C-XI: Pressure Vessels, Boilers and Pipelines

79th Annual Assembly Salzburg 2026

Monday, 13th – Wednesday, 15th July 2026

Chair: Prof. SuJun Wu

Agenda – 13 July 2026

Time	Agenda Item	Responsibility	Action
10.00	Administrative affairs of C-XI	Prof. Sujun Wu	Information
12.30	Lunch time		Information
14.00	Author presentations - Plenary Session + Discussions	Authors	information
18.00	Adjournment for the Day		

Agenda – 14 July 2026

Time	Agenda Item	Responsibility	Action
08.30	Author presentations---morning session	Authors	Information
12.30	Lunch time		Information
14.00	Author presentations---afternoon session	Authors	Information
18.00	Adjournment for the Day		Information

Agenda – 15 June 2026

Time	Agenda Item	Responsibility	Action
14.00	C-XI and ASME IWG Joint Meeting	Authors	Information
16.30	Panel Discussion	Panellists	Information
18.00	Adjournment of the Meeting of Commission XI		

Members' List (C-XI Leadership)

First name	Last name	Role	IIW user/E-mail	Country
Sujun	**Wu**	C-XI Chair	wusj@buaa.edu.cn	China
Xing	**Sun**	C-XI Vice Chair	xing.sun@twi.co.uk	UK
Muhammad	**ALI**	SC-XI-NM Chair	muhammad.ali@twi.co.uk	UK
Chen	**Sun**	SC-XI-NM Vice Chair	sunchen@spic.com.cn	China
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Sujun	**Wu**	SC-XI-H Chair	wusj@buaa.edu.cn	China
Masoud	**Moshtaghi**	SC-XI-H Vice Chair	Masoud.Moshtaghi@lut.fi	Finland

Appendix (Schedule of Activities and Presentations)

79th Annual Assembly Salzburg 2026

C-XI: Pressure Vessels, Boilers and Pipelines, July 13-15, 2026
Room: Listed by day of meeting

Day 1 (13th): Administrative Affairs Monday 13 July 2026

Session1: C-XI Administrative Affairs 10.00-12.30

Chair: Prof. Su Jun Wu

Room: Papageno (Sheraton)

10:00 – 10:30

- ➢ Opening of the meeting
- ➢ Identification of C-XI delegates
- ➢ Request fellow member volunteer to draft the Minutes of the Meeting
- ➢ News from the IIW Secretariat (Dr Elisabetta Sciaccaluga, IIW Technical Manager)
- ➢ Presentation of 'Welding in the World' status – WitW Editor-in-Chief

10:30 – 10:50

- ➢ Summary of the C-XI work and Election of Vice Chair for C-XI. By C-XI Chair Professor Su Jun WU.

10:50 – 11:30

- ➢ Introduction to the Intermediate Meeting-1 organised by Subcommission SC-XI-HE (Harsh Environment). By SC-XI-HE Chair Chuanbao Jia.
- ➢ Introduction to the Intermediate Meeting-2 organised by Subcommission SC-XI-E (Transmission Pipelines). By SC-XI-E Chair Wojciech Suder.
- ➢ Introduction to the Intermediate Meeting-3 (Joint meeting of XI-H and XI-E) held at LUT University, Finland. By SC-XI-H Vice Chair Masoud Moshtaghi.

11:30 – 12:30

- ➢ Discussions of C-XI Future Work. Participants: The Chairs and Vice Chairs of C-XI and its Sub-commissions; Members who are interested in the topic.

Close of Day 1 Morning Session

Day 1 (13th): Author Presentations Monday 13 July 2026

Session 2: Plenary Session

Chair: Prof. SuJun Wu

Room: Papageno (Sheraton)

[01] **Plenary talk 1:**

14.00-14.45: Review of the recent Top Advances of Welding in China

Guoqing Wang, Xiaochun Lv, **Xiao Guo**

China Welding Society

XI-1248-2026

[02] **Plenary talk 2:**

14.45-15.30: Defect acceptance criteria for additively manufactured pressure vessel/pipe components

Yuning Zhang and **Pingsha Dong**

Dept of Naval Architecture and Marine Engineering, The university of Michigan, USA

XI-1241-2026

[03] **Plenary talk 3:**

15.30-16.15: Metal-Polymer Dissimilar Joining: Fundamentals and Applications

Ke Chen, Zhenkun Cheng, Xin Zou, Feifei Xie, Nannan Chen, Mingyang Li

School of Materials Science and Engineering, Shanghai Jiao Tong University, China

XI-1240-2026

[04] **Plenary talk 4:**

16.15-17.00: In-service welding on hydrogen pipelines - a status review and brief summary of the "H2SuD" project

