



International Institute of Welding
Commission IV -Power Beam Process-
Meeting in Osaka, Japan 12 –14 July, 2004

Room: 1003A
at Osaka International Convention Center
(Grand Cube Osaka)
Osaka/Japan

Proposed Agenda

Monday 12 July, 2004: Commission IV Meeting

14:00 – 18:00

14:00 **1. Opening of the meeting**

2. Appointment of secretary

3. Adoption of agenda (Doc. IV-873-04)

4. Minutes of the Bucharest meeting (Doc. IV-852-03)

14:30 **5. Paper presentation and discussion**

14:30 **5.1 Doc. IV-859-04: "Formation Mechanism of Porosity and Hot Cracking in Full Penetration Laser Welding of Thick Steel Plates",**
Susumu Tsukamoto, Goro Arakane, Hiroshi Honda and Isao Kawaguchi (National Institute for Materials Science, Japan)

14:50 **5.2 Doc. IV-860-04: "Prevention of Porosity by Power Modulation in Deep Penetration Laser Welding"**
Isao Kawaguchi, Susumu Tsukamoto, Hiroshi Honda and Goro Arakane (National Institute for Materials Science, Japan)

15:10 **5.3 Doc. IV-857-04: "Toughness Evaluation by Means of Side-Notched Charpy Test"**
Yukito Hagiwara*, Susumu Tsukamoto*, Tadayuki Otani**, Goro Arakane* and Ko Matsuda*
(*National Institute for Materials Science, **Nippon Steel, Japan)

15:30 **Coffee Break**

16:00 **5.4 Doc. IV-870-04: "Reflections of laser beam and pool phenomena in laser welding with filler wire and arc"**
Veli Kujanpaa (Lappeenranta University of Technology, Finland) ([Paper to be distributed on site.](#))

- 16:20 **5.5 Doc. IV-863-04: “In-Process Monitoring and Adaptive Control in Laser Micro-Spot Welding of Aluminum Alloy”**
Yousuke Kawahito and Seiji Katayama (JWRI, Osaka University, Japan)
- 16:40 **5.6 Doc. IV-866-04: “Welding of Aluminum-Lithium Alloy with a High Power Continuous Wave Nd³⁺:YAG Laser”**
Ba Ruizhang and Gong Shuili (BAMTRI, PRC)
- 17:00 **5.7 Doc. IV-869-04: “Hybrid Laser/GMA Welding Aluminium Alloy 7075”**
B. Hu* and I. M. Richardson** (*Netherlands Institute for Metals Research, **Delft University of Technology, The Netherlands) ([Paper to be distributed on site.](#))
- 17:20 **5.8 Doc. IV-872-04: “Induction Pre-Heating and Laser Welding of High Grade Pipelines for Energy Transport: Welding Process Optimisation”**
C.Gerardin*, D.Knispel*, A.Chehaibou*, A. Ihsan Koruk** (*Institut de Soudure, Laser Centre, France, **OCAS, Innovation R&D, ARCELOR, Belgium)

Tuesday 13 July, 2004: One Day Joint Workshop between Commissions III, IV and XII: “Improving Productivity and Reliability in Welding Processes” (CDR Proceedings will be distributed on site.)

08:30 – 18:00

08:30 **Opening** Prof. K. Matsuyama (MIT, USA)

Session 1 (*Chair: Mr. M. Kimchi*)

- 08:40 **1.1 Doc. III-1293-04: “FSW Process Variants and Mechanical Properties”**
W. Thomas, D. Nicholas, D. Staines, P. J. Tuby and M. F. Gittos (TWI, UK)
- 09:05 **1.2 Doc.III-1290-04: “Properties of Low Carbon Steel Joint by Low Heat Input Friction Welding Method”**
M. Kimura, M. Kusaka, K. Seo (Hyogo Univ., Japan) and A. Fuji (KIT, Japan)
- 09:30 **1.3 Doc. III-1294-04: “Fast Ultrasonic Evaluation of Spot Welds with Line Probe”**
S. Satonaka, K. Kaieda and S. Yamasaki (Kumamoto Univ., Japan)

09:55 **Coffee Break**

Session 2 (*Chair: Dr. H. Irie*)

