáková
Centrum výzkumu Řež s.r.o., Husinec - Řež, Czech Republic

ANDE-1 Certification: Excellence through a Systematic Approach to Training and Performance Based Qualification ICONE26-82519
Paul Lang[1] Clayton Smith[2]
1. ASME, New York, NY, USA; 2. Smith Associates Consulting Group LLC, Simpsonville, SC, USA

Student Paper Competition

16-4 Nuclear Components, Nuclear Waste and Radiation I

Tuesday July 24 Room Lalande | 16:30 – 18:30

Session Chair: Adam Drescher, University of Texas at Austin, USA

Session Co-Chair: Marco Di Filippo, Swiss Federal Institute of Technology in Zurich, Switzerland

Operational Impacts and Consequences of Piping Component Failure: a Review of Operating Experience Data as Recorded in CODAP ICONE26-81001
Braedon Carr[1] Bengt Lydell[2] Jovica Riznic[3]
1. University of Ontario Institute of Technology, Oshawa, ON, Canada;
2. Sigma-Phase Inc, Vail, AZ, USA; 3. Canadian Nuclear Safety Commission, Ottawa, ON, Canada

Analysis of Major Group Structures used for Nuclear Reactor Simulations ICONE26-81445
Marco Di Filippo[1] Jiri Krepel[2] Konstantin Mikityuk[2] Horst-Michael Prasser[3]
1. Swiss Federal Institute of Technology in Zurich, Zürich, Switzerland; 2. Paul Scherrer Institute (PSI), Villigen, Switzerland; 3. ETH Zürich, Zürich, Switzerland

Study on Current Status and Future Developments in Nuclear Power Industry of the World ICONE26-82085
Roman Pioro[1] Igor Pioro[2] Alexander Zvorykin[3] Rachid Machrafi[2]
1. Lomonosov Moscow State University, Moscow, Russia; 2. University of Ontario Institute of Technology, Oshawa, ON, Canada; 3. National Technical University of Ukraine, Kiev, Ukraine

Research of Fast Modeling and Simulating Platform for Nuclear Power Plant Secondary Loop ICONE26-81779
Meijie Gong, Minjun Peng, Haishan Zhu
Harbin Engineering University, Harbin, China

Revamping of a Graduate Radiochemistry Course for Nuclear Forensics Applications ICONE26-81593
Adam Drescher, Brandon De Luna, Marjolein Pasman, Derek Haas, Sheldon Landsberger
University of Texas, Austin, TX, USA

Student Paper Competition

16-18 Thermalhydraulics V

Tuesday July 24 Room Mouton Cadet | 16:30 – 18:30

Session Chair: Yuki Kamata, University Of Tsukuba, Japan

Session Co-Chair: Alexander Zvorykin, National Technical University of Ukraine, Ukraine

Heat Transfer to Supercritical Water (Liquid-Like State) Flowing in a Short Vertical Bare Tube with Upward Flow ICONE26-81608
Alexander Zvorykin[1] Mohammed Mahdi[2]
Roman Popov[3] Keyaan Barati Far[3] Igor Pioro[3]
1. National Technical University of Ukraine, Kiev, Ukraine; 2. Faculty of Energy Systems and Nuclear Science University of Ontario Institute of Technology, Oshawa, ON, Canada; 3. University of Ontario Institute of Technology, Oshawa, ON, Canada

Study on Gas Entrainment from Unstable Drifting Vortexes on Liquid Surface ICONE26-82477
Moe Hirakawa[1] Yuichiro Kikuchi[1] Takaaki Sakai[2]
Masaaki Tanaka[3] Hiroyuki Ohshima[3]
1. Tokai University, Hiratuka-shi, Japan; 2. Tokai University, Kanagawa, Japan; 3. Japan Atomic Energy Agency, Oarai, Japan

Pressure Dependence of Two Phase Flow Behavior of Stagnant Water in a Vertical Pipe during Steam Injection ICONE26-82545
Naoto Kitahara, Yasunori Yamamoto, Tadashi Narabayashi, Go Chiba
Hokkaido University, Sapporo, Japan

Study on Flow Structure in a Supersonic Steam Injector ICONE26-82058
Yuki Kamata, Masaya Fujishiro, Akiko Kaneko, Yutaka Abe
University of Tsukuba, Tsukuba, Japan

Experimental Study on Bubble Bursting and Droplet Releasing Characteristics under Different Liquid Phase Conditions ICONE26-82047
Hao Chen, Haifeng Gu, Xiang Yu, Yanmin Zhou, Zhongning Sun, Jimin Wen
Harbin Engineering University, Harbin, China

Relationship between Void Fraction and Electrical Characteristics in Gas-Liquid Two Phase Flow ICONE26-81944
Yuya Takakura[1] MinHo Jeon[1] Masahiro Takei[1]
Sohei Takamiya[2] Minjae Do[1] Daisuke Kawashima[1]
1. Chiba University, Chiba, Japan; 2. Aichi Tokei Denki Co. Ltd., Aichi, Japan

Student Paper Competition

16-22 Measurement, Instrument and Control II

Tuesday July 24 Room Fronsac | 16:30 – 18:30

Session Chair: Shifali Singh, Commissariat à l'Énergie Atomique et aux Énergies Alternatives (CEA), Cadarache, France

Session Co-Chair: Hironobu Kiuchi, Tokyo Institute of Technology, Jordan

Modelling of X-Ray Radioscopy for Phase Topology Estimation during Corium Sodium Interaction ICONE26-82400
Shifali Singh, Nathalie Cassiaut-Louis, Christophe Journeau, Magali Zabiego, Nicolas Estre, Leonie Tamagno
Commissariat à l'Énergie Atomique et aux Énergies Alternatives (CEA), Cadarache, St Paul lez Durance, France

Axial Flux Wire Measurements at the McMaster Nuclear Reactor ICONE26-82412
Liz MacConnachie, David Novog, Simon E. Day
McMaster University, Hamilton, ON, Canada

Dynamic Analysis of Flexible Rotor Suspended by Active Magnetic Bearings with LQR Controller ICONE26-82347
Yixin Su, Yanhui Ma, Qian Shi, Suyuan Yu
Tsinghua University, Beijing, China

Fundamental Study on Development of Air-Coupled Ultrasonic Imaging Measurement for Fuel Debris Inspection ICONE26-82150
Hironobu Kiuchi[1] Shun Kimura[1] Hamdani Ari[1] Hideharu Takahashi[1]
Hiroshige Kikura[1] Daisuke Sasa[2] Shuichi Ohmori[2]
1. Tokyo Institute of Technology, Tokyo, Tokyo, Japan; 2. Tokyo Electric Power Company Holdings, Inc., Yokohama, Japan

A Control Method for Combined Cycle Coupled with HTGR at Part Load ICONE26-81252
Xinhe Qu[1] Xiaoyong Yang[1] Gang Zhao[1] Jie Wang[2]
1. Tsinghua University, Beijing, China; 2. INET, Tsinghua University, Beijing, China

19:00 – 22:00 Twickenham Stadium, Rose Suite

CONFERENCE BANQUET

See page 13 for details.

Wednesday, July 25

TIME	TITLE	LOCATION
08:30 – 10:00	Plenary Session – Future of Nuclear Power	Cremant, 1st Floor
10:00 – 10:30	Poster Session & Coffee Break	Chablis Suite, Ground Floor
10:30 – 12:30	Technical Sessions	See pages 59 through 63 for session titles, authors and locations
12:30 – 14:00	Lunch	Chablis Suite, Ground Floor
14:00 – 16:00	Panel Sessions	See pages 23 through 26 for panel session details
16:00 – 16:30	Poster Session & Coffee Break	Chablis Suite, Ground Floor
16:30 – 18:30	Technical Sessions	See pages 64 through 68 for session titles, authors and locations

08:30 – 10:00 Cremant, 1st Floor

PLENARY SESSION: FUTURE OF NUCLEAR POWER

Clayton Smith, *Organizing Committee Chair ICONE26, ASME*

Xiaohang Wang, *Plenary Session Co-Chair, CNS, Vice President, Global Marketing and International Cooperation of SNPTC*

Tetsuaki Takeda, *Plenary Session Co-Chair, JSME*

Jovica Riznic, *Organizing Committee Co-Chair ICONE26, Canadian Nuclear Safety Commission, ASME*

SPEAKER ONE:

Industrialization Application of the 3rd Generation Nuclear Power Technology

Fengxue Wang, *Vice President of CNS, Chief Nuclear Officer of State Power Investment Corporation (SPIC), President of State Nuclear Power Technology Corporation (SNPTC), China*

Developing low-carbon clean energy has become international consensus to tackle the deterioration of global ecological environment. As clean low-carbon base-load energy which can replace thermal power in a large scale, nuclear power plays a critical role in the process of global energy transformation and upgrading towards low carbonization. Due to energy endowment limitation in China, developing nuclear power safely and efficiently has always been the major direction of the nation's energy strategy.
As the implementation unit of the first batch of AP1000 programs, and as the developer and owner of the world's leading 3rd generation passive PWR technology — CAP1400, State Power Investment Corporation (SPIC) will persist in innovative development, differential development and synergic development, accelerate the industrialization and scale of the 3rd generation nuclear power in China by continuously promoting safety and economy in association with our extensive cooperation partners. SPIC will also actively promote the application of CAP1400 technology in global market and provide new solutions to transformation and upgrading of nuclear power from the 2nd generation to the 3rd generation. Meanwhile, SPIC will accelerate the innovation of new types of nuclear energy technology such as small scale reactors and the 4th generation reactors, so as to meet the needs of a more extensive application and higher safety requirements.

Mr. Wang Fengxue took office as Chief Nuclear Officer of State Power Investment Corporation (SPIC) and President of State Nuclear Power Technology Corporation (SNPTC) in April 2017.

Mr. Wang started his career with Yuanbaoshan Power Plant in Inner Mongolia Province since 1982, worked successively as Director, Deputy Chief Engineer, and Chief Engineer.

In March 2002, he was appointed as General Manager of Chifeng Thermal Power Plant in Inner Mongolia Province. During November 2004 to October 2005, he served as Vice President and Chief Engineer of China Power Investment Group Northeast Branch.

From October 2005 to November 2007, he served as Chairman of Jilin Electric Power Company Ltd. and General Manager of Jilin Energy and Transportation Corporation. Besides that, he also served as President of China Power Investment Group Northeast Branch since November 2007.

From March 2008 to February 2017, Mr. Wang served as the President of Shandong Nuclear Power Company. He was nominated as the Senior Vice President of SNPTC in July 2015. He worked as the Acting President and Board Member of SNPTC and Executive Director of China Power New Energy Development Company Ltd during February to April 2017. Then he was appointed as Chief Nuclear Officer of State Power Investment Corporation (SPIC) and President of State Nuclear Power Technology Corporation (SNPTC) in April 2017.

Mr. Wang has a Master Degree in Power System and Automation from North China Electric Power University and is a senior engineer.

SPEAKER TWO:

Nuclear Infrastructure and Capacity Building: Collaboration with the Next Generation of Young Professionals

Nathan Paterson, *ENS YGN Chairman & Customer Account Manager – Civil Nuclear, Rolls-Royce*

The world is hungry for energy with constant increasing demand year on year. Nuclear power is seen by many as fundamental in its function to deliver clean, secure and reliable energy within the world's low-carbon energy mix. New nuclear infrastructure programmes, reactor designs, fleet refurbishments and step changes in ways of manufacture and operation are required for strategic long term sustainable growth.

This presents both opportunities and challenges surrounding nuclear power; innovative technology development; deployment and financing. The young professionals working their way through the industry and the generations of new entries to come will play a massive part if structuring the delivery of these areas for decades to come. Modern factors, areas of motivation and the view points of the young generation will be explored through this presentation.

Nathan is responsible for management, business development, engagement and deployment for key civil nuclear accounts in Europe and International areas at Rolls-Royce Civil Nuclear.

Previously he has been part of the delivery of new reactor designs for Naval Prolusion covering engineering governance and delivery of V&V strategy areas.

Prior to that he lead aspects of safety design, internal and external hazard analysis, and harsh environmental assessment for Through-life nuclear safety justifications

He is the Chairman of the European the European Nuclear Society (ENS) Young Generation Network (YGN) which brings together the YGNs of 21 member countries of ENS. He leads the committee's operation and strategy covering a number of activities to help support the sustainable growth of the nuclear industry and associated academic communities.

He collaborates on programmes including: the nuclear skills delta; infrastructure and capacity building; diversity within the industry; nuclear as part of the solution to fight climate change and public engagement on nuclear technologies to name a few.

SPEAKER THREE:

Research and Development for Post-Fukushima Nuclear Systems

Koji Okamoto, *Ph.D, Director General, Collaborative Laboratory for Advanced Decommissioning Sciences (CLADS), Japan Atomic Energy Agency (JAEA)*

Professor, Nuclear Professional School, School of Engineering, The University of Tokyo

Seven years had been passed after the Fukushima-Daiichi Nuclear Power Plant Accident. Nuclear Energy around the world is still in progress for the baseline energy resources. However, in Japan, the nuclear systems have lots of sociological and political risks, including Local Governor election, Court and so on. To reduce the Nuclear Risk, R&D on the super-safe nuclear systems is strongly needed. The system should be safe for both operation and waste disposal. The decommissioning of the Fukushima-Daiichi NPP is also the R&D Targets. The reactor and containment vessel is extremely high radiation environments. Fuel debris removal and waste management will be challenging topics for R&D. The post-fukushima R&D activities will be summarized.

Professor Koji Okamoto got his Master Degree of Engineering from the University of Tokyo in 1985. He worked at Mitsubishi Heavy Industries Ltd. as a researcher for Fast Breeder Reactor, Monju. In 1988, he returned to the University of Tokyo as a research associate at Department of Nuclear Engineering. After he got Ph.D in 1992, he had been promoted to be an Associate Professor in 1993. In 2004, he was a full professor at Department of Quantum Engineering and Systems Science, the University of Tokyo. His major is Thermal-Hydraulics and Nuclear Safety. He published more than 100 referred papers in the field of Fluid Engineering and Nuclear Engineering. He had several patents related to nuclear systems in US and Japan. He is an editor of Measurement Science and Technology, Institute of Physics, for more than 10 years.

After Fukushima-Daiichi NPP accidents, he moved to Nuclear Professional School of the University of Tokyo. He explained to the public about the detail of the accident at several TV programs, including NHK and so on. He was a member of accident evaluation committee at Atomic Energy Society of Japan.

Currently his research interests include Safety Improvements of Nuclear Power Plants, Advanced Nuclear Systems, Severe Accident Researches and Decommissioning activities of normal shutdown NPP and/or Fukushima-Daiichi NPP. He was a chair of the Nuclear System Decommissioning sub-working group at Ministry of Education, Science, Sports and Culture (MEXT). He also worked as an executive committee member of Nuclear Damage Compensation and Decommissioning Facilitation Cooperation (NDF). He was a Division Head of Power Energy Systems, Japanese Society of Mechanical Engineers (JSME). From April, 2018, he also works as a Director General of Collaborative Laboratory for Advanced Decommissioning Sciences (CLADS) in Japan Atomic Energy Agency (JAEA).

SPEAKER FOUR:

TERA of Nuclear Gas Turbines to Improve Economics and Meet Decarbonisation Targets by 2050

Pericles Pilidis, *Professor of Cranfield University, UK.***,** *Head of Power and Propulsion Department, Centre for Propulsion Engineering*

Nuclear Energy has a significant role to play in delivering a long-term objective of a secure, low carbon and affordable energy, which can compete economically with other established generation sources but more important, meet decarbonisation targets for 2050. To achieve these targets, significant challenges need to be met in the short term such as complementing the portfolio of design by including high efficiency Brayton cycles provided by a gas turbine to boost thermal efficiency. Helium gas turbines are a very promising option as the Power Conversion Units (PCUs) for Generation IV Nuclear Systems. The presentation will be focused on three areas related to the PCU. The first will be to outline the design performance characteristics. The second section will indicate the importance of thermal efficiency and specific power from a technical and an economic point of view. The third element of the talk will offer some speculative suggestions regarding installation opportunities.

Professor Pilidis completed a doctorate in Gas Turbine Engineering at Glasgow University. His first employment was with the British Caledonian group in the gas turbine overhaul business. He joined Cranfield in 1986 as a lecturer and was promoted to the Director of the Thermal Power Masters course and Head of the Gas Turbine Engineering Group. In 2006 he was appointed Head of the Power and Propulsion Department.

Over the years, he has applied performance modelling techniques to understand issues of relevance to operation, maintenance, control and technoeconomic environmental risk analysis (TERA).

Professor Pilidis has organised and contributed to many international teaching and applied research programmes in the power, gas, oil and aviation industries. Much of his research has been focused on the needs of equipment users in various countries. He has acted as a consultant to several organisations and his active contributions have resulted in many international honours. He is a Fellow of the Royal Aeronautical Society, Fellow of the Higher Education Academy and was Chairman of the ASME Cycle Innovations.

Throughout his career at Cranfield, he has supervised 150+ postgraduate students

10:00 – 10:30 Chablis Suite, Ground Floor

POSTER SESSION & COFFEE BREAK

10:30 – 12:30

TECHNICAL SESSIONS

Plant Systems, Structures, Components and Materials

3-7 Fracture and Failure

Wednesday July 25 Room Chalon | 10:30 – 12:30

Session Chair: Leon Cizelj, Jozef Stefan Institute, Slovenia

Session Co-Chair: Hakan Ozaltun, Idaho National Laboratory, USA

Research on Simplified Method of Transients Combining and Loading in Fatigue Crack Growth Analysis of Carbon Steel Nuclear Piping ICONE26-81640
Zhenshun Liu, Hongdong Zhen
China Nuclear Power Design Co., Ltd. (Shenzhen), Shenzhen, China

LBB Analysis on Nuclear-Class Pipes of Floating Nuclear Power Stations ICONE26-82180
Fan Bai, Yong Liu, XingSheng Lao, Qi Xiao, Jun Wu, Zhenxing Zhao, Can Ma, Wei Wang
Wuhan Second Ship Design and Research Institute, Wuhan, China

PWSCC Initiation Behavior of Nickel-Based Alloy after Long-term Aging ICONE26-82469
Seung Chang Yoo[1] Kyoung Joon Choi[2] Ji Hyun Kim[1]
1. Ulsan National Institute of Science and Technology, Ulsan, Korea; 2. Korea Basic Science Institute, Daejeon, Korea

Development of a Crack Opening Displacement Assessment Procedure Considering Change of Compliance at a Crack Part in Thin Wall Pipes Made of Modified 9Cr-1Mo Steel ICONE26-82619
Takashi Wakai[1] Hideo Machida[2] Manabu Arakawa[2]
Seiji Yanagihara[3] Ryosuke Suzuki[4] Masaaki Matsubara[4]
1. Japan Atomic Energy Agency, Oarai, Japan; 2. Tepco Systems Corporation, Koto-ku, Japan; 3. Shin-etsu Engineering Co. Ltd., An-naka, Japan; 4. Gunma University, Kiryu, Japan

Recent Work on the Effect of Constraint on Fracture Behaviour ICONE26-82698
Simon Lewis[1] Mahmoud Mostafavi[2] Iain Palmer[1]
1. Frazer-Nash Consultancy, Bristol, United Kingdom; 2. University of Bristol, Bristol, United Kingdom

Instrumentation and Control (I&C) and Influence of Human Factors

4-5 I&C Simulation Models and Systems

Wednesday July 25 Room Cognac | 10:30 – 12:30

Session Chair: Dr. Antonio Ciriello, Framatome Gmbh, Germany

Session Co-Chair: Duo Li, Tsinghua University, China

Design and Development of Virtual DCS Debugging and Research Platform based on NPP Simulation Model ICONE26-81122
Caike Zhang, JingWen Qi, Chun Liu, Chenglong Xie, Peibang Liu, Ming Qu
China Nuclear Power Operation Technology Corporation. LTD, Wuhan, China

Application of Virtual Reality Technology in Nuclear Power Plant Control Room Simulator ICONE26-81163
Xiyun Li[1] Xi Wang[1] Chenchen Liang[2] Shaohua Wang[1]
1. China Nuclear Power Engineering Co., Ltd., Beijing, China; 2. China National Nuclear Corporation, Beijing, China

Simulated Training Instrument of Nuclear Radiation Reconnaissance based on an Improved Ellipse Numerical Model ICONE26-81250
Shuijun He, Manchun Liang, Guofeng Su, J.T He
Tsinghua University, Beijing, China

Evaluation of Electromagnetic Fields from Wireless Technologies in a Nuclear Plant ICONE26-82290
Mauro Cappelli[1] Vanni Lopresto[2] Riccardo Cecchi[2] Gaetano Marrocco[3]
1. ENEA, Frascati, Italy; 2. ENEA, Rome, Italy;
3. University of Tor Vergata, Rome, Italy

Advanced Load Following Control with Predictive Reactivity Management (ALFC-PREDICTOR) ICONE26-82678
Victor Morokhovskyi
Framatome GmbH, Erlangen, Germany

Advanced Reactors and Fusion Technologies

5-4 Advanced Reactors General

Wednesday July 25 Room Bourg | 10:30 – 12:30

Session Chair: Takanori Sugawara, Japan Atomic Energy Agency, Japan

Session Co-Chair: Xian-Gang Fu, CNPRI, China

Session Co-Chair: Takaaki Sakai, Tokai University, Japan

Design Study of Beam Window for Accelerator-Driven System with Subcriticality Adjustment Rod ICONE26-81233
Takanori Sugawara, Yuta Eguchi, Hironari Obayashi,
Hiroki Iwamoto, Hiroki Matsuda, Kazufumi Tsujimoto
Japan Atomic Energy Agency, Tokai, Japan

Structural Analysis and Manufacturing of HL-2M Vacuum Vessel and Support Structures ICONE26-81273
Yuncong Huang, Hong Ran, Jilai Hou, Zeng Cao, Binbin Song
Southwestern Institute of Physics, Chengdu, China

Design of Steam Generator Accident Protection System for Sodium Cooled Fast Breeder Reactor ICONE26-81298
Xu Yeqiang
China Institute of Atomic Energy, Beijing, China

Application of Similarity Law in Electrical Device Design in Helium for High Temperature Gas-Cooled Reactor ICONE26-82520
Xiaohuan Chen[1] Yinan Geng[1] Jie Wang[2]
1. Tsinghua University, Beijing, China; 2. INET, Tsinghua University, Beijing, China

Feasibility Study of a New Fabrication Method for the Li_4SiO_4 Pebbles ICONE26-82598
Rosa Lo Frano[1] Monica Puccini[1] Eleonora Stefanelli[1]
Stefano Malquori[2] Matteo Luppichini[1] Claudio Grima[3]
Stefania De Sanctis[2] Sandra Vitolo[1] Donato Aquaro[1]
1. DICI-University of Pisa, Pisa, Italy; 2. Industrie Bitossi, Sovigliana, Italy;
3. University of Pise, Pise, Italy

Strategy and R&D Status of China Lead-based Reactor ICONE26-82613
Yican Wu[1] Liqin Hu[1] Zhumin Zhao[1] Yong Song[1] Qunying Huang[1]
Tao Zhou[1] Sheng Gao[1] Chao liu[1] Yunqing Bai[2] Chunjing Li[1] Ang Wang[1]
1. Institute of Nuclear Energy Safety Technology, Chinese Academy of Sciences, Hefei, China; 2. Key Laboratory of Neutronics and Radiation Safety, Institute of Nuclear Energy Safety Technology, Hefei, China

Nuclear Safety, Security, and Cyber Security

6-6 Emergency Preparedness

Wednesday July 25 Room Mouton Cadet | 10:30 – 12:30

Session Chair: Daming Liu, IAEA, Austria

Session Co-Chair: Wang Cong, Naval University of Engineering, China

Session Co-Chair: Akira Yamada, Toshiba Energy Systems & Solutions Corporation, Japan

