Sellafield Ltd

NEA
NUCLEAR ENERGY AGENCY

PROGRAMME

WORKSHOP ON THE ROLE OF INNOVATION IN THE NUCLEAR BACK-END

31 March - 4 April 2025
Cumbria, United Kingdom

Programme – Day 1

The Nuclear Energy Agency (NEA) and Sellafield Ltd are jointly organising an international workshop on innovative technologies for the nuclear back-end, focusing on the opportunities, benefits and challenges in increasing safety and efficiency. Complementing other technical and academic conferences, this workshop leverages the NEA's unique position and Sellafield's expertise to create a neutral forum for all stakeholders. The goal is to identify good practices and policies that will drive the successful implementation of cutting-edge technologies in the nuclear back-end.

The nuclear back-end offers significant opportunities for advancement. Challenges such as ageing facilities, waste management, and the decommissioning of complex and legacy sites, are catalysts for innovation. In addition, the demand for efficient, cost-effective solutions in the back-end has made it an ideal ground for demonstrating and deploying new technologies.

Recognising this potential, the NEA established two dedicated working groups: the Expert Group on the Application of Robotics and Remote Systems in the Nuclear Back-end (EGRRS) and the Working Party on Technical, Environmental and Safety Aspects of Decommissioning and Legacy Management (WPTES). Their insights have shaped the workshop's programme, ensuring it addresses key challenges while fostering innovation.

TUESDAY – 1 April 2025

Opening session		
8:00		**Registration**
9:00	**1.1**	**Welcome remarks** OECD Nuclear Energy Agency (NEA) and Sellafield Ltd
9:20	**1.2**	**Innovative technologies for back-end challenges** Thomas Braunroth, GRS, Germany and Ladislav Vargovcik, Technical University of Kosice (TUK), Slovak Republic, Workshop Co-Chairs
9:50	**1.3**	**Keynote speaker from Sellafield Ltd** Robin Ibbotson, Sellafield Ltd, United Kingdom
10:05	**1.4**	**Robotics and Artificial Intelligence Collaboration (RAICo)** Kirsty Hewitson, RAICo, United Kingdom
10:20		**Coffee break**

Leveraging international experience 2

		Session Chair – Peter Berben, Engie, Belgium
10:50	**2.1**	**Canadian Nuclear Laboratories: Safely advancing decommissioning through digital visualisation and innovation** Patrick Aikens, Canadian Nuclear Laboratories, Canada
11:10	**2.2**	**Intelligent safety equipment for decommissioning at the CIAE** Liu Yang, CIAE, China
11:30	**2.3**	**Robot applications at the Korea Atomic Energy Research Institute (KAERI) for nuclear safety and decommissioning** Jongwon Park, KAERI, Korea
11:50	**2.4**	**3D mapping for characterisation at Fukushima** Yuki Sato, JAEA, Japan
12:10	**2.5**	**Further Q&A and session wrap-up: session Chair(s)**
12:20		Lunch

Implementation challenges 3

		Session Chair – Gabriele Grassi, NEA
13:50	**3.1**	**Drafting a good implementation roadmap to anticipate overcome deployment challenges** Richard Brook, Atkins and Will Newsom, Createc, United Kingdom
14:10	**3.2**	**AI-powered nuclear engineering – Story of a journey from expectations to real life** Victor Richet and Andy Radley, Assystem, France and United Kingdom
14:30	**3.3**	**Panel session (40'): Funding, management, supply chain, regulation, stakeholder engagement aspects**
15:10		Coffee break

Characterisation and sampling 4

Session Chair – Cynthia Barr, Nuclear Regulatory Commission, United States

15:40	**4.1**	**Automated measurement system for radioactive waste drums – Implementation and commissioning experiences** Hofkens Wim, Engie, Belgium
16:00	**4.2**	**Unmanned Aerial Vehicle (UAV) radiological surveillance data processing and post-processing** Sven Altfelder, BGR, Germany
16:20	**4.3**	**Laser sampling in support of radiological, chemical and asbestos characterisation** Kym Jarvis and Susan Parry, Viridian, United Kingdom
16:40	**4.4**	**Further Q&A and session wrap-up: Session chair(s) 4.5**

Decontamination, dismantling, and handling (Part 1) 5

Session Chair – Ladislav Vargovcik, TUK, Slovak Republic

16:50	**5.1**	**In-situ ultrasonic decontamination technology: Application experiences in nuclear decommissioning** Martin Brandauer, EPRI, USA
17:10	**5.2**	**LD-SAFE: Underwater laser cutting demonstration for nuclear dismantling** Pierre Daguin, ONET, France
17:30	**5.3**	**Further Q&A and session wrap-up: Session chair(s)**
17:40		Day 1 wrap-up and finish Workshop co-chairs

