



INTERNATIONAL INSTITUTE OF WELDING

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**Doc.XII-2557-2022**

**Annual Assembly 2022**  
**Tokyo, Japan and On-line**

**Draft Agenda**  
**Commission XII**  
**"Arc Welding Processes and Production Systems"**  
**July20 - 21, 2022**

**Chair: Prof. Satoru Asai (Japan)**

**Wednesday 20 July 2022, 8:30 – 18:05 @ Room “Étolie ”**

**(Morning Session, 8:30-12:30)**

1. Opening (Prof. Asai, Chairman of Commission XII)
2. Agenda
3. Minutes of previous meeting
4. Brief report on intermediate meeting on March, 2022
5. Direction and topics of Comm.XII
6. Presentation of documents:

**Session1: Process I (Session chairman: Dr. Egerland, Chairman of Sub-Comm.B)**

- [1] Innovative Hybrid Arc Process for Brazing of Galvanized Thin Sheet  
Weis,S, Grunert R., Brumm S. and Prank U. (Germany) *Physical*  
Doc.XII-2489-2022
- [2] Development of slag control technology to improve electrodeposition coating of arc welding joints  
Hikaru Kinashi, Yue Sun and Kazuya Ikai (Japan) *Physical*  
Doc.XII-2492-2022
- [3] Fatigue strength improvement method for thin sheet GMA welding joints by weaving  
K.Matsuda,Y.Ishida and S.Kodama (Japan) *Physical*  
Doc.XII-2494-2022
- [4] Development of Laser-Arc Hybrid Process for Dissimilar Metals Joining of Galvanized or Galvannealed Steel to Aluminum Alloy  
Masayuki Fujiwara, Tomoya Asayama, Ryoji Tamaki, Zhongjie Liu and Tetsuo Era (Japan)  
*Physical*

**Coffee Break (20 min)**

**Session2: Process II (Session chairman: Prof. Tanaka, Chairman of Sub-Comm.F)**

- [5] Development of non-short-circuit type wire feed controlled GMAW process  
Yoshiaki Kitamura, Kei Yamazaki, Shogo Nakatsukasa, Akira Ogawa and Yoshihide Inoue  
(Japan) *Physical*  
Doc.XII-2514-2022
- [6] GMAW hot-wire process with indirect resistive heating of the auxiliary wire  
Guokai Zhang, T.Ungethüm, E.Spaniol, M.Trautmann and U.Füssel (Germany) *Physical*  
Doc.XII-2525-2022
- [7] Effect of ultrasonic vibration on the molten flow velocity and weld pool/keyhole geometries  
in plasma arc welding  
Shuoshuo Tian and ChuanSong Wu (China) *Non-physical(pre-recorded video)*  
Doc.XII-2520-2022
- [8] Development of Welding Technique for Butt Joint in Hull Steel Plate Using Plasma Arc  
Welding Carriage.  
Takanori HIRIGAYA and Noboru KIJU (Japan) *Physical*  
Doc.XII-2512-2022
- [9] Use of low Transition Temperature Steel Alloys for high wear applications  
Carter Trautmann and Patricio Mendez (Canada) *Physical*  
Doc.XII-2512-2022

**(Afternoon Session, 14:00-18:05)**

**Session3: Monitoring & Control**

**(Session chairman: Dr.Hermans, Vice-chairman of Comm.XII)**

- [10] Characterization of Porosity Formation by In Situ Videography for GMAW of Zinc Coated  
Steel with SuperArc® XLS  
Corey Cox (USA) *Non-physical(pre-recorded video)*  
Doc.XII-2519-2022,
- [11] In-line Detection of Blowholes in Lap Joint Welding of Galvanized Steel Sheet by Laser  
Ultrasonic Technique and Its Robotic Application Using Microchip Laser  
Kazufumi NOMURA, Taketo MATSUIDA, Keiji KADOTA, Seiya NITTA, Tetsuo ERA and  
Satoru ASAI (Japan) *Physical*  
Doc.XII-2509-2022
- [12] Towards Real-time Monitoring of Temperature Distribution and Dynamic Metal Transfer  
during Gas Metal Arc Directed Energy Deposition  
P K Chaurasia (India), S-F Goecke (Germany) and A De (India) *Non-physical(pre-recorded  
video)*  
Doc.XII-2533-2022
- [13] Optimization of In-process Welding Torch Position Control System using AI Technology  
S.Amano, Y.Tsujimura, T.Ogawa and T.Shibata (Japan) *Physical*  
Doc.XII-2507-2022