Study on Offsite Emergency Preparedness for the Industry Application of HTR-PM ICONE26-81166
Hongchun Ding[1] Liguo Zhang[2] Jiejuan Tong[2]
1. Tsinghua University, Beijing, China; 2. Institute of Nuclear and New Energy Technology, Tsinghua University, Beijing, China

The Design of a Nuclear Emergency Decision Deduction and Training Platform ICONE26-81691
Ke Li[1] Manchun Liang[1] Guofeng Su[1] Jie Yang[2] Jingtao He[1] Shuijun He[1]
1. Tsinghua University, Beijing, China; 2. Gsafety Company, Beijing, China

Study on Emergency Planning Zone Determination for CAP200 Small Modular Reactor ICONE26-81071
Xuan Wang, Fenglei Du, Te Tang, Dawei Sun
Shanghai Nuclear Engineering Research & Design Institute, Shanghai, China

Research on Optimization of Ingestion Emergency Planning Zone Sizing ICONE26-81285
Mengxi Wang, Na Xue, Xinjian Liu
China Nuclear Power Engineering Co., Ltd., Beijing, China

The Design of Data Structure and Interface for Nuclear Emergency Assessment and Decision Support System ICONE26-81885
Yapeng Yang[1] Hong Wei[2] Zongyang Feng[1]
Linsheng Jia[1] Xiaoxiao Xu[1] Jiangang Zhang[1]
1. China Institute for Radiation Protection, Taiyuan, China;
2. China National Nuclear Power Co., Ltd, Beijing, China

Data-Driven Fault Diagnosis for Nuclear Power Plant: The Implicit Model Approach ICONE26-82473
Zhaoxu Chen, Xianling Li, Zhiwu Ke, Mo Tao, Yi Feng
Wuhan Second Ship Design and Research Institute, Wuhan, China

Codes, Standards, Licensing, and Regulatory Issues

7-5 Personnel Certifications, Regulatory Influence, and Computer Codes

Wednesday July 25 Room Epernay | 10:30 – 12:30

Session Chair: Samuel Miranda, Independent Author, USA

Discussion on Personnel Qualification System of Korea Electric Power Industry Code (KEPIC) ICONE26-82080
Su yeon Park, Myoungsung Sohn, Hyun Jae Joo, Lee Jong Eun
Korea Electric Association, Seoul, Korea

ASME Nondestructive Examination and Quality Control Central Qualification and Certification Program ICONE26-82280
Clayton Smith[1] Paul Lang[2]
1. Smith Associates Consulting Group LLC, Simpsonville, SC, USA; 2. ASME, New York, NY, USA

"Begging the Question" in Licensing Basis Accident Analyses ICONE26-81902
Samuel Miranda
Independent Author, Silver Spring, MD, USA

Comprehensive Safety Simulation of "Pengze" NPP based on Virtual4DS ICONE26-82624
Tao He, Xiaolei Zheng, Liwei Chen, Leiming Shang, Pengcheng Long
Key Laboratory of Neutronics and Radiation Safety, Institute of Nuclear Energy Safety Technology, Hefei, China

NECP-Bamboo: A PWR-core Nuclear Design Code System ICONE26-81117
Yunzhao Li[1] Hongchun Wu[1] Liangzhi Cao[2]
1. Xi'an Jiao Tong University, Xi'an, China; 2. School of Nuclear Science and Technology, Xi'an Jiao Tong University, Xi'an, China

Thermal-Hydraulics and Safety Analyses

8-9 Modeling NPPs Using System Analysis Software I

Wednesday July 25 Room Reims | 10:30 – 12:30

Session Chair: Anwar Hussain, PIEAS, Pakistan

Investigation on Thermal-Hydraulic Parameters and Instability under Two Different Heating Conditions based on RELAP5 Code ICONE26-82268
Zhaoyang Xia[1] Zhiwei Zhou[1] Tianji Peng[2]
1. Tsinghua University, Beijing, China; 2. Institute of Modern Physics, Chinese Academy of Sciences, Lanzhou, China

The Simulation Research of Noncondensable Gas to Condensation in Secondary Side Condenser of Floating Nuclear Power Plant based on RELAP5 ICONE26-82222
Siwei Yan, Chunmei Li, Tiebo Liang, Jing Zhao, Chengming Hao, Yu Wang
Nuclear Power Institute of China, Chengdu, China

Numerical Simulation on Primary Side of AP1000 Steam Generator by Porous Media Model ICONE26-82182
Hu Liqiang
China Institute of Atomic Energy, Beijing, China

Accident Progression and Reactor Safety Analysis in Case of Safety Systems Operation Failure in AP1000 SBLOCA ICONE26-82643
Anwar Hussain, Amjad Nawaz
PIEAS, Islamabad, Pakistan

Pressurized Thermal Shock (PTS) Transient Scenarios Screening Analysis with Trace ICONE26-81749
Roman Mukin[1] Ivor Clifford[1] Markus Niffenegger[1] Hakim Ferroukhi[2]
1. Paul Scherrer Institute, Villigen, Switzerland; 2. Paul Scherrer Institut / Laboratory for Reactor Physics and Systems Behaviour, Villigen, Switzerland

Thermal-Hydraulics and Safety Analyses

8-12 Scaling and Seismic: Methodology, Development, and Application

Wednesday July 25 Room Alsace | 10:30 – 12:30

Session Chair: Pavel Lobanov, Kutateladze Institute of Thermophysics, Russia

A Scaling Analysis for a General Passive Heat Removal System ICONE26-81133
Wei Li, Zhen Feng Qi, Qiang Guo, Yidan Yuan
China Nuclear Power Engeneering Co., Ltd., Beijing, China

A Dimensional Analysis of Ex-Vessel Steam Explosion ICONE26-81303
Wei Li, Qiang Guo, Yidan Yuan
China Nuclear Power Engeneering Co., Ltd., Beijing, China

Uncertainty Analysis of Scaling Calculations from LSTF Small Break LOCA Tests with Steam Generator Intentional Depressurization Applying to a Four-Loop PWR ICONE26-81920
Ikuo Kinoshita
Institute of Nuclear Safety System, Inc., Mikata-Gun, Fukui, Japan

Experimental Activities on Thermal Hydraulics of Heavy Liquid Metal Flow in Typical Elements of Nuclear Power Stations ICONE26-82407
Pavel Lobanov[1] Oleg Kashinsky[2] Alexandr Kurdyumov[1]
Aleksandr Svetonosov[1] Nikolay Pribaturin[2] Maksim Vorobyev[1]
1. Kutateladze Institute of Thermophysics, Novosibirsk, Russia;
2. Institute of Thermophysics, Novosibirsk, Russia

The Qualitative Analysis of Vertical Seismic Acceleration Effect on a Single Nuclear-Coupled Boiling Channel Natural Circulation Loop ICONE26-81230
Jin Der Lee[1] Yuh-Ger Lin[1] Shao-Wen Chen[1] Chin Pan[2] Jinn-Jer Peir[1]
1. National Tsing Hua University, Hsinchu, Taiwan;
2. City University of Hong Kong, Hong Kong, Hong Kong

Thermal-Hydraulics and Safety Analyses

8-15 Natural Circulation Experiments, Phenomena, and Analyses I

Wednesday July 25 Room Bouzy | 10:30 – 12:30

Session Chair: Chikako Iwaki, Toshiba Energy Systems & Solutions Corporation, Japan

The Experimental Investigation of Steam Condensation with Non-Condensable Gas under Natural Convection ICONE26-81292
Xizhen Ma[1] Wen Fu[1] Haijun Jia[2] Peiyue Li[1] Jun Li[2]
1. Luoyang Ship Material Research Institute, Luoyang, China; 2. Tsinghua University, Beijing, China

COPRA Experiments on Melt Pool Behavior with Eutectic $NaNO_3$-KNO_3 Simulant ICONE26-81367
Yukun Zhou[1] Yapei Zhang[1] Simin Luo[1] Zhichun Xu[1]
Luteng Zhang[1] Guanghui Su[1] Suizheng Qiu[2]
1. Xi'an Jiao Tong University, Xi'an, China; 2. School of Nuclear Science and Technology, Xi'an Jiao Tong University, Xi'An, China

Natural Convection Heat Transfer from Vertical 9x9 Rod Bundles in Liquid Sodium ICONE26-81966
Koichi Hata[1] Qiusheng Liu[2] Takashi Nakajima[3]
1. Graduate School of Maritime Sciences, Kobe University, Kobe, Japan; 2. Kobe University, Kobe, Japan; 3. Kyoto University, Uji, Japan

Advanced Natural Circulation Reduced Order Model with Inclined Channel for Low Pressure Conditions ICONE26-81238
René Manthey, Alexander Knospe, Carsten Lange,
Christoph Schuster, Antonio Hurtado
Technische Universität Dresden, Dresden, Germany

Research on Thermal Hydraulic Characteristics of Two Phase Natural Circulation Process for Secondary Side Passive Residual Heat Removal System ICONE26-81257
Erbing Shi[1] Chang Wang[1] Rui Hao[1] Lu Sun[1] Genglei Xia[2]
1. China Ship Development and Desin Center, Wuhan, China; 2. Harbin Engineering University, Harbin, China

Thermal-Hydraulics and Safety Analyses

8-21 Instability Experiments and Analyses

Wednesday July 25 Room Cremant | 10:30 – 12:30

Session Chair: Shuichiro Miwa, Hokkaido University, Japan

Effects of Parameters on the Two-Phase Flow Instability in a Microchannel ICONE26-81992
Yefei Liu, Yang Liu, Xing-Tuan Yang, Liqiang Pan
Tsinghua University, Beijing, China

Effect of the Jet Stability on Supersonic Steam Injector Operation ICONE26-82585
Shuichiro Miwa, Nozomu Akiyama, Takahiro Moribe, Hiroto Sakashita
Hokkaido University, Sapporo, Japan

Development of Techniques for RCP Performance Verification Test and Optimization of Flow Stability ICONE26-82091
Seok Kim[1] Byoung-Uhn Bae[1] Yun-Je Cho[1]
Woo-Jin Jeon[1] Yeon-Sik Kim[2] Seok Cho[1]
1. Korea Atomic Energy Research Institute, Daejeon, Korea; 2. Korea Atomic Energy Research Institute, Taejon, Korea

Experimental Study on Two-Phase Natural Circulation Flow Instability in Rod Bundle Channel under Low Pressure Condition ICONE26-81225
Kun Cheng, Sichao Tan, Zheng Liu, Tao Meng
Harbin Engineering University, Harbin, China

Numerical Investigation on the Characteristic of the Reverse Flow Phenomenon in a Z-Type Parallel Compact Heat Exchanger with Large Number of Tubes ICONE26-81242
Jian Zhou, Ming Ding, Haozhi Bian, Zhang Yinxing, Zhongning Sun
Harbin Engineering University, Harbin, China

Thermal-Hydraulics and Safety Analyses

8-23 Fast Reactors: Experiments and Analyses I

Wednesday July 25 Room Lalande | 10:30 – 12:30

Session Chair: Chenglong Wang, Xi'an Jiaotong University, China

Numerical Simulation of Safety Rod and its Drive Mechanism in Sodium-Cooled Fast Reactor during Scram Action ICONE26-81559
Yan Li, Wenjun Hu, Iixia Ren
China Institute of Atomic Energy, Beijing, China

Development of the LMFBR Subchannel Analysis Code ATHAS-LMR and Analysis of Blockage Accident ICONE26-81600
Peng Du, Jianqiang Shan, Bo Zhang
Xi'an Jiao Tong University, Xi'an, China

Development and Application of Multi-Physics Safety Analysis Code for Advanced Liquid Metal Cooled Reactor ICONE26-81973
Chi Wang[1] Xuebei Zhang[2] Jingchao Feng[2]
Muhammad Shehzad Khan[2] Minyou Ye[1] Hongli Chen[1]
1. University of Science and Technology of China, Hefei, China; 2. University of Science and Technology of China, Anhui, China

Experimental Evaluation on Heat Transfer Characteristics of Sodium-to-Air Heat Exchanger with Helical Finned Tubes in a Cross Flow ICONE26-82458
Hyungmo Kim, Jaehyuk Eoh, Joonki Kim, Ji-Young Jeong
Korea Atomic Energy Research Institute, Daejeon, Korea

Stress and Fatigue Analysis of Thermal Shock for Cladding of Center Measurement Column Lower Head in the Fast Reactor under Shutdown Condition ICONE26-82596
Shu Zheng[1] Daogang Lu[1] Qiong Cao[1] Chao Liu[1] Yunlong Ding[1] Yi Huang[2]
1. North China Electric Power University, Beijing, China; 2. China Institute of Atomic Energy, Beijing, China

Phénix Transient Analysis for the Assessment of RELAP5-3D based on Dissymmetric Test Benchmark ICONE26-82419
Fabio Giannetti[1] Vincenzo Narcisi[1] Andrea Subioli[1] Alessandro Del Nevo[2]
1. Sapienza University of Rome, Roma, Italy; 2. ENEA CR Brasimone, Camugnano, Italy

Computational Fluid Dynamics (CFD)

9-2 Multi-phase flow Analysis I

Wednesday July 25 Room Fronsac | 10:30 – 12:30

Session Chair: Ronghua Chen, Xi'an Jiaotong University, China

Session Co-Chair: Jiazhi Li, The University of Tokyo, Japan

Session Co-Chair: Shimpei Saito, University of Tsukuba, Japan

Numerical Simulations on Hydrodynamic Process of Melt Jet Breakup and Fragmentation with the Two-Phase Lattice Boltzmann Method ICONE26-81663
Shimpei Saito[1] Yutaka Abe[1] Akiko Kaneko[1] Alessio Festuccia[2] Alessandro De Rosis[3] Kazuya Koyama[4]
1. University of Tsukuba, Tsukuba, Japan; 2. University of Rome Tor Vergata, Rome, Italy; 3. Israel Institute of Technology, Haifa, Israel; 4. Mitsubishi FBR Systems, Inc., Shibuya, Japan

Enhancement of Pressure and Curvature Calculation for the Moving Particle Semi-Implicit Method ICONE26-82205
Jiazhi Li, Sunghyon Jang, Akira Yamaguchi
The University of Tokyo, Tokyo, Japan

Advances in Modeling Critical Heat Flux in LWR Boiling Flows with the NEK-2P CFD Code ICONE26-81910
Adrian Tentner[1] Prasad Vegendla[2] Ananias Tomboulides[1] Aleksandr Obabko[1] Elia Merzari[2] Dillon Shaver[1]
1. Argonne National Laboratory, Argonne, IL, USA; 2. Argonne National Laboratory, Lemont, IL, USA

Optimization of Moving Particle Semi-Implicit (MPS) Method and Studying of Flow Instability ICONE26-81948
Kailun Guo[1] Ronghua Chen[1] Suizheng Qiu[2] Guanghui Su[1] Wenxi Tian[1] Junmei Wu[1]
1. Xi'an Jiao Tong University, Xi'an, China; 2. School of Nuclear Science and Technology, Xi'an Jiao Tong University, Xi'an, China

Improvement of Software BRT-CICERO Dedicated to Carbon Steel Flow-Accelerated-Corosion Monitoring on Nuclear Power Plants – from Experiments to CFD Calculations ICONE26-82588
Elodie Gipon[1] Marie-Pierre Moutrille[1] Stephane Trevin[2] Corentin Masbou[2]
1. EDF, Grenoble, France; 2. EDF DTG, Grenoble, France

Computational Fluid Dynamics (CFD)

9-14 Thermal Mixing II

Wednesday July 25 Room Muscadet | 10:30 – 12:30

Session Chair: Afaque Shams, Nuclear Research and Consultancy Group, Netherlands

Session Co-Chair: Mo Fei, Tsinghua University, China

Session Co-Chair: Yann Le Moigne, Westinghouse Electric Sweden AB, Sweden

Application of Vorticity Method in Auxiliary Impeller Optimization of HTR-PM Main Helium Fan ICONE26-82559
Mo Fei, Zhang Youjie
Tsinghua University, Beijing, China

Preliminary Validation of the Detached Eddy Simulation Model in CFD Code GASFLOW-MPI ICONE26-82402
Han Zhang[1] Yabing Li[2] Jianjun Xiao[2] Thomas Jordan[1]
1. Karlsruhe Institute of Technology, Karlsruhe, Germany; 2. Karlsruhe Institute of Technology, Eggenstein-Leopoldshafen, Germany

Unsteady CFD Analyses of the Thermal Mixing of the Feedwater in the Downcomer of a BWR ICONE26-82179
Yann Le Moigne
Westinghouse Electric Sweden AB, Västerås, Sweden

Numerical Investigation of Mass Mixing in the Reactor Core of a Pebble Bed HTGR ICONE26-81722
Wei Lu, Xiaowei Li, Xinxin Wu
Tsinghua University, Beijing, China

Innovative Nuclear Power Plant Design and SMRs

13-1 Small Modular Reactors-SMR Water Cooled

Wednesday July 25 Room Talbot | 10:30 – 12:30

Session Chair: Jovica Riznic, Canadian Nuclear Safety Commission, Canada

Session Co-Chair: Christopher Bell, Rolls-Royce PLC, United Kingdom

Integrated Design of a Reactor Core for the Rolls-Royce Small Modular Reactor Project ICONE26-81311
Simon de Haas[1] David Chu[1] Kevin Ellis[1] Matthew White[1] Ben Lindley[2] Peter Smith[2] Julian Murgatroyd[2] Andrew Grief[3] Mike Leddy[3] Mike Yule[3]
1. Rolls-Royce Nuclear, Derby, United Kingdom; 2. Wood, Dorchester, United Kingdom; 3. Wood, Knutsford, United Kingdom

We never built small modular reactors (SMRs), but what do we know about modularization in construction? ICONE26-81604
Benito Mignacca, Giorgio Locatelli, Mahmoud Alaassar, Diletta Colette Invernizzi
University of Leeds, Leeds, United Kingdom

A Methodology to Determine SMR Build Schedule and the Impact of Modularisation ICONE26-81550
Clara Lloyd, Anthony Roulstone
University of Cambridge, Cambridge, United Kingdom

A Combined Small Modular Reactor and Gas Turbine Cycle with Reheat ICONE26-81002
Robert Stakenborghs, Gregory Kramer
ILD Power, Baton Rouge, LA, USA

The Canadian Nuclear Safety Commission: Readiness Activities to Regulate Small Modular Reactors ICONE26-82620
Kevin Lee
Canadian Nuclear Safety Commission, Ottawa, ON, Canada

Approach to UK SMR Component Design ICONE26-81188
Christopher Bell
Rolls-Royce PLC, Derby, United Kingdom

Proposed License Structure of Small Modular Reactor in China ICONE26-81985
Hua Zheng, Shuhong Wei
China Nuclear Power Design Co., Ltd. (Shenzhen), Shenzhen, China

12:30 – 14:00 Chablis Suite, Ground Floor

LUNCH

14:00 – 16:00

PANEL SESSIONS

See pages 23 through 26 for panel session details.

16:00 – 16:30 Chablis Suite, Ground Floor

POSTER SESSION & COFFEE BREAK

16:30 – 18:30

TECHNICAL SESSIONS

Plant Systems, Structures, Components and Materials

3-10 Impact and Vibration Analyses

Wednesday July 25 Room Chalon | 16:30 – 18:30

Session Chair: Akemi Nishida, Japan Atomic Energy Agency, Japan

Session Co-Chair: Hakan Ozaltun, Idaho National Laboratory, USA

Study on the Shaking Dynamic Response of Steam Generator LOCA ICONE26-81278
Qian Huang, Xiaofei Yu, Huan-huan Qi, Nai-bin Jiang, FengChun Cai, Zhi-peng Feng
Nuclear Power Institute of China, Chengdu, China

Optimal Design and Performance Simulation of a Novel Semi-Active Vibration Absorber for Pipeline System of NPP ICONE26-81741
Zhiguo Wei[1] Jinlan Gou[1] Shao Dan Li[1] Lu Dai[1] Meng-Ran Liao[2]
1. Wuhan Second Ship Design and Research Institute, Wuhan, China; 2. Key Lab. on Steam Power System, Wuhan Second Ship Design and Research Institute, Wuhan, China

Proposal of a Simple Evaluation Method for Sloshing Impact Pressure on Flat Roofs ICONE26-82562
Shigeru Takaya[1] Tatsuya Fujisaki[2]
1. Japan Atomic Energy Agency, Ibaraki, Japan; 2. NDD, Ibaraki, Japan

Evaluation of Local Damage to Reinforced Concrete Panels Subjected to Oblique Impact of Rigid and Soft Missiles ICONE26-82615
Akemi Nishida[1] Minoru Nagai[2] Haruji Tsubota[2] Yinsheng Li[3]
1. Japan Atomic Energy Agency, Chiba, Japan; 2. Japan Atomic Energy Agency, Ibaraki, Japan; 3. Japan Atomic Energy Agency, Ibaraki-Ken, Japan

Structural Dynamic Transient Analysis of Fire Protection System at a Nuclear Power Plant ICONE26-82627
Milton Dong, Eugene Tom
Unisont Engineering, Inc., Oakland, CA, USA

Mechanical Impact Tests with EB Welded Joints Made with Fixing Bars of Nuclear Fuel Assembly ICONE26-82666
Soo-sung Kim, Hyun-jung Kim, Yong-jin Jeong, Jong-man Park
KAERI, Daejeon, Korea

Instrumentation and Control (I&C) and Influence of Human Factors

4-6 I&C Modeling and Software

Wednesday July 25 Room Lalande | 16:30 – 18:30

Session Chair: Dr. Antonio Ciriello, Framatome Gmbh, Germany

Session Co-Chair: Mauro Cappelli, ENEA, Italy

Application of Monte Carlo Methods in Reactor Protection System Reliability Research ICONE26-81300
Duo Li, Zhaojun Hao, Shuqiao Zhou, Chao Guo
Tsinghua University, Beijing, China

A Research on System Error Correction for a High Temperature Hydrogen Detector based on Neural Network Technique ICONE26-81301
Zhen Feng Qi, Yi Wang Zhang, Wei Li, Yidan Yuan
China Nuclear Power Engineering Co., Ltd., Beijing, China

Prediction and Sensibility Analysis for Nuclear Safety-Critical Software Reliability of DCS ICONE26-81647
Ying Liu, Yafeng Wang, Bo Pang, Lei Tang, Bo Feng, Guohai Cao
Nuclear Power Institute of China, chengdu, China

Research on Algorithm of Sump Level Operator Assisted Support Program for PWR Nuclear Power Plant ICONE26-81714
Qiaofen Liu, Sanping Xiao, Yu Liu, Xichao Liu, Xulun Jiang
China Nuclear Power Design Co., Ltd. (Shenzhen), Shanghai, China

The Cloud Model Theory of Intelligent Control Method for Non-Minimum-Phase and Non-Self-Balancing System in Nuclear Power ICONE26-81829
Mo Tao[1] Ruotong Qu[2] Zhiwu Ke[1] Zhaoxu Chen[1] Xianling Li[1] Yi Feng[1]
1. Wuhan Second Ship Design and Research Institute, Wuhan, China; 2. Nanjing University of Aeronautics and Astronautics, Nanjing, China

Advanced Reactors and Fusion Technologies

5-3 Modeling and Simulation I

Wednesday July 25 Room Epernay | 16:30 – 18:30

Session Chair: Arnold Gad-Briggs, Cranfield University & EGB Engineering UK, United Kingdom

Session Co-Chair: Hong Yu, Chinese Institute of Atomic Energy, China

Neutronic Methodological Benchmarks with Simplified Geometries for the Gas Cooled Reactor Group Constant Generating Tools ICONE26-81427
Emese Temesvari[1] Balint Batki[1] Milan Gren[2]
1. MTA EK, Centre for Energy Research, Hungarian Academy of Sciences, Budapest, Hungary; 2. UJV Rez, Husinec - Rez, Czech Republic

