

3rd International Symposium on Friction Stir Welding (3ISFSW)

Port Island, Kobe, Japan

27-28 September 2001

135 delegates from 14 different countries attended the 3rd International Friction Stir Welding Symposium which was held at the Kobe Exhibition Hall, Kobe, Japan, on 27 and 28 September 2001.



At the symposium, organised by TWI Ltd of behalf of the Friction Stir Welding Licensees Association, with assistance from NIRO, the Japan Welding Society, and Showa Denko, delegates were able to hear 31 presented papers, and an additional 18 papers were presented as posters ([titles listed below](#)).

During the Japanese buffet-style social dinner the attendees were entertained by traditional Japanese drummers from the Masakatsu Drumming Preservation Group, and were able to take the opportunity to network with the other delegates.



Once again the feedback from delegates shows that the opportunity to meet with so many experts and to hold informal discussions with people with a strong interest in friction stir welding was a major benefit of attending the symposium.

The 4th Meeting of the Friction Stir Welding Licensees Association was held in conjunction with the symposium, giving the opportunity for all companies holding a friction stir welding licence to get together for open discussion.



3RD INTERNATIONAL SYMPOSIUM ON FSW - JAPAN (27-28 SEPTEMBER 2001)		
Session	Author	Paper
Process Development 1		
	Professor Shinoda	Recent trends of research & development technology in Japan
	Gerhard Engelhard	Orbital friction stir welding of aluminium pipes
	Satoshi Hirano	Development of 3-dimensional type friction stir welding equipment
	Wayne Thomas	Skew stir
Non-aluminium Alloys		
	Tony Reynolds (presented by Jack Halpin)	Friction stir welding of austenitic stainless steels
	Colin Bird	NDT of friction stir welds
	Kazuhiro Nakata	Friction stir welding of AZ91D thixomolded sheet
	Paul Konkol	Friction stir welding of HSLA-65 steel for shipbuilding
Process Development 3		
	Richard Johnson (presented by Dave Nicholas)	Friction stir welding repair of friction stir welds
	Mitsuo Fujimoto	Development of spot FSW robot system for automobile body members
	Poster Review 1: Metallurgy & properties	
	Poster Review 2: Process & equipment developments	
	Poster Review 3: Applications & quality control	
Aerospace Applications		
	François Marie	Development of friction stir welding of 7000 series extrusions for central wing box applications
	Raj Talwar	Friction stir welding of affordable lightweight assemblies
	Daniela Lohwasser	Welding of airframes by friction stir
	Murray Mahoney	Experimental validation of computational modeling for friction stir weldi
Process Development 2		
	Kevin Colligan	Friction stir welding of thick section 5083-H131 and 2195-T8P4 aluminum plates
	Hisashi Hori	Joint strength of thick sheet welded by friction stir welding
	Carl Sorensen	Tool material testing for friction stir welding of high temperature alloys
	Koichi Matsumoto	Lap joints of aluminium alloys by friction stir welding

Metallurgy		
	Murray Mahoney	High strain rate superplasticity in thick section 7050 aluminum created by friction stir processing
	Masaki Kumagai	Integral wing panel for airplanes produced by friction stir welded extrusion
	Jorge dos Santos	Effect of Sc & Zr additions on the microstructure & properties of friction stir welds in an Al 6013 alloy
	Yutaka S Sato	Distribution of hardness & microstructure in friction stir weld of Al alloy 6063
Properties/Performance		
	M Karlsen	Characterisation of the deformation microstructure in friction stir welded 7075-T6 aluminium alloy using the SEM-EBSD technique
	Simmons - Simmons Wheels	Friction stir welding of wheels
	Chris Smith	Robotic friction stir welding
	Fouzia Hannour	Corrosion behaviour of laser treated friction stir welds in high strength aluminium alloys
	Claudio Dalle Donne	Investigations on residual stresses in friction stir welds
Applications		
	Jukka T Mononen	Cost comparison of FSW & MIG welded aluminium panels
	Masatoshi Enomoto	Mass production of Al suspension parts using friction stir welding for the automotive
	Michael Wood	Environmental comparison of FSW against MIG in aluminium railway rolling stock Application
	Hideo Takai	of friction stir welding to rolling stock body shell
Poster Presentations		
	Jorge Dos Santos	Effect of dry lubricant coating on the properties of robotic friction stir welds in Al 6016-T4 sheets
	Richard Johnson	Forces in friction stir welding of aluminium alloys
	Professor Takeshi Shinoda	Effect of tool angle on metal flow phenomenon in friction stir welds
	Andrew Leonard	Corrosion resistance of friction stir welds in aluminium alloys 2014A-T651 & 7075-T651
	Claudio Dalle Donne	Effect of heat treatments on mechanical properties of friction stir welded 6013
	Minoru Hayashi	Mechanical properties of friction stir welded 5083 aluminium alloy at cryogenic temperatures Mechanical properties of aluminium die castings joined by friction stir welding
	Anne Denquin	Microstructural evolution & strength mismatch within a friction stir welded 6056 aluminium alloy
	Carl Sorensen	Material flow in the friction stir welding process
	Kazutaka Okamoto	Fabrication of backing plate of copper alloy by friction stir welding
	Yoshikawa	Numerically controlled friction stir welding in layered dissimilar metal materials of aluminium & steel
	Lamarre	New development of the ultrasound phased-array & Eddy current array technologies for the evaluation of friction stir welds
	Kinya Aota	Heat inputs and mechanical properties in friction stir welding
	Kevin Colligan	Friction stir welding of aluminium armor plate
	Sunao Tanaka	Joining dissimilar alloys between AA5083 and A6N01 by friction stir welding
	Naoki Oiwa	Deformation behaviour of friction stir welding
	Andy F Norman	The effect of welding conditions on the microstructure & mechanical properties of the nugget zone in AA7010 alloy friction stir welds
	Colin Bird	Qualistir - Phased array on-line inspection of friction stir welds

Proceedings

The proceedings of this highly successful symposium are available on [CD-ROM](#). The papers presented provided an overview of the current state of the art., presenting novel work, some incremental, but some reporting significant advances in technology and applications.

The CD is also available from the Library at TWI Ltd. Please contact library@twi.co.uk
(Tel: +44 (0)1223 899000, Fax: +44 (0)1223 892588).

For FSW enquiries please email: friction@twi.co.uk