

Enlarged Halden HTO Programme Review Group (EHPRG) meeting 2026

Draft technical program. For more info: <https://ife.no/en/event/enlarged-halden-programme-review-group-meeting-ehprg-2026/>

Monday 12th October			
08:30 – 11:30	Paper No.:	Opening session Opportunities and challenges in today's nuclear renaissance	Chair: Jacoline Hanekom, NRG PALLAS Secretaries: Bjørn Axel Gran, Andreas Bye
08:30-08:40	Mo-00	Welcome and Introduction	Andreas Bye , IFE. Programme Manager, Halden HTO Project
08:40-09:00	Mo-01	Opening keynote (virtual)	William D. Magwood, IV , Director General, OECD Nuclear Energy Agency
09:00-09:15	Mo-02	New nuclear builds and programs in the Netherlands	Jacoline Hanekom , NRG PALLAS
09:15-09:50	Mo-03	Power Reactor Optimization to support US Nuclear Energy Capacity Expansion	Christopher Bunting , Office of Reactor Sustainability, Office of Nuclear Energy, U.S. Department of Energy; Bruce Hallbert , Idaho National Laboratory. Director, Technical Integration Office, DOE Light Water Reactor Sustainability (LWRS) Program
09:50-10:15	Mo-04	Canada's Nuclear Energy Strategy and readiness for a new nuclear build era	Mark Broeders , Director General, Directorate of Safety Management, Canadian Nuclear Safety Commission (CNSC); Edward Nakaza , HOF Specialist, CNSC
10:15-10:45		Coffee break	
10:45-11:15	Mo-05	Regulating for a New Nuclear Era: Enabling Innovation While Sustaining Safety	Christian Araguas , Deputy Director, Office of Advanced Reactors, U.S. Nuclear Regulatory Commission
11:15-11:30	Mo-06	The energy and nuclear situation in Norway	Nils Morten Huseby , CEO, IFE
11:30-11:50	Mo-07	NEA initiatives and perspectives on the future of the nuclear industry	Gabriela Miranda , Division Head, Radiological Protection and Human Aspects of Nuclear Safety, OECD Nuclear Energy Agency
11:50-12:10	Mo-08	Outlook from an advanced SMR technology vendor	Anders Blennermark , Blykalla

12:10-13:40		Lunch		
13:40-16:10		Topic 1: Human Performance	Chair: Johan Enkvist, SSM Secretaries: Jan Erik Farbrot and Peter Lirvall	Ref.:
13:40-14:10	Mo-1-1	Keynote address: Human Factors Engineering for new fleets of nuclear power plants in China (TBC)	Shuhui Zhang, SNERDI (TBC)	
14:10-14:30	Mo-1-2	Regulating the Use of Digital Twin Technology for Nuclear Operator Examinations: A Performance-Based Approach in the Absence of Explicit Regulatory Guidance	Spencer Brown, Maitha Al Taher, Mohamed Al Harbi, FANR	Paper
14:30-15:00		Coffee Break		
15:00-15:30	Mo-1-4	Impact of crew brief on crew dynamics: An expanded analysis of eight crews in HAMMLAB	Magnhild Kaarstad, Rob McDonald, Daniel Odéen, IFE; Yochan Kim, KAERI	HTOR-127
	Mo-1-5	Scenario-based synthesis of crew dynamics and assumption-driven vulnerabilities	Magnhild Kaarstad Daniel Odéen, Rob McDonald, IFE	HTOR-128
15:30-15:50	Mo-1-6	Decision-Making in the Control Room: A Replication Study with Computer-Based Procedures	Salvatore Massaiu et al., IFE	HTOR-140
15:50-16:10	Mo-1-7	Sensemaking in learning from events: Capturing and interpreting failures and successes in a team learning context	Prosper A. Kwei-Narh et al., IFE	HTOR-119
16:30-18:30		HPRG meeting		
19:00-19:30		Refreshments		
19:30		Seated Dinner		

