



INTERNATIONAL INSTITUTE OF WELDING

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Doc. X-1997-2022

Annual Assembly 2022

Tokyo, Japan and Online

Draft Agenda

C-X: Structural Performance of Welded Joints – Fracture Avoidance

July 19-21, 2022

Niji, Room

Chair: Mitsuru Ohata (Japan)

Tuesday, 19th July – Room Niji, Grand Nikko Tokyo Daiba (08:30 – 12:30)

1. Preliminary Items

08:30 – 08:40

- (a) Welcome address (Prof. M. Ohata, C-X Chair, Osaka University, Japan)
- (b) Approval of agenda (X-1997-22)
- (c) List of C-X documents (X-2014-22)
- (d) Approval of last minutes (X-1996-21)

2. Chair for 2021 – 2023 (Prof. M. Ohata, C-X Chair, Osaka University, Japan)

08:40 – 09:00

- (a) Recent activities (~ 2021)
- (b) Terms of reference and Operational plan of C-X (Draft Idea) (X-1998-22)
- (c) Election of Vice-Chair of C-X

3. Technical presentation

S1: Simulation-based design –Welding residual stress

09:00 – 09:30 X-2000-2022 *Physical*

Gouging heat source model and analysis of gouging/welding residual stresses
Ninshu Ma, Kazuma Kado, Sherif Rashed, Kunio Narasaki (Osaka University)
Yasuo Agano, Nobuya Tanaka (FaB-Tec Japan Corporation)

S2: Simulation-based design –Fracture avoidance

09:30 – 10:00 X-2005-2022 *Physical*

Simulation-Based Design for Fracture Control of Knock-Off Bolts for Bridges
Hayato Nagaki, Kento Ozaki, Toru Ohmae, Dai Sago (Takadakiko Co.Ltd.)

Hiroto Shoji, Mitsuru Ohata (Osaka University)

10:00 – 10:30 X-2006-2022 *Physical*

Evaluation Method for Ductile Fracture Property of Steel and Weld Metal
Asato Hatamoto, Hiroshi Shimanuki (Nippon Steel Corporation), Japan

----- Coffee break (10:30 – 11:00) -----

S2: Simulation-based design –Fracture avoidance (Part 2)

11:00 – 11:30 X-2001-2022 *Physical*

Crack Growth Analysis for Welded Structures Using Characteristic Tensor - Small Scale Yielding and CTOD Viewed from Computational Aspect-
Hidekazu Murakawa (Joining and Welding Research Institute, Osaka University)

11:30 – 12:00 X-2002-2022 *Physical*

Crack Growth Analysis for Welded Structures Using Characteristic Tensor - Effect of Stress Ratio and Yield Stress on Fatigue Crack Growth Rate –
Hidekazu Murakawa (Joining and Welding Research Institute, Osaka University)

S3: Mechanical properties of AM products

12:00 – 12:30 X-2012-2022 *Non-physical (pre-recorded video)*

Process-microstructure-properties of CuAlNi shape memory alloys fabricated by selective laser melting
Yankun Zhang, Yongdian Han, Lianyong Xu, Lei Zhao (Tianjin University, China, and Tianjin Key Laboratory of Advanced Joining Technology, China)

Wednesday, 20th July – Room Niji, Grand Nikko Tokyo Daiba (8:30 – 12:30)

S4: Brittle fracture and arrest assessment

08:30 – 09:00 X-2004-2022 *Physical*

Long Brittle Crack Arrest Behavior in T Joint of Extra Thick Steel Plate
Ryota Nagao, Tsunehisa Handa, Takatoshi Okabe, Satoshi Igi (JFE Steel Corporation)
Hiroaki Hirasawa, Akihiko Yamanouchi, Noboru Kiji, Takuya Kusaba (Japan Marine United Corporation)

09:00 – 09:30 X-2013-2022 *Non-physical (live)*

Unstable Fracture Characteristics of Cryogenic Steel
Gyubaek An, Daehee Seong, Jeong-Ung Park, Iiwook Han (Chosun university, Korea)

S5: Development of FFS

09:30 – 10:00 X-1999-2022 *Physical*

Development of WES 2820 Fitness-For-Service assessment procedure for pressure equipment - Metal loss assessment
Junya Takahashi (WES 2820 Revision Sub-Committee, Chemical Plant Welding Research Committee, JWES, Sumitomo Chemical Co., Ltd.)

10:00 – 10:15 **Secretariat visit**

10:15 – 10:30 **Information about WitW** (Prerecorded video: Prof. Lippold)

----- **Coffee break (10:30 – 11:00)**-----

S6: Fracture toughness testing of welds

11:00 – 11:30 X-2008-2022 *Physical*

Pre-crack straightening treatment that ensures constant toughness evaluation in CTOD testing of welds

Tomoya Kawabata (The University of Tokyo)

Yoshiki Mikami (Joining and Welding Research Institute, Osaka University)

Takumi Ozawa (National Maritime Research Institute)

Houichi Kitano (National Institute for Materials Science)

11:30 – 12:00 X-2009-2022 *Physical*

Understanding the Mechanism of Weld Residual Stress Change by Local Compression Method

Yoshiki Mikami (Joining and Welding Research Institute, Osaka University)

Takumi Ozawa (National Maritime Research Institute)

Tomoya Kawabata (Graduate School of Engineering, The University of Tokyo)

12:00 – 12:30 X-2007-2022 *Physical*

Improved Local Compression with Bayesian Optimization

Takumi Ozawa (National Maritime Research Institute)

Tomoya Kawabata (Graduate School of Engineering, The University of Tokyo)

Yoshiki Mikami (Joining and Welding Research Institute, Osaka University)

Thursday, 21st July – Room Niji, Grand Nikko Tokyo Daiba (8:30 – 10:30)

SS7: Constraint correction for welded joints – Ductile and creep fracture

08:30 – 09:00 X-2010-2022 *Non-physical (pre-recorded video)*

A modification of $J-Q_m$ theory and out-of-plane crack-tip constraint quantification

Yi Miao, Lianyong Xu, Lei Zhao, Yongdian Han (Tianjin University, China, and Tianjin Key Laboratory of Advanced Joining Technology, China)

09:00 – 09:30 X-2011-2022 *Non-physical (pre-recorded video)*

Mismatch effect in creep properties on creep crack growth behavior of welded joints

Lei Zhao, Yu Xiong, Lianyong Xu, Yongdian Han (Tianjin University, China, and Tianjin Key Laboratory of Advanced Joining Technology, China)

09:30 – 10:00 X-2003-2022 *Physical*

Loading mode effect on brittle fracture toughness under large-scale yielding

Kazuma Shimizu, Mitsuru Ohata, Hiroto Shoji (Osaka University, Japan)

4. Resolutions

10:00 – 10:15

- (a) Recommendation of documents to Welding in the World
- (b) Terms of reference & Operational plan
- (c) Vice Chair of C-X

5. Next Meeting

10:15 – 10:30

- (a) Meeting at 76th Annual Assembly: 16th (Mon.) to 21st (Wed.), July 2023
- (b) Intermediate meeting: Date: XXXX, 2023, Place: XXXX
- (c) Any other business

6. Closing