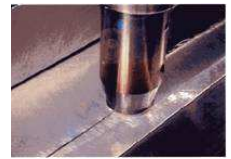


INTERNATIONAL CONFERENCE ON SCIENTIFIC AND TECHNICAL ADVANCES ON FRICTION STIR WELDING AND PROCESSING



FSWP 2010



Lille, France

January 28-29, 2010

2nd Circular

PROGRAM

Scope of the conference

Friction stir processes are very promising techniques for either welding (Friction Stir Welding) or surface treatment (Friction Stir Processing). Such processes take the advantage of taking place in the solid state which allows them to be applied to materials difficult to join (aluminium alloys, composites, etc...) or to treat with the usual techniques.

The current conference aims to present the state of the art together with the latest advances dealing with the following items:

- Process,
- Relationships between microstructure, mechanical and functional properties,
- Modelisation and numerical simulation,
- Applications.

Each topic area will be introduced by a keynote lecture given by an internationally known expert.

Location:

The conference will be held at Polytech'Lille, University of Lille 1, Villeneuve d'Ascq, France.

Scientific Committee:

M.N. Avettand-Fènoël	(Univ. Lille 1, France)
N. Benseddiq	(Univ. Lille 1, France)
J.M. Bergheau	(ENISE, St Etienne, France)
H.K.D.H. Bhadeshia	(Univ. Cambridge, United Kingdom)
R. Bigot	(Arts et Métiers ParisTech, Metz, France)
I. Bordesoules	(Alcan, Centre de recherche de Voreppe, France)
M. Bousseau	(DCNS, France)
C. Casalova	(Politecnico di Bari, Bari, Italy)
K. Dang Van	(Ecole Polytechnique, Palaiseau, France)
B. de Meester	(Univ. Catholique de Louvain la Neuve, Belgique)
A. Denquin	(ONERA, France)
Ch. Desrayaud	(Ecole des Mines de Saint Etienne, France)
A. Echeverria Zubiria	(LORTEK Technical Center, Spain)
E. Feulvarch	(ENISE, Saint Etienne, France)
R. Gaumy	(DRIRE, Douai, France)
J.D. Guérin	(Univ. Valenciennes, France)
Ch. Herbelot	(Univ. Lille 1, France)
A. Imad	(Univ. Lille 1, France)
J. Laye	(Institut de Soudure, Goin, France)
H.P. Lieurade	(Cetim, France)
F. Marie	(EADS, France)
S.K. Marya	(Ecole Centrale, Nantes, France)
M. Mazari	(Univ. Sidi Bel Abbès, Algery)
C. Pappalettere	(Politecnico di Bari, Bari, Italy)
C. Perron	(NRC, Montréal, Canada)
K. Shinozaki	(Univ. Hiroshima, Japan)
R. Taillard	(Univ. Lille 1, France)

Organizing Committee:

General Chairmen: A. Imad (Univ. Lille 1, France) and R. Taillard (Univ. Lille 1, France)

Members:

M.N. Avettand-Fènoël	(Univ. Lille 1, France)
N. Benseddiq	(Univ. Lille 1, France)
A. Denquin	(ONERA, France)
R. Gaumy	(DRIRE, Douai, France)
J.D. Guérin	(Univ. Valenciennes, France)
Ch. Herbelot	(Univ. Lille 1, France)
S.K. Marya	(Ecole Centrale, Nantes, France)

Important Dates

January 25, 2010:	Registration
January 28, 2010:	Manuscripts due

Manuscript preparation and submission details

The text of the papers should be submitted electronically via the following address fswp2010@polytech-lille.fr. They should have to be formatted according to the requirements of the international journal: Science and Technology of Welding and Joining.

The manuscripts will be refereed according to the normal review procedure of this journal (<http://maney.co.uk/index.php:journals/stw/>) in order to be published in a special issue.

Supporting Organizations:

The congress is proudly supported by:



Participation fees:

Participation fees are of 150 euro. They include documents, coffee breaks, luncheons and the conference dinner.

Contact:

E-mail: fswp2010@polytech-lille.fr

Internet site (further details):

<http://fswp2010.polytech-lille.net>

Program

English will be the official language.

January 28, 2010

Inaugural Session

◆ **9h 15'**: *Introductory Remarks*

◆ **9h 30'**: *Keynote Lecture:*

Data Required to Assess the Fitness for Service of Friction Stir Welded Structures.

M. Bousseau, CESMAN, DCNS, La Montagne, France

SESSION A- Technology

◆ **10h**: *Keynote Lecture*

An overview of the means of production used for FSW

J. Laye, S. Zimmer, L. Langlois, R. Bigot, Institut de Soudure, Goin, France.

10h30'-10h45' Coffee Break

◆ **10h 45'** **A local model for online path corrections in robotic Friction Stir Welding**

M. Soron, J. De Backer, F. Tuvesson, A.K. Christiansson, T. Ilar, ESAB AB, Sweden.

◆ **11h05'** **Qualification of a robotized Friction Stir Welding System**

S. Zimmer, L. Langlois, J. Laye, J-C. Goussain, P. Martin, R. Bigot, ENSAM Metz, France.

◆ **11h25'** **Material flow in friction stir welding: formation of macroscopic banded structures and microscopic layers**

F. Gratecap, A. Poitou, S. Marya, **G. