



IIW International Conference

Hydrogen Applications and Energy Transition

[DocumentNumber]

Chair: Giovannibattista Garbarino

Agenda – 26 June 2025

Time	Agenda Item	Room
09:30 – 10:00	Opening and introduction	Maestrale
10:00 – 11:00	Opening lectures	Maestrale
11:00 – 12:30	Awards ceremony	Maestrale
12:30 – 14:00	Lunch	
14:00 – 15:40	Technical Presentations	Grecale
14:00 – 15:40	Technical Presentations	Ligure
15:40 – 16:10	Coffee break	
16:10 – 17:50	Technical Presentations	Grecale
16:10 – 17:50	Technical Presentations	Ligure

Agenda – 27 June 2025

Time	Agenda Item	Room
09:00 – 10:30	Technical Presentations	Grecale
09:00 – 10:30	Technical Presentations	Ligure
10:40 – 11:10	Coffee break	
11:00 – 12:25	Technical Presentations	Grecale
11:00 – 12:25	Technical Presentations	Ligure
12:30 – 14:00	Lunch	
14:00 – 15:40	Technical Presentations	Grecale
14:00 – 16:05	Technical Presentations	Ligure
15:40 – 16:10	Coffee break	
16:10 – 17:00	Technical Presentations	Grecale



Schedule of Presentations

IIW International Conference: “Hydrogen applications and Energy Transition”

Venue: Centro Congressi Porto Antico

June 26-27, 2025

Chair: Giovannibattista Garbarino

Room Grecale – June 26, 14:00 – 17:50

IC Papers (25 minutes per paper including questions)

Session Chair: Marco Palombo

[01] 14:00: Performance of ferritic steel weldments in gaseous hydrogen
Matteo Ortolani (Tenaris)

[02] 14:25: Hydrogen Embrittlement in Pipeline Steels: A Chemical and Mechanical Approach
Flavio Catalano (UNIGE)

[03] 14:50: Repair and Hot Tapping of Pipelines in Hydrogen and Blended Gas Service
William Bruce (DNV)

[04] 15:15: Assessment of in-service welding conditions for pressurized hydrogen pipelines via component test
Sebastian Kaiser, M. Rhode (BAM)

[05] 16:10: Characterization of hydrogen trapping in a CoCrFeMnNi high-entropy alloy charged up to 1000 bar high-pressure hydrogen
Michael Rhode (BAM)

[06] 16:35: Cryogenic Performance of Conventional and Novel Welding Materials for Liquid Hydrogen Applications
Hyojin Park (Hyundai-steel Company), Woo-hyuk Choi (Hyundai-steel Company), Jin Hwan Cho (Hyundai welding)

[07] 17:00: Weld heat input effect on microstructure and hydrogen diffusion in thick-walled S690 submerged arc welded joints
Michael Rhode (BAM), M.D. Irfan (BAM), D. Czeskleba (BAM), T. Kannengiesser (Otto-von Guericke University, Institute for Materials Research and Joining Technology)

[08] 17:25: Anticipating Skills for the Hydrogen Transition: An approach for Energy-Intensive Industries

A. Marques (EWF), A. Almeida (EWF), Antonius Schröder (Technische Universität, Dortmund)

Room Ligure – June 26, 14:00 – 17:50

IC Papers (25 minutes per paper including questions)

Session Chair: Marcello Mandina

[01] 14:00: The ARHYOSA Project: AIoT platform for Renewable HYdrogen OEM Services Architecture

Fabrizio Cardinali (MYWAI), David Massetti (Ansaldo Greentech/University of Genoa - DIME)

[02] 14:25: Study on WAAM-based dissimilar metal additive manufacturing through multi-robot control

Geon Hu Han (Changwon National University), Chang Jong Kim (Changwon National University), In Soo Jo (Changwon National University), Young Tae Cho (Changwon National University)

[03] 14:50: Estimation of Charpy energy for SUS316L at cryogenic temperature based on temperature-lateral expansion relationships

Jeong Yeol Park (Korea Institute of Industrial Technology), Changwook Ji (Korea Institute of Industrial Technology), JaeHan Park (Korea Institute of Industrial Technology)

[04] 15:15: Development of an In-Situ Welding CCT Diagram for HSLA S960MC Steel and Comparison with the Existing CCT Diagram

Jakub HARVANEK (University of Zilina)

[05] 16:10: Heat-affected zone simulations of P355NH pipeline steel

Ádám Pap (Kis Engineering and trading LTD), Ákos Meilinger (Kis Engineering and trading LTD), Marcell Gáspár (Kis Engineering and trading LTD)

[06] 16:35: Wire arc additive manufacturing of CNT coated AISI316L stainless steel

Pratishtha Sharma (Department of Mechanical Engineering, Indian Institute of Technology), S. Aravindan (Department of Mechanical Engineering, Indian Institute of Technology), Kusum Meena (Department of Mechanical Engineering, Indian Institute of Technology)

