



Working Unit: Commission II

Agenda of 77th Annual Assembly of C-II “ARC WELDING AND FILLER METALS”

July 8 – 10, 2024

II-2337r3-2024

Venue

Room JUPITER
Rodos Palace Hotel, Trianton Avenue, Ixia, 85100
Rhodes Island, Dodekanesos Complex, Greece

Working Unit and Subcommissions:

C-II Arc Welding and Filler Metals	Chair: Dr. Zhuyao Zhang (United Kingdom) Vice Chair: Dr. Susanne Baumgartner (Austria)
SC II-A Metallurgy of Weld Metals	Chair: Dr. Thomas Kannengiesser (Germany)
SC II-C Testing and Measurement of Welds	Chair: Dr. Carolin Fink (United States)
SC II-E Standardization	Chair: Mr. Dave Fink (United States)

Meeting Schedule (Greek time, EEST)

July 8, Monday	14:30 – 14:40	Opening Session
	14:40 – 18:30	II-A Meeting
July 9, Tuesday	14:30 – 16:15	II-E Meeting
	16:45 – 18:30	II-C Meeting
July 10, Wednesday	14:30 – 18:00	II-C Meeting
	18:00 – 18:30	Summary and Closing

IIW ANTITRUST POLICY

IIW activities are based on a close, voluntary cooperation of its worldwide members with the overall target to improve the knowledge and skills in joining. To maintain these fruitful activities, it is strictly necessary to meet the obligatory terms of antitrust laws during IIW working sessions, meetings and other events. Thus, any commercial oriented discussion (including, but not limited to market shares, prices, turnovers, production quantities, costs, suppliers and/or customers) is strictly banished.

By attending the meeting, you commit to follow the terms of prevailing antitrust laws (relevant antitrust laws can be found at www.iiwelding.org).

8 July, Monday, 2024
(14:30 – 18:30 EEST)

I. Welcome and Administration (Chair: Dr. Zhuyao ZHANG)
(14:30 – 14:40)

1. Opening of the C-II meeting
2. Apologies
3. Approval of Agenda (II-2337-2024)
4. Approval of MoM:
 - Executive Summary Annual Report, 2023 (II-2298-2023)
5. Election
 - Chair of C-II by IIW Secretary

II. Technical Meeting of Sub Commission II-A:
Metallurgy of Weld Metals (Chair: Dr. Thomas KANNENGIESSER)

1. Administrative matters of Subcommittee II-A
(14:40 – 14:45)

- **II-2322-2024 (II-A-450-2024):** Approval of Agenda for SC II-A, July 2024 by Th. Kannengiesser
- **II-2323-2024 (II-A-437-2024):** List of documents of SC II-A, July 2024 by Th. Kannengiesser
- **II-2324-2024 (II-A-438-2024):** List of members of SC II-A, July 2024 by Th. Kannengiesser
- **II-2325-2024 (II-A-449-2024):** Working program 2024/2025 of SC II-A by Th. Kannengiesser

2. Hydrogen in weld metals
(14:45 – 16:15)

- **II-2326-2024 (II-A-439-2024):** “Effect of δ -ferrite and strain-induced martensite on hydrogen embrittlement of STS 308L and 316L all-weld metals”
by D. Choi, J. Nam, B. Moon, S. Kr. Saha, J. Yoo, J. M. Park, K. H. Yun and N. Kang
- **II-2327-2024 (II-A-440-2024):** “Repair welding of pressurized in-service hydrogen pipelines - A review on current challenges and strategies”
by K. Erxleben, S. Kaiser, M. Rhode, Th. Kannengiesser and A. Kromm
- **II-2328-2024 (II-A-448-2024):** “Effect of fluoride on reducing hydrogen in steel weld metal”
by K. Watanabe, Y. Totsuka, R. Chiba and T. Iwakami
- **II-2329-2024 (II-A-441-2024):** “Importance of joining processes for reliable component manufacturing for sustainable energy generation, conversion and transport - Concepts, challenges, perspectives”
by M. Rhode and Th. Kannengiesser

Coffee Break

2. Hydrogen in weld metals (cont.)

(16:45 – 17:25)

