



Commission XIII - Fatigue of welded components and structures

Draft Agenda for the 76th IIW Annual Assembly 2023

16th – 21st July 2023, Singapore

MARINA BAY SANDS CONVENTION CENTRE

Overview of C-XIII Meetings

Note: The schedule time is according to the local time in Singapore

| Sunday, 16 th July | Monday, 17 th July | Tuesday, 18 th July | Wednesday, 19 th July |
|----------------------------------|---|---|---|
| C-XIII working group meetings | C-XIII main Commission meetings + C-XIII working group meeting | C-XIII main Commission meetings (08:30 - 12:30) + Joint Commission meeting X/XIII/XV (14:00-18:00) | C-XIII main Commission meetings + C-XIII working group meeting |
| 08:30 – 17:00 | 08:30 -18:00 | 08:30-18:00 | 08:30 – 12:30 |



COMMISSION XIII WORKING GROUP MEETINGS

Sunday, 16th July

08:30 – 17:00

Orchid Junior 4311 & 4312

Day 1

| Working Group | Chair | Time |
|---|---------------------------|-----------------|
| Welcome Commission business | M. Farajian | 08:30- 09:00 |
| WG2 Fatigue improvement and retrofit engineering techniques | M. Farajian Z. Barsoum | 09:00- 10:30 |
| Coffee/Tee Break | | 10:30- 11:00 |
| WG3 Stress analysis | J. Baumgartner | 11:00- 12:30 |
| Lunch Break | | 12:30- 13:30 |
| WG4 Effects of weld imperfections on fatigue strength | H. Remes M. Leitner | 13:30- 15:00 |
| Coffee/Tea Break | | 15:00- 15:30 |
| WG6 Residual stress effects in fatigue | J. Hensel | 15:30- 17:00 |



MAIN COMMISSION XIII MEETINGS

Monday, 17th July

Orchid Main 4305 & 4306

08:30 – 12:30

Day 2

| | | | |
|--|---|---------------|-----------------|
| Main topic: Fatigue testing and evaluation of data for design (WG1) | | | |
| Welcome, opening remarks and Commission business | | | 08:30- |
| 2 Best practice documents | | | 08:40 |
| Presentation XIII-3009-2023-P | Industrial Spotlight: Weld Fatigue Considerations at Caterpillar | C. Lee | 08:40- 09:10 |
| XIII-3005-2023 | Weld Fatigue Research in France | F. Lefebvre | 09:10- 09:30 |
| XIII-2985-2023 | Fatigue strength of single-sided fillet welds in overlapping ultra-high-strength steel sheets | A. Ahola | 09:30- 09:50 |
| XIII-2998-2023 | FATIGUE LIFE ASSESSMENT OF TUBE-TO-TUBESHEET WELDED JOINTS USING SINGLE AND MULTIPLE TUBE TEST SPECIMENS | S. TANAKA | 09:50 10:10 |
| XIII-2986-2023 | Fatigue Crack Propagation Limit Curves for 1100 MPa and 1300 MPa Strength Structural Steels and their Welded Joints Based on Two-stage Relationship | J. Lukács | 10:10- 10:30 |
| Coffee/Tea break | | | 10:30- 11:00 |
| Main topic: Fatigue improvement and retrofit engineering techniques (WG2) | | | |
| Presentation XIII-3010-2023-P | Current status of normative design rules for HFMI treated welded steel structures | I. Engelhardt | 11:00- 11:30 |
| XIII-2977-2023 | Fatigue behaviour of automatically HFMI-treated welds | L. Wendler | 11:30- 11:50 |
| XIII-2980-2023 | Study on the applicability of a modified strain approach to predict the fatigue life of HFMI-treated transverse stiffeners under variable amplitude loading | D. Löschner | 11:50- 12:10 |
| Commission Business | | | 12:10- |
| Buffer time | | | 12:30 |
| Lunch Break | | | 12:30- 14:00 |