- 10:30 **2.1 Doc. III-1291-04: “New High-Productivity Welding Techniques for Advanced Automotive Structures”**
M Kimchi (EWI, USA)
- 10:55 **2.2 Doc. IV-871-04: “Laser Technology for New Markets - Application Highlights”**
E. Beyer (Fraunhofer IWS Dresden, Germany)
- 11:20 **2.3 Doc. IV-861-04: “Improvement of Productivity and Reliability of Welding Parts in Heavy Industry by Laser Welding Process”**
S. Tsubota, T. Ishide and M. Nayama (MHI, Japan)
- 11:45 **2.4 Doc. IV-862-04: “Reduced Pressure Electron Beam Welding for High Productivity in Thick Section Materials”**

C. Punshon and C. Ribton (TWI, UK)

- 12:10 **2.5 Doc. XII-1823-04: “Trend and Perspective on Welding Consumables in Japan”**
H. Koshiishi (Kobe Steel Ltd., Japan) and K. Suda (Nippon Steel and Sumikin Welding, Japan)

12:35 **Lunch**

Session 3 (Chair: Prof. K. Oshima)

- 14:10 **3.1 Doc. XII-1824-04: “Trend and Perspective of Welding Power Source”**
T. Mita (Hitachi Via Mechanics, Japan) and S. Harada (Daihen, Japan)
- 14:35 **3.2 Doc. XII-1825-04: “Trend and Perspective of Sensing and Monitoring Systems”**
S. Asai (Toshiba Co., Japan)
- 15:00 **3.3 Doc. XII-1826-04: “Trend and Perspective of CAD/CAM/CAPM and Systemization Technology”**
Y. Kanjyo (JFE Engineering, Japan)

15:25 **Coffee Break**

- 16:00 **3.4 Doc. XII-1827-04: “Trend and Perspective in Increasing Efficiency of Welding Processes”**
Y. Sugitani (Japan)

Session 4 (Chair: Prof. A. Matsunawa)

- 16:25 **4.1 “Discussion on Improving Productivity and Reliability in Welding Processes”**
Note: Each Commission should be find at least one commentator for the discussion.
- 17:45 **4.2 “Concluding Remarks”** Prof. A. Matsunawa (Osaka University, Japan)

Wednesday 14 July, 2004: Commission IV Meeting

14:00 – 17:30

- 14:00 **5.9 Doc. IV-864-04: “Research on CO₂ Laser Beam Welding of BT20 Titanium Alloy”**
Chen Li*, Gong Shuili**, Yao Wei** and Hu Lunji* (*Huazhong University of Science and Technology, **BAMTRI, PRC)
- 14:20 **5.10 Doc. IV-854-04: “Manufacturing with Lasers Developments and Opportunities”**
Geoff S. Booth (TWI, UK)
- 14:40 **5.11 Doc. IV-856-04: "Application of Nd:YAG Laser Welding to Stainless Steel Car Body of Commuter Train"**
Takayuki Murata, Masayuki Inuzuka, Osamu Komaki, Toshiyuki Hirashima and Katsumi Ohkubo (KHI, Japan) ([Paper to be distributed on site.](#))
- 15:00 **5.12 Doc. IV-858-04: "Laser Welding of 304 Stainless Steel Products of Vacuum Chambers and Nuclear Equipments"**
Akikazu Kitagawa*, Naoki Fukuda*, Takeshi Aboshi*, Takashi Kawahara* and Akira Matsunawa** (*Hitachi Zosen, **Osaka University, Japan)

15:20 **Coffee Break**

- 16:00 **5.13 Doc. IV-855-04: “The Principle and Method of Electron Beam Dynamic Focus Testing”**
Zhou Qi, Liu Fangjun and Guan Qiao (BAMTRI, PRC)
- 16:20 **5.14 Doc. IV-867-04: “Transferring Electron Beam Parameters between Different Machines and Facilities Using EB Profiler Diagnostics”**
J.W. Elmer, T.A. Palmer, P. Terrill, K.D. Nicklas‡, T. Mustaleski‡, and P. Burgardt* (Lawrence Livermore National Laboratory, ‡BWXT Y-12 Plant, *Los Alamos National Laboratory, USA)
- 16:40 **5.15 Doc. IV-865-04: “Study on Electron Beam Welding Technology of Titanium TC4 after Super-Plastic Forming”**
Hu Gang, Fu Gang, Li Jinwei and Yu Wei (BAMTRI, PRC)
- 17:00 **5.16 Doc. IV-868-04: “Thin Surface Layers Formation by EB Treatment of Thermal Sprayed Coatings”**, by Kolenic.F., Kosecek M.A., Blazicek P., Fodrek P. (The First Welding Company, Slovak) ([Paper to be distributed on site.](#))
- 17:20 **6. New Business**
- 17:40 **7. Adjourn**

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