Sebastian Kaiser, **Michael Rhode**, Kjell Erxleben, Thomas Kannengiesser

Bundesanstalt fuer Materialforschung und -pruefung (BAM)

Josef Domitner, Zahra Silvayeh

Technical University of Graz

XI-1233-2026

17.00-18.00: Panel Discussion

General discussions about the proposals in draft of two Standards:

a. **Hydrogen Damage Assessment Methods, to be presented by Prof. Su Jun Wu.**
b. **Hydrogen Permeation in Metals, to be presented by Prof. Michael Rhode.**

Close of Day 1 Activities

Day 2 (14th): Author Presentations Tuesday 14 July 2026

Session 3: Hydrogen Effects on Performance of Welds

Chair: Prof. Michael Rhode

Room: Papageno (Sheraton)

[05] **Keynote talk 1**

08.30-08.55: Advanced Welding Design Strategies for Hydrogen Pipelines: Recent Developments in Microstructure Engineering and Hydrogen-Resistant Welds

Masoud Moshtaghi

Mechanics of Materials Lab, School of Energy Systems, LUT University, Finland

XI-1230-2026

[06] **08.55-09.10: Fracture toughness measurement of welded pipelines**

Mahdieh safyari

Metals Technology Lab, Department of Material Science and Environmental Engineering, Tampere University, FinlandXI-1218-2026

[07] **09.10-09.25: Fracture Toughness of X65 Girth Welds in High-Pressure Hydrogen Gas: Effect of Test Methods and Specimen Type**

Yuki Kiyokawa[1], Yasuhiro Kawai[1], Fumiaki Kimura[1], Keigo Manabe[2], Yuji Kisaka[2], Shusuke Fujita[2], Hiroto Shoji[3], Mitsuru Ohata[3]

[1] Nippon Steel Engineering Co., Ltd.; [2] Nippon Steel Pipeline & Engineering Co., Ltd.; [3] Osaka University

XI-1217-2026

[08] **09.25-09.40: Burst tests of orbital welded austenitic stainless steel (316L) tubes charged in pressurized hydrogen**

Sam Shaanika

University of Namibia

XI-1219-2026

[09] **09.40-09.55: Tailored precipitates from additive manufacturing improve hydrogen trapping in aluminum alloys for high-pressure vessels**

Mansoob Ahmad, Mahdieh Safyari

Metals Technology Lab, Department of Material Science and Environmental Engineering, Tampere University, Finland

XI-1224-2026

Session 4: Hydrogen Effects on Performance of Welds (conti.)

Chair: Prof. Masoud Moshtaghi

[10] **Keynote talk 2**

09.55-10.20: Adapted ISO 3690 tests for quantifying realistic H contents in multi-layer welds of pipeline steels

Michael Rhode, Sebastian Kaiser, Kjell Erxleben, Thomas Kannengiesser
Bundesanstalt fur Materialforschung und -pruefung (BAM)

XI-1235-2026

[11] **10.20-10.35: An Experimentally Informed Model for Predicting Hydrogen-Assisted Fatigue in Welded Steels**

Donát Horváth[1], Mahdieh Safyari[2], Masoud Moshtaghi[1]
[1]Mechanics of Materials Lab, School of Energy Systems, LUT University, Finland
[2]Metals Technology Lab, Department of Material Science and Environmental Engineering, Tampere University, Finland

XI-1225-2026

[12] **10.35-10.50: Simulation-based fatigue assessment of weld and unwelded stainless steel in air and hydrogen environments**

Mohit Yadav[1], Mahdieh Safyari[2], Masoud Moshtaghi[1]
[1]Mechanics of Materials Lab, School of Energy Systems, LUT University, Finland
[2]Metals Technology Lab, Department of Material Science and Environmental Engineering, Tampere University, Finland

XI-1226-2026

[13] **10.50-11.05: Decision-oriented probabilistic framework for maintenance and repair of hydrogen-pipelines with fatigue cracks using Dynamic Bayesian Networks**

Phyo Myat Kyaw[1], Nandar Hlaing[2], Moritz Braun[1]
[1] German Aerospace Center, Institute of Maritime Technology and Propulsion Systems, Geesthacht, Germany; [2] OWI-Lab, AVRG, Vrije Universiteit Brussel, Brussels, Belgium

XI-1227-2026

[14] **11.05-11.20: Low-Cycle Fatigue Performance of Hydrogen Pre-charged X65 Girth Welds under Seismic Strain Conditions**

Tsubasa Katayama[1], Yuki Kiyokawa[1], Yasuhiro Kawai[1], Fumiaki Kimura[1], Keigo Manabe[2], Yuji Kisaka[2], Shusuke Fujita[2], Behzad Farahani[3], Margo Cauwels[3], Tom Depover[3], Wim De Waele[3]
[1] Nippon Steel Engineering Co., Ltd.; [2] Nippon Steel Pipeline & Engineering Co., Ltd.; [3] Ghent University