Programme – Day 2

WEDNESDAY – 2 April 2025

Decontamination, dismantling, and handling (Part 2) 5		
		Session Chair – Ladislav Vargovcik, TUK, Slovak Republic
9:00	**5.4**	**Robotic technologies for nuclear decommissioning** Leonel Lagos, Florida International University, United States
9:20	**5.5**	**The use of Robotics and Remote Systems (RRS) in decommissioning by Vattenfall** Nicklas Tjernlund, Vattenfall AB, Sweden
9:40	**5.6**	**Innovative handling system for graphite core dismantling** Riccardo Chebac, GraphiCore, Italy
10:00	**5.7**	**Technology development and application to support recycling of radioactive materials** Tim Milner, Energy Solutions, United States
10:20	**5.8**	**Further Q&A and session wrap-up: Session chair(s)**
10:30		Coffee break

Behind the technology: Human factors 6		
		Session Chair – Seifallah Ben Hadj Hassine, European Commission (EC)
11:00	**6.1**	**Area Manager Production & Operation – SKB** Heikki Laitinen, SKB, Sweden
11:20	**6.2**	**Wearable Robotics, Human Machine Interface, common failures** Jason Wheeler, DOE, United States
11:40	**6.3**	**Further Q&A and session wrap-up: Session chair(s)**
11:50		Lunch

Digitalisation and cyber security 7

		Session Chair – Nicklas Tjernlund, Vattenfall AB, Sweden
13:30	**7.1**	**Context presentation** Rob Nichol, Sellafield Ltd, United Kingdom
13:50	**7.2**	**Cyber security for innovative nuclear technologies** Fan Zhang, Georgia Tech, United States
14:10	**7.3**	**Towards safe and secure use of robots in nuclear** Levente Nyusti, IFE, Norway
14:30	**7.4**	**Further Q&A and session wrap-up: Session chair(s)**
14:40		Coffee break

Safety considerations for automated and AI technologies 8

		Session Chair – Michael Donnelly, Sellafield Ltd, United Kingdom
15:10	**8.1**	**Use of AI and automated systems to improve safety in radioactive waste management** Rustam Stolkin, University of Birmingham, United Kingdom
15:30	**8.2**	**Safety standards, The role of AI-large language models in safety during decommissioning** Duriem Calderin, International Atomic Energy Agency (IAEA)
15:50	**8.3**	**Trilateral Principles Paper on the Deployment of Artificial Intelligence in Nuclear Activities** Paolo Picca, ONR, United Kingdom
16:10	**8.4**	**Panel session on safety consideration for automated and AI technologies**
17:00		Day 2 wrap-up and finish Workshop co-chairs

Programme – Day 3

THURSDAY – 3 April 2025

How could innovative technologies support the back end of SMRs and advanced reactors 9		
		Session Chair – Thomas Braunroth, GRS, Germany
9:00	**9.1**	**SMR concerns, constraints, and opportunities: NEA activities** Gabriele Grassi, NEA
9:20	**9.2**	**Lessons learnt from decommissioning thorium technology facilities** Pat Degagne, CNL, Canada
9:40	**9.3**	**Innovation in Gen IV SMR – Lead cooled fast reactor** Pascal De Langhe and Didier Leonard, SCK CEN, Belgium
10:00	**9.4**	**IAEA safety considerations for radioactive waste, spent fuel management, and decommissioning of SMRs** Duriem Calderin, IAEA
10:20	**9.5**	**Further Q&A and session wrap-up: Session chair(s)**
10:30		Coffee break

Effective initiatives to foster innovation 10		
		Session Chair – Nicklas Tjernlund, Vattenfall AB, Sweden
11:00	**10.1**	**Euratom Research & Training Programme: A European strategy for research and innovation in D&D activities** Seifallah Ben Hadj Hassine, EC
11:20	**10.2**	**ONR's approach to enable innovation in the UK nuclear industry** Paolo Picca, ONR, United Kingdom
11:40	**10.3**	**When regulators adopt innovation** John McIntosh, Canadian Nuclear Safety Commission, Canada

12:00	**10.4**	**Électricité de France (EDF's) strategy on robotic training definition** Lise Thenault, EDF, France
12:20	**10.5**	**Further Q&A and session wrap-up: Session chair(s)**
12:30		**Closing remarks and summary** Workshop co-chairs
12:40		Workshop conclusion

EXHIBITORS

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