**Coffee Break (20 min.)**

**Session4: Process III (Session chairman: Prof. Goecke, Chairman of Sub-Comm.C)**

- [14] Narrow gap welding process for heavy thick steel plates with CO2 gas shielded arc welding  
using REM addition wire  
Shohei KOZUKI, Takatoshi OKABE, Satoshi IGI and Manabu TANAKA (Japan) *Physical*  
Doc.XII-2490-2022
- [15] Effect of Welding Condition on Fracture Toughness for Ultra-Narrow Gap Submerged Arc

Welding

Yohei ABE, Takahiro FUJIMOTO, Mitsuyoshi NAKATANI, Masaya SHIGETA and Manabu TANAKA (Japan) *Physical*

Doc.XII-2524-2022

- [16] Development of Welding Method for Liquefied Hydrogen Tank  
Atsuhito AOKI, Michitaka MAEGAWA, and Shoichiro YOSHIDA (Japan) *Physical*  
Doc.XII-2493-2022
- [17] Development of Electromagnetic Stirring Technology for 12%Ni Steel ESW Weld Metal:  
Research on Magnetic Field Application Method.  
O.Ozaki, T.Ito, H. Hashimoto, H.Nako and K.Ishizaki (Japan) *Physical*  
Doc.XII-2515-2022
- [18] Development of Electromagnetic Stirring Technology for 12%Ni Steel ESW Weld Metal:  
The Effect of Electromagnetic Stirring on Microstructure Formation in the Weld Metal  
T.Ito, O.Ozaki, T.Nishimura, H.Hashimoto, H.Nako and K.Ishizaki (Japan) *Physical*  
Doc.XII-2516-2022

## **Thurthsday 21 July 2022, 8:30– 18:00@ Room “Châtelet”**

**(Morning Session, 8:30-12:35)**

### **Session5 Arc Physics I (Session chairman: Prof. Tanaka, Chairman of Sub-Comm.)**

- [19] Influence of radial and axial electromagnetic force in metal transfer phenomenon  
Yuriko SATO, Yosuke OGINO and Tomokazu SANO (Japan) *Physical*  
Doc.XII- XII-2510-2022
- [20] Metal deposition with gas metal arc in pulsed mode: comparative study of the effect of  
electromagnetic force models on predicted melt pool  
Pradip Aryal, Fredrik Sikström, Håkan Nilsson and Isabelle Choquet (Sweden) *Physical*  
Doc.XII- 2513-2022
- [21] Difference of the metal transfer phenomena in MIG welding process using a steel and an  
aluminum alloy wire electrode  
Yosuke Ogino, Hayato Ohgushi, Tomokazu Sano (Japan) and Anthony B. Murphy (Australia)  
*Physical*  
Doc.XII- 2511-2022
- [22] Numerical investigation of arc properties in gas tungsten arc based additive manufacturing  
Xinxin Wang, Jia Zhang, Ying Deng and Dawei Chen (China)  
*Non-physical(pre-recorded video)*  
Doc.XII- 2526-2022

**(The current status and future plans regarding Welding in the World: Video from Prof.Lippold)**

**Coffee Break (20 min.)**

### **Session6: Arc Physics II (Session chairman: F Prof. Goecke, Chairman of Sub-Comm.C)**

- [23] Effect of flux ratio on droplet transfer behavior in metal-cored arc welding  
Ngoc Quang TRINH (Vietnam), Shinichi TASHIRO, Tetsuo SUGA, Tomonori KAKIZAKI,  
Kei, YAMAZAKI, Tomozaku MORIMOTO and Hiroyuki SHIMIZU (Japan),  
Ackadech LERSVANICHKOOL, Hanh Van BUI (Vietnam) and Manabu TANAKA (Japan)  
*Physical*  
Doc.XII- XII-2527-2022
- [24] Numerical Investigation of Buried Space Formation Process in High-Current Gas Metal Arc  
Welding Using Particle Method  
Hisaya KOMEN, Manabu TANAKA, Hayato BABA, Keiji KADOTA, Tetsuo ERA and Hidenori  
TERASAKI (Japan) *Physical*