Experimental Studies on the Thermal-Hydraulics of Dowtherm A through the Pebble Bed with Internal Heat Generation ICONE26-81917
Limin Liu[1] Dalin Zhang[2] Linfeng Li[2] Yichen Yang[2]
Chenglong Wang[2] Suizheng Qiu[3]
1. Xi'an Jiao Tong University, Xi'an, CA, USA; 2. Xi'an Jiao Tong University, Xi'an, China; 3. School of Nuclear Science and Technology, Xi'an Jiao Tong University, Xi'an, China

Research on the Application of Two Order Discrete Scheme in Intermediate Heat Exchanger Heat Transfer Numerical Calculation Model ICONE26-81624
Jin Wang, Donghui Zhang
China Institute of Atomic Energy, Beijing, China

A Review of Brayton Helium Gas Turbine Cycles for GFR and VHTR Generation IV Nuclear Power Plants ICONE26-81681
Arnold Gad-Briggs[1] Pericles Pilidis[2] Theoklis Nikolaidis[2]
1. Cranfield University & EGB Engineering UK, Cheshire, United Kingdom; 2. Cranfield University, Bedford, United Kingdom

Modification of RELAP/SCDAPSIM/MOD4.0 for Liquid Metal in Contact with Noncondensable Gas ICONE26-82030
Qian Sun[1] Tianji Peng[2] Zhiwei Zhou[1] Zhibin Chen[3] Shisheng Wang[4]
1. Tsinghua University, Beijing, China; 2. Institute of Modern Physics, Chinese Academy of Sciences, Lanzhou, China; 3. Key Laboratory of Neutronics and Radiation Safety, Institute of Nuclear Energy Safety Technology, Hefei, China; 4. Institute of Nuclear Energy Safety Technology, Chinese Academy of Sciences, Hefei, China

Experimental and Numerical Analysis of Steam Generator Tube Rupture Event for MYRRHA Reactor in CIRCE Facility with SIMMER-IV Code ICONE26-82503
Alessio Pesetti[1] Mariano Tarantino[2] Nicola Forgione[1]
1. University of Pisa, Pisa, Italy; 2. ENEA C.R. Brasimone, Camugnano, Italy

Nuclear Safety, Security, and Cyber Security

6-8 Radiation Source and Field Detection I

Wednesday July 25 Room Mouton Cadet | 16:30 – 18:30

Session Chair: Giada Gandolfo, Sapienza University of Rome, Rome, Italy

Session Co-Chair: Fuliang Jiang, University of South China, Hengyang City, China

The Neutron Active Interrogation System for In-Field Detection of Transuranic-Based Radioactive Dispersal Devices for Security Applications ICONE26-81422
Nadia Cherubini[1] Alessandro Dodaro[1] Giada Gandolfo[2] Giuseppe A. Marzo[1]
Luigi Lepore[2] Ermanno Piccinelli[1] Romolo Remetti[2]
1. ENEA, Rome, Italy; 2. Sapienza University of Rome, Rome, Italy

Experimental Study of Radon Exhalation Rate in Uranium-like Rock based on Closed Chamber Method ICONE26-81067
Fuliang Jiang, Xiaoli Wang, Shuai Zhang, Xiangyang Li, Changshou Hong
University of South China, Hengyang, China

Noise Reduction Treatment and Analysis of Accumulated Radon Concentration in Uranium-like Rock based on Wavelet Theory ICONE26-81068
Fuliang Jiang, Wenchao Yang, Ming Li, Xiangyang Li, Changshou Hong
University of South China, Hengyang, China

High Efficient Detritiation Catalysts for Fusion Safety ICONE26-81269
Quanwen Wu, Daqiao Meng, Wenhua Luo, Jinchun Bao, Jingwen Ba
China Academy of Engineering Physics, Mianyang, China

Diffusion Law and Simulation Analysis of Radon in Uranium Tailings based on Multiple Gauss Plume Model ICONE26-81189
Jiaxin Wang[1] Guohua Wu[1] Liguo Zhang[2] Jingyuan Qu[1] Jiejuan Tong[2]
1. Tsinghua University, Beijing, China; 2. Institute of Nuclear and New Energy Technology, Tsinghua University, Beijing, China

The Development of the Advanced Method for the Source Term Evaluation Applicable to the Dynamic PRA ICONE26-82523
Koichi Nakamura[1] Sunghyon Jang[2] Akira Yamaguchi[2]
1. Central Research Institute of Electric Power Industry, Kanagawa, Japan; 2. The University of Tokyo, Tokyo, Japan

Thermal-Hydraulics and Safety Analyses

8-5 Gas-cooled Reactor Experiments and Analyses

Wednesday July 25 Room Reims | 16:30 – 18:30

Session Chair: Rosa Lo Frano, DICI - University of Pisa, Italy

A Numerical Study on Graphite Dust Deposition on Steam Generator Tubes in the High-Temperature Gas-Cooled Reactor (HTGR) ICONE26-82043
Mingzhe Wei, Yiyang Zhang, Zhu Fang, Xinxin Wu, Libin Sun
Tsinghua University, Beijing, China

The Cross-Flow Mixing Analysis of Quasi-Static Pebble Flow in Pebble Bed Reactor ICONE26-82223
Xiang Fang, Xing-Tuan Yang, Shengyao Jiang
Tsinghua University, Beijing, China

Study on the Turbulent Mixed Convection Phenomena inside the Air-Cooled RCCS Riser ICONE26-82071
Dong-Ho Shin[1] Sin-Yeob Kim[1] Chan Soo Kim[2]
Goon-cherl Park[1] Hyoung Kyu Cho[1]
1. Seoul National University, Seoul, Korea; 2. Korea Atomic Energy Research Institute, Daejeon, Korea

Development of Single Pebble Benchmark Ex. I-2A for IAEA UAM CRP with MOOSE ICONE26-82155
Jinlin Niu, Lidong Wang, Jiong Guo, Fu Li
Tsinghua University, beijing, China

Thermal-Hydraulics and Safety Analyses

8-11 Containment Related Experiments and Analyses

Wednesday July 25 Room Alsace | 16:30 – 18:30

Session Chair: Gonzalo Jimenez, Universidad Politécnica de Madrid (UPM), Spain

AP1000® Passive Cooling Containment Analysis of a Double-Ended LBLOCA with a 3D Gothic Model ICONE26-81886
Samanta Estevez-Albuja, Gonzalo Jimenez,
Kevin Fernández-Cosials, César Queral, Zuriñe Goñi
Universidad Politécnica de Madrid, Madrid, Spain

Analyses of Gas Stratification Erosion by a Vertical Jet in Presence of an Obstacle using the GOTHIC Code ICONE26-82360
Michele Andreani, Ralf Kapulla
Paul Scherrer Institut (PSI), Villigen, Switzerland

Study of Fission Product Behavior in Containment Vessel using Modified Art Mod 2: Update of Cesium and Iodine Compound Models ICONE26-82069
Wasin Vechgama, Kampanart Silva
Thailand Institute of Nuclear Technology, Nakhon Nayok, Thailand

Study of the Behaviors of an Open-Loop Heat-Removal System ICONE26-82146
Xianmao Wang[1] Yonggang Shen[1] Jiang Yang[1]
Yong Ouyang[2] Min Rui[1] Suizheng Qiu[3]
1. China Nuclear Power Technology Research Institute, Shenzhen, China; 2. CGNPC, Shenzhen, China; 3. School of Nuclear Science and Technology, Xi'an Jiao Tong University, Xi'an, China

Thermal-Hydraulics and Safety Analyses

8-13 Aerosols and Spent Fuel Pool Related Experiments and Analyses

Wednesday July 25 Room Bouzy | 16:30 – 18:30

Session Chair: Haomin Sun, Japan Atomic Energy Agency, Japan

Detailed Experimental and Analytical Study on Long Two-Phase Closed Thermosiphons Related to Passive Spent-Fuel Pool Cooling ICONE26-81726
Claudia Grass[1] Anne Kruessenberg[2] Rudi Kulenovic[1]
Fabian Weyermann[2] Joerg Starflinger[3] Andreas Schaffrath[2]
1. University of Stuttgart - Institute of Nuclear Technology and Energy Systems, Stuttgart, Germany; 2. Gesellschaft fuer Anlagen- und Reaktorsicherheit GRS gGmbH, Garching, Germany; 3. University of Stuttgart, Stuttgart, Germany

Experimental Study of Aerosol Behavior during Pool Scrubbing: Part 1 - Visualization Measurement of Aerosol Particle in a Single Rising Bubble ICONE26-81383
Kota Fujiwara, Wataru Kikuchi, Yuki Nakamura, Shimpei Saito, Tomohisa Yuasa, Akiko Kaneko, Yutaka Abe
University of Tsukuba, Tsukuba, Japan

Experimental Investigation on Dependence of Decontamination Factor on Aerosol Number Concentration in Pool Scrubbing under Normal Temperature and Pressure ICONE26-81638
Haomin Sun[1] Shinichi Machida[2] Sibamoto Yasuteru[3]
Yuria Okagaki[1] Taisuke Yonomoto[1]
1. Japan Atomic Energy Agency, Tokai-mura, Japan; 2. Persol Tempstaff Co.,Ltd., Shibuya-ku, Japan; 3. Japan Atomic Energy Agency, Naka, Japan

Experimental Study of Aerosol Behavior during Pool Scrubbing: Part 2 - Decontamination of Aerosol Particle in Two Phase Flow ICONE26-81659
Wataru Kikuchi, Kota Fujiwara, Yuki Nakamura, Shimpei Saito, Tomohisa Yuasa, Akiko Kaneko, Yutaka Abe
University of Tsukuba, Tsukuba, Japan

Thermal-Hydraulics and Safety Analyses

8-16 Fluid-Structure Interactions: Experiments and Analyses

Wednesday July 25 Room Muscadet | 16:30 – 18:30

Session Chair: Rosa Lo Frano, DICI - University of Pisa, Italy

A Flow-Induced Vibration Study on the Multiple Rectangular Tubes Bundles for Steam Generator Outlet Pipes of HTR-PM ICONE26-81229
Yu Song, Qin Zhou, jiaqing Zhao, Yiyang Zhang, Xinxin Wu
Tsinghua University, Beijing, China

Experimental and Numerical Analysis of the Flow Field in the Integrated Valve for the Control Rod Hydraulic Drive System ICONE26-81305
Junfei Jiang, Benke Qin, HanLiang Bo
Tsinghua University, Beijing, China

Study on Flow-Induced Vibration of Intermediate Heat Exchanger in Prototype Fast Reactor ICONE26-81652
Guangdong Song, Lina Zhu, Liu Mengmeng
China Institute of Atomic energy, Beijing, China

Suppression Methods of Acoustic Noise Generated in Main Steam Stop Valve ICONE26-82515
Shiro Takahashi[1] Atsuyuki Minenaga[2] Eiji Ozaki[2]
1. Hitachi, Ltd., Hitachi Research Laboratory, Hitachi, Japan; 2. Mitsubishi Hitachi Power Systems, Ltd., Nagasaki, Japan

Evaluation of Jet Impact Region and Fluid Force Generated from Ruptured Pipes: Part 4 - Numerical Evaluation of Affected Region by Flashing Jet Flow ICONE26-82063
Ryo Morita[1] Shiro Takahashi[2] Shun Watanabe[1] Noriyuki Takamura[3]
1. Central Research Institute of Electric Power Industry, Kanagawa, Japan; 2. Hitachi, Ltd., Hitachi Research Laboratory, Hitachi, Japan; 3. Hitachi GE Nuclear Energy, Hitachi-shi, Japan

Thermal-Hydraulics and Safety Analyses

8-19 Condensation Phenomena, Experiments, and Analyses

Wednesday July 25 Room Cremant | 16:30 – 18:30

Session Chair: Ronghua Chen, Xi'an Jiaotong University, China

Numerical Simulation of Condensation Heat Transfer in Shell Side of Double Inlet Condenser ICONE26-81370
Kaiyu Li, Ruojun Xue, Zhaoheng Liu, Jilin Sun, Le Liang
Harbin Engineering University, Harbin, China

Experimental Comparison on the Multi-Hole Steam Spraying Condensation Heat Transfer Characteristics ICONE26-82518
Yuhao Zhang, Bin Ouyang, Yonglong Yuan, Daogang Lu
North China Electric Power University, Beijing, China

Modeling of Wall Condensation in the Presence of Noncondensable Gases for Representative Nuclear Reactor Accident Tests ICONE26-82608
Sonia Benteboula[1] Frédéric Dabbene[2]
1. Commissariat à l'Energie à Atomique (CEA), Gif sur Yvette, France; 2. CEA Saclay, Gif sur Yvette, France

Non-Condensable Gas Plugging and Mixing Behavior in PWR Steam Generator Tubes during Reflux Condensation ICONE26-82350
Filip Janasz[1] Horst-Michael Prasser[1] Detlef Suckow[2] Marton Szogradi[3]
1. ETH Zurich, Zürich, Switzerland; 2. Paul Scherrrer Institute, Villigen, Switzerland; 3. VTT Technical Research Centre of Finland, Espoo, Finland

Analysis of the Condensation Model used in Severe Accident Integral Codes ICONE26-82020
Yiming Zhu, Zhuo Liu, Xiaoming Yang
China Nuclear Power Engineering Co., Ltd., Beijing, China

Applying Computational Fluid Dynamics Methodologies to Hydro-Dynamic Loads in the Suppression Pool of a BWR ICONE26-82167
David Mauritzson[1] Sven Perzon[1] Thomas A. Probert[2]
1. Westinghouse Electric Sweden AB, Vasteras, Sweden; 2. OKG AB, Oskarshamn, Sweden

Computational Fluid Dynamics (CFD)

9-11 Multi-phase Flow Analysis II

Wednesday July 25 Room Fronsac | 16:30 – 18:30

Session Chair: Yann Le Moigne, Westinghouse Electric Sweden AB, Sweden

Session Co-Chair: Paridhi Goel, Homi Bhabha National Institute, Mumbai, India; Bhabha Atomic Research Centre, Mumbai, India, India

Session Co-Chair: Elia Merzari, Argonne National Laboratory, USA

Numerical Study of Effect of Contact Angles on Flow Boiling Employing Thermal LBM Simulation ICONE26-81569
Tingzhen Sun[1] Qian Liu[1] O Gui[1] Xing-Tuan Yang[2]
Jiyuan Tu[1] Shengyao Jiang[2]
1. Institute of Nuclear and New Energy Technology, Tsinghua University, Beijing, China; 2. Tsinghua University, Beijing, China

3D Modelling of Hydrogen-Air-Steam Mixture Combustion within the Framework of Nuclear Power Plant Safety Substantiation ICONE26-82641
Vitaly Kotov
JSC ATOMPROEKT, Saint Petersburg, Russia

Numerical Investigation of Aerosol Collection Efficiency in a Venturi Scrubber ICONE26-82489
Paridhi Goel[1,2] Arun Nayak[2]
1. Homi Bhabha National Institute, Mumbai, MH, India; 2. Bhabha Atomic Research Center, Mumbai, MH, India

Evaluation of Turbulence Modeling Approaches for Cross-Flow in a Helical Tube Bundle ICONE26-82486
Adam Kraus, Haomin Yuan, Elia Merzari
Argonne National Laboratory, Lemont, IL, USA

Sensitivity Analysis of Turbulence Models for the Core Inlet Flow Distribution of PWR ICONE26-82454
Lu-lu Hao, Hong Chen, Su-chen Qiu
Fujian Fuqing Nuclear Power Co., Ltd., Fuqing, China

CFD Modeling of Annular Flow with a Three-Field Approach ICONE26-82351
Salvatore Raddino[1] Yann Le Moigne[2]
Tobias Strömgren[2] Jean-Marie Le Corre[2]
1. Royal Institute of Technology, Stockholm, Sweden; 2. Westinghouse Electric Sweden AB, Västerås, Sweden

Decontamination & Decommissioning, Radiation Protection, and Waste Management

10-2 Radioactive Waste

Wednesday July 25 Room Bourg | 16:30 – 18:30

Session Chair: Massimo Sepielli, ENEA, Italy

Session Co-Chair: Hideharu Takahashi, Tokyo Institute of Technology, Japan

Overview of the U.S. Department of Energy Advanced Waste Forms Development ICONE26-81017
Patricia Paviet[1] Kimberly Gray[1] John Vienna[2]
1. Department of Energy - Office of Nuclear Energy, Germantown, MD, USA; 2. Pacific Northwest National Laboratory, Richland, WA, USA

Application of Clearance in Controlling Radioactive Waste of Nuclear Power Plant ICONE26-81048
Qiang Wu[1] LiQinDu Wang[2] Chen Jiang[2] GuangLai Zhou[1]
1. China Institute for Radiation Protection, TaiYuan, China; 2. FuQing Nuclear Power Plant, Fuzhou, China

Free Release of Radioactive Waste Containing Very Low Level Waste and Short Lived Radionuclides at Nucleco ICONE26-82039
Alessandro Dodaro, Claudio Andreozzi, Battistina Bianchilli,
Filippo Gagliardi, Egidio Mauro, Monica Sisti
Nucleco S.p.A., Rome, Italy

Ultrasonic Velocities Measurement in Compacted Bentonite-Sand Mixtures for Saturation Level Evaluation ICONE26-82617
Shun Kimura[1] Hideharu Takahashi[1] Ari Hamdani[1]
Masanori Aritomi[1] Susumu Ozaki[2] Hiroshige Kikura[1]
1. Tokyo Institute of Technology, Tokyo, Japan; 2. OCL Corporation, Tokyo, Japan

In Situ Measurement Technique of Low-Energy Y-Contaminated Waste Sorting ICONE26-81341
Yue Weihong, Xu Yeqiang
China Institute of Atomic Energy, Beijing, China

UK Nuclear New Build Programme: Funded Decommissioning Planning ICONE26-82708
Aujas Mistry, Chris Medlock
Nuvia, Warrington, United Kingdom

Innovative Nuclear Power Plant Design and SMRs

13-2 Sodium Cooled Reactors

Wednesday July 25 Room Talbot | 16:30 – 18:30

Session Chair: Kenta Ichikawa, Mitsubishi FBR Systems, INC., Japan

Session Co-Chair: Bin Hou, China Institute of Atomic Energy, China

Estimation of Mitigation Effects of Sodium Nanofluid for SGTR Accidents in SFR ICONE26-81309
Kenta Ichikawa[1] Naoki Yoshioka[1] Hironori Kanda[2]
Kuniaki Ara[2] Jun-ichi Saito[2] Keiichi Nagai[2]
1. Mitsubishi FBR Systems, Inc., Tokyo, Japan; 2. Japan Atomic Energy Agency, Ibaraki, Japan

Geometry Survey on the Convex Shaped Core for Recriticality Prevention against CDA in Sodium-Cooled Fast Reactor ICONE26-81331
Keiko Chitose[1] Yoshiaki Tachi[2] Toshio Wakabayashi[3] Naoyuki Takaki[1]
1. Tokyo City University, Tokyo, Japan; 2. Japan Atomic Energy Agency, Higashi Ibaraki, Japan; 3. Tohoku University, Sendai, Japan

Controller Design of a LFR Demonstrator Steam Generator using Active Disturbance Rejection Control Method ICONE26-81883
Mohanned Khalid, Zhou Shiliang, Shen Cong
North China Electric Power University, Beijing, China

Numerical Study on the Two-Phase Flow for a Gas/Liquid Metal Magnetohydrodynamic Generator ICONE26-82231
Meng-Ran Liao[1] Chunhui Dai[2] Can Ma[2] Yong Liu[2]
Zhenxing Zhao[2] Zhouyang Liu[2]
1. Key Lab. on Steam Power System, Wuhan Second Ship Des. & Res. Ins., Wuhan, China; 2. Wuhan Second Ship Design and Research Institute, Wuhan, China

Risk Assessments and Management

14-1 Risk Assessment and Management I

Wednesday July 25 Room Cognac | 16:30 – 18:30

Session Chair: Hidemasa Yamano, Japan Atomic Energy Agency, Japan

Session Co-Chair: Mahesh Pandey, University of Waterloo, Canada

Probabilistic Analysis of Creep-Induced SGTR for NPP ICONE26-81032
Wenjing Li, Wentao Zhu, Xinli Yu, Wei Wei
China Nuclear Power Engineering Co., Ltd., Beijing, China

Level 1 PRA for External Vessel Storage Tank of Japan Sodium-cooled Fast Reactor in Scheduled Refueling ICONE26-81079
Hidemasa Yamano[1] Kenichi Naruto[2] Kenichi Kurisaka[3]
Hiroyuki Nishino[3] Yasushi Okano[3]
1. Japan Atomic Energy Agency, Ibaraki, Japan; 2. NESI, Inc., Oarai, Japan; 3. Japan Atomic Energy Agency, Oarai, Japan

Calibration of Inspection Strategies in Support of Aging Management Programs: A Probabilistic Approach ICONE26-81115
Mahesh Pandey, Mikko Jyrkama
University of Waterloo, Waterloo, ON, Canada

Study on Description of Plant Status at Fukushima Accident by Emergency Action Level ICONE26-81127
Kazufumi Nagashima, Nakahiro Yasuda
Fukui University, Tsuruga-shi, Japan

Standby Equipment Reliability Data Analysis on Risk Monitor of Nuclear Power Plant ICONE26-82590
Yingfei Ma, Zhijian Zhang, He Wang, Sijuan Chen,
Anqi Xu, Gangyang Zheng
Harbin Engineering University, Harbin, China

Thursday, July 26

TIME	TITLE	LOCATION
08:30 – 10:30	Technical Sessions	See pages 69 through 73 for session titles, authors and locations
10:30 – 11:00	Coffee Break	Chablis Suite, Ground Floor
11:00 – 13:00	Technical Sessions	See pages 74 through 78 for session titles, authors and locations
13:00 – 14:00	Lunch	Chablis Suite, Ground Floor
14:00 – 16:00	Technical Sessions	See pages 78 through 83 for session titles, authors and locations
16:00 – 16:30	Coffee Break	Chablis Suite, Ground Floor
16:30 – 18:30	Technical Sessions	See pages 83 through 87 for session titles, authors and locations

08:30 – 10:30

TECHNICAL SESSIONS

Nuclear Fuel and Material, Reactor Physics and Transport Theory

2-7 Future Reactor Concepts and Innovative Nuclear Applications

Thursday July 26 Room Fronsac | 08:30 – 10:30

Session Chair: Thomas Adams, Naval Surface Warfare Center, Crane Division, USA

Session Co-Chair: Carsten Schroer, Karlsruhe Institute of Technology (KIT), Eggenstein-Leopoldshafen, Germany

Modular Boiling Water Reactor Concept ICONE26-81196
Yi Liao[1] Wang Cong[2] Lei Chen[1]
1. Wuhan Second Ship Design and Research Institute, Wuhan, China;
2. Naval University of Engineering, Wuhan, China

Conceptual Core Design of HAPPY200 Reactor ICONE26-82125
Xiaosheng Li, Linsen Li, Lianghui Peng, Xiaosong Chen, Zhaocan Meng, Yaodong Chen
State Power Investment Central Research Institute, Beijing, China

Preliminary Neutron Simulation of Ceramic Fast Reactor ICONE26-81474
Xuesong Yan[1] Xunchao Zhang[2] Yaling Zhang[2] Lei Yang[2] Wenshan Duan[1]
1. Joint Laboratory of Atomic and Molecular Physics of NWNU & IMPCAS, Northwest Normal University, Lanzhou, China; 2. Institute of Modern Physics, Chinese Academy of Sciences, Lanzhou, China

Criticality Safety Issues in Nuclear Design of HP-SMTCs Space Reactor ICONE26-82244
Songyang Li, Dingqu Wang, Yueyuan Jiang, Weihua Li, Wenli Guo
Tsinghua University, Beijing, China