Tuesday 13 th Oct				
08:30-10:00		Topic 2: Digital I&C – Safety Assurance	Chair: Anna Engelbrecht, Framatome Secretaries: Emilie Grecker and Fabien Sechi	Ref.:
08:30-09:00	Tu-2-1	Keynote address:	TBD	
09:00-09:20	Tu-2-2	Advancing Performance-Based Safety Assurance: Lessons Learned from Structured Safety Argumentation and Regulatory Practice	Xueli Gao et al., IFE	HTOR-103
09:20-09:40	Tu-2-3	Aspect-Oriented Property Graphs (AOPG) for Safety Assurance	Peter Karpati et al., IFE	HTOR-110
09:40-10:00	Tu-2-4	AI-Assisted Rapid Prototyping of a Novel Safety Assurance Paradigm	Peter Karpati et al., IFE	HTOR-111
10:00-10:30		Coffee break		
10:30-10:45	Tu-2-5	Proceedings of the Workshop series 2026 on Safety of Digital Systems	Coralie Esnoul , Emilie Grecker, IFE	HTOR-113
10:45-11:00	Tu-2-6	Updating the State-of-the-art on Digital Systems: support to knowledge transfer	Coralie Esnoul , Emilie Grecker, IFE	HTOR-114
11:00-11:20	Tu-2-7	STPA and HAZOP applied on an SMR case study	Charlotte Vrangsd, Ankur Shukla et al., IFE	HTOR-133
11:20-13:00		Lunch		
13:00-15:00		Topic 3: Control Room Design & Evaluation	Chair: Brandon Elliott, AtkinsRéalis Secretaries: Hanne K. Rødsethol and Sathiya K. Renganayagalu	Ref.:
13:00-13:30	Tu-3-1	Keynote address: Operator Training Programmes and Human Factor Aspects	Oleksandr Oshurko, Energoatom, Rivne NPP;	

			Oleksandr Yatsun, Energoatom, South-Ukraine NPP	
13:30-13:50	Tu-3-2	An experimental investigation of how evaluator independence and system-specific knowledge influence human factors control room validation	Espen Nystad , Gyrd Skraaning Jr, Per Øivind Braarud, Robert MacDonald, Daniel Odéen, Aleksander B. Gundersen, IFE	HTOR-130
13:50-14:10	Tu-3-3	Situation Awareness as a Distributed Process: A Simulator Study of Multi-Unit SMR Operations	Aleksander B. Gundersen et al., IFE	HTOR-132
14:10-14:30	Tu-3-4	Operator Reliance on Overview Displays: Investigating Performance Impacts Through Display Loss in a Simulator Study.	Maren H. Rø Eitrheim , Langstrand, J.-P., Nguyen, H. T., Braseth, A. O., & McDonald, R., IFE	HTOR-107
14:30-14:50	Tu-3-5	Overview Displays in Multi-Unit SMR Control Rooms: Operators' Perspectives	Aleksander B. Gundersen et al., IFE	HTOR-115
14:50-15:20		Coffee Break		
15:20-15:40	Tu-3-6	Auditory Displays and Alarm Handling in Multi-Unit SMR Control Rooms	Jonas Andersson et al., IFE	HTOR-134
15:40-16:00	Tu-3-7	Virtual Reality for NPP Control Room Operator Training and Early System Validation – Equivalence Study	Michael Louka et al., IFE	HTOR-118
16:00-17:00		Topic 4: Human-Automation Collaboration and Multi-Unit Operation	Chair: Bruce Hallbert, INL Secretaries: Magnhild Kaarstad, Stine Strand	Ref.:
16:00-16:30	Tu-4-1	Keynote address: Human-Automation Collaboration for Advanced Nuclear Operations: Research Directions and Regulatory Readiness	Niav Hughes Green , U.S. NRC	

16:30-16:50	Tu-4-2	Peer Checking in Multi-Unit SMRs: Practices and Operator Perspectives from Simulator Studies.	Maren H. Rø Eitrheim , Arigi, A. M., Zoutis, S., & McDonald, R., IFE	HTOR-117
16:50-19:30		Exhibitions and Demonstrations		
19:30-21:00		Buffet Dinner		
Wednesday 14th October				
08:30-09:50		Topic 4: Human-Automation Collaboration and Multi-Unit Operation, continued	Chair: Bruce Hallbert, INL Secretaries: Stine Strand and Magnhild Kaarstad	Ref.:
08:30-08:50	We-4-3	Control room work in SMR operations: Adaptation or transformation of the operator role (TBC)	Kine Reegård et al., IFE	HTOR-100
08:50-09:10	We-4-4	Operators' experiences of work in the advanced control room: insights to inform new ConOps	Prosper A. Kwei-Narh et al., IFE	HTOR-112
09:10-09:30	We-4-5	Making Sense of Automation	Gyrd Skraaning Jr. (IFE), Greg A. Jamieson (University of Toronto)	HTOR-106
09:30-09:50	We-4-6	Cooperating with Adaptive Procedures	Michael Hildebrandt et al., IFE	HTOR-121-126
09:50-10:10		Verifiable Operator Support in Nuclear Main Control Rooms: An Operational Ontology That Externalizes the Operator's Cognitive Integration	Jung Sung Kang , KAERI	Paper
10:10-10:30	We-4-7	Error Modes in Multi-Unit SMR Operation	Awwal Arigi et al., IFE	HTOR-129
10:30-11:00		Coffee break		