MAIN COMMISSION XIII MEETINGS

Monday, 17th July

Orchid Main 4305 & 4306

14:00 – 18:00

Day 2

| | | | |
|---|---|--------------|-------------|
| XIII-2980-2023 | Local relaxation of residual stress in high-strength steel welded joints treated by HFMI | Y. Ono | 14:00-14:20 |
| XIII-2983-2023 | Validation of the fatigue strength assessment of HFMI-treated steel joints by effective notch stress approach | C. Buzzi | 14:20-14:40 |
| XIII-2997-2023 | Fatigue Strength of Peened-Welded Joints after Single High Compressive load peaks | Y. Banno | 14:40-15:00 |
| Coffee/Tea Break | | | 15:00-15:30 |
| XIII-3000-2023 | Direct Shot Velocity Measurement and a Numerical Simulation of Shot Peening for Welded Joints | K. Kinoshita | 15:30-15:50 |
| XIII-2999-2023 | Local Stress Based Fatigue Assessment of the Gusset Welded Joint Improved by HFMI | D. Peiyuan | 15:50-16:10 |
| XIII-2995-2023 | Fatigue strength of HFMI-treated transverse non-load-carrying attachments with partial penetration of S355 steel | S. Motrunich | 16:10-16:30 |
| Main topic: Fatigue design rules (JWG XIII/XV) | | | |
| XIII-3006-2023 | 2023 Report of Work in Progress (WIP) of Fatigue Strength of Welded Joints in Japan | N. Osawa | 16:30-16:50 |
| XIII-3007-2023 | Evaluation of the fatigue resistance of butt-welded joints in towers of wind turbines – A comparison of experimental studies with small scale and component tests as well as numerical based approaches with local concepts | F. Glienke | 16:50-17:10 |
| XIII-3008-2023 | Fatigue life of thin sheet joints of dissimilar AA2024 and AA5056 produced by friction stir welding technology | S. Motrunich | 17:10-17:30 |
| End discussion JWG XIII/XV | | | 17:30-18:00 |



MAIN COMMISSION XIII MEETINGS

Tuesday, 18th July

Orchid Main 4301AB & 4302

08:30 – 12:30

Day 3

| Main topic: Stress analysis (WG3) | | | |
|--|---|------------------|-------------|
| Presentation XIII-3012-2023-P | Study on expansion of applicability of Fatigue design recommendations to thin-welded joint | S. Kanna | 08:30-09:00 |
| XIII-2976-2023 | Multiaxial fatigue lifetime assessment of weld extremities in steel joints for off-road vehicles using the Peak Stress Method | Jacopo Pelizzari | 09:00-09:20 |
| XIII-2987-2023 | Engineering applicable methods for fatigue assessment of welded joints in the LCF range | Josef Neuhäusler | 09:20-09:40 |
| XIII-2988-2023 | Fatigue strength assessment of welded steel fasteners using structural stress concept with consideration of the mounting preload” | A. Jöckel | 09:40-10:00 |
| XIII-2989-2023 | Required Fatigue Strength (RFS) - A Simple Method for Determining of an Equivalent Stress Range Indicating the Necessary Minimum Weld Joint Quality | J. Baumgartner | 10:00-10:20 |
| Buffer Time | | | 10:20-10:30 |
| Coffee/Tee Break | | | 10:30-11:00 |
| XIII-2990-2023 | Fatigue life evaluation of welded joints under multiaxial loading for different stress concepts using the extended Gough-Pollard criterion | N. M. Bauer | 11:00-11:20 |
| XIII-2996-2023 | Structural Hot-Spot Stress Approach for Toe Cracking from Plate Edge of Load-Carrying Welded Attachment | T. HANJI | 11:20-11:40 |
| XIII-3001-2023 | Study on the Estimation Method for Welding Fatigue Mean Stress Effect Independently from Failure Mode and Joint Type | Y. Yoshihara | 11:40-12:00 |
| XIII-3003-2023 | Weld Fatigue Assessment of Rail Track Maintenance Machines – Regulations, Challenges and Suggestions | D. Patil | 12:00-12:20 |
| Buffer time | | | 12:20-12:30 |
| Lunch Break | | | 12:30-14:00 |