Experimental and Modeling Research on Leading Betavoltaic Technology ICONE26-82475
Thomas Adams[1] Shripad Revankar[2] Darrell Cheu[2]
Peter Cabauy[3] Bret Elkind[3] Jesse P. Grant[4]
1. Naval Surface Warfare Center, Crane Division, Crane, IN, USA;
2. Purdue University, West Lafayette, IN, USA; 3. City Labs, Homestead, FL, USA;
4. City Labs, Inc / Johns Hopkins, Homestead, FL, USA

Physics Design of Special Epithermal Neutron Beam based on Multi D-D Reaction Neutron Tubes ICONE26-81392
Yi Yang[1] Yiguo Li[2] Bin Zhao[1]
1. China Nuclear Power Engineering Co., Ltd., Beijing, China; 2. China Institute of Atomic Energy, Beijing, China

Plant Systems, Structures, Components and Materials

3-12 Seismic and Transient Analyses

Thursday July 26 Room Chalon | 08:30 – 10:30

Session Chair: Antony Hurst, EASL, United Kingdom

Session Co-Chair: Asif Arastu, Unisont Engineering, Inc., USA

Analytical Study on Fragility Evaluation with Uncertainty against Fault Displacement for Nuclear Power Plant Buildings ICONE26-81072
Kenshiro Ishiki[1] Hirokazu Tsuji[2] Minoru Kanechika[1] Yoshinori Mihara[1]
1. Kajima Corporation, Tokyo, Japan;
2. Japan Nuclear Safety Institute, Tokyo, Japan

Study on Methods for HCLPF Value of Nonlinear Supports System of Steam Generator ICONE26-81279
FengChun Cai, Xianhui Ye, Qian Huang, Wenzheng Zhang
Nuclear Power Institute of China, Chengdu, China

Influence of Gap Size on Added Mass for Spent Fuel Storage Rack ICONE26-82595
Daogang Lu, Yu Liu, Shu Zheng
North China Electric Power University, Beijing, China

Transient Analysis of Fire Protection System at a Nuclear Power Plant using Computer Code USLAM ICONE26-82622
Asif Arastu[1] Eugene Tom[2]
1. Unisont Engineering, Inc., Castro Valley, CA, USA;
2. Unisont Engineering, Inc., Oakland, CA, USA

Nuclear Safety, Security, and Cyber Security

6-5 Security of SMRs and Advanced Reactors I

Thursday July 26 Room Bouzy | 08:30 – 10:30

Session Chair: Daming Liu, IAEA, Vienna, Austria

Session Co-Chair: Akira Yamada, Toshiba Energy Systems & Solutions Corp., Kawasaki, Japan

Session Co-Chair: Wang Cong, Naval University of Engineering Wuhan, Hubei, China

Calculation of Core Damage Frequency Caused by Main Control Broad Fire in the Main Control Room for Small Momular Reactors ICONE26-81467
Wanhong Wang, Changhong Peng, Yun Guo
University of Science and Technology of China, Hefei, China

Transient Thermal Behaviors of SBO Accident for a 200MW OFNP under Heaving Motion Conditions ICONE26-81880
Yan Qiqi[1] Simin Luo[1] Yapei Zhang[1] Liu Limin[1] Guanghui Su[1] Suizheng Qiu[2]
1. Xi'an Jiao Tong University, xi'an, China; 2. School of Nuclear Science and Technology, Xi'an Jiao Tong University, Xi'an, China

Research on the Passive Residual Heat Removal System of Floating Nuclear Plants ICONE26-82219
Wang Cong[1] Jue Wang[2] Chen Hu[2] Yi Liao[2] Lei Chen[2]
1. Naval University of Engineering, Wuhan, China; 2. Wuhan Second Ship Design and Research Institute, Wuhan, China

Assessment of Control Room Radiological Habitability of High-Temperature Reactor Pebble-Bed Module in Shidao Bay Multi-Reactor Nuclear Power Site ICONE26-82448
Xinpeng Li, Sheng Fang
Tsinghua University, Beijing, China

Structural Redundancy Design and Reliability Analysis of Magnetic Bearing for HTGR Primary Helium Circulator ICONE26-81336
Yangbo Zheng, Zhengang Shi, Xingnan Liu, Mo Ni, Guojun Yang
Tsinghua University, Beijing, China

Development of Boron Dilution Model in COBRA-EN ICONE26-82269
Hao Yu[1] Mingjun Wang[1] Suizheng Qiu[2] Wenxi Tian[1] Guanghui Su[1]
1. Xi'an Jiao Tong University, Xi'an, China; 2. School of Nuclear Science and Technology, Xi'an Jiao Tong University, Xi'an, China

Thermal-Hydraulics and Safety Analyses

8-6 Thermal-hydraulic Experiments I

Thursday July 26 Room Reims | 08:30 – 10:30

Session Chair: Suizheng Qiu, School of Nuclear Science and Technology, Xi'An Jiaotong University, China

Experimental Study of a Micrometer-sized Droplet Impinging on a Smooth Heated Surface ICONE26-81038
Zhen Zhang, Kai Chen, Peixue Jiang, Xing-Tuan Yang
Tsinghua University, Beijing, China

Development of Experimental Facility to Study Channel Disassembly Behaviour for Indian PHW Reactor during Heatup ICONE26-81312
Pradeep Sahoo[1] Ankit Singh[2]
1. Botswana International University of Science & Technology - BIUST, Palapye, Botswana; 2. Indian Institute of Technology Roorkee, Roorkee, UK, India

Experimental Study on the Safety Injection Pump (SIP) Failure Accompanied by the Steam Generator Tube Rupture (SGTR) ICONE26-81460
Yusun Park, Byoung-Uhn Bae, Jongrok Kim, Jae Bong Lee, Hae Min Park, Nam Hyun Choi, Kyoung Ho Kang
Korea Atomic Energy Research Institute, Daejeon, Korea

Turbulent Transverse Plane PIV Measurements on a Wire-Wrapped 61-Pin Hexagonal Fuel Bundle ICONE26-81462
Nolan Goth[1] Philip Jones[1] Thien D. Nguyen[1] Rodolfo Vaghetto[2] Yassin Hassan[2]
1. Texas A&M Nuclear Engineering, College Station, TX, USA; 2. Texas A&M University, College Station, TX, USA

A Piezoelectric Droplet Generating Device for Experiment in Successive Droplets Impacting onto Solid Surface ICONE26-81475
Jianxin Li[1] Huang Zhang[1] Yuzheng Li[1] Qianfeng Liu[2] HanLiang Bo[1]
1. Tsinghua University, Beijing, China; 2. Institute of Nuclear and New Energy Technology, Tsinghua University, Beijing, China

Mechanism of Flashing Phenomena Induced by Microwave Heating ICONE26-81699
Shunya Fujita[1] Yutaka Abe[2] Akiko Kaneko[2] Tomohisa Yuasa[2] Tomoomi Segawa[3] Yoshikazu Yamada[3] Yoshiyuki Kato[3] Katsunori Ishii[3]
1. University of Tsukuba, Ibaraki, Japan; 2. University of Tsukuba, Tsukuba, Japan; 3. Japan Atomic Energy Agency, Ibaraki, Japan

Thermal-Hydraulics and Safety Analyses

8-14 Core Experiments, Phenomena, and Modeling

Thursday July 26 Room Alsace | 08:30 – 10:30

Session Chair: Mingjun Wang, Xi'an Jiaotong University, China

Research on the Physical Modelling for the Subchannel Analysis of PWR Core ICONE26-81231
Guangliang Chen, Xiaomeng Dong, Lei Li, Peizheng Hu, Thompson Appah, Zhaofei Tian, Zhijian Zhang
Harbin Engineering University, Harbin, China

Analysis of Flow Blockage of a Single Fuel Assembly in the JRR-3 20MW Research Reactor ICONE26-81313
Yu-chuan Guo, Guanbo Wang, Dazhi Qian, Heng Yu, Bo Hu
China Academy of Engineering Physics, Mianyang, China

A Numerical Research of the Resistance Characteristics of the Bottom Nozzle in the Annular Fuel Assembly ICONE26-82259
Minghui Duan, Minfu Zhao
China Institute of Atomic Energy, Beijing, China

Thermal Hydraulic Design of a Million Kilowatt Travelling Wave Reactor Core ICONE26-82103
Lin Chao
China Institute of Atomic Energy, Beijing, China

Influence of Spacer Elements on Flow Distribution and Heat Transfer in Experimental Models of Fuel Assemblies ICONE26-82163
Nikolay Pribaturin[1] Oleg Kashinsky[1] Dmitry Kulikov[2]
Alexandr Kurdyumov[2] Sergey Lezhnin[2] Pavel Lobanov[2] Julio Pacio[3]
Leonid Stoppel[3] Aleksandr Svetonosov[2] Thomas Wetzel[3]
1. Institute of Thermophysics SB RAS, Novosibirsk, Russia; 2. Kutateladze Institute of Thermophysics, Novosibirsk, Russia; 3. Karlsruhe Institute of Technology, Eggenstein-Leopoldshafen, Germany

Thermal-Hydraulics and Safety Analyses

8-30 Thermal-hydraulic Experiments III

Thursday July 26 Room Cremant | 08:30 – 10:30

Session Chair: Chikako Iwaki, Toshiba Energy Systems & Solutions Corporation, Japan

Experimental Nusselt Number in Rod Bundles Cooled by Heavy-Liquid Metals ICONE26-82213
Julio Pacio[1] Markus Daubner[1] Thomas Wetzel[1] Ivan Di Piazza[2]
Mariano Tarantino[2] Daniele Martelli[3] Morena Angelucci[4]
1. Karlsruhe Institute of Technology, Leopoldshafen, Germany;
2. ENEA C.R. Brasimone, Camugnano, Italy; 3. University of Pisa - Dipartimento di Ingegneria Civile ed Industriale (DICI), Pisa, Italy; 4. University of Pisa, Pisa, Italy

Effect of Subcooling and Nozzle Diameter on Heat Transfer Characteristics of Downward Facing Hot Surfaces using Mist Jet ICONE26-82211
Avadhesh Kumar Sharma, Monika Meena,
Anirudh Soni, Santosh Kumar Sahu
Indian Institute of Technology Indore, Indore, MP, India

Experimental Study on the Interaction of Molten SN with Water ICONE26-82204
Longkun He[1] Pengfei Liu[1] Xisi Zhang[2] Wenjun Hu[2]
Bo Kuang[1] Liangzhang Wei[1]
1. Shanghai Jiao Tong University, Shanghai, China; 2. China Institute of Atomic Energy, Beijing, China

Experimental Investigation and Flow Visualization of the Two-Phase Flow Instability at Low Vapor Quality in a Vertical Narrow Channel ICONE26-82052
Liqiang Pan, Yang Liu, Weihua Li, Yefei Liu
Tsinghua University, Beijing, China

Investigation on Flow and Breakdown Characteristics under Horizontal Shear of Water Film Falling Down Vertical Corrugated Plate Dryer ICONE26-81702
Wang Bo, Ruifeng Tian, Chen Bowen, Mao Feng
Harbin Engineering University, Harbin, China

Experimental Research on Steam Jetting and Condensation in Low Sub-Cooled Water ICONE26-81597
Chunhui Dai[1] Meng-Ran Liao[2] Qi Xiao[1] Jun Wu[1] Shao Dan Li[1] Jinlan Gou[1]
1. Wuhan Second Ship Design and Research Institute, Wuhan, China;
2. Key Lab. on Steam Power System, Wuhan Second Ship Design and Research Institute, Wuhan, China

Thermal-Hydraulics and Safety Analyses

8-36 Equipment Design Studies II

Thursday July 26 Room Muscadet | 08:30 – 10:30

Session Chair: Hirofumi Takeda, Central Research Institute of Electric Power Industry, Japan

Development of Device for Detecting Helium Leak from Canister: Part 1 – Experiment on Temperature Behavior during Gas Leak from Canister of 1/4.5 Scale Cask Model ICONE26-81477
Hirofumi Takeda[1] Masanori Goto[2]
1. Central Research Institute of Electric Power Industry, Chiba, Japan;
2. Hitachizosen, Tokyo, Japan

Vaporisation and Condensation in the Feed-Water System in the Turbine Building: How the Phenomenon Arises and How it Can Be Avoided ICONE26-81769
Thomas A. Probert
OKG AB, Oskarshamn, Sweden

The Effects of a Non-Condensable Gas on Pressurizer Insurge Transients under the High Pressure ICONE26-81772
Bolong Wang, Weihua Li, Haijun Jia, Jun Li
Tsinghua University, Beijing, China

ALFRED Steam Generator Assessment: Design and Pre-Test Analysis of HERO Experiment ICONE26-81824
Pierdomenico Lorusso[1] Alessio Pesetti[2] Mariano Tarantino[3]
1. University "La Sapienza", Roma, Italy; 2. University of Pisa, Pisa, Italy; 3. ENEA C.R. Brasimone, Camugnano, Italy

Design and Distortion Analysis of Thermal-Hydraulics Test Facility for the Fuel Transfer Tube ICONE26-81834
XiDao Mao[1] Yang Liu[2] Haijun Jia[2] Qiang Guo[1]
1. China Nuclear Power Engineering Co., Ltd., Beijing, China;
2. Tsinghua University, Beijing, China

Evaluation of IET Facility Applicability on Simulating SBLOCA in Large-Scale Passive PWR Plant ICONE26-82630
Haozheng Kong[1] Bo Kuang[1] Pengfei Liu[1]
Xia Lu[1] Lifang Liu[2] Bo Dong[2] Yi Yao[2]
1. Shanghai Jiao Tong University, Shanghai, China;
2. State Power Investment Central Research Institute Nuclear Power Software Development Center, Shanghai, China

Computational Fluid Dynamics (CFD)

9-5 Heat Transfer

Thursday July 26 Room Epernay | 08:30 – 10:30

Session Chair: Angel Papukchiev, Gesellschaft fuer Anlagen und Reaktorsicherheit (GRS) gGmbH, Germany

Session Co-Chair: Dan Li, University of Science and Technology of China, China

Session Co-Chair: Zhen Zhang, Tsinghua University, China

Experimental Validation of ANSYS CFX for Transient Flows with Heat Transfer in a Tubular Heat Exchanger ICONE26-81104
Angel Papukchiev
Gesellschaft fuer Anlagen und Reaktorsicherheit (GRS) gGmbH, Garching, Germany

Numerical Investigation on Turbulent Heat Transfer of Supercritical CO_2 in a Helically Coiled Tube ICONE26-81748
Xiaorui Huang[1] Zhen Zhang[1] Xing-Tuan Yang[1] Shengyao Jiang[1] Jiyuan Tu[2]
1. Tsinghua University, Beijing, China; 2. Institute of Nuclear and New Energy Technology, Tsinghua University, Beijing, China

Predicting Critical Heat Flux from First Principle Based Modeling in Multiphase CFD ICONE26-82426
Emilio Baglietto, Etienne Demarly, Ravikishore Kommajosyula
Massachusetts Institute of Technology, Cambridge, MA, USA

Numerical Analysis of Heat Transfer Characteristics of External Cooling Channel of the Lower Head ICONE26-81410
Dan Li, Yun Guo, Changhong Peng
University of Science and Technology of China, Hefei, China

Computational Fluid Dynamics (CFD)

9-12 Multi-phase Flow Analysis III

Thursday July 26 Room Mouton Cadet | 08:30 – 10:30

Session Chair: Hyukjin Song, Dongguk University, Korea

Session Co-Chair: Ying Liu, Nuclear Power Institue of China, China

Session Co-Chair: Fulong Zhao, Tsinghua University, China

Prediction of Subcooled Boiling with Uncertainties from Boundary Conditions and Interaction Models ICONE26-81101
Tenglong Cong, Minjun Peng, Xiang Zhang
Harbin Engineering University, Harbin, China

Stokes Number Analysis of the Moving Droplets in the Steam-Water Separator ICONE26-81299
Fulong Zhao[1] Qianfeng Liu[2] Chenru Zhao[1] HanLiang Bo[1] Ying Liu[3] Ya Zhou[4]
1. Tsinghua University, Beijing, China; 2. Institute of Nuclear and New Energy Technology, Tsinghua University, Beijing, China; 3. Nuclear Power Institute of China, Chengdu, China; 4. AFD China Intellectual Property, Beijing, China

DEM-CFD Study on Fluid Flow through Radial Layered Composite Packed Beds ICONE26-81343
Zehua Guo, Zhongning Sun, Nan Zhang, Ming Ding,
Haozhi Bian, Zhaoming Meng
Harbin Engineering University, Harbin, China

CFD Simulation of Fission Gas Release under Fuel Defects Condition in Pressurized Water Reactor ICONE26-81398
Bing Dong, Leihao Li, Chenyue Li, Junlian Yin, Wang Dezhong
Shanghai Jiao Tong University, Shanghai, China

Computation of Solid Melting with Wall Boiling under External Reactor Vessel Cooling ICONE26-81499
Hyukjin Song[1] Jong Woon Park[2]
1. Dongguk University, Gyeongju, Korea; 2. Dongguk University, Dept. Nuclear & Energy Eng., Gyeongju, Korea

Modeling of Low and High Void Fraction Two-Phase Flow in a Vertical Pipe by using the Two-Fluid Model ICONE26-81583
Shimo Yu, Xiao Yan, Junyi Zhang
Nuclear Power Institute of China, Chengdu, China

Mitigation Strategies for Beyond Design Basis Events

11-1 Core Cooling, Core Degradation and In-Vessel Melt Retention

Thursday July 26 Room Bourg | 08:30 – 10:30

Session Chair: Alexei Miassoedov, Karlsruhe Institute of Technology, Germany

Experimental Study on Flow Instability during Gravity-Driven Reflooding ICONE26-81736
Lili Tong[1] Dandi Zhang[1] Liqiang Hou[2] Xiaoji Wang[2]
1. Shanghai Jiao Tong University, Shanghai, China; 2. Nuclear Power Institute of China, Chengdu, China

Reactor Core Cooling Performance of a Passive Endothermic Reaction Cooling System during Design and Non-Design Basis Accidents ICONE26-81896
Nathan R. Murray, Mitchell E. Sailsbery, Samuel E. Bischoff,
Paul R. Wilding, Matthew J Memmott
Brigham Young University, Provo, UT, USA

Evaluation of the Kinetics of Molten Pool Stratification in Case of In-Vessel Melt Retention Strategy ICONE26-82243
Laure Carénini, Florian Fichot
IRSN, Saint Paul Lez Durance, France

A Revised Methodology to Assess In-Vessel Retention Strategy for High-Power Reactors ICONE26-82248
Florian Fichot[1] Laure Carénini[1] Sevostian Bechta[2] Walter Villanueva[2]
1. IRSN, St Paul lez Durance, France; 2. KTH, Stockholm, Sweden

Assessment of Scale-Down Models of SFR-RVCS ICONE26-82591
Koung Moon Kim[1] Ji-Hwan Hwang[2] Dong-Wook Jerng[2] Ho Seon Ahn[1]
1. Incheon National University, Incheon, Korea; 2. Chung-Ang University, Seoul, Korea

Innovative Nuclear Power Plant Design and SMRs

13-3 Advanced Reactors I

Thursday July 26 Room Talbot | 08:30 – 10:30

Session Chair: Zhaocan Meng, State Power Investment Corporation Research Institute, China

Session Co-Chair: Hirota Noriaki, Japan Atomic Energy Agency, Japan

Comparative Study of Helium Turbine Brayton Cycle and Supercritical CO_2 Brayton Cycle for HTGR ICONE26-81561
Gang Zhao[1] Xiaoyong Yang[1] Ping Ye[2] Wei Peng[1] Jie Wang[2]
1. Tsinghua University, Beijing, China; 2. INET, Tsinghua University, Beijing, China

A Concept of Intermediate Heat Exchanger for High-Temperature Gas Reactor Hydrogen and Power Cogeneration System ICONE26-81718
Hirota Noriaki[1] Terada Atsuhiko[1] Xing L. Yan[1] Tanaka Kohei[2] Otani Akihito[2]
1. Japan Atomic Energy Agency, Ibaraki-ken, Japan; 2. IHI Corporation, Yokohama, Japan

European Utility Requirements for Advanced LWR Issue of EUR Revision E and Ongoing Assessments ICONE26-82343
Peter Chappell[1] Guillaume Jacquart[2] Olli Kymäläinen[3] Giovanni Ferraro[2]
1. EDF Energy, Bristol, United Kingdom; 2. EDF, DIPNN/SEPTEN, Lyon, France; 3. FORTUM, Helsinki, Finland

Status of District Heating Reactor and its Development Prospects in China ICONE26-82445
Jing Zhao, Fei Xie, Zhihong Liu
Tsinghua University, Beijing, China

Dynamic Modeling of the NSSS based on NHR200-II Nuclear Heating Reactor ICONE26-82579
Zhe Dong, Yifei Pan, Miao Liu, Xiaojin Huang
Tsinghua University, Beijing, China

Risk Assessments and Management

14-2 Risk Assessment and Management II

Thursday July 26 Room Cognac | 08:30 – 10:30

Session Chair: Qinfang Zhang, Shanghai Nuclear Engineering Research & Design Institute, China

Session Co-Chair: Meiru Liu, China Nuclear Power Engineering Co.,LTD, China

A Review of Multi-Unit Nuclear Power Plant Probabilistic Risk Assessment Research ICONE26-81130
Taotao Zhou, Mohammad Modarres, Enrique Droguett
University of Maryland College Park, College Park, MD, USA

Evaluation of Core Damage Frequency of High Flux Engineering Test Reactor from Internal Events ICONE26-81176
Jinlin Liu, Wanhong Wang, Changhong Peng, Yun Guo
University of Science and Technology of China, Hefei, China

Study on Shutdown Fire PRA for Nuclear Power Plant ICONE26-81272
Meiru Liu[1] Qingnan Zhao[1] Wei Deng[1] Jinyan Du[1] Lin Sun[2]
1. China Nuclear Power Engineering Co., Ltd., Beijing, China; 2. Harbin Engineering University, Harbin, China

Design and Development of DeRisk: A Fault Tree Analysis Program Package ICONE26-81291
Zhenxu Zhou, Hao Nie, Qin Zhang
Tsinghua University, Beijing, China

Design and Development of the Platform for Significance Determination Process System for Nuclear Power Plant ICONE26-81399
Qinfang Zhang[1] Guoxu Zhang[1] Zilong Wang[2] Qi Dong[1] Guofeng Tang[1]
1. Shanghai Nuclear Engineering Research and Design Institute Co. Ltd., Shanghai, China; 2. CNNC Nuclear Power Operations Management Co. Ltd, Zhejiang, China

Computer Code Verification and Validation

15-1 Methodologies, Protocols, and Strategies for Conducting V&V

Thursday July 26 Room Lalande | 08:30 – 10:30

Session Chair: Marco Lanfredini, GRNSPG-University of Pisa, Italy

Session Co-Chair: Aaron Krueger, Texas A&M University, College Station, TX, United States

A Continuous Integration Platform for the Deterministic Safety Analyses Code System AC² ICONE26-81123
Joachim Herb
Gesellschaft für Anlagen- und Reaktorsicherheit (GRS) gGmbH, Garching bei München, Germany

Rigorous Code Verification: An Additional Tool to Use with the Method of Manufactured Solutions ICONE26-82438
Aaron Krueger[1] Vincent Mousseau[2] Yassin Hassan[1]
1. Texas A&M University, College Station, TX, USA; 2. Sandia National Laboratories, Albuquerque, NM, USA

Moving from V&V to V&V&C in Nuclear Thermal-Hydraulics ICONE26-82574
Francesco D'Auria[1] Marco Lanfredini[2]
1. University of Pisa, Pisa, Italy; 2. GRNSPG-University of Pisa, Pisa, Italy

Two Stage Data Driven V&V for an Agile Thermohydraulic Analysis Method ICONE26-82628
Christopher Bennett, Scott Adams, Nicholas Alexander
Rolls-Royce, Derby, United Kingdom