11:00-12:30		Topic 5: Digital Systems for Operations and Maintenance	Chair: Sarah Lawrie, UKNNL Secretaries: Hans Olav Randem and Emil Wingstedt	Ref.:
11:00-11:30	We-5-1	Keynote address: Optimizing Our Nuclear Fleet: Current Initiatives and Updates	Ahmad Al Rashdan, INL	
11:30-11:50	We-5-2	Digital Twins for NPP Steam Generator O&M: Multi-Fidelity Modelling, Fault Detection, and Experiment Dashboard - Findings from a Prototype Testbed	Sathiya K.Renganayagalu et al., IFE	HTOR-138
11:50-12:10	We-5-3	Maintenance Optimization for NPPs: Operational range of AI/ML models	Mario Hoffmann et al., IFE	HTOR-142
12:10-12:30	We-5-4	Shifts in responsibility for safety during nuclear plant maintenance: Worker perceptions under increased use of technologies	Prosper A. Kwei-Narh et al., IFE	HTOR-120
12:30-14:00		Lunch		
14:00-18:00		Social activity		
19.00-21:00		Buffet Dinner		
Thursday 15th October				
08:30-10:00		Topic 6: Sustainable Decommissioning	Chair: Spencer Brown, FANR Secretaries: Bálint Batki and Omar Zahra	
08:30-09:00	Th-6-1	Keynote address: Safety Culture and Human and Organisational Factors in Decommissioning: Insights from Event Investigations and Expert Interviews	Michael Paßens, Christian Lambertus, GRS	
09:00-09:20	Th-6-2	Fleet-Ready Visual SLAM: Low-Cost Solutions for Nuclear Facility Mapping and Monitoring	Abdenour Benkrid, Omar Zahra, et al., IFE	HTOR-143

09:20-09:40	Th-6-3	Precision at Scale: Autonomous Small-Part Manipulation for Nuclear Robotics	Omar Zahra et al., IFE	HTOR-144
09:40-10:00	Th-6-4	Safety and Readiness of AI, Data and Robotics in Nuclear Applications: TECOP, HAZOP and STPA perspectives	Istvan Szöke et al., IFE	HTOR-137
10:00-10:30		Coffee Break		
10:30-11:50		Topic 7: Cyber Security for Main Control Rooms	Chair: Jinkyun Park, KAERI Secretaries: Coralie Esnoul and Charlotte Vrangsund	Ref.:
10:30-11:00	Th-7-1	Keynote address:	Paul Smith , Lancaster University	
11:00-11:20	Th-7-2	Supply Chain Cybersecurity Risks, Challenges and Requirements for Grey-Box, Black-Box, and COTS Technologies: A Systematic Review and Gap Analysis	Ankur Shukla et al., IFE	HTOR-105
11:20-11:50	Th-7-3	Cybersecurity of Grey-Box, Black-Box, and COTS Technologies: Insights from Expert Interviews in Safety-Critical Systems	Ankur Shukla et al., IFE	HTOR-135
	Th-7-4	Cybersecurity Assessment of Grey-Box/Black-Box Technologies: A Case Study Using LLM-Based Systems	Ankur Shukla et al., IFE	HTOR-136
12:00-13:30		Lunch		
13:30-14:50		Topic 7: Cyber Security for Main Control Rooms, continued	Chair: Jinkyun Park, KAERI Secretaries: Coralie Esnoul and Charlotte Vrangsund	Ref.:
13:30-13:50	Th-7-5	Distinguishing Attacks and Faults: Observations on Detection, Response, and Operational Practices from Expert Interviews	Sabarathinam Chockalingam , Stine Aurora Mikkelsplass, IFE	HTOR-139
13:50-14:10	Th-7-6	Distinguishing Cyber-Attacks and Faults Using Heterogeneous Data: An Experimental Study in an IEC 62443-Aligned ICS Testbed	Aleksander Lygren Toppe, Emilie Greaker , Sabarathinam Chockalingam , IFE	HTOR-141

14:10-14:30	Th-7-7	Control room operators' cyber situational awareness during cyber incident scenarios	Espen Nystad , Fabien Sechi, John Eidar Simensen, IFE	HTOR-131
14:30-14:50	Th-7-8	Govern and trust your data: are Data Spaces something for the Nuclear Industry?	Rossella Bisio et al., IFE	Paper
14:50-15:20		Coffee break		
15:20-17:00		Panel session with Main take-aways from EHPRG	Chair: Jacoline Hanekom, NRG PALLAS Secretary: Andreas Bye Panel: Topic chairs	
19:00		Aperitif		
19:30		Banquet dinner		