- **II-2332-2024 (II-A-443-2024):** “Evaluation of local strain behavior of cross-weld tensile specimens of micro-alloyed high-strength steels by digital image correlation”
by N. Schroeder, M. Rhode, Th. Kannengiesser, D. Kadoke and J. Kruse
- **II-2333-2024 (II-A-444-2024):** “Ultrastrong and ductile steel welds achieved by fine interlocking microstructures with film-like retained austenite”
by G. Bae, J. Moon and D. Ponge

3. The constitution of weld metals

(17:25 – 17:40)

- **II-2338-2024 (II-A-451-2024):** “Multi-source ultrasonic assisted arc welding of nuclear nickel-based alloy”
by Yunhao Xia, Bolun Dong, Xiaoyu Cai, Sanbao Lin

4. Weld metal cracking

(17:40 – 18:10)

- **II-2334-2024 (II-A-445-2024):** “Combined effect of heating rate and restraint condition on stress relief cracking susceptibility during PWHT of thick-walled Cr-Mo-V steel submerged arc welded joints”
by M. Rhode, D. Czeskleba and Th. Kannengiesser
- **II-2335-2024 (II-A-446-2024):** “Investigation of restraint intensity influence on solidification cracking of high-strength filler materials in fillet welds via CTS testing”
by P. Liepold, A. Kromm and Th. Kannengiesser

5. Development and behavior of filler metals for high-loaded components

(18:10 – 18:30)

- **II-2336-2024 (II-A-447-2024):** “Residual stress reduction using LTT welding consumables with focus on the weld geometry”
by M. Huebner, F. Dittmann, A. Kromm, I. Varfolomeev and Th. Kannengiesser

9 July, Tuesday, 2024

(14:30 – 16:15 EEST)

III. Technical Meeting of Subcommittee II-E:

Standardization (Chair: Mr. Dave FINK)

1. Administrative matters of Subcommittee II-E

(14:30 – 14:35)

- **II-2317-2024 (II-E-849-2024):** Approval of Agenda for SC II-E, July 2024 by D. Fink
- **II-2318-2024 (II-A-850-2024):** List of documents of SC II-E, July 2024 by D. Fink
- **II-2322-2024 (II-E-854-2024):** Working program 2024/2025 of SC II-E by D. Fink

2. Update of standards for welding consumables in review (14:35 – 16:00)

- **II-2319-2024 (II-E-851-2024)** Update on Standards for Welding Consumables under Review
- **Update on Standards for Systematic Review in 2024**
 - **ISO 14174:2019**, *Welding consumables — Fluxes for submerged arc welding and electroslag welding — Classification*
 - **ISO 24598:2019**, *Welding consumables — Solid wire electrodes, tubular cored electrodes and electrode-flux combinations for submerged arc welding of creep-resisting steels — Classification*
- **IIW standards**
 - **IIW SC II-E to address confirmations and any future actions on the following:**
 - **ISO 3690:2018**, *Welding and allied processes — Determination of hydrogen content in arc weld metal (II-E-846a-2024)*
 - **II-2315-2024 (II-E-846-2024)** *Systematic Review of ISO 3690-2018 Results & Comments*
 - **ISO 8249:2018**, *Welding — Determination of Ferrite Number (FN) in austenitic and duplex ferritic-austenitic Cr-Ni stainless steel weld metals (II-E-847a-2024)*
 - **II-2316-2024 (II-E-847-2024)** *Systematic Review of ISO 8249:2018 Results & Comments*
 - **II-2320-2024 (II-E-852-2024)** **ISO/DTR 22824.2**, *Welding — Best practices for specification and measurement of ferrite in stainless steel weld metal*

4. Matrix of filler metal classification standards (16:00 – 16:15)

- **II-2321-2024 (II-E-853-2024)** “*Matrix of Filler Metal Classifications*”