The International Experimental Thermal Hydraulic Systems Database (TIETHYS): A New NEA Validation Tool ICONE26-82631
Upendra Rohatgi[1] James Dyrda[2] Nicolas Soppera[2]
1. Brookhaven National Laboratory, Upton, NY, USA; 2. Nuclear Energy Agency-OECD, Boulogne-Billancourt, France

Application of RELAP/SCDAPSIM/MOD4.1 to the Analysis of Advanced Reactor/Fluid Systems with Liquid Molten Salt in the Presence of Non-Condensable Gases ICONE26-82041
Shuying Jiang[1] Zheng Fu[1] M. Perez-Ferragut[2] Judith Hohorst[1]
1. Innovative Systems Software, Idaho Falls, ID, USA; 2. Innovative Systems Software, Ammon, ID, USA

10:30 – 11:00 Chablis Suite, Ground Floor

COFFEE BREAK

11:00 – 13:00

TECHNICAL SESSIONS

Nuclear Fuel and Material, Reactor Physics and Transport Theory

2-11 Nuclear Fuel Safety and Performance Analysis III

Thursday July 26 Room Bourg | 11:00 – 13:00

Session Chair: Wenzhong Zhou, City University of Hong Kong, Hong Kong

Geometry Sensitivity of a CANDU Fuel Bundle on Dryout Power ICONE26-81674
Joohwan Park, Jong Yeob Jung
KAERI, Taejon, Korea

Modeling for Gas Bubble Evolution in Nuclear Fuels ICONE26-82648
San-Qiang Shi, Zhihua Xiao
Department of Mechanical Engineering, Hong Kong, Hong Kong

Multiphysics Modeling of Thorium-Based (Th, U)O_2 and (Th, Pu)O_2 Fuel Performance in a Light Water Reactor ICONE26-81237
Rong Liu[1] Jiejin Cai[1] Wenzhong Zhou[2] Ye Wang[1]
1. South China University of Technology, Guangzhou, China;
2. City University of Hong Kong, Kowloon, Hong Kong

Preliminary Development of a TRISO Fuel Performance Analysis Code: FFAT ICONE26-82242
Jian Li, Ding She, Lei Shi, Jing Zhao
Tsinghua University, Beijing, China

(1) An Era of Small and Medium Sized Reactors (SMRs) in Power Generation and Other Miscellaneous Use; (2) Evaluation of Triso Fuel Performance in PWRs ICONE26-82645
Anwar Hussain, Amjad Nawaz
PIEAS, Islamabad, Pakistan

Experiences on Radioactive Materials Safe Transport in CIRP ICONE26-82009
Jiangang Zhang, Guoqiang Li, Renze Wang, Hongchao Sun, Dajie Zhuang, Shutang Sun, Dongyuan Meng
China Institute for Radiation Protection, Taiyuan, China

Plant Systems, Structures, Components and Materials

3-13 Structural Materials

Thursday July 26 Room Chalon | 11:00 – 13:00

Session Chair: Carsten Schroer, Karlsruhe Institute of Technology (KIT), Germany

Session Co-Chair: Leon Cizelj, Jozef Stefan Institute, Slovenia

A Systematic Study of the Material Performance of Hot Isostatically Pressed Type 316L Stainless Steel Powder for the Civil Nuclear Sector ICONE26-81438
William Kyffin[1] David Gandy[2] Barry Burdett[3]
1. Nuclear AMRC, Rotherham, United Kingdom; 2. Electric Power Research Institute, Charlotte, NC, USA; 3. W B Burdett Associates, Truro, United Kingdom

Towards in situ Thermomechanical Property Monitoring during Ion Beam Irradiation: Benchmark Studies on Pure Copper ICONE26-82014
Cody Dennett[1] Khalid Hattar[2] Michael Short[1]
1. Massachusetts Institute of Technology, Cambridge, MA, USA;
2. Sandia National Laboratories, Albuquerque, NM, USA

Quantifying Radiation Damage in Materials using Stored Energy Fingerprints ICONE26-82403
Charles Hirst, Rachel Connick, Penghui Cao, Kangpyo So, R. Scott Kemp, Michael Short
Massachusetts Institute of Technology, Cambridge, MA, USA

Welded Joint Evaluation for Chromium Controlled Carbon Steel Piping to Improve FAC Resistance ICONE26-81913
Yoshio Uemoto, Takahiro Kawabe, Hiroyuki Shibata, Shoh Tarasawa, Hiroshi Asano, Junya Kaneda
Hitachi-GE Nuclear Energy, Ltd., Hitachi-shi, Japan

Oxidation Behaviors of Titanium Hydride and its Effect on the Desorption of Hydrogen ICONE26-82271
Lei Wang, Mingwang Ma, Binghua Tang
Institute of Electronic Engineering, China Academy of Engineering Physics, Mianyang, China

Comparison of the Oxide Films Formed on 308L and 309L Cladding Alloys in Simulated Pressurized Water Reactor Primary Water Environments ICONE26-82662
Zhanpeng Lu[1] Qi Xiong[2]
1. Shanghai University, Shanghai, China; 2. Shanghai University, School of Materials Science and Engineering, Shanghai, China

Nuclear Safety, Security, and Cyber Security

6-9 Radioactive Material Transport and Management

Thursday July 26 Room Epernay | 11:00 – 13:00

Session Chair: Kazuyuki Demachi, University of Tokyo, Tokyo, Japan

Session Co-Chair: Dongyuan Meng, China Institute for Radiation Protection, Taiyuan, Shanxi, China

Identification of Gas Accumulation Susceptibility in NPP's Safety Related Systems and Operability Evaluation due to Gas Transportation ICONE26-81074
Pei-Hsun Huang, Zhen-Yu Hung, Chao-Jen Li
industrial Technology Research Institute, Hsinchu, Taiwan

Facilities and Experience on Impact Test of Packages for Radioactive Materials Transport ICONE26-81451
Guoqiang Li, Dajie Zhuang, Xuexin Wang, Dongyuan Meng, Jiangang Zhang, Hongchao Sun, Shutang Sun, Anping Ma
China Institute for Radiation Protection, Taiyuan, China

Preliminary Design of Unloading Device for MNSR LEU Conversion ICONE26-81520
Hao Qian, Yiguo Li, Peng Dan, Wu Xiaobo, Lu Jin, Hong Jingyan, Jinhua Zhang, Mengjiao Wang
China Institute of Atomic Energy, Beijing, China

Vibration Reduction Design for Radiation Material Transport Package with Finite Element Method ICONE26-81862
Dongyuan Meng, Shutang Sun, Hongchao Sun, Guoqiang Li, Lei Chen
China Institute for Radiation Protection, Taiyuan, China

Tests of the Package for the Transport of Natural Uranium Hexafluoride ICONE26-82151
Hongchao Sun, Guoqiang Li, Dajie Zhuang, Shutang Sun, Dongyuan Meng, Yiren Lian, Chen Lei, Jiangang Zhang
China Institute for Radiation Protection, Taiyuan, China

Segmented i^3 Scanning Device and its Experimental Research ICONE26-82327
Suxia Hou, Chen Chen, Quanhu Zhang, Xianghua Su, Wenming Zuo
Xi'an High-tech Research Institute, Xi'An, China

Nuclear Safety, Security, and Cyber Security

6-10 Security of SMRs and Advanced Reactors II

Thursday July 26 Room Bouzy | 11:00 – 13:00

Session Chair: Hongxing Yu, Nuclear Power Institute of China, Chengdu, Sichuan Province, China

Session Co-Chair: Munemichi Kawaguchi, Japan Atomic Energy Agency, Tsuruga-shi, Japan

Evaluation Method of Response Reliability during an Accident and its Applicability to Fast Reactor Plants ICONE26-82567
Masaaki Suzuki[1] Kazuyuki Demachi[2]
Shigeru Takaya[3] Yoshitaka Chikazawa[3]
1. Tokyo University of Science, Chiba, Japan; 2. The University of Tokyo, Tokyo, Japan; 3. Japan Atomic Energy Agency, Ibaraki, Japan

Hangers and Supports Fault Analysis of High Temperature Sodium Pipelines for Sodium-Cooled Fast Reactor ICONE26-81832
Changzhi Xiao, Yuan Lu
China Institute of Atomic Energy, Beijing, China

Discussion About Sodium-Concrete Reaction in Presence of Internal Heater ICONE26-82233
Munemichi Kawaguchi[1] Miyahara Shinya[2] Uno Masayoshi[2]
1. Japan Atomic Energy Agency, Tsuruga-shi, Japan; 2. University of Fukui, Tsuruga-shi, Japan

Numerical Simulation of Debris Bed Relocation Behavior in Sodium-Cooled Fast Reactor ICONE26-82493
Chunming Teng, Bin Zhang, Jianqiang Shan
Xi'an Jiao Tong University, Xi'an, China

Tritium Transport Characteristics Analysis in Molten Salt Reactor under Transient Conditions ICONE26-81728
Hao Qin[1] Chenglong Wang[1] Suizheng Qiu[2]
Dalin Zhang[1] Wenxi Tian[1] Guanghui Su[1]
1. Xi'an Jiao Tong University, Xi'an, China; 2. School of Nuclear Science and Technology, Xi'an Jiao Tong University, Xi'an, China

Sensitivity Analysis of Burnup Performance and Pu Mass Balance by Changing Core and Blanket Fuel Design of SFR for Flexible Pu Management Options ICONE26-82618
Rie Fujioka[1] Hiroshi Sagara[1] Chi Young Han[2]
1. Tokyo Institute of Technology, Tokyo, Japan; 2. Tokyo Institute of Technology, Meguro-ku, Japan

Thermal-Hydraulics and Safety Analyses

8-27 Boiling Heat Transfer and Behavior II

Thursday July 26 Room Alsace | 11:00 – 13:00

Session Chair: Roman Mukin, Paul Scherrrer Institute, Switzerland

Sensitivity of CTF Solution to Subchannel Window Size ICONE26-82546
Roman Mukin[1] Ivor Clifford[1] Marcus Seidl[2] Hakim Ferroukhi[3]
1. Paul Scherrrer Institute, Villigen, Switzerland; 2. PreussenElektra GmbH (former E.ON Kernkraft GmbH), Hannover, Germany; 3. Paul Scherrer Institut / Laboratory for Reactor Physics and Systems Behaviour, Villigen, Switzerland

On the Liquid Film Flow Characteristics during the Rewetting in the Single Rod Air-Water System ICONE26-82491
Yuki Wada[1] Dan Le[2] Akira Satou[1] Sibamoto Yasuteru[3] Taisuke Yonomoto[1]
1. Japan Atomic Energy Agency, Tokai-mura, Japan; 2. Japan Atomic Energy Agency, Ibaraki, Japan; 3. Japan Atomic Energy Agency, Naka, Japan

A Brief Review of Computational Intelligence Techniques for Critical Heat Flux Prediction ICONE26-82325
Botao Jiang[1] Yanni Liu[2]
1. Xi'an Polytechnic University, China; 2. Xi'an Jiao Tong University, Xi'an, China

Experimental Investigation on Critical Heat Flux from Downward-Facing Flat Plate for Different Orientation Angles ICONE26-81844
Kuanghan Deng[1] Yan Zhang[1] Chenglong Wang[1] Yapei Zhang[1]
Wenxi Tian[1] Guanghui Su[1] Suizheng Qiu[2] Yun Wang[3]
1. Xi'an Jiao Tong University, Xi'an, China; 2. School of Nuclear Science and Technology, Xi'an Jiao Tong University, Xi'an, China; 3. Nuclear Power Institute of China, Chengdu, China

Experimental Study on the Critical Heat Flux of Nanofluid Flow Boiling under Different Conditions ICONE26-81752
Yun Wang[1] Kuanghan Deng[2] Junmei Wu[2] Nina Yue[1]
Yuanfeng Zan[1] Guanghui Su[2] Suizheng Qiu[3]
1. Nuclear Power Institute of China, Chengdu, China; 2. Xi'an Jiao Tong University, Xi'an, China; 3. School of Nuclear Science and Technology, Xi'an Jiao Tong University, Xi'an, China

Transient Boiling and Cross Flow in 5x5 Rod Bundle with Rapid Heating ICONE26-81496
Hiroki Takiguchi[1] Masahiro Furuya[1] Takahiro Arai[2] Kenetsu Shirakawa[2]
1. Central Research Institute of Electric Power Industry, Yokosuka, Japan; 2. Central Research Institute of Electric Power Industry, Kanagawa, Japan

Thermal-Hydraulics and Safety Analyses

8-28 Supercritical Fluids II

Thursday July 26 Room Muscadet | 11:00 – 13:00

Session Chair: Shenghui Liu, Nuclear Power Institute of China, China

Analysis of Unsteady Flow in a Supercritical Carbon Dioxide Radial Compressor Stage ICONE26-82183
Can Ma, Wei Wang, Jun Wu, Lu Dai
Wuhan Second Ship Design and Research Institute, Wuhan, China

An Experimental Study on a Straight-Channel Printed Circuit Heat Exchanger for Supercritical CO_2 Power Cycle Applications ICONE26-81588
Aiwei Xu, Yanping Huang, Junfeng Wang
Nuclear Power Institute of China, Chengdu, China

Investigation of Supercritical CO2 Thermal Hydraulic Characteristics in a Printed Circuit Heat Exchanger ICONE26-81581
Wen Fu, Xizhen Ma, Peiyue Li, Minghui Zhang, Sheng Li
Luoyang Ship Material Research Institute, Luoyang, China

Numerical Investigation of Buoyancy Effect on Forced Convective Heat Transfer to Supercritical Carbon Dioxide Flowing in a Heated Tube ICONE26-81450
Shenghui Liu, Yanping Huang, Guangxu Liu, Junfeng Wang
Nuclear Power Institute of China, Chengdu, China

Thermal-Hydraulics and Safety Analyses

8-31 Thermal-hydraulic Modeling: 1st Principle Physics and Correlations II

Thursday July 26 Room Fronsac | 11:00 – 13:00

Session Chair: Atsushi Kodama, Mitsubishi Heavy Industries, Ltd., Japan

Numerical Study on Streamwise Vorticity and Entrainment Enhancement of a Round Jet ICONE26-81794
Bangming Li[1] Qi Xiao[2] Yong Li[1] Xu Hu[1] Wei Wang[2]
1. Key Lab. on Steam Power System, Wuhan Second Ship Design and Research Institute, Wuhan, China; 2. Wuhan Second Ship Design and Research Institute, Wuhan, China

Impairment of Local Heat Transfer of the Turbulent Mixed Convection in a Vertical Flat Plate ICONE26-82010
Myeong-Seon Chae, Bum-Jin Chung
Kyung Hee University, Yongin-si, Korea

Development of Evaluation Method for Thermal Stratification by Cavity Flow in a Vertical Branch Pipe with Elbow and Horizontal Section: Experimental Results ICONE26-81143
Atsushi Kodama, Yoshiteru Komuro, Keiichi Hori, Hironori Noguchi, Yoshiyuki Kondo, Koichi Tanimoto
Mitsubishi Heavy Industries, Ltd., Hyogo, Japan

Development of Evaluation Method for Thermal Stratification by Cavity Flow in a Vertical Branch Pipe with Elbow and Horizontal Section: Modeling of Evaluation Method ICONE26-81144
Atsushi Kodama, Yoshiteru Komuro, Keiichi Hori, Hironori Noguchi, Yoshiyuki Kondo, Koichi Tanimoto
Mitsubishi Heavy Industries, Ltd., Hyogo, Japan

Analysis and Parallel Implementation of Transient Thermal Feedback in Neutron Kinetics Calculation ICONE26-81442
Pingzhou Ming, Zhigang Li, Ping An, Wei Lu, Dong Liu, Hongxing Yu
Nuclear Power Institute of China, Chengdu, China

Developing an Accident Tolerant Fuel for Water-Cooled Reactors: Numerical Simulation and Validation of Natural Convection Heat Transfer and Transport in Packed Beds of Heated Microspheres ICONE26-82456
Olugbenga O Noah, Johan Slabber, Josua P Meyer
University of Pretoria, Pretoria, South Africa

Thermal-Hydraulics and Safety Analyses

8-33 Modeling NPPs Using System Analysis Software II

Thursday July 26 Room Reims | 11:00 – 13:00

Session Chair: Pavel Kral, UJV Rez (NRI), Czech Republic

Thermal Hydraulic Analyses for PTS Evaluation: Comparison of Temperature Fields at RPV Predicted by System TH Code and CFD Code ICONE26-81007
Pavel Kral, Ladislav Vyskocil
UJV Rez (NRI), Husinec - Rez, Czech Republic

Effect of Ocean Conditions on Neutronic/Thermal-Hydraulic Coupling of IPWR ICONE26-81080
Genglei Xia
Harbin Engineering University, Harbin, China

Probable Causes of Unexpected Multiple Destructions of Heat Exchanger Tubes of Some Low Pressure Reheaters on Nuclear Power Plants with VVER-1000 ICONE26-81083
Mikhail Gotovsky, Alexander A. Lanin, Vladimir E. Mikhailov, Yuri G. Sukhorukov, Nikolay N. Trifonov
Polzunov Institute, Saint Petersburg, Russia

Research on Steam Generator False Water Level Calculation Improvement for PWR NPP Simulation Program ICONE26-81128
Junying Hong[1] Zhao Xu[2]
1. CNPE, Beijing, China; 2. CNNC China Nuclear Power Engineering Co., Ltd., Beijing, China

A Simulation of Small Break Loss of Coolant Accident in Nuclear Heating Reactor based on RELAP5 ICONE26-81416
Meng Lu, Heng Xie
Tsinghua University, Beijing, China

Thermal Hydraulic Analysis of Pressurized Thermal Shock for Loviisa NPP using Apros Simulation Code ICONE26-81558
Gintaras Zemulis[1] Pasi Junninen[2] Petri Kytömäki[3]
1. Fortum Power and Heat Oy, Espoo, Finland; 2. Platom Oy, Mikkeli, Finland; 3. Fortum Power and Heat Oy/Loviisa NPP, Loviisa, Finland

Computational Fluid Dynamics (CFD)

9-9 Phase Change

Thursday July 26 Room Cremant | 11:00 – 13:00

Session Chair: Susumu Yamashita, Japan Atomic Energy Agency, Japan

Session Co-Chair: Gregory M. Cartland-Glover, Science and Technology Facilities Council, Scientific Coumputing Department,, United Kingdom

Modelling Frozen Salt Films in a Molten Salt Fast Reactor
ICONE26-82210
Gregory M. Cartland-Glover[1] Stefano Rolfo[2] Dzianis Litskevich[3]
Alex Skillen[1] David Emerson[2] Bruno Merk[3] Charles Moulinec[1]
1. Science and Technology Facilities Council, Scientific Computing Department, Warrington, United Kingdom; 2. STFC Daresbury Laboratory, Warrington, United Kingdom; 3. University of Liverpool, Liverpool, United Kingdom

CFD Analysis on Wall Boiling Model during Subcooled Boiling in Vertical Narrow Rectangular Channel ICONE26-81554
Tingting Ren, Changqi Yan, Meiyue Yan, Shengzhi Yu
Harbin Engineering University, Harbin, China

CFD Modeling of Condensation inside Emergency Condensers of Passive Heat Removal Systems ICONE26-81846
Amirhosein Moonesi Shabestary, Dirk Lucas, Eckhard Krepper
Helmholtz-Zentrum Dresden - Rossendorf, Dresden, Germany

Development of Numerical Simulation Method to Evaluate Molten Material Behaviors in Nuclear Reactors: Estimation of Fuel Debris Distribution in the Pedestal ICONE26-82088
Susumu Yamashita, Hiroyuki Yoshida
Japan Atomic Energy Agency, Tokai-Mura, Japan

Validation of a CFD Code for the Analysis of Hydrogen Behaviors and Thermal Hydraulics in Containments ICONE26-82192
Meilan Chen[1] Zeming Zheng[2]
1. China Nuclear Power Technology Research Institute, Shenzhen, China; 2. Sun Yat Sen University, Guangzhou, China

CFD Simulations of Aerosol Dispersion and Agglomeration during the Laser Cutting of Fukushima Fuel Debris Simulants
ICONE26-82408
Thomas Gelain[1] Emmanuel Porcheron[1]
Christophe Chagnot[2] Damien Roulet[3]
1. IRSN, Gif sur Yvette, France; 2. CEA, Gif sur Yvette, France; 3. ONET, Pierrelatte, France

Decontamination & Decommissioning, Radiation Protection, and Waste Management

10-3 Decommissioning and Sources

Thursday July 26 Room Mouton Cadet | 11:00 – 13:00

Session Chair: Naoko Watanabe, Hokkaido University, Japan

Session Co-Chair: Giorgio Locatelli, University of Leeds, United Kingdom

iDROP: An Innovative Software Program to Design Nuclear Decommissioning Scenarios ICONE26-81147
Caroline Chabal[1] Vincent Perrot[1] Mehdi Ben Mosbah[1]
Yves Soulabaille[2] Jean-Claude Thieblemont[2]
Fabien Chaffard[2] Yann Chevalier[1] Laurent Chodorge[3]
1. CEA DEN, Bagnols sur Ceze, France; 2. CEA, Bagnols sur Ceze, France; 3. CEA, Gif sur Yvette, France

Applying Statistics to Improve the Performance of Nuclear Decommissioning Projects ICONE26-81428
Diletta Colette Invernizzi, Giorgio Locatelli, Naomi J Brookes
University of Leeds, Leeds, United Kingdom

Cost Analysis for Decommissioning of Nuclear Power Plants with Uncertainties ICONE26-82572
Naoko Watanabe[1] Ryohei Miyoshi[1] Tamotsu Kozaki[1]
Shingo Tanaka[1] Satoshi Yanagihara[2]
1. Hokkaido University, Sapporo, Japan; 2. University of Fukui, Tsuruga-shi, Japan

Modelling on Source Term Calculation of Sodium Fast Reactor in Severe Accident and Normal Operating Condition ICONE26-81241
Fenglong Wang
CIAE, Beijing, China

An Inverse Method to Estimate Emission Rates of Multi-Radionuclides based on an Ensemble 4DVar Method with Local Gamma Dose Rate Measurements ICONE26-81609
Xiaobing Geng, Mei Xu, Biao Yuan, Lijun Zhang
Institute of NBC Defense, PLA Army, Beijing, China

R&D Status on Safety Regulation related to Decommissioning of Nuclear Facilities in Korea ICONE26-81678
Jungjoon Lee, Kyungwoo Choi
Korea Institute of Nuclear Safety, Daejeon, Korea

Innovative Nuclear Power Plant Design and SMRs

13-4 Advanced Reactors II

Thursday July 26 Room Talbot | 11:00 – 13:00

Session Chair: Hirota Noriaki, Japan Atomic Energy Agency, Japan

Extended Ultimate Response Measures for Offshore Nuclear Power Plant under Barge-Reactor Coupled Conditions
ICONE26-81159
Jue Wang[1] Longze Li[1] Chen Hu[1] Wang Cong[2]
1. Wuhan Second Ship Design and Research Institute, Wuhan, China; 2. Naval University of Engineering, Wuhan, China

Preliminary LOCA Analysis of Heating-Reactor of Advanced Low-pressurized and Passive Safety System (HAPPY)
ICONE26-81271
Mian Xing, Zhaocan Meng, Xiaotao Liao, Canhui Sun, Shuming Zhang, Yaodong Chen, Xiao Hu, Peidong Sun, Huijing Jiang
State Power Investment Central Research Institute, Beijing, China