XI-1232-2026

Session 5: Welding Technology

Chair: Prof. Lianyong Xu

[15]**11.20-11.35： New manufacturing strategy of thickening pipe end by surfacing welding to suppress the softening behavior in heat-affected zone of X80 oil and gas pipeline girth weld**
Zhendan Zheng[1], Meijuan Hu[2], Qiang Chi[2], Fangjie Cheng[1], Shaojie Wu
[1] Tianjin University; [2] CNPC Tubular Goods Research Institute
XI-1222-2026

[16]**11.35-11.50: Nickel-based superalloy/stainless stee bimetal fabricated by laser melting deposition interfacial microstructure and mechanical property relationship**
Weidi Li, Qian Wang, Tiesong Lin, Peng He
Harbin Institute of Technology, China
XI-1229-2026

[17]**11.50-12.05: Study on additive friction stir deposition of Ti/Al dissimilar alloys**
Lei Shi, Xiankun Zhang, Yang Li, Chuansong Wu
Shandong University, China
XI-1237-2026

[18]**12.05-12.20: Process monitoring of a micro plasma arc welding process for thin-walled austenitic cylinders using principal component analysis based on multisensor process parameters**
Sven Seibold, A. Hälsig, J. Hensel
Technische Universität Chemnitz, Germany
XI-1244-2026

Close of Day 2 Morning Session

Session 6: Welding in Harsh Environment

Chair: Prof. Wojciech Suder

Room: Papageno (Sheraton)

[19] **Keynote talk:**
14.00-14.25: Comprehensive Review on the development of underwater welding and additive manufacturing
Chuanbao Jia

Shandong University, China
XI-1207-2026

[20] **14.25-14.40: Experimental Research on Repair of Rail Steel via Laser Cladding**
HongTu Song
China Academy of Railway Sciences Co., Ltd.
XI-1210-2026

[21] **14.40-14.55: Polarity and depth effects on underwater wet welding performance using an experimental nickel-based tubular wire**
Eduardo J. S. Lobo (Federal University of Minas Gerais – UFMG, Belo Horizonte, Brazil), Orlando M. Castellanos Gonzalez (Federal University of Santa Catarina – UFSC, Florianopolis, Brazil), Ariel R. Arias (Federal University of Minas Gerais – UFMG, Belo Horizonte, Brazil)
XI-1215-2026

[22] **14.55-15.10: Experimental Analysis and Numerical Modelling of Rail Steel Friction Stir Processing**
Ming Zhai
China Academy of Railway Sciences Co., Ltd.
XI-1208-2026

[23] **15.10-15.25: In-situ visualization and adhesive regulation of gas-induced weld pool dynamics in underwater submerged arc welding**
Lijian Wu, Chuanbao Jia, Yanfei Han, Chuansong Wu
Shandong University, China
XI-1220-2026

[24] **15.25-15.40: MHD-Based Coupled Modeling of TIG Arc and Molten Pool Flow under Low-Temperature and Low-Pressure Conditions**
Yongzhe Li, Yilong Yu
Southeast University, China
XI-1234-2026

[25] **15.40-15.55: Mechanical Performance and Microstructure Evolution of Ultra-High Strength Steel Q960E Welded Under Polar Temperature**
Caowei Huang, Yongzhe Li, Yijun Zhou
SouthEast University, China
XI-1216-2026

Session 7: Welding in Harsh Environment (conti.)

Chair: Prof. Chuanbao Jia

[26] **Invited talk:**

15.55-16.15: Influence of pulsed current on arc dynamics and metal transfer in shielded metal arc welding in SMAW underwater wet welding

Leandro Vaccari, Hans Jürgen Maier, Thomas Hassel
Leibniz University of Hanover, Germany
XI-1214-2026

[27] **16.15-16.30: Benefits of High-Power Vacuum Laser Beam Welding - Welding Equipment and Process Development**

Meng Jiang, Lijun Yang, Xi Chen, Yanbin Chen
Harbin Institute of Technology, China
XI-1238-2026

[28] **16.30-16.45: Optimization of Microstructure and Enhancement of Mechanical Properties in Flash-butt Welded Rail Joints**

YuPeng Hao
China Academy of Railway Sciences Co., Ltd.
XI-1209-2026

[29] **16.45-17.00: Electron Beam Welding of Copper Tubes for Heat Pump Refrigerant Circuits: Process Window and Joint Integrity**

Sathishkumar Duraisamy[1], António Manuel de Bastos Pereira[1], Ana Lúcia Horovistiz[1], Bernardo Mascate[2], João Miguel Serras Dias[1]
[1] University of Aveiro; [2] Bosch Home Comfort, Aveiro
XI-1247-2026