Coffee Break

9 July, Tuesday, 2024
(16:45 – 18:30 EEST)

IV. Technical Meeting of Subcommittee II-C: Testing and Measurement of Welds (Chair: Dr. Carolin FINK)

1. Administrative matters of Subcommittee II-C (16:45 – 16:50)

- **II-2300-2024 (II-C-657-2024)**: Approval of Agenda for SC II-C, July 2024 by C. Fink
- **II-2301-2024 (II-C-658-2024)**: List of documents of SC II-C, revised June 2024 by C. Fink
- **II-2302-2024 (II-C-648-2024)**: List of members of SC II-C, revised March 2024 by C. Fink
- **II-2303-2024 (II-C-659-2024)**: Working Program of SC II-C for 2024-2025 by C. Fink

2. Microstructural analysis of welds, and comparison of analysis methods (16:50 – 17:15)

- **II-2304-2024 (II-C-660-2024):** “Influence of Nitrogen Gas Addition in shielding gas on properties of a pulse modulated TIG welded UNS S32205”
by J. Wichmann

3. Weld metal chemical analysis, and comparison of analysis methods

No documents

4. Mechanical property testing of welds, and comparison of test methods (17:15 – 18:30)

- **II-2305-2024 (II-C-661-2024):** “Thermomechanical properties of GTAW welds between wrought and L-PBF AM Ni-base superalloy”
by Z. Yu, T. Pickle, A. Abdelmotagaly, B.S. Rafferty, J. Iten and C. Augustine
- **II-2306-2024 (II-C-662-2024):** “Mechanical properties of welded splices on cold-bent reinforcing steel”
by J. Stickle and C. Fink
- **II-2307-2024 (II-C-663-2024):** “Defined surfaces via ultrasonic-assisted machining of modified wear protection coating alloys”
by M. Giese, M. Graebner, D. Schroepfer, K. Treutler, S. Lorenz, T. Kannengiesser and V. Wesling

10 July, Wednesday, 2024 (14:30 – 18:30 EEST)

IV. Technical Meeting of Subcommittee II-C (cont.): Testing and Measurement of Welds (Chair: Dr. Carolin FINK)

5. Weldability testing, and comparison of test methods (14:30 – 15:50)

- **II-2308-2024 (II-C-664-2024):** “Investigation of hot cracking susceptibility via Modified Varestraint Transvarestraint testing of high-strength filler material”
by P. Liepold, A. Kromm and Th. Kannengiesser
- **II-2309-2024 (II-C-665-2024):** “Synergistic compositional effects on weld solidification behavior and solidification cracking resistance in nickel base filler metals”
by S. Coates, L. Aguilar and C. Fink
- **II-2310-2024 (II-C-666-2024):** “Database of Hydrogen Assisted Cracking Susceptibility in Dissimilar Metal Welds”
by B. Alexandrov, W. Siefert, R. Buntain, J. Rule, D. Bourgeois and C. Boster

6. Corrosion testing of welds, and comparison of test methods (15:50 – 16:15)

- **II-2311-2024 (II-C-667-2024):** “Joining and corrosion performance assessment of SDSS welded using HDSS filler metal”
by K.C. Riffel, A. Acuna, H. Leon and A. Ramirez

Coffee Break

(16:45 – 18:00)

- **II-2312-2024 (II-C-668-2024):** “Development of Stainless Steel 309L Weld Metal for Overlay Applications with Better Corrosion Resistance after Post-Weld Heat Treatment”
by S. Chakravarty, M.S, D. Giri and R. Hariganesh
- **II-2313-2024 (II-C-669-2024):** “Electrochemical corrosion behavior of stainless steels grade 1.4404 and 1.4435 butt welds by autogenous GTAW”
by D. Large, D. Plélan, N. Ducommun, L. Guilmois and L. Jubin
- **II-2314-2024 (II-C-670-2024):** “Microstructure characterization and SCC resistance in AF96 armour steel welded joints”
by K.C. Riffel, G. Montiel, J. Locke and A. Ramirez

V. Summary and AOBs (Chair: Dr. Zhuyao ZHANG)
(18:00 – 18:30)

1. Summary of technical presentations and recommendations

- WitW recommendations

2. Administrative matters

- Resolutions

3. Next meetings

- 2025 Intermediate Meetings of Commission II: March 2025, Trollhättan, Sweden
- 2025 Annual Assembly

4. AOBs and closing remarks