A Multi-Objective Optimization of the Reactor Power Plant
ICONE26-82239
Lei Chen[1] Jia Zhen[1] Wang Cong[2] Gong Zili[1] Yi Liao[1] Chen Hu[1]
1. Wuhan Second Ship Design and Research Institute, Wuhan, China; 2. Naval University of Engineering, Wuhan, China

iB1350: Part 1 - A Generation III.7 Reactor iB1350 and Defense in Depth (DiD) ICONE26-82428
Takashi Sato[1] Keiji Matsumoto[1] Kenji Hosomi[1] Keisuke Taguchi[2]
1. Toshiba Energy Systems & Solutions Corporation, Yokohama, Japan; 2. Toshiba Energy Systems & Solutions Corporation, Kawasaki, Japan

iB1350: Part 2 - Level 1 PRA Considering Optimization of Safety Systems for the iB1350 ICONE26-82552
Go Tanaka, Takashi Sato, Yuji Komori, Keiji Matsumoto
Toshiba Energy Systems & Solutions Corporation, Yokohama, Japan

Risk Assessments and Management

14-3 Risk Assessment and Management III

Thursday July 26 Room Cognac | 11:00 – 13:00

Session Chair: Ge Shao, Shanghai Nuclear Engineering Research & Design Institute Co. Ltd, China

Dynamic Fault Tree Analysis based on Dynamic Uncertain Causality Graph ICONE26-81636
Zhenxu Zhou, Chunling Dong, Qin Zhang
Tsinghua University, Beijing, China

A PSA Case Study: Promoting the Reliability of the CRSS on the CMRR through the ATWS Mitigation System ICONE26-81755
Heng Yu, Guan-bo Wang, Da-zhi Qian, Yu-chuan Guo, Bo Hu
China Academy of Engineering Physics, Mianyang, China

The Necessity of Independent Configuration of the DC Power Supply System Used for Power Supply and Auxiliary Power Supply in Nuclear Power Plant ICONE26-81774
Zhang Zhichao
State Nuclear Power Demonstration Plant Co., Ltd, Rongcheng, China

Reliability Prediction for the Squib Valve of Advanced Passive PWR by Hardened Test Method ICONE26-81822
Ge Shao, Qinfang Zhang
Shanghai Nuclear Engineering Research & Design Institute Co. Ltd, Shanghai, China

Incorporation of the Radioactive Interinfluence in Multi-Unit Seismic PRA ICONE26-81928
Shuhei Matsunaka[1] Chikahiro Sato[2] Manabu Watanabe[3]
1. Tepco Systems Corporation, Tokyo, Japan; 2. Tepco Systems Corporation, Koto-ku, Japan; 3. Tokyo Electric Power Company Holdings, Inc., Chiyoda-ku, Japan

Computer Code Verification and Validation

15-2 V&V of High Fidelity Numerical Tools

Thursday July 26 Room Lalande | 11:00 – 13:00

Session Chair: Timothy Valentine, Oak Ridge National Laboratory, USA

Session Co-Chair: Tangpei Cheng, CAEP Software Center for High Performance Numerical Simulation, China

OECD-NEA Expert Group on Multi-Physics Experimental Data, Benchmarks and Validation ICONE26-81571
Timothy Valentine[1] Kostadin Ivanov[2] Maria Avramova[2] Alessandro Petruzzi[3] Jean-Pascal Hudelot[4] Upendra Rohatgi[5] Kiril Velkov[6]
1. Oak Ridge National Laboratory, Oak Ridge, TN, USA; 2. North Carolina State University, Raleigh, NC, USA; 3. Nuclear and INdustrial Engineering (NINE), Lucca, Italy; 4. CEA Cadarache, Saint Paul Lez Durance, France; 5. Brookhaven National Laboratory, Upton, NY, USA; 6. GRS, Garching bei München, Germany

A Discontinuous Finite Method for Neutron Transport Equations on 3-D Unstructured Grids ICONE26-81826
Junxia Wei, Shulin Yang
Institute of Applied Physics and Computational Mathematics, Beijing, China

Assessment of Time and Space High-Order Schemes for Two-Fluid Seven-Equation Two-Pressure Model using the Reversed Water Faucet Problem ICONE26-81942
Fei Chao, Jianqiang Shan, Junli Gou, Pan Wu, Li Ge
Xi'an Jiao Tong University, Xi'an, China

CFD Validation with a PIV Provided Experimental Data for the Coolant Velocity Measurement in Reactor Vessel Down-Comer ICONE26-82212
Abdelgadir Eltayeb, Sichao Tan, Ayodeji A. Ala, Nisrene M.Ahmed, Zhang Qi
Harbin Engineering University, Harbin, China

JSNT-S: A Parallel 3D Discrete Ordinates Radiation Transport Code on Structured Mesh ICONE26-82252
Tangpei Cheng[1] Zeyao Mo[2] Chao Yang[2] Lili Wen[2] Li Deng[2]
1. CAEP Software Center for High Performance Numerical Simulation, Beijing, China; 2. Institute of Applied Physics and Computational Mathematics, Beijing, China

Simulation of JAERI Downcomer Effective Water Head Experiments with WCOBRA/TRAC-TF2 ICONE26-82610
Jeffrey Kobelak, Jun Liao, Katsuhiro Ohkawa
Westinghouse Electric Company, Cranberry Twp., PA, USA

13:00 – 14:00 Chablis Suite, Ground Floor

LUNCH

14:00 – 16:00

TECHNICAL SESSIONS

Plant Systems, Structures, Components and Materials

3-3 Design Analyses I

Thursday July 26 Room Chalon | 14:00 – 16:00

Session Chair: Asif Arastu, Unisont Engineering, Inc., USA

Session Co-Chair: Ziduan (Joshua) Shang, Shanghai Nuclear Engineering R & D Institute (SNERDI), China

Study on the Mechanism and Characteristics of Transient Noise of the Steam Discharge Pipes ICONE26-81938
Lu Dai, Zhiguo Wei, Jun Wu, Yong Liu, Can Ma, Qi Xiao
Wuhan Second Ship Design and Research Institute, Wuhan, China

Design of the Sampling Measurement and Radiochemistry Lab in the Nuclear Island of HTR-PM ICONE26-81701
Mengqi Lou[1] Wenqian Li[1] Feng Xie[2] Jianzhu Cao[2] Liqiang Wei[2] Jiejuan Tong[2] Jiaji Kong[3]
1. Tsinghua University, Beijing, China; 2. Institute of Nuclear and New Energy Technology, Tsinghua University, Beijing, China; 3. Chinergy Company, LTD, Beijing, China

A Recommended Method for SC Wall Design-Evaluation Regarding the Elasto-Plastic Behavior under Beyond Design Basis Seismic Loading ICONE26-81088
Ziduan (Joshua) Shang, Xiao Huang, Yugang Sun, Meng Chu
Shanghai Nuclear Engineering R & D Institute (SNERDI), Shanghai, China

The Design and Research on Steam Dump Valve in Turbine By-Pass System-A of ACP1000 ICONE26-81363
Hou Ting, Yu Pei
China Nuclear Power Engineering Co., Ltd., Beijing, China

Eulerian Two-Fluid Model for Aerosol Removal in Filtered Containment Venting Scrubbers ICONE26-81506
Ji-Su Kim[1] Jong Woon Park[2] Minkyung Kim[1]
1. Dongguk University, Gyeongju, Korea; 2. Dongguk University, Dept. Nuclear & Energy Eng., Gyeongju, Korea

Advanced Reactors and Fusion Technologies

5-6 Fission Reactors Design and Analyses II

Thursday July 26 Room Bouzy | 14:00 – 16:00

Session Chair: Rosa Lo Frano, Univeristy of Pisa, Italy

Session Co-Chair: Jovica Riznic, Canadian Nuclear Safety Commission, Canada

The EUR Assessment Process and Highlights of the Compliance Analysis for the EU-APR Standard Design ICONE26-81889
Cedric Declercq[1] Andrew Ballard[2] Giovanni Ferraro[3] Anicet Touré[1]
1. Tractebel ENGIE, Brussels, Belgium; 2. Tractebel ENGIE, Manchester, United Kingdom; 3. EDF, DIPNN/SEPTEN, Lyon, France

An Instrument Established for the High Temperature Measurement of Ultraviolet-Visible Absorption Spectra of Molten Fluoride Salt Behaving As Coolant in the Molten Salt Reactor ICONE26-82013
Hongtao Liu, Yiyang Liu, Tao Su
Shanghai Institute of Applied Physics (SINAP), Chinese Academy of Sciences (CAS), ShangHai, China

Development of Oxygen Sensors for Large HLM-Pool Reactor Systems ICONE26-82232
Serena Bassini, Ivan Di Piazza, Mariano Tarantino
ENEA C.R. Brasimone, Camugnano, Italy

Thermal-Hydraulic Evaluation of Design Concept of Containment Pressure and Radioactivity Suppression System (CPRSS) for SMR ICONE26-82671
Kyung Jun Kang[1] Ji-Han Chun[1] Han-Ok Kang[1]
Seong Su Jeon[2] Soon-Joon Hong[3]
1. Korea Atomic Energy Research Institute, Daejeon, Korea; 2. FNC Technology, Yongin-si, Korea; 3. FNC Technology Co., Ltd., Gyeonggi-Do, Korea

Design and Safety Features Analysis of the 2MW Chinese Thorium Molten Salt Test Reactor TMSR-LF1 ICONE26-82689
Chong Zhou
Shanghai Institute of Applied Physics, Chinese Academy of Sciences, Shanghai, China

Nuclear Safety, Security, and Cyber Security

6-7 Nuclear Accidents II

Thursday July 26 Room Epernay | 14:00 – 16:00

Session Chair: Mohammad Pourgol Mohammad, Independent Consultant, Boston, MA, USA

Session Co-Chair: Deyang Xu, China Nuclear Power Technology Research Institute, Shenzhen, China

Development of Experimental Technology for Simulated Fuel-Assembly Heating to Address Core-Material-Relocation Behavior during Severe Accident ICONE26-81411
Yuta Abe[1] Yamashita Takuya[2] Ikken Sato[2]
Toshio Nakagiri[2] Akihiro Ishimi[1] Yuji Nagae[2]
1. Japan Atomic Energy Agency, Oarai-machi, Japan; 2. Japan Atomic Energy Agency: JAEA, International Research Institute for Nuclear Decommissioning: IRID, Oarai-machi, Japan

Preliminary Hazard Analysis of Uranium Hexafluoride Accident ICONE26-81956
Chen Lei, Jiangang Zhang, Guoqiang Li,
Shutang Sun, Dongyuan Meng, Ning Wang
China Institute for Radiation Protection, TaiYuan, China

LBLOCA Initiated Emergency Condition Analysis for a China Three-Loop PWR ICONE26-81960
Ning Wang, Chen Lei, Jiangang Zhang, Yapeng Yang,
Xiaoxiao Xu, Zongyang Feng, Linsheng Jia
China Institute for Radiation Protection, Taiyuan, China

Analysis of Hydrogen Source Term in Severe Accidents ICONE26-82162
Deyang Xu, Meilan Chen
China Nuclear Power Technology Research Institute, Shenzhen, China

Research on the Influence of Complex Terrain on Atmospheric Dispersion after Accident ICONE26-81378
Nan Wu, Na Xue, Xinjian Liu
China Nuclear Power Engineering Co., Ltd., Beijing, China

Study of Leakage Location for a Dry Storage of Spent Fuel under Accident Condition by Simulation of Radionuclide Diffusion ICONE26-82606
Liwei Chen, Tao He, Chunhua Chen
Key Laboratory of Neutronics and Radiation Safety, Institute of Nuclear Energy Safety Technology, Hefei, China

Thermal-Hydraulics and Safety Analyses

8-3 Severe Accident Experiments and Analyses I

Thursday July 26 Room Mouton Cadet | 14:00 – 16:00

Session Chair: Guanghui Su, Xi'an Jiaotong University, China

Experimental Investigation on Steam Jet Condensation in Subcooled Water through Double Nozzle ICONE26-81118
Weichao Li, Zhaoming Meng, Zhongning Sun, Jiaqing Liu
Harbin Engineering University, Harbin, China

Three-Dimensional Numerical Study on Pool Stratification Behavior in Molten Corium-Concrete Interaction (MCCI) with MPS Method ICONE26-82037
Xin Li[1] Ikken Sato[2] Akifumi Yamaji[3] Guangtao Duan[4]
1. Japan Atomic Energy Agency, Ibaraki-ken, Japan; 2. Japan Atomic Energy Agency: JAEA, International Research Institute for Nuclear Decommissioning: IRID, Oarai-machi, Japan; 3. Waseda University, Shinjyuku-ku, Japan; 4. Waseda University, Tokyo, Japan

Simulation of Hydrogen Distribution due to In-Vessel Severe Accident in WWER-1000 NPP CONTAINment: A Comparison of CONTAIN and MELCOR Codes Results ICONE26-82635
Omid Noorikalkhoran, Massimiliano Gei
Cardiff University, Cardiff, United Kingdom

Severe Accident Analysis with Spatial Discretized Model by MAAP: Part 1 - Parametric Study on Fukushima-Daiichi Unit-2 ICONE26-82129
Kenichi Kanda[1] Yoshihisa Nishi[1] Kazuma Abe[1] Satoshi Nishimura[2] Koichi Nakamura[2] Masahiro Furuya[3] Atsushi Ui[2]
1. Central Research Institute of Electric Power Industry, Tokyo, Japan; 2. Central Research Institute of Electric Power Industry, Kanagawa, Japan; 3. Central Research Institute of Electric Power Industry, Yokosuka, Japan

Study on Thermal-Hydraulics Characteristics of the Flat and High-Thermal-Conductivity Core-Catcher ICONE26-82046
Daiki Takeyama[1] Chikako Iwaki[2] Mika Tahara[3] Yoichi Onitsuka[2]
1. Toshiba Corporation, Yokohama, Japan; 2. Toshiba Energy Systems & Solutinos Corporation, Yokohama, Japan; 3. Toshiba Energy Systems & Solutinos Corporation, Kanagawa, Japan

Severe Accident Analysis with Spatial Discretized Model by MAAP: Part 2 - Parametric Study on Fukushima-Daiichi Unit-3 ICONE26-82018
Yoshihisa Nishi[1] Kenichi Kanda[1] Kazuma Abe[1] Satoshi Nishimura[2] Koichi Nakamura[2] Masahiro Furuya[3] Atsushi Ui[2]
1. Central Research Institute of Electric Power Industry, Tokyo, Japan; 2. Central Research Institute of Electric Power Industry, Kanagawa, Japan; 3. Central Research Institute of Electric Power Industry, Yokosuka, Japan

Thermal-Hydraulics and Safety Analyses

8-29 Thermal-hydraulic Experiments II

Thursday July 26 Room Alsace | 14:00 – 16:00

Session Chair: Yingwei Wu, Xi'an Jiaotong University, China

X-Ray CT Visualization of Boiling Two-Phase Flow and Precipitation Profile of Sea Water and Borated Water in 5x5 Heated-Rod Bundle ICONE26-82658
Masahiro Furuya[1] Hiroki Takiguchi[1] Takahiro Arai[2] Riichiro Okawa[1]
1. CRIEPI, Yokosuka, Japan; 2. CRIEPI, Kanagawa, Japan

An Experimental Study of Liquid Flooding in Vertical Large Scale Rectangular Channel with the Counter-current Flow of Air and Water Film ICONE26-82478
Kashuai Du, Po Hu, Shuwei Zhai, Xiaojie Yang, Weibo Wang
Shanghai Jiao Tong University, Shanghai, China

Time-Resolved Velocity Measurements in a Matched Refractive Index Facility of Randomly Packed Spheres ICONE26-82425
Ethan Kappes[1] Thien D. Nguyen[2] Mateusz Marciniak[1] Stephen King[1] Yassin Hassan[1] Victor Ugaz[1] Andrew Mills[1] Robert Muyshondt[1]
1. Texas A&M University, College Station, TX, USA; 2. Texas A&M Nuclear Engineering, College Station, TX, USA

SIRIO: An Experimental Facility for a New Heat Removal System Passively Controlled by Non-Condensable Gases ICONE26-82379
Ranieri Marinari[1] Mariano Tarantino[2] Francesco Saverio Nitti[2] Alessandro Alemberti[3] Marco Caramello[3] Andrea Achilli[4] Roberta Ferri[4] Emanuele Rizzo[5] Fabio Giannetti[5]
1. University of Pisa, Pisa, Italy; 2. ENEA C.R. Brasimone, Camugnano, Italy; 3. Ansaldo Nucleare, Genova, Italy; 4. Siet S.p.A, Piacenza, Italy; 5. SRS s.r.l., Roma, Italy

Experimental Investigation and Model Analysis on Upper Plenum Entrainment in AP1000 ICONE26-82303
Xiang Yan[1] Yingwei Wu[1] Mingjun Wang[1] Wenxi Tian[1] Suizheng Qiu[2] Guanghui Su[1]
1. Xi'an Jiao Tong University, Xi'an, China; 2. School of Nuclear Science and Technology, Xi'an Jiao Tong University, Xi'an, China

Experimental Investigation on Boiling Flow Characteristics under Passive IVR-ERVC Conditions ICONE26-82254
Fan Wang, Bo Kuang, Pengfei Liu, Longkun He
Shanghai Jiao Tong University, Shanghai, China

Thermal-Hydraulics and Safety Analyses

8-32 Thermal-Hydraulic Modeling: 1st Principle Physics and Correlations III

Thursday July 26 Room Fronsac | 14:00 – 16:00

Session Chair: John Crepeau, University of Idaho, USA

The Effect of Functional Spacers on the Liquid Film Thickness and Dryout in a BWR Fuel Bundle Model ICONE26-81602
Christian Bolesch[1] Lukas Robers[1] Robert Zboray[2] Horst-Michael Prasser[1]
1. ETH Zurich, Zürich, Switzerland; 2. Pennsylvania State University, University Park, PA, USA

Study on the Influence of the Heaving Condition on the Pressure Drop Characteristics of the Two-Phase Flow in the Circular Tube ICONE26-81031
Tianzhou Xie, Jianjun Xu, Bingde Chen, Wei Bao
Nuclear Power Institute of China, Chengdu, China

Fourier-Bessel Series Model for the Stefan Problem with Internal Heat Generation in Cylindrical Coordinates ICONE26-81009
Lyudmyla Barannyk[1] John Crepeau[1] Patrick Paulus[1] Ali Siahpush[2]
1. University of Idaho, Moscow, ID, USA; 2. Southern Utah University, Cedar Clty, UT, USA

Countercurrent Flow Limitation at Sharp-edged Upper End in Vertical Pipes ICONE26-81039
Michio Murase[1] Koji Nishida[2] Akio Tomiyama[3]
1. Institute of Nuclear Safety System, Inc., Mikata-gun, Japan; 2. Institute of Nuclear Safety System, Inc., Mihama-cho, Japan; 3. Kobe University, Kobe-shi, Japan

Interfacial Drag Force Improvement in Two-fluid Model ICONE26-81070
Longxiang Zhu, Jianqiang Shan
Xi'an Jiao Tong University, Xi'an, China

First Attempt to Determine a Critical Heat Flux Correlation for Thermalhydraulic System Codes ICONE26-81589
Christopher Herer, Antoine Lejosne
IRSN, Fontenay Aux Roses, France

Thermal-Hydraulics and Safety Analyses

8-35 Modeling NPPs Using System Analysis Software IV

Thursday July 26 Room Reims | 14:00 – 16:00

Session Chair: Kai Kosowski, PreussenElektra GmbH (former E.ON Kernkraft GmbH), Germany

External Hazard Coinciding with Small Break LOCA Thermohydraulic Calculation with System Code ATHLET ICONE26-81815
Kai Kosowski, Marcus Seidl
PreussenElektra GmbH (former E.ON Kernkraft GmbH), Hannover, Germany

Feasibility Assessment of Air-Cooling System as an Ultimate Heat Sink of the ATOM System ICONE26-81845
Doyoung Shin[1] Gwang Hyeok Seo[1] Min Wook Na[1]
Sung Joong Kim[1] Yonghee Kim[2] Jeongik Lee[2]
1. Hanyang University, Seoul, Korea; 2. Korea Advanced Institute of Science and Technology, Daejeon, Korea

Assessment of RELAP/SCDAPSIM for Turbine Trip Transient in NuScale-SMR ICONE26-81861
Katarzyna Skolik[1] Anuj Trivedi[2] M. Perez-Ferragut[2] Chris Allison[2]
1. AGH University of Science and Technology, Cracow, Poland;
2. Innovative Systems Software, Ammon, ID, USA

Bleed and Feed Analysis for Loss of Secondary Heat Sink to Support the Development of EOPs ICONE26-81933
Changjiang Yang, Shuliang Huang, Jingxiang Zhan
China Nuclear Power Engineering Co., Ltd., Beijing, China

Development of Self-Reliant Thermal Hydraulic and Safety Analysis Software for NPP Design ICONE26-82031
Yu Liu, Jian Deng, Junjie Pan, Zongjian Lu
Nuclear Power Institute of China, Chengdu, China

Hydrodynamic Loads Calculation of Pressurizer Safety Valve Discharge Piping using RELAP/SCDAPSIM ICONE26-82035
Shuying Jiang, Zheng Fu, Judith Hohorst
Innovative Systems Software, Idaho Falls, ID, USA

Thermal-Hydraulics and Safety Analyses

8-38 Fast Reactors: Experiments and Analyses II

Thursday July 26 Room Bourg | 14:00 – 16:00

Session Chair: Dalin Zhang, Xi'an Jiaotong University, China

Development and Basic Verification of Decay Heat Removal Analysis Code of Sodium-Cooled Fast Reactor ICONE26-81630
Ping Song[1] Dalin Zhang[1] Tangtao Feng[1] Shibao Wang[1]
Yapei Zhang[1] Mingjun Wang[1] Suizheng Qiu[2] Guanghui Su[1]
1. Xi'an Jiao Tong University, Xi'an, China; 2. School of Nuclear Science and Technology, Xi'an Jiao Tong University, Xi'an, China

Structure Innovation and Thermal Hydraulics Analysis for Cold Trap of CEFR ICONE26-81533
Chen Zuguo, Xu Yijun, QI Wen-jing
China Institute of Atomic Energy, Beijing, China

The Choose of Decay Heat Removal Systems of SFR ICONE26-81563
Nina Yue[1] Rong Cai[1] Yun Wang[1] Suizheng Qiu[2] Dalin Zhang[3]
1. Nuclear Power Institute of China, Chengdu, China; 2. School of Nuclear Science and Technology, Xi'an Jiao Tong University, Xi'an, China; 3. Xi'an Jiao Tong University, Xi'an, China

Effects of Pump Transient Characteristic Model on Safety Analysis of Sodium-Cooled Fast Reactor ICONE26-82497
Young-Mln Kwon, Bao Truong
TerraPower LLC., Bellevue, WA, USA

Computational Fluid Dynamics (CFD)

9-10 Flow Through Complex Structures II

Thursday July 26 Room Cremant | 14:00 – 16:00

Session Chair: Afaque Shams, Nuclear Research and Consultancy Group, Netherlands

Session Co-Chair: Laurent De Moerloose, Ghent University, Belgium

Session Co-Chair: Pei Shen, City University of Hong Kong, Hong Kong

Numerical Simulations on Throttle Characteristic with Large Pressure Drop and Optimal Design of the Orifice Plate ICONE26-81191
Chen Hu[1] Jue Wang[1] Wang Cong[2] Zili Gong[1]
Zhen Jia[1] Anmin Yuan[1] Lei Chen[1] Yi Liao[1]
1. Wuhan Second Ship Design and Research Institute, Wuhan, China;
2. Naval University of Engineering, Wuhan, China

Numerical Simulation of Thermal Hydraulic Phenomena during Spray Injection using Lagrangian and Eulerian Approaches ICONE26-81622
Taehyub Hong, JongWook Go, MiRo Seo
Korea Hydro & Nuclear Power Co., Ltd, Daejeon, Korea