[07] 17:00: Hydrogen ready solutions for hydrogen leak prevention

Simone Zanetti (Henkel)

[08] 17:25: Laser Welding of Busbar-to-Cell Terminal Connections for Battery Modules

C. M. Allen (TWI Ltd), **R. Bola** (EWF), R.M. Afonso (EWF)

Room Grecale – June 27, 09:00 – 12:25

IC Papers (25 minutes per paper including questions)

Session Chair: Marco Palombo

[01] 09:00: Modern filler metal development for liquid hydrogen cryogenic application
Nicola Faraone (Voestalpine Bohler Welding Italia srl), **Daniel Klemm** (Voestalpine Bohler Welding Germany GmbH), Enrico Zuin (Voestalpine Bohler Welding Germany GmbH)

[02] 09:25: Development of austenitic stainless steel welding filler metals and weld properties for liquid hydrogen storage applications
S. Cracium (Lincoln Electric Europe), M. Pruteanu (Lincoln Electric Europe), **Z. Zhang** (Lincoln Electric Europe), S. Starck (Lincoln Electric Europe), C. Barone (Lincoln Electric Europe)

[03] 09:50: Resistance Welding for future Hydrogen Economy – Challenges in the Comeback of an old Welding Technique for modern Applications
Maïke Epperlein (RWTH Aachen University, Welding and Joining Institute (ISF)), Alexander Schiebahn (RWTH Aachen University, Welding and Joining Institute (ISF)), U. Reisgen (RWTH Aachen University, Welding and Joining Institute (ISF))

[04] 10:15: Hydrogen Embrittlement Behavior in API X52 Steel for High-pressure Hydrogen Transportation
Sung-kyu Cho (Hyundai-steel Company), Ho-sang Chang (Hyundai-steel Company), Sang-yong Shin (Dept. of Materials Science and Engineering, University of Ulsan), Won-seok Ko (Dept. of Materials Science and Engineering, Inha University), Hyung-goun Joo (Hyundai-steel Company)

[05] 11:10 Description of fatigue crack propagation in steel pipelines transporting hydrogen media
J. Kovács (University of Miskolc), János Lukács (University of Miskolc)

[06] 11:35: Hydrogen embrittlement evaluation of welded joints in low-alloy carbon and austenitic stainless steels for hydrogen applications
Amir Baghdadchi (ESAB), Eduard Navalles Martínez (Swelam), Fredrik Welberg (ESAB), Esa Virolainen (SSAB), Johan Pilhagen (Outokumpu), BirhanSefer (Swelam), Nuria Fuertes (Swelam)

[07] 12:00: Influence of Process Parameters on the Solidification Mode in Wire-Arc Additive Manufacturing of Duplex Stainless Steels
Gitae Park, Chan Kyu Kim, Yongjoon Kang, Dong-Jin Oh, Sang Woo Song (Extreme Materials Research Institute, Korea Institute of Materials Science)

Room Ligure – June 27, 09:00 – 12:00

IC Papers (25 minutes per paper including questions)

Session Chair: Marco De Marco

[01] 09:00: Assessment of hydrogen effect on failure mechanisms of welded low alloy carbon steel

Ayoub El Moutaouakkil (Centre Technique de l'industrie mécanique – CETIM), Matthieu Tanguy (Centre Technique de l'industrie mécanique – CETIM), Romaric Collet (Centre Technique de l'industrie mécanique – CETIM), Pierre Osmond (Centre Technique de l'industrie mécanique – CETIM), Gouenou Girardin (Centre Technique de l'industrie mécanique – CETIM)

[02] 09:25: Fusion joining of advanced and dissimilar metals — Processes, challenges and experimental insights (Inconel-Copper)

Raghawendra P.S. Sisodia (University of Miskolc), János Fajger (University of Miskolc), Piotr Śliwiński (Łukasiewicz Upper Silesian Institute of Technology), Paweł Pogorzelski (Łukasiewicz Upper Silesian Institute of Technology), Dániel Koncz-Horváth (University of Miskolc), Marek St. Węglowski (Łukasiewicz Upper Silesian Institute of Technology)

[03] 09:50: Data Analytics Approaches for Yield Strength Prediction of Austenitic Stainless Steel Welds

Hyunjun Lee (Manufacturing Innovation Lab, HD Korea Shipbuilding & Offshore Engineering Co. Ltd), Sukil Park (Manufacturing Innovation Lab, HD Korea Shipbuilding & Offshore Engineering Co. Ltd), Dongyoon Kim (Flexible Manufacturing R&D Department, Korea Institute of Industrial Technology), Cheolhee Kim (Department of Mechanical and Material Engineering, Portland State University), Namhyun Kang (Department of Materials Science and Engineering, Pusan National University)

