

**17th International Conference
COMPUTER TECHNOLOGY IN WELDING AND MANUFACTURING
18 – 19 June 2008
Cranfield University, Cranfield, UK**

PROGRAMME

WEDNESDAY 18 JUNE

08.15 Registration and Coffee

08.50 Welcome

SESSION 1: MATHEMATICAL MODELLING AND SIMULATION

Chairman: David Yapp

09.00 A new methodology for the fast temperature field generation for welding simulation
A Pittner¹, C Schwenk¹, M Rethmeier¹, D Weiss², ¹Federal Institute for Materials Research and Testing BAM, Germany, ²Sauer-Danfoss, Denmark

09.20 Computer simulation technology subroutines of drive-shafts failure processes under dynamic loads
S V Medvedev, V A Ovsyanko, M V Petrushina, G A Kostyukovich, M E Kipnis, United Institute of Informatics Problems, National Academy of Science of Belarus, Minsk

09.40 Methodological approaches to hydraulic hook-ups elements systems failure processes simulation
S V Medvedev, M V Petrushina, N S Kuleshova, S V Gusev, United Institute of Informatics Problems, National Academy of Science of Belarus, Minsk

10.00 Simulation and validation of the evolution of precipitates during production and fabrication of a complex martensitic 9 wt.% Cr steel
*I Holzer¹, P. Mayr¹, B. Sonderegger¹, E. Kozeschnik^{1,2}, H. Cerjak¹
¹Institute for Materials Science, Welding and Forming, Graz University of Technology.
²Materials Center Leoben Forschungsgesellschaft mbH, Austria*

10.20 Neural network models on weld microstructure prediction for austenitic stainless steel welds
M Vasudevan and B Raj, Indira Gandhi Centre for Atomic Research, India

10.40 Coffee

SESSION 1 (CONTINUED) - Chairman: Luisa Quintino

11.10 Supercomputer technology of residual welding deformation prognosis - General approach
S V Medvedev, M V Petrushina, O P Tchij, United Institute of Informatics Problems, National Academy of Science of Belarus, Minsk

11.30 Mitigation of welding distortion and residual stress via cryogenic CO2 cooling – a numerical investigation
D Camilleri, T G F Gray and D Nash, University of Strathclyde, Department of Mechanical Engineering, UK

11.50 A sensitivity analysis for modelling of buckling distortion of DP600 overlap joints
T Schenk¹, S Ohnimus², M Kraska² and I M Richardson^{1,3}, ¹Netherlands Institute for Materials Research, Netherlands; ²INPRO GmbH, Germany; ³Technical University of Delft, Netherlands

12.10 Numerical modelling of MIG welded multiply-stiffened plate structures to optimize fabrication Procedures

D Camilleri, T G F Gray and N McPherson, University of Strathclyde, Department of Mechanical Engineering, UK

12.30 The modelling of destruction of pipeline elements
N Kuliashova, UIIB of NASB

12.50 Lunch

SESSION 1 (CONTINUED) – Chairman: Ian Richardson

14.00 Mathematical modelling and optimum control of dual sources welding process
V Melukov¹, D Melyukov², ¹Vyatka State University, Kirov, ²N Bauman Moskow State Technical University, Ukraine

14.20 Inverse mapping using genetic algorithm and forward mapping using artificial neural network for modeling of Nd:YAG laser welding of titanium alloy
D S Nagesh², G. L. Datta¹, Department of Mechanical Engineering, ¹Indian Institute of Technology, ²Delhi College of Engineering, India

14.40 The prediction of maximum HAZ hardness in C-Mn and low alloy steel arc welding
J M Nicholas and D J Abson, TWI, UK

15.00 The prediction of maximum HAZ hardness in various regions of multiple pass welds
J M Nicholas and D J Abson, TWI, UK

15.20 A methodology for determining kinematics and dynamics characteristics of a transferring droplet aiming modelling validation of MIG/MAG welding
C E A L Rodrigues and A Scotti, Universidade Federal de Uberlândia, Brazil

15.40 COFFEE

PARALELL SESSION 2: EDUCATION, TRAINING AND INFORMATION TECHNOLOGIES

Chairman: Andy Brightmore

14.00 A proposal for a new weld class system,
B Jonsson, Volvo, Sweden

14.20 New education methodologies for education of welding personnel
E Engh, QM Soft, Norway

14.40 IT Tool for harmonising examinations in welding courses
L Quintino¹, I. Fernandes², ¹TU Lisbon, EWF/IAB, ²ISQ, EWF/IAB, Portugal