Joint Commission Meetings X/XIII/XV

Tuesday, 18th July

Orchid Main 4301 & 4302

Day 3

14:00 – 18:00

| | | | |
|--|--|----------------|-----------------|
| Presentation XIII-3004-2023-P | Recommendations for Fatigue Design of Welded Joints and Components | A. Hobbacher | 14:00- 14:30 |
| X-2040-2023 | Assessment of crack initiation phase in welded joints by reverse calculations of fatigue crack propagation | F. Dittmann | 14:30- 15:00 |
| Presentation | IIW Commission Update International Journal of Materials Joining Welding in the World | J. Lippold | 15:00- 15:15 |
| Coffee/Tee break | | | 15:15- 15:30 |
| Presentation XIII-3011-2023-P | Retrofitting Engineering for Fatigue Damaged Steel Bridges | C. Miki | 15:30- 16:00 |
| XV-1663-2023 | Comparison of fatigue life and crack initiation in simple-gapped and completely overlapped N-type weld joints | S. Muzaffera | 16:00- 16:20 |
| XV-1664-2023 | Distortion and Residual Stress of T-joints by Laser-arc Hybrid Welding for Steel Bridge Members | G. CHEN | 16:20- 16:40 |
| XV-1666-2023 | Improvement of weld details to avoid brittle fracture initiating at the toes of weld access hole of the beam end - Part II. Prediction of ultimate strength of welded joint with improved details | K. AZUMA | 16:40- 17:00 |
| XIII-2993-2023 | Round robin study on the determination of weld geometry parameters | J. Schubnell | 17:00- 17:20 |
| XIII-2982-2023 | Effect of angular distortion and axial misalignment on the fatigue strength of welded and grinded mild steel cruciform joints | Benjamin Laher | 17:20- 17:40 |
| XIII-2991-2023 | Investigations on the influence of angular and axial misalignment on the fatigue strength of HFMI-treated structural steel butt joints | B. Ripsch | 17:40- 18:00 |
| End | | | 18:00 |



MAIN COMMISSION XIII MEETINGS

Wednesday, 19th July

Orchid Main 4305 & 4306

08:30 – 12:30

Day 4

| | | | |
|--|---|---------------|-------------|
| Main topic: Effects of weld imperfections on fatigue strength (WG4) | | | |
| XIII-2979-2023 | Fatigue assessment of welded joints based on geometric profile of the weld toe | L. Guilmois | 08:30-09:00 |
| XIII-2994-2023 | Influence of pores on the fatigue life of welded joints and investigation of acceptance criteria defined in standard documents | Matthias Jung | 09:00-09:20 |
| Main topic: Residual stress effects in fatigue (WG6) | | | |
| XIII-2981-2023 | Fatigue design of a stress relief groove to prevent weld root fatigue in butt-welded cast steel to ultra-high-strength steel joints | J. Havia | 09:20-09:40 |
| XIII-2992-2023 | Comparison of fatigue test results of high strength steel DED-arc specimens with milled and unmilled surfaces | J. Müller | 09:40-10:00 |
| XIII-2984-2023 | Overload and variable amplitude load effects on the fatigue strength of welded joints made of high-strength steel | K. Grönlund | 10:00-10:20 |
| Buffer Time | | | 10:20-10:30 |
| Coffee/Tee Break | | | 10:30-11:00 |
| COMMISSION XIII WORKING GROUP MEETING | | | |
| WG1 Fatigue testing and evaluation of data for design | | F. Lefebvre | 11:00-12:00 |
| Closing remarks and Commission business (a) Commission XIII WITW paper recommendations (b) 2024 Annual Assembly (c) 2024 Spring Intermediate meetings (d) Any other business | | M. Farajian | 12:00-12:30 |