[04] 10:15: Effect of Hydrogen on the Fracture Toughness of X65 Pipeline Steel Welded Joints in High-pressure Natural Gas/Hydrogen Mixtures

Yongdian Han, Xue Liu, Youfu Xiao, Yun Cheng, Lei Zhao, Lianyong Xu (School of Materials Science and Engineering, Tianjin University)

[05] 11:10 Techniques for Improving the Fatigue Strength of Thin Laser-Welded Butt Joints

Martin Fratrik (University of Zilina)

[06] 11:35: Laser Welding Characteristics of UHSS-STs Dissimilar Joints for Battery Pack Cases
Changjun Lee (Research institute of advanced manufacturing & Materials Technology Advanced Joining & Additive Manufacturing R&D Department, Korea Institute of industrial technology), YoungHoon Jang (Yonsei University, Department of Mechanical Engineering), **Minjung Kang** (Research institute of advanced manufacturing & Materials Technology Advanced Joining & Additive Manufacturing R&D Department, Korea Institute of Industrial Technology)

Room Grecale – June 27, 14:00 – 17:00

IC Papers (25 minutes per paper including questions)

Session Chair: Rosario Marchese

[01] 14:00: Evaluation of Hydrogen Embrittlement Susceptibility in Pipeline Steel Welds
Boian Alexandrov Fernando Romero (Center for Weldability Evaluation, Department of Materials Science and Engineering, The Ohio State University)

[02] 14:25: Effect of hydrogen blending into natural gas on the metallic structural elements of the gas distribution networks
Janos Lukács (University of Miskolc), **Nora Nagy** (University of Miskolc)

[03] 14:50: Effect of Microstructure on Hydrogen Embrittlement of 13Ni Steel Welded Joints for Liquid Hydrogen Storage Tanks
Chenjun Yu, **Shohei Uranaka**, **Tomoya Kawabata** (Department of Systems Innovation, The University of Tokyo)

[04] 15:15: Development Process of Weld Residual Stress Database for Probabilistic Assessment of Dissimilar Metal Welds in Nuclear Power Plants
Jun-Young Jeon, **Kyungsik Ha**, **Chang-Young Oh**, **Sang-Woo Song** (Department of Nuclear Safety Research, Korea Institute of Materials Science)

[06] 16:10: Induction Heating Straightening and Thermal Deformation of Shipbuilding Materials
Byungjoo Kim, **Kyeong-Min Kim**, **Hee-Keun Lee** (Digital Production Innovation Division, Research Institute of Medium & Small Shipbuilding)

[07] 16:35: Study on Improvement of Semi-auto TIG Welding Productivity
Hee-Keun Lee (Digital Production Innovation Division, Research Institute of Medium & Small Shipbuilding), **Kwang-Hee Yun** (Manufacturing Innovation R&D Center, Hanwha Ocean), **Hyun Jun Ahn** (Digital Production Innovation Division, Research Institute of Medium & Small Shipbuilding), **Sung-Min Ki** (Digital Production Innovation Division, Research Institute of Medium & Small Shipbuilding)

Room Figure – June 27, 14:00 – 16:05

IC Papers (25 minutes per paper including questions)

Session Chair: Emanuele Gandolfo

[01] 14:00: Effect of δ -ferrite and Martensitic Transformation on the Cryogenic Fracture Toughness of SUS316L for Liquid Hydrogen Storage Tanks

Daiki Maeda, Shohei Uranaka, Tomoya Kawabata (Department of Systems Innovation, The University of Tokyo)

[02] 14:25: Hybrid Manufacturing of Bimetallic Steel Components by Directed Energy Deposition of S690 on Rolled AISI 304L for Enhanced Structural Performance

Saad Waqar (Department of Mechanical Engineering, Politecnico di Milano), Ali Gokhan Demir (Department of Mechanical Engineering, Politecnico di Milano), Alper Kanyilmaz (Department of Architecture, Built Environment, and Construction Engineering, Politecnico di Milano), Barbara Previtali (Department of Mechanical Engineering, Politecnico di Milano)

[03] 14:50: Obtaining High-temperature Ductility Curves of Stainless steels using In-plane Constraint and Relaxation Type Hot Cracking Evaluation System

Shaowei Yang, Tamaki Ito, Kenji Shinozaki, Motomichi Yamamoto (Graduate School of Advanced Science and Engineering, Hiroshima University)

[05] 15:15 Technical Viability Analysis of Laser Cladding

Meshal Ashrah (Saudi Aramco)

[06] 15:40 A Real-Time Seam Tracking Algorithm in GMAW Based on YOLO Feature Extraction

Sung Been Han (Dept. of Smart Manufacturing Engineering, Changwon National University), Geon Hu Han (Dept. of Smart Manufacturing Engineering, Changwon National University), Kwan Woo Ko (Dept. of Smart Manufacturing Engineering, Changwon National University), **Young Tae Cho** (Dept. of Smart Manufacturing Engineering, Changwon National University)