15.00 Activity based training utilized in education for international welder
J B Stav¹, E Engh², ¹Sør-Trøndelag University College, ²Quality Management Software AS, Norway

15.20 Activity based training within plastic welding - a new training approach
E. Engh¹, L Quintino², S. Escala², ¹QMSOFT, Norway, ²TU Lisbon, EWF-IAB/IIW Chief Executive, ³EWF Secretariat, Portugal

15.40 E-learning program in welding technology
E Flatås and A Tveit, Aker Kvaerner Stord, Norway

16.00 Coffee

16.20 TOUR OF LABS

19.00 CONFERENCE DINNER

THURSDAY 19 JUNE

08.30 Coffee

SESSION 3: SENSORS, MONITORING & CONTROL

Chairman: Jim Lucas

- 09.00 Arc Vision System using laser illumination and windowing techniques
M Houghton¹, W. Lucas², ¹University of Liverpool, ²TWI, UK
- 09.20 Single camera vision based profile measurement for robotic weld repair of worn components
D A Rodriguez, J Norrish and A Nicholson, University of Wollongong, Australia
- 09.40 Welding automation of unflat surfaces
Dr Ramin Narimani and Mohammad Reza Karafi, Iran University of Science and Technology, Iran
- 10.00 Measurement of process efficiency for a range of MIG/MAG welding processes
N Pepe, D Yapp, Cranfield University
- 10.20 Process monitoring and quality assurance for GMAW
D Rehfeldt¹, M D Rehfeldt² and G Reyznikov², ¹Leibniz University Hanover, ²Albstadt-Sigmaringen University, Germany

10.40 COFFEE

SESSION 4: MANUFACTURING AND PRODUCTION

Chairman: Americo Scotti

- 11.00 Influence of shielding gas composition on bead geometry in narrow groove MIG/MAG pipe welding
T Liratzis, D Yapp, Cranfield University
- 11.20 The new Fronius Xplorer software - a virtual control desk for networked welding systems
K Palmer, TPS Fronius, UK
- 11.40 Development of a multi torch pipeline welding system
J-C Kim, H-S Moon, S-H Ko, J-J Kim, J-H Shin, Hyundai Industrial Research Institute, Hyundai Heavy Industries Co, Ltd., South Korea
- 12.00 Advanced digital input technique for interactive robotic welding
A Nicholson and J Norrish, University of Wollongong, Australia
- 12.20 Managing construction projects at CB&I using Welding Coordinator software,
A Dorset, A Brightmore², ¹CB&I, ²TWI Ltd., UK

12.40 LUNCH

SESSION 5: EQUIPMENT CONTROL

Chairman: Erik Engh

- 13.40 Application of PLC for system control
P Mavromatidis, University of Liverpool, UK
- 14.00 Development and control of autonomous mobile welding robot for the double hull ship structure in shipbuilding
Ji-Hyoung Lee, Jong-Ryon Park, Jong-Jun Kim, and Jae-Kwon Kim, Hyundai Industrial Research Institute, Hyundai Heavy Industries Co, Ltd., South Korea
- 14.20 Investigations of tandem GMA welding using a flexible computer controlled power source system
R P Reis, J Norrish, D Cuiuri and A Nicholson, University of Wollongong, Australia

14.40 The development of a single box computer based monitoring instrument offering benefits to a wide range of welding applications
K Chawla¹, J Tapp², L Bowden², J Harris², A Roja³, R Spelt⁴, ¹ Neat Control Solutions, UK, ² Triton Electronics Ltd, UK, ³ Arjan Roza Lastechniek, Netherlands, ⁴ SEC BV, Netherlands

15.00 COFFEE

Chairman: John Norrish

15.20 Heat generation and process optimization in friction stir welding
H Wang, P Colegrove, Cranfield University

15.40 Thermal and electrical resistance in resistance spot welding
N den Uijl, Corus RD&T, Netherlands

16.00 Effects of energy input rate on the deformation behaviour of Al 6082-T6 Matrix during friction stir spot welding
S Khosa^{1,2}, T. Weinberger^{1,2} - ¹ JOIN – Network of Excellence for Joining, Austria, ² Institute for Materials Science, Welding and Forming (IWS) Graz University of Technology, Austria

16.20 Closing Remarks

16.30 CLOSE OF CONFERENCE