

Hydrogen Production Using Nuclear Energy - Safety Considerations

Tuesday, October 1st, 2024, 8:30 am – 5:00 pm



The Westin Ottawa, Ottawa (Canada)
Lead by:

Gilles Rodriguez, CEA, France



Rami El-Emam, Ontario Tech, Canada



The one-day workshop aims to address critical safety aspects and standardization needs associated with integrating hydrogen production facilities with nuclear power plants (NPPs). Current nuclear fleets as well as the anticipated deployment of small modular reactors (SMRs), can be coupled to different electrochemical and thermochemical hydrogen production technologies, to produce clean and sustainable hydrogen at a large scale. Over the past three years, several nations have delved into demonstration projects for hydrogen production from nuclear energy, providing valuable insights into relevant safety considerations and standards. This event seeks to build on such initiatives by fostering a comprehensive discussion on the technical and safety aspects of hydrogen production at nuclear power plants.

This event's discussions will focus on the technical and safety aspects of integrating hydrogen production with NPPs, assessing existing standards, and determining whether specific safety considerations are required to address the interface between these technologies.

By bringing together key parties, this event will facilitate the exchange of knowledge, best practices and on-going R&D programs, fostering a collaborative approach to overcome the challenges of hydrogen production in hydrogen production using nuclear energy. Attendees will gain a deeper understanding of the complexities involved and contribute to the development of robust safety and technical frameworks necessary for the future of low-carbon hydrogen production.

Organized by:



Participating Organizations:



Canadian Nuclear Laboratories

Laboratoires Nucléaires Canadiens



Canadian Nuclear Safety Commission

Commission canadienne de sûreté nucléaire



This conference is hosted and welcomed by G4SR-5 Conference



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Session I		
08:30 - 12:00 (Ottawa time: UTC - 4)		
08:30 – 09:00	Opening Remarks & Introduction to the context and configuration of the workshop	G. Rodriguez (CEA) & L. Jacobs (Ontario Tech)
09:00 Keynote Session I		
	P1. The Canadian Hydrogen Safety Centre (15 min)	N. Gnanapragasam (CNL)
	P2. Safety assessment for SMRs coupled with non-electric application: the TANDEM project approach. (15 min)	G. Rodriguez (<i>on behalf of C. Vaglio-Gaudard</i>) (CEA)
	P3. Technical and safety considerations for nuclear integrated hydrogen production (15 min)	D. Klein (EPRI)
	P4. Standardization assessment for hydrogen production using nuclear energy (15 min)	L. Logan (CSA)
10:00 Coffee Break (30 min)		
10:30 Keynote Session II		
	P5. Hydrogen in Ontario from a Regulatory Perspective. (15 min)	A. Lal (TSSA)
	P6. Regulatory considerations for non-electric application of nuclear regulators (15 min)	S. Reodikar (CNSC)
11:00 Panel Discussion Session I		
Regulatory Frameworks and Safety Standards: Existing Standards and Gaps in Safety of Coupling Hydrogen and Nuclear Plants		
<i>N. Gnanapragasam / L. Logan (CSA) / G. Rodriguez (CEA) / D. Klein (EPRI) / S. Reodikar (CNSC) / A. Lal (TSSA)</i>		
Expert Round table moderated by R. El Emam		
12:00 Lunch Break (90 min)		

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Session II	
13:30 - 17:00 (Ottawa time: UTC - 4)	
13:30- 15:00	Keynote Session III
P7. High-temperature electrolysis and nuclear (15 min)	B. Pollet (UQTR)
P8. Fundamentals of H ₂ safety management in the nuclear industry (15 min)	N. Chaumeix (CNRS)
P9. Hydrogen from Nuclear: The end users' safety requirements (15 min)	EDF / FRA or CEA pres
P10. Lessons learnt from French and European R&D programs on the H ₂ safety management in NPPs (15 min)	A. Bentaib (IRSN)
P11. Assessment of Hydrogen Production using Gen IV system (15 min)	R. Sadankhar (GIF)
P12. Nuclear-Hydrogen coupled plants: safety requirements and quantitative risk assessment (15 min)	R. Liang (CNL)
15:00	Coffee Break (30 min)
15:30 – 16:30	Panel Discussion Session II
<p>How R&D works can foster the safety approach of coupling Hydrogen units and Nuclear plants? What are the positive feedback?</p> <p><i>R. Liang (CNL) / N. Chaumeix (CNRS) / A. Bentaib (IRSN) / EDF / FRA or CEA expert / R. Sadankhar (NRCAN) / B. Pollet (UQTR)</i></p>	
Expert Round table moderated by G. Rodriguez	
16:30	Open discussion and debate from the audience (Moderated by G. Rodriguez)
17:00	Closing Remarks