[30] **17.00-17.15: Study on Process Stability of Flash Butt Welding Based on Time-series Characteristics of Welding End Face State**

Guo Zhao
China Academy of Railway Sciences Co., Ltd.
XI-1213-2026

[31] **17.15-17.30: Microstructural Evolution and High-Temperature Properties of Service-Exposed P92 Steel Welded Joints**

Lei Zhao, Lianyong Xu
Tianjin University, China
XI-1243-2026

[32] **17.30-17.45: The molten metal flow and forming mechanism in wire arc directed energy deposition using bypass hybrid variable polarity plasma arc**
Cheng Li, Bolun Dong, Xiaoyu Cai, Sanbao Lin
Harbin Institute of Technology, Harbin 150001, China
XI-1245-2026

[33] **17.45-18.00: Effects of automatic ultrasonic impact treatment on fatigue performance of weld joints - a comparative study between automatic and manual ultrasonic impact treatment**
Zhijiang Wang, Tao Wang, Siliang Chen, Caiyan Deng
Tianjin University, China
XI-1246-2026

Close of Day 2 Activities

Day 3 (15th): Joint Meeting Wednesday 15 July 2026

Session 8: C-XI & ASME IWG Germany (14.00-18.00)

Chair: Prof. Su Jun Wu, Prof. Lei Zhao

Room: Papageno (Sheraton)

[34] **Invited talk:**
14.00-14.20: Revisiting Classical High-Cycle Fatigue: Mean Stress or R, Transition from S-N to Paris Law, and Implications for Codification
Su Hao[1,2], J. W. Fisher [3]
[1] ACII, Inc., USA & Beijing ACII Engineering Technology Co., Ltd., China; [2] Invited Visiting Professor, Guangxi University / Hainan University, China; [3] Department of Civil Engineering, Lehigh University, USA
XI-1242-2026

[35] **Invited talk:**
14.20-14.40: Research supporting adoption of wire direct energy deposition (DED) manufactured components operating in creep range
Teresa Melfi
Lincoln Electric
XI-1228-2026

[36] **Invited talk:**
14.40-15.00: Robust metallurgical bonding via nano-thick layer of interfacial solid solution in Mg/Steel dissimilar welding

Ke Chen[1], Xuebin Zhuo[1], Haining Yao[1], Gaohui Li[1], Katsuyoshi Kondoh[2], Min Wang[1], Xueming Hua[1]
[1] Shanghai Jiao Tong University, China; [2] The University of Osaka, Japan
XI-1239-2026

[37] **Invited talk:**

15.00-15.20: The path to standardization: The applicability of hollow specimens for material tests in hydrogen atmosphere

Florian Konert, **Michael Rhode**, Sergio Blason, Oded Sobol
Bundesanstalt fuer Materialforschung und -pruefung (BAM)
XI-1236-2026

[38] **15.20-15.35: Microstructure-Property Relationships in TMCP API 5L X70 Pipeline Welded Steel of Varying Wall Thickness**

Mahdi Marashi [1], Mahdieh Safyari[2], Masoud Moshtaghi [1]
[1]Mechanics of Materials Lab, School of Energy Systems, LUT University, Finland
[2]Metals Technology Lab, Department of Material Science and Environmental Engineering, Tampere University, Finland
XI-1211-2026

[39] **15.35-15.50: Characterisation of solidification behaviour and microstructure properties in SS316L built via LPBF additive manufacturing for boiler and pressure vessel applications**

Meysam Norouzi-Inallu, Kari Ullakko, Masoud Moshtaghi
Mechanics of Materials Lab, School of Energy Systems, LUT University, Finland
XI-1212-2026

[40] **15.50-16.05: Improving Stress Corrosion Cracking integrity of X52 girth welds based on damage experiences**

Judit Kovács (University of Miskolc), Péter Chován (FGSZ Ltd.), János Lukács (University of Miskolc)
XI-1221-2026

[41] **16.05-16.20: Comparative Study of 2.25Cr-1Mo Weld Metal Mechanical Properties after PWHT at standard and Low temperatures**

Gitartha Dev Sarmah, Dipkumar Patel, Ritesh Patel, Parth Bhandarkar
L&T Heavy Engineering
XI-1223-2026

16.30-18.00: Panel Discussion

Panellists include Professor Michael Rhode (BAM, Germany), Professor Ke Chen (Shanghai Jiaotong University, China), Professor Masoud Moshtaghi (LUT, Finland), Professor Chuanbao Jia (Shandong University, China), Professor Wojciech Suder (Cranfield University, UK), and any volunteers.

Any questions related to welding can be asked and will be answered by the Panellists.

18.00 Adjournment of the 2025 C-XI Meeting