Numerical Study of the Amplitude and the Convection Speed of Periodic Large-Scale Vortices in a Square Array of Cylinders Subjected to Axial Flow ICONE26-81730
Laurent De Moerloose, Jeroen De Ridder, Jan Vierendeels, Joris Degroote
Ghent University, Ghent, Belgium

Numerical Simulation of Corium Jet Breakup during Fuel-Coolant Interaction based on the ALISA Test Performed at KROTOS Test Facility ICONE26-81818
Pei Shen[1] Wenzhong Zhou[2]
1. City University of Hong Kong, Hong Kong, Hong Kong; 2. City University of Hong Kong, Kowloon, Hong Kong

Development of Numerical Simulation Method to Evaluate Molten Material Behaviors in Nuclear Reactors: Preliminary Numerical Simulation for Molten Core Relocation Behavior in BWR and PWR Cores ICONE26-82565
Yasuo Ose[1] Susumu Yamashita[2] Hiroyuki Yoshida[2]
1. Yamato System Engineer Co., LTD., Ibaraki, Japan;
2. Japan Atomic Energy Agency, Tokai-mura, Japan

Mitigation Strategies for Beyond Design Basis Events

11-3 Ex-Vessel Phenomena

Thursday July 26 Room Muscadet | 14:00 – 16:00

Session Chair: Alexei Miassoedov, Karlsruhe Institute of Technology, Germany

Parametric Model for Ex-Vessel Melt Jet Breakup and Debris Bed Cooling ICONE26-81465
Kiyofumi Moriyama, Hyun Sun Park, Mooneon Lee, Jin Ho Park
POSTECH, Pohang, Korea

Measurement of Dry-Out Heat Flux (DHF) of Debris Beds using a Non-Heating Experimental Methodology ICONE26-82028
Je-Young Moon, Bum-Jin Chung
Kyung Hee University, Yongin-si, Korea

Evaluation of Explosivity from Fuel Coolant Interaction Experiments in the TROI Facility ICONE26-82029
Seong Wan Hong, Rae Joon Park
KAERI, Daejeon, Korea

The Effect of Initial Condition of Melt Jet on the Jet Breakup Phenomenon in the Subcooled Water Pool ICONE26-82310
Woo Hyun Jung, Hyun Sun Park, Kiyofumi Moriyama, Moo Hwan Kim
POSTECH, Pohang, Korea

Innovative Nuclear Power Plant Design and SMRs

13-5 Molten Salt and Supercritical CO_2 Cooled Reactors

Thursday July 26 Room Talbot | 14:00 – 16:00

Session Chair: Anton Moisseytsev, Argonne National Laboratory, USA

Session Co-Chair: Rui Guo, Nuclear Power Institute of China, China

Dynamic Control Analysis of the AFR-100 SMR SFR with a Supercritical CO_2 Cycle and Dry Air Cooling: Part I - Plant Control Optimization ICONE26-82292
Anton Moisseytsev, James Sienicki
Argonne National Laboratory, Argonne, IL, USA

Dynamic Control Analysis of the AFR-100 SMR SFR with a Supercritical CO2 Cycle and Dry Air Cooling: Part II - Plant Control under Varying Ambient Conditions ICONE26-82295
Anton Moisseytsev, James Sienicki
Argonne National Laboratory, Argonne, IL, USA

A Core Design of Innovative Breeder BWR ICONE26-82079
Rui Guo[1] Akifumi Yamaji[2] Yun Cai[1] Xingjie Peng[1]
1. Nuclear Power Institute of China, Chengdu, China; 2. Waseda University, Shinjyuku-ku, Japan

Upgrade and Shakedown Test of a High Temperature Fluoride Salt Test Loop ICONE26-81222
Xiangbo Kong, Yuan Fu, Jianyu Zhang, Huiju Lu, Naxiu Wang
Shanghai Institute of Applied Physics, Chinese Academy of Science, Shanghai, China

Risk Assessments and Management

14-4 Risk Assessment and Management IV

Thursday July 26 Room Cognac | 14:00 – 16:00

Session Chair: Byunghyun Choi, Japan Atomic Energy Agency, Japan

Session Co-Chair: Daisuke Taniguchi, Hitachi-GE Nuclear Energy, Ltd., Japan

Upgrade of Accident Sequence Model of PRA for LOCA inside PCV ICONE26-81959
Shohei Yamagishi[1] Shunsuke Tanno[1] Teruyoshi Sato[1]
Toshiteru Saito[1] Masayuki Hiraide[2] Toshinobu Kita[2]
1. Tepco Systems Corporation, Tokyo, Japan;
2. Tokyo Electric Power Company Holidings, Inc., Tokyo, Japan

Development of Fuel Route/Dropped Load PSA for UK ABWR ICONE26-82022
Daisuke Taniguchi[1] Yuki Ishiwatari[1] Hirokawa Naoki[2]
1. Hitachi-GE Nuclear Energy, Ltd., Hitachi-shi, Japan;
2. Hitachi-GE Nuclear Energy, Ltd., Ibaraki-ken, Japan

Epistemic Uncertainty Quantification of Floor Responses for a Nuclear Reactor Building ICONE26-82034
Byunghyun Choi[1] Akemi Nishida[1] Yinsheng Li[2]
Ken Muramatsu[3] Tsuyoshi Takada[4]
1. Japan Atomic Energy Agency, Chiba, Japan; 2. Japan Atomic Energy Agency, Ibaraki-Ken, Japan; 3. Tokyo City University, Tokyo, Japan; 4. The University of Tokyo, Tokyo, Japan

Study on PRA Procedure Considering Combination of Multiple Events using DQFM Methodology ICONE26-82086
Hirohisa Yamakawa[1] Hitoshi Muta[2]
1. Tokyo City University, Setagaya-ku, Japan;
2. Tokyo City University, Yokohama, Japan

Application of Level 2 PSA in the Design of Cavity Injection System for Nuclear Power Plant ICONE26-82095
Wentao Zhu, WenJing Li
China Nuclear Power Engineering Co., Ltd., Beijing, China

Computer Code Verification and Validation

15-3 V&V of Systems Analysis Numerical Analysis Tools I

Thursday July 26 Room Lalande | 14:00 – 16:00

Session Chair: Run Luo, University of South China, China

Stand-alone Containment Analysis of the Phébus FPT-3 Test with the ASTEC and the MELCOR Codes ICONE26-81139
Bruno Gonfiotti[1] Sandro Paci[2]
1. DICI-University of Pisa, Pisa, Italy; 2. University of Pisa - Dipartimento di Ingegneria Civile ed Industiale, Pisa, Italy

Validation of Film Evaporation Model in GASFLOW-MPI ICONE26-81249
Yabing Li[1] Han Zhang[2] Jianjun Xiao[1]
1. Karlsruhe Institute of Technology, Eggenstein-Leopoldshafen, Germany;
2. Karlsruhe Institute of Technology, Karlsruhe, Germany

Development of Neutronics and Thermal-Hydraulics Coupled Code for Accelerator Driven Subcritical Systems ICONE26-81276
Run Luo[1] Pengfei Wang[2] Xinyu Wei[2] Shripad Revankar[3] Fuyu Zhao[2]
1. University of South China, Hengyang, China; 2. Xi'an Jiao Tong University, Xi'an, China; 3. Purdue University, West Lafayette, IN, USA

Development and Validation of a Correlation for Wet Resuspension Simulation ICONE26-81286
Tobias Jankowski, Marco K. Koch
Ruhr-Universität Bochum, Bochum, Germany

A Validation of RELAP on Predicting Nuclear Power Plant Phenomena ICONE26-81424
Ji Soo Ahn[1] Michael J. Bluck[1] Matthew D. Eaton[1] Christopher Jackson[2]
1. Imperial College London, London, United Kingdom; 2. Rolls-Royce, Derby, United Kingdom

Uncertainty Analysis of Power Distribution for NESTOR based on the Double Latin Hypercube Sampling Method ICONE26-81441
Hongkuan Liao, Qing Li, Yingrui Yu, Yuying Hu, Lei Wu,
Chenlin Wang, Jinyu Wang, Jinghui Wang, Peng Xiao
Nuclear Power Institute of China, Chengdu, China

A Simplified Numerical Benchmark for Pool-Type Sodium Fast Reactors ICONE26-82260
Stefan Radman[1] Carlo Fiorina[1] Konstantin Mikityuk[2] Andreas Pautz[1, 2]
1. École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland;
2. Paul Scherrer Institute, Villigen, Switzerland

16:00 – 16:30 Chablis Suite, Ground Floor

COFFEE BREAK

16:30 – 18:30

TECHNICAL SESSIONS

Operations & Maintenance, Engineering, Modifications,Life extension, Life Cycle and Balance of Plant

1-5 Equipment Operation and Failure Analysis

Thursday July 26 Room Bourg | 16:30 – 18:30

Session Chair: William A. Byers, Westinghouse, USA

The Influence of Centrifugal Pump Characteristics on Dynamic Loadings on Pipelines after Power Failure ICONE26-81825
Jerzy Marcinkiewicz[1] Krzysztof Karaskiewicz[2] Claes Joheman[3]
1. Forsmarks Kraftgrupp AB, Östhammar, Sweden; 2. Warsaw University of Technology, Warsaw, Poland; 3. Ringhals AB, Väröbacka, Sweden

The Evaluation of Nuclear Key Parameters according to Shutdown Length for Two Kinds of Cycle Strategy Cores ICONE26-82495
Jongwoo Lee[1] Hwansoo Kim[1] Sang-Rin Shon[1]
Sang-Rae Moon[2] Ho-Cheol Shin[2]
1. KEPCO Nuclear Fuel, Deajeon, Korea; 2. KHNP Central Research Institute, Deajeon, Korea

First Generation Magnox Storage Pond Export ICONE26-82710
Chris Medlock
Nuvia, Warrington, United Kingdom

Virtual Prototyping and Simulation of Robotic Devices and Maintenance Procedures for Remote Handling Activities in the Access Cell of DONES ICONE26-82390
Stefano Papa[1] Giuseppe Di Gironimo[1]
Gioacchino Micciché[2] Federica Casoria[1]
1. University of Naples Federico II, Napoli, Italy; 2. ENEA, Brasimone, Italy

Plant Systems, Structures, Components and Materials

3-4 Design Analyses II

Thursday July 26 Room Chalon | 16:30 – 18:30

Session Chair: Ziduan (Joshua) Shang, Shanghai Nuclear Engineering R & D Institute (SNERDI), China

Session Co-Chair: John Sulley, Rolls Royce PLC, United Kingdom

Research of I^3-Ray 3D Scanning Detection and Analysis System ICONE26-81929
Chen Chen, Suxia Hou, Quanhu Zhang, Xianghua Su, Wenming Zuo
Xi'an High-tech Research Institute, Xi'an, China

Residual Stress Measurement of Sealing Glass based on Optical Fiber Sensing Technology ICONE26-82135
Mingze Li, Zhichun Fan, Xingzhong Diao, He Yan
Tsinghua University, Beijing, China

The Numerical Simulation of Residual Heat-Removal System's Dead Leg Phenomena in Tianwan 5 and 6 Units ICONE26-81656
Ma Huiyun, Sun Qi
China Nuclear Power Engineering Co., Ltd., Beijing, China

Boric Acid Circulation Analysis of Chemistry and Volume Control System ICONE26-81660
Sun Qi, Ma Huiyun, Wang Guangfei
China Nuclear Power Engineering Co., Ltd., Beijing, China

Simulation and Analysis of Start-up and Shutdown Characteristics of Once-through Steam Generator ICONE26-82308
Ye Shangshang, Xiaokun Wang, Hongyi Yang, Yizhe Liu,
Xiaoyan Yang, Yang Jun, Shaopu Qi, Lixia Wang
China Institute of Atomic Energy, Beijing, China

Advanced Reactors and Fusion Technologies

5-7 Modeling and Simulation II

Thursday July 26 Room Bouzy | 16:30 – 18:30

Session Chair: Rosa Lo Frano, Univeristy of Pisa, Italy

Preliminary Neutronics and Thermal-Hydraulics Study on Thorium-Based HTR-PM with Outer Breeding Zone ICONE26-81975
Qiudong Wang, Bing Xia, Jiong Guo, Ding She, Lei Shi, Zuoyi Zhang
Tsinghua University, Beijing, China

Analysis of Vibrations Due to the Steam Condensation at Sub-Atmospheric Condition ICONE26-82378
Guglielmo Giambartolomei, Rosa Lo Frano,
Daniele Del Serra, Dahmane Mazed, Donato Aquaro
DICI-University of Pisa, Pisa, Italy

Evaluation of Heat Removal during the Failure of the Core Cooling for New Critical Assembly ICONE26-82012
Yuta Eguchi, Takanori Sugawara, Kenji Nishihara,
Kazufumi Tsujimoto, Yujiro Tazawa
Japan Atomic Energy Agency, Tokai, Japan

Modelling the Neutronics of a Molten Salt Fast Reactor using DYN3D-MG for the Investigation of the Application of Frozen Wall Technology ICONE26-82170
Gregory M. Cartland-Glover[1] Dzianis Litskevich[2] Alex Skillen[1]
Stefano Rolfo[3] David Emerson[3] Bruno Merk[2] Charles Moulinec[1]
1. Science and Technology Facilities Council, Scientific Computing Department, Warrington, United Kingdom; 2. University of Liverpool, Liverpool, United Kingdom; 3. STFC Daresbury Laboratory, Warrington, United Kingdom

Performance Analysis of Generation IV Nuclear Reactor Power Plant using CO_2 and N_2: Case Study of a Recuperated Brayton Gas Turbine Cycle ICONE26-81337
Emmanuel O. Osigwe[1] Arnold Gad-Briggs[2] Pericles Pilidis[1]
Theoklis Nikolaidis[1] Suresh Sampath[1]
1. Cranfield University, Bedford, United Kingdom; 2. Cranfield University & EGB Engineering UK, Cheshire, United Kingdom

Experimental Research on Heat Transfer Characteristic of Liquid Lead-Bismuth Eutectic Flowing in Annular Channel ICONE26-82042
Fengjie Zhu, Leitai Shi, Junmei Wu, Guanghui Su
Xi'an Jiao Tong University, Xi'an, China

Thermal-Hydraulics and Safety Analyses

8-4 Severe Accident Experiments and Analyses II

Thursday July 26 Room Mouton Cadet | 16:30 – 18:30

Session Chair: Yapei Zhang, Xi'an Jiaotong University, China

Numerical Investigation of Heat Transfer Characteristics of Debris Bed after Severe Accident of SFR based on 1-D Heat Conduction Model ICONE26-81296
Mengwei Zhang, Bin Zhang, Jianqiang Shan
Xi'an Jiao Tong University, Xi'an, China

Injectable Sacrificial Material System to Contain Ex-Vessel Molten Corium in Nuclear Accidents ICONE26-81440
David L.Y. Louie, Yifeng Wang, Rekha Rao, Alec Kucala, Jessica N. Kruichak
Sandia National Laboratories, Albuquerque, NM, USA

Liquid Film Flow on Vertical and Successive Inclined Plate Modeling Flow Channel of Molten Control Rod in Severe Accident ICONE26-81690
Yutaro Hihara[1] Hideaki Monji[1] Yutaka Abe[1]
Hiroyuki Yoshida[2] Susumu Yamashita[2]
1. University of Tsukuba, Tsukuba, Japan;
2. Japan Atomic Energy Agency, Tokai-mura, Japan

Designing and Establishing a Single-Rod Integrated LOCA Experiment Setup ICONE26-82554
Chan Lee, Ashwini Kumar Yadav, Chang Hwan Shin, Kyung-doo Kim
Korea Atomic Energy Research Institute, Daejeon, Korea

Thermal-Hydraulics and Safety Analyses

8-7 Thermal-hydraulic Modeling and Probabilistic Risk Assessment Related Analyses

Thursday July 26 Room Epernay | 16:30 – 18:30

Session Chair: Richard Underhill, Frazer-Nash Consultancy Ltd, United Kingdom

Experimental Study on the Steam Line Break (SLB) Accident with the Steam Generator Tube Rupture (SGTR) ICONE26-81458
Yusun Park, Byoung-Uhn Bae, Jongrok Kim, Jae Bong Lee,
Hae Min Park, Nam Hyun Choi, Kyoung Ho Kang, Kyung-doo Kim
Korea Atomic Energy Research Institute, Daejeon, Korea

Non-LWR Model Development for the MELCOR Code ICONE26-82415
Larry Humphries[1] Brad Beeny[1] David L.Y. Louie[1]
Hossein Esmaili[2] Michael Salay[2]
1. Sandia National Laboratories, Albuquerque, NM, USA; 2. United States Nuclear Regulatory Commission, Washington, DC, USA

The Monte Carlo Method in Radiative Heat Transfer of Heat Rejection Subsystem ICONE26-81168
Pei Yao Qi, Sichao Tan, Li Xing, Zheng Liu, Xiu Chun Luan
Harbin Engineering University, Harbin, China

UK Nuclear Thermal Hydraulics Test Facility and Modelling Research ICONE26-82696
Richard Underhill, Carolyn M Howlett, Jordan McIntosh
Frazer-Nash Consultancy Ltd, Bristol, United Kingdom

Thermal-Hydraulic Analysis of TOPAZ-II with Modified RELAP5 ICONE26-81735
Simiao Tang[1] Chenglong Wang[1] Guanghui Su[1] Suizheng Qiu[2] Wenxi Tian[1]
1. Xi'an Jiao Tong University, Xi'an, China; 2. School of Nuclear Science and Technology, Xi'an Jiao Tong University, Xi'an, China

Thermal-Hydraulics and Safety Analyses

8-20 Equipment Design Studies I

Thursday July 26 Room Reims | 16:30 – 18:30

Session Chair: TBA

Development of a Device for Detecting Helium Leaks from Canisters: Part 2 - Numerical Analysis of Temperature Behavior during Gas Leaks from a Canister of a 1/4.5 Scale Cask Model ICONE26-81417
Kosuke Shimizu[1] Hirofumi Takeda[2] Masanori Goto[3]
1. Hitachizosen, Osaka, Japan; 2. Central Research Institute of Electric Power Industry, Chiba, Japan; 3. Hitachizosen, Tokyo, Japan

Hydraulic Characteristics of Reactor Coolant Pump under Rated and Off-Design Conditions ICONE26-81952
Jin Seok Park[1] Abdulelah Abobakr[2] Kang Heon Lee[1] Jong-Wook Kim[3]
1. Korea Atomic Energy Research Institute, Deajeon, Korea; 2. King Abdullah City for Atomic and Renwable Energy, Taejeon, Korea; 3. Korea Atomic Energy Research Institute, Taejeon, Korea

Qualification Test of APR1400's RCP Seal under Extended SBO Condition ICONE26-82006
Seok Cho[1] Seok Kim[1] Byoung-Uhn Bae[1] Yun-Je Cho[1] Yeon-Sik Kim[2] Woo-Jin Jeon[1] Young-Jung Youn[1] Sung-Min Chu[3] Sang-Youn Bang[3]
1. Korea Atomic Energy Research Institute, Daejeon, Korea; 2. Korea Atomic Energy Research Institute, Taejon, Korea; 3. DOOSAN Heavy Industries and Construction, Changwon, Korea

Application of Robust Design Techniques to Optimise Safety Systems ICONE26-82335
Nicholas Alexander, Scott Adams
Rolls-Royce, Derby, United Kingdom

Analyzing Droplet Size Distributions inside a Self-Priming Venturi Scrubber for Filtered Containment Venting Systems ICONE26-82227
Petros Papadopoulos[1] Terttaliisa Lind[2] Horst-Michael Prasser[1]
1. ETH Zürich, Zürich, Switzerland; 2. Paul Scherrer Institute, Villigen, Switzerland

The Safety Analysis of Multiple Method Fusion on Reactor Scram Subsystem ICONE26-82453
Hua Liu[1] Zhaohui Liu[2] Xiao-hua Yang[2] Shi-Yu Yan[2] Zhi Chen[3]
1. School of Electrical Engineering, University of South China, Hengyang, China; 2. University of South China, Hengyang, China; 3. Nuclear Power Institute of China, Chengdu, China

Thermal Hydraulic Analysis of the CIRCE-HERO Pool-Type Facility ICONE26-82589
Bruno Gonfiotti[1] Gianluca Barone[2] Morena Angelucci[2] Daniele Martelli[1] Nicola Forgione[2] Alessandro Del Nevo[3] Mariano Tarantino[3]
1. University of Pisa - Dipartimento di Ingegneria Civile ed Industriale (DICI), Pisa, Italy; 2. University of Pisa, Pisa, Italy; 3. ENEA CR Brasimone, Camugnano, Italy

Thermal-Hydraulics and Safety Analyses

8-39 Thermal-hydraulic Modeling: 1st Principle Physics and Correlations IV

Thursday July 26 Room Fronsac | 16:30 – 18:30

Session Chair: Yufeng Lv, China Institute of Atomic Energy, China

A Choking Model with Thermal Non-Equilibrium for Initially Subcooled Water ICONE26-82207
Yufeng Lv, Minfu Zhao, Weiqing Li
China Institute of Atomic Energy, Beijing, China

Numerical Benchmark of the FRENETIC Multiphysics Code ICONE26-82339
Ettore Guadagni[1] Antonio Cammi[2] Sandra Dulla[1] Stefano Lorenzi[2] Giuseppe Francesco Nallo[1] Piero Ravetto[1] Laura Savoldi[3] Roberto Zanino[3]
1. Politecnico di Torino, Torino, Italy; 2. Politecnico di Milano, Milano, Italy; 3. Dipartimento Energia, Politecnico Di Torino, Torino, Italy

Numerical Study on Effect of Pressure on Behavior of Bubble Coalescence by using CMFD Simulation ICONE26-82564
Ayako Ono[1] Takayuki Suzuki[2] Hiroyuki Yoshida[3]
1. Japan Atomic Energy Agency, Ibaraki, Japan; 2. Japan Atomic Energy Agency, Naka-gun, Japan; 3. Japan Atomic Energy Agency, Tokai-mura, Japan

Development of Numerical Simulation for Jet Breakup Behavior in Complicated Structure of BWR Lower Plenum (9) Evaluation of Effects of Fluids Properties on Jet Shape and Diameter of Fragments ICONE26-82580
Takayuki Suzuki[1] Hiroyuki Yoshida[2] Yutaka Abe[3]
1. Japan Atomic Energy Agency, Naka-gun, Japan; 2. Japan, Naka-tokai, Japan; 3. University of Tsukuba, Tsukuba, Japan

Development of a Thermal-Hydraulic Analysis Code for Helical Coiled Once-through Steam Generator ICONE26-81945
Jun Huang, Haifu Ma, Jie Fan, Junli Gou, Jianqiang Shan
Xi'an Jiao Tong University, Xi'an, China

Development and Application of Level 3 PSA for the UK ABWR Generic Design Assessment ICONE26-81469
Hironobu Iwanami[1] Ming Leang Ang[2] Tomoharu Hashimoto[1] Liz Grindon[3] Neil Harman[3] Carmen Niculae[3]
1. Hitachi-GE Nuclear Energy, Ltd., Hitachi, Japan; 2. Horizon Nuclear Power, Gloucester, United Kingdom; 3. Wood PLC, Cheshire, United Kingdom

Decontamination & Decommissioning, Radiation Protection, and Waste Management

10-6 Dose and Radiation Effects

Thursday July 26 Room Alsace | 16:30 – 18:30

Session Chair: Junjun Chen, Tsinghua University, China

Session Co-Chair: Yuiko Motome, Japan Atomic Energy Agency, Japan

Analysis of Aerosol Emission and Dispersion during the Laser Cutting of Fukushima Fuel Debris Simulants ICONE26-81531
Emmanuel Porcheron[1] Samuel Peillon[1] Thomas Gelain[1] Christophe Chagnot[2] Christophe Journeau[3] Damien Roulet[4]
1. IRSN, Gif sur Yvette, France; 2. CEA, Gif sur Yvette, France; 3. Commissariat à l'énergie atomique et aux énergies alternatives (CEA), St Paul lez Durance, France; 4. ONET, Pierrelatte, France