- Doc.XII- 2522-2022
- [25] Investigation of dominant factors for droplet ejection from electrode during AC TIG welding by visualization of electrode phenomena  
Kenta Iida, Hisaya Komen, Masaya Shigeta and Manabu Tanaka (Japan) *Physical*  
Doc.XII- 2521-2022
- [26] Numerical investigation of slag formation and transfer mechanisms during metal active gas welding using particle-based simulation  
Takamasa FUKAZAWA, Hisaya KOMEN, Masaya SHIGETA and Manabu TANAKA (Japan) *Physical*  
Doc.XII- XII-2529-2022
- [27] Researching of AC-GTA Characteristics in like Mars Atmosphere by Measuring Electron Density Distribution  
Kai Aoyama, Shinichiro Shobako, Tomohiko Yamashita, Noboru Terajima, Hisaya Komen and Manabu Tanaka (Japan) *Physical*  
Doc.XII- 2528-2022

**(Afternoon Session, 14:00-18:10)**

**Session7: IoT,Data processing**

**(Session chairman: Dr.Hermans, Vice-chairman of Comm.XII)**

- [28] Automated arc welding of support structures for offshore wind turbines (SmartWeld)  
Andreas Pittner, René Winterkorn, Cagtay Fabry and Michael Rethmeier (Germany)  
*Non-physical(pre-recorded video)*  
Doc. XII- 2517-2022
- [29] Multi-layer welding data analysis and open data approach using weldx  
Cagtay Fabry, Volker Hirthammer, Martin K. Scherer, Andreas Pittner and Michael Rethmeier (Germany) *Non-physical(pre-recorded video)*  
Doc.XII- 2518-2022
- [30] Transformation of proprietary welding data software from a PC-based application to a cloud-enabled container application using standard interfaces.  
Timo Steinbring (Germany) *Physical*  
Doc.XII- 2491-2022
- [31] Characterization and qualification of high-strength fine-grained structural steels for welding processing  
M. Neumann, A. Hälsig and J. Hensel (Germany) *Physical*  
Doc.XII-2547-2022

**Coffee Break (20 min.)**

**Session8: Additive Manufacturing, Weldability**

**(Session chairman: Dr. Egerland, Chairman of Sub-Comm.B)**

- [32] Microstructure modification of twin-wire directed energy deposition-arc fabricated Ti-48Al alloy via deposition current control  
Lin Wang, Chen Shen, Yuelong Zhang, Fang Li, Wenlu Zhou, Jianwen Xin and Xueming Hua (China) *Non-physical(pre-recorded video)*  
Doc.XII-2531-2022
- [33] Grade2XL Graded Wire and Arc Additive Manufacturing  
Constantinos Goulas and Marcel Hermans (Netherlands) *Physical*  
Doc.XII- 2554-2022
- [34] Influence of Sulfur Content on Molten Pool Geometry in TIG Welding of High Manganese Stainless Steels  
Y. Kisaka, S.Miki, F.Kimura, S.Tashiro and M. Tanaka (Japan) *Physical*  
Doc.XII-2523-2022
- [35] Effect of voltage and pre-soldering on thermal fatigue property of parallel gap resistance welded Au/Ag interconnection in GaAs solar cell

Yuhan Ding, Zhichao Wang, Xueming Hua, Chen Shen, Xunchun Wang, Jianfeng Lu,  
Yan Cai, Lin Wang and Bin Qian (China) *Non-physical(pre-recorded video)*  
Doc.XII- 2530-2022

- [36] SOLVING THE PROBLEM OF WELDABILITY OF STRUCTURAL ALUMINUM ALLOY D16  
Valerij Koval, Maksym Khokhloy and Tetyana Labur (Ukraine) *Non-physical(pre-recorded video)*  
Doc.XII- 2532-2022

7. Recommendation of submission to IIW Journal "Welding in the World"
8. Miscellaneous
9. Date and place of next meeting
10. Closure (Prof. Asai, Chairman of Commission XII)