Estimation of External Dose Volume Correction Factors based on Neural Network ICONE26-81616
Junjun Chen[1] Jingyuan Qu[1] Junjun Gong[2]
1. Tsinghua University, Beijing, China;
2. Naval University of Engineering, Wuhan, China

The Dose Constraint Calculation of High Radioactivity Level Waste Canister Surface ICONE26-82056
Yang Bo, Qianglin Wei, Hexi Wu, Luo Xujia, Yibao Liu
East China University of Technology, Nanchang, China

Valuation of the Radiation Effects of Residents Living around the NSRR under the External Hazards ICONE26-82258
Yuiko Motome, Yoshiya Akiyama, Hiroyuki Murao
Japan Atomic Energy Agency, Tokai-mura, Japan

Design and Safety Analysis of a Kind of UO_2 Pellets Transport Container ICONE26-82291
Shutang Sun, Dongyuan Meng, Guoqiang Li, Hongchao Sun, Dajie Zhuang, Jiangang Zhang, Chen Lei, Yiren Lian
China Institute for Radiation Protection, Taiyuan, China

Decontamination & Decommissioning, Radiation Protection, and Waste Management

10-7 Decommissioning

Thursday July 26 Room Cremant | 16:30 – 18:30

Session Chair: Hitoshi Mimura, UNION SHOWA K.K., Japan

Session Co-Chair: Luisa Carvalho, CEA, France

Research on Deposition of Micro-Nano Aerosols in Rising Bubble under Pool Scrubbing Condition ICONE26-81160
Yanmin Zhou[1] Haifeng Gu[1] Qiunan Sun[1] Zhongning Sun[1]
Jiqiang Su[2] Li Gao[2] Qianchao Ma[1] Gan Zhu[1] Li Yingzhi[1]
1. Harbin Engineering University, Harbin, China; 2. China Nuclear Power Engineering Co, Beijing, China

Research Concept of Decommissioning Knowledge Management for the Fugen NPP ICONE26-81228
Yasuyoshi Taruta[1] Satoshi Yanagihara[2] Yukihiro Iguchi[1]
Koichi Kitamura[1] Masashi Tezuka[1] Yuya Koda[1]
1. Japan Atomic Energy Agency, Turuga-city, Japan; 2. University of Fukui, Tsuruga-shi, Japan

Evaluation of Adsorption Properties of U(VI) for Various Inorganic Adsorbents ICONE26-81338
Hitoshi Mimura[1] Minoru Matsukura[2] Fumio Kurosaki[2] Tomoya Kitagawa[2]
Akira Kirishima[3] Nobuaki Sato[3] Daisuke Akiyama[3]
1. UNION SHOWA K.K., Sendai, Japan; 2. UNION SHOWA K.K., Tokyo, Japan; 3. Tohoku University, Sendai, Japan

Development of Laser Cleaning for Metallic Equipment ICONE26-81853
Luisa Carvalho, Wilfried Pacquentin, Michel Tabarant,
Juliette Lambert, Alexandre Semerok, Hicham Maskrot
CEA, Gif sur Yvette, France

Modification of Filtered Air Intake Flowrate to Improve Control Room Habitability ICONE26-81941
Xinjian Liu[1] Weipeng Shu[2] Mengxi Wang[1]
1. China Nuclear Power Engineering Co., Ltd., Beijing, China; 2. Tsinghua University, Beijing, China

An Effect of Bismuth Ion on the Reduction of Terbium Ion in Molten LiCl-KCl Eutectic Salt ICONE26-82468
Beom Kyu Kim, Byung Gi Park, Hwa Jeong Han, Ji Hye Park, Won Ki Kim
Soonchunhyang University, Asan-si, Korea

Mitigation Strategies for Beyond Design Basis Events

11-4 Accident Analysis, Prevention and Mitigation

Thursday July 26 Room Muscadet | 16:30 – 18:30

Session Chair: Yidan Yuan, China Nulcear Power Engineering Corporation, China

Study on Protection against Large Commercial Aircraft Crash of HPR1000 ICONE26-81397
Xueshuang Zhang, Li Fan, Lijian Cai, Qianwen Liu
China Nuclear Power Engineering Co., Ltd., Beijing, China

Evolution and Implementation of the Design Extension Conditions (DEC) Concept: Assessment of Selected Events ICONE26-82593
Pavel Kral
UJV Rez (NRI), Husinec - Rez, Czech Republic

Sensitivity Analysis of RCS Depressurization Strategy under a Postulated SGTR Accident in OPR1000 ICONE26-82074
Wonjun Choi, Taeseok Kim, Joongoo Jeon,
Nam Kyung Kim, Sung Joong Kim
Hanyang University, Seoul, Korea

Design Optimization of PERCS in RELAP5 using Parallel Processing and a Multi-Objective Non-Dominated Sorting Genetic Algorithm ICONE26-82389
Paul R. Wilding, Nathan R. Murray, Matthew J Memmott
Brigham Young University, Provo, UT, USA

Innovative Nuclear Power Plant Design and SMRs

13-6 Small Modular Reactors II

Thursday July 26 Room Talbot | 16:30 – 18:30

Session Chair: Robert Stakenborghs, ILD Power, USA

Session Co-Chair: Kevin Lee, Canadian Nuclear Safety Commission, Canada

Control Strategy Investigation for a Multi-Purpose Modular Small Pressurized Water Reactor with Once-through Steam Generators ICONE26-81318
Qian Ma, Peiwei Sun
Xi'an Jiao Tong University, Xi'an, China

Study on the Water Supply Scheme of a Small Modular Reactor ICONE26-81811
Chunguan Zhou, Ruo bing Yang, Cheng Lu
China Nuclear Power Engineering Co., Ltd., Beijing, China

Design and Non-Proliferation Viability of Small Modular Reactors ICONE26-81651
Zafar Koreshi
Air University, Islamabad, Pakistan

Hydrogen Risk Reducing Technology in Small Modular Reactor ICONE26-81705
Yanlin Chen[1] Xuefeng Lv[2]
1. China Nuclear Power Engineering Co., Ltd., Beijing, China; 2. North China Electric Power University, Beijing, China

Functional Additively Manufactured Surface Development and its Application within SMR Power Plants ICONE26-82228
Joe Howard[1] Dan Robertson[1] Mark Whiting[2] Paul Wilson[1] Julie Yeomans[2]
1. Rolls-Royce, Derby, United Kingdom; 2. University of Surrey, Guildford, United Kingdom

Risk Assessments and Management

14-5 Risk Assessment and Management V

Thursday July 26 Room Cognac | 16:30 – 18:30

Session Chair: Gerard Ratoka Lekhema, National Nuclear Regulator, South Africa

Session Co-Chair: Hirokawa Naoki, Hitachi-GE Nuclear Energy, Ltd., Japan

Discussion of Issues for Small Modular Reactor PSA ICONE26-82157
Tao Liu
Tsinghua University, Beijing, China

Comparative Analysis on the Reliability Estimating Method for the Components of Sodium-Cooled Fast Reactor Primary Pump with Extreme Small Scale Sample Test ICONE26-82313
Guo Xiaoxian, Gu Jipin, Xiao Lili, Pu Enshan, Zhang Jianxin, Liu Xiuting
China Institute of Atomic Energy, Beijing, China

Real-Time Online Risk Monitoring and Management Method for Maintenance Optimization in Nuclear Power Plant ICONE26-82472
Anqi Xu[1] Zhijian Zhang[1] Huazhi Zhang[1] Min Zhang[1] He Wang[1]
Yingfei Ma[1] Sijuan Chen[1] Yan Wang[2] Gangyang Zheng[1]
1. Harbin Engineering University, Harbin, China; 2. China Institute of Atomic Energy, Beijing, China

High Reliability Micro-Grid for a Nuclear Facility Emergency Power Supply ICONE26-82510
Gerard Ratoka Lekhema[1] Willem A. Cronje[2] Ian Korir[1]
1. National Nuclear Regulator, Centurion, South Africa; 2. University of the Witwatersrand, Johannesburg, South Africa

Overview of PSA for the UK ABWR Generic Design Assessment ICONE26-82553
Hirokawa Naoki[1] Yuki Ishiwatari[2] Daisuke Taniguchi[2] Kohei Hisamochi[2]
1. Hitachi-GE Nuclear Energy, Ltd., Ibaraki-ken, Japan; 2. Hitachi-GE Nuclear Energy, Ltd., Hitachi-shi, Japan

System Safety Analysis Method based on Real-Time Online Risk Monitoring Technology ICONE26-82563
Sijuan Chen, Zhijian Zhang, He Wang, Min Zhang,
Huazhi Zhang, Anqi Xu, Yingfei Ma, Gangyang Zheng
Harbin Engineering University, Harbin, China

Computer Code Verification and Validation

15-5 V&V of Systems Analysis Numerical Analysis Tools III

Thursday July 26 Room Lalande | 16:30 – 18:30

Session Chair: Nicola Forgione, University of Pisa, Italy

Session Co-Chair: Heriberto Sánchez-Mora, Innovative Systems Software, USA

Analysis Contour Plots in RELAP/SCDAPSIM/MOD 3.4 and Mod 4.1 ICONE26-81991
Heriberto Sánchez-Mora[1] Carlos Chávez-Mercado[2]
Chris Allison[1] Judith Hohorst[3]
1. Innovative Systems Software, Ammon, ID, USA; 2. Universidad Nacional Autónoma de México, Mexico City, Mexico; 3. Innovative Systems Software, Idaho Falls, ID, USA

QUENCH-06 Experiment Post-Test Calculations and Integrated Uncertainty Analysis with RELAP/SCDAPSIM/MOD3.4 and MOD3.5 ICONE26-81912
C. Allison[1] B. T. Le[1] G. Gerova[2] I. Spasov[2]
M. Perez-Ferragut[1] Judith Hohorst[3]
1. Innovative Systems Software, Ammon, ID, USA; 2. Technical University of Sofia, Sofia, Bulgaria; 3. Innovative Systems Software, Idaho Falls, ID, USA

Numerical Investigation of Corium Coolability in Core Catcher: Sensitivity to Modeling Parameters ICONE26-81841
Liancheng Guo, Andrei Rineiski
Karlsruhe Institute of Technology, Eggenstein-Leopoldshafen, Germany

Verification of Shielding Calculation Capability of RMC with H. B. Robinson-2 Pressure Vessel Benchmark ICONE26-81694
Junjie Rao, Xiaotong Shang, Kan Wang
Tsinghua University, Beijing, China

Blind Simulations of NACIE-UP Experimental Tests by STH Codes ICONE26-81434
Nicola Forgione[1] Morena Angelucci[1] Gianluca Barone[1] Fabio Giannetti[2]
Pierdomenico Lorusso[3] Thorsten Hollands[4] Angel Papukchiev[4]
Massimiliano Polidori[5] Antonio Cervone[5] Ivan Di Piazza[6]
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Validation of Systems Code for beyond Prompt Critical Reactivity Excursions using SPERT III Test Facility Data ICONE26-82680
Alex Kirby
Rolls-Royce Power Engineering PLC, Derby, United Kingdom

Track Chairs and Co-Chairs

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Track 11 Mitigation Strategies for Beyond Design Basis Events

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Track 13 Innovative Nuclear Power Plant Design and SMRs

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Igor A. Bolotnov, *North Carolina State University, Raleigh, NC, United States*
Shoaib Usman, *Missouri University of Science and Technology, Rolla, MO, United States*

Track 17 Keynote, Plenary, Panels Sessions

CHAIR: Guoqiang Wang, *Westinghouse Electric Company LLC*, *Murrysville, PA, United States*

CO-CHAIRS:

Shripad Revankar, *Purdue University*, *West Lafayette, IN, United States*

Clayton Smith, *Smith Associates Consulting Group LLC*, *Simpsonville, SC, United States*

Asif Arastu, *Unisont Engineering, Inc.*, *Castro Valley, CA, United States*

Jovica Riznic, *Canadian Nuclear Safety Commission, Ottawa, ON, Canada*

Leon Cizelj, *Jozef Stefan Institute, Ljubljana, Slovenia*

Lixin Shen, *Chinese Nuclear Society, Beijing, China*

Richard Schultz, *Idaho State Univ & Texas A&M Univ*, *Pocatello, ID, United States*

Howard Chung, *KAIST*, *Daejeon, Korea (Republic)*

Track 18 Workshops

CHAIR: Guoqiang Wang, *Westinghouse Electric Company LLC*, *Murrysville, PA, United States*

CO-CHAIRS:

Shripad Revankar, *Purdue University*, *West Lafayette, IN, United States*

Yassin Hassan, *Texas A&M University*, *College Station, TX, United States*

Jovica Riznic, *Canadian Nuclear Safety Commission*, *Ottawa, ON, Canada*

Robert Stakenborghs, *ILD Power*, *Baton Rouge, LA, United States*

Richard Schultz, *Idaho State Univ & Texas A&M Univ*, *Pocatello, ID, United States*

Clayton Smith, *Smith Associates Consulting Group LLC*, *Simpsonville, SC, United States*

Author Index

D

E

F

G

H

I

J

K

L

M

N

O

P

Q

R

S

T

U

V

W

X

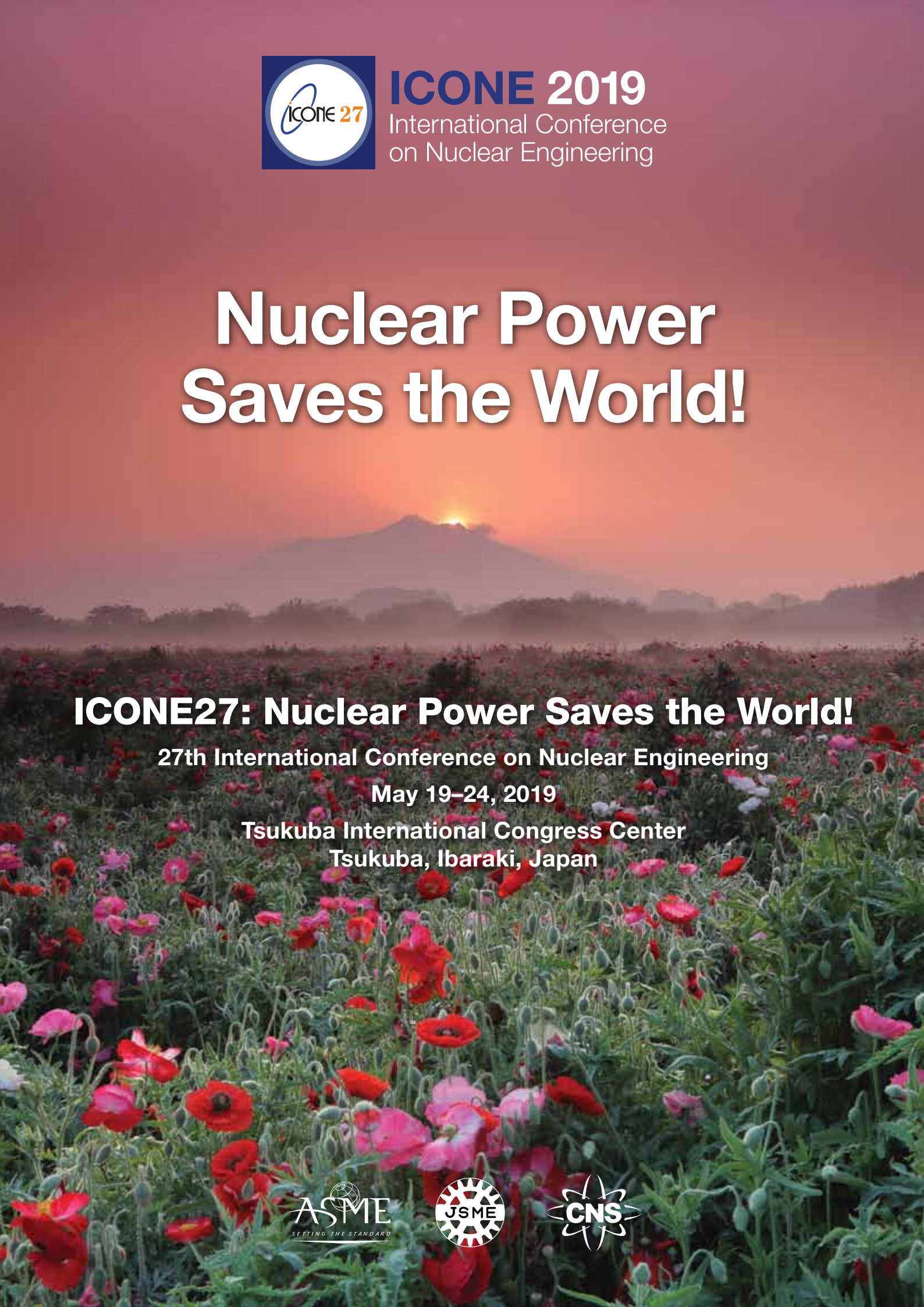
Y

Z

Session Index

ICONE 2019
International Conference
on Nuclear Engineering

Nuclear Power Saves the World!



ICONE27: Nuclear Power Saves the World!

27th International Conference on Nuclear Engineering

May 19–24, 2019

Tsukuba International Congress Center
Tsukuba, Ibaraki, Japan

ASME SETTING THE STANDARD
JSME
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ICONE 27 Call for Papers

"Nuclear Power Saves the World!"

27th International Conference on Nuclear Engineering • May 19-24, 2019
Tsukuba International Congress Center, Tsukuba, Ibaraki, Japan

Topics of Interest

A wide range of topics related to nuclear engineering will be covered using Keynote and Penary speakers and Panel Sessions. In particular, the conference will cover (but not limited to) the following topics:

Track 1	Operations & Maintenance, Engineering, Modifications, Life extension, Life Cycle and Balance of Plant
Track 2	Nuclear Fuel and Material, Reactor Physics and Transport Theory
Track 3	Plant Systems, Structures, Components and Materials
Track 4	Instrumentation and Control (I&C) and Influence of Human Factors
Track 5	Advanced Reactors and Fusion Technologies
Track 6	Nuclear Safety, Security, and Cyber Security
Track 7	Codes, Standards, Licensing, and Regulatory Issues
Track 8	Thermal-Hydraulics and Safety Analyses
Track 9	Computational Fluid Dynamics (CFD)
Track 10	Decontamination & Decommissioning, Radiation Protection, and Waste Management
Track 11	Mitigation Strategies for Beyond Design Basis Events
Track 12	Nuclear Education and Public Acceptance
Track 13	Innovative Nuclear Power Plant Design and SMRs
Track 14	Risk Assessments and Management
Track 15	Computer Code Verification and Validation
Track 16	Student Paper Competition

Conference Chair Person:
Prof. Koji Okamoto (The University of Tokyo)

Contact Information:
The Japan Society of Mechanical Engineers (JSME)
E-mail: info@icone27.org (General)
Conference website: http://www.icone27.org/
Conference Venue (Tsukuba International Congress Center)

Publication Schedule

Technical Paper

• Submission of Abstract	September 28, 2018
• Author Notification of Abstract Acceptance	October 26, 2018
• Submission of Full-Length Draft Paper for Review	November 30, 2018
• Author Notification of Draft Paper Acceptance	January 18, 2019
• Submission of Revised Paper	February 1, 2019
• Author Notification of Revised Paper Acceptance	February 15, 2019
• Submission of Copyright Agreement	March 1, 2019
• Submission of Final Accepted Paper	March 1, 2019
• Author Registration	March 1, 2019

Presentation Only (No Publication)

• Submission of Extended Abstract	February 1, 2019
• Author Notification of Extended Abstract Acceptance	February 15, 2019
• Submission of Final Extended Abstract	March 1, 2019
• Author Registration	March 1, 2019

Elsevier Index / Special issue in MEJ

- The Elsevier indexes (Scopus and Compendex) will be given to the papers included in the ICONE27 proceedings.
- Special issue of ICONE27 will be published in Mechanical Engineering Journal (JSME). Details will be announced in the conference website.

Sponsored by

About ICONE

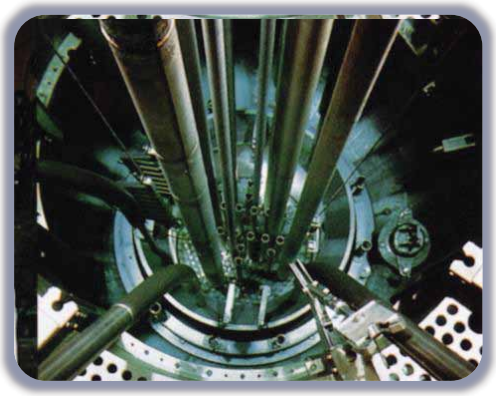
The International Conference on Nuclear Engineering (ICONE) is the premier global conference held by the contribution of numerous professionals from companies, governments, academias and technical societies. The focus of ICONE is on the technical state-of-the-art and the current status of nuclear power around the world. Through the ICONE student program, the conference also fosters the development of future nuclear professionals.

The Japan Society of Mechanical Engineers (JSME), American Society of Mechanical Engineers (ASME) and Chinese Nuclear Society (CNS) are jointly organizing the 27th International Conference on Nuclear Engineering (ICONE27) in 2019 at Tsukuba, Ibaraki, Japan, a follow-up to the successful meetings held in Tokyo (1991), San Francisco (1993), Kyoto (1995), New Orleans (1996), Nice (1997), San Diego (1998), Tokyo (1999), Baltimore (2000), Nice (2001), Washington (2002), Tokyo (2003), Washington (2004), Beijing (2005), Miami (2006), Nagoya (2007), Orlando (2008), Brussels (2009), Xi'an (2010), Osaka (2011), Anaheim (2012), Chengdu (2013), Prague (2014), Makuhari (2015), Charlotte (2016), Shanghai (2017), and London (2018).

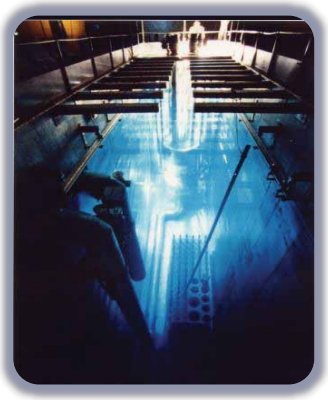
Notes

Nuclear Power Institute of China

Nuclear Power Institute of China (NPIC), a subsidiary to China National Nuclear Corporation (CNNC), is the only large-scale comprehensive R&D base in China incorporating reactor engineering research, design, test, operation and small batch production. NPIC is praised as the Cradle of Nuclear Engineering in China by Wu Bangguo, Chairman of the National People's Congress of China.



High Flux Engineering Test Reactor



The Core of Minjiang Reactor

Since its foundation in 1965, NPIC has established a complete research and development system, including nuclear power engineering design, equipment assembly and supply of NSSS, reactor operation and application research, reactor engineering test and research, nuclear fuel and material , isotope production, nuclear technology application research and services, etc.

CF3 Fuel assembly

The GEN III Nuclear Power Engineering

National Comprehensive Nuclear Power R&D Base

COMMITTED TO PROVIDING THE MOST ADVANCED NUCLEAR TECHNOLOGY

Since Westinghouse helped pioneer the nuclear industry with the world's first pressurized water reactor more than 60 years ago, we've remained committed to delivering innovative solutions for both future and existing clean energy markets.

Our research and development organization helps to cultivate our ever-growing portfolio of products and services to do so. The latest in development is the eVinci™ micro reactor. Particularly for remote locations, this next-generation, small nuclear energy generator is aimed at improving the reliability, resiliency and affordability of sustainable, low-maintenance power.

Our commitment to nuclear energy defines our combined efforts to deliver the most advanced nuclear technology, the most reliable nuclear fuel and the most innovative plant maintenance solutions.

Learn more about our pursuit of technical excellence and innovation at http://www.westinghousenuclear.com/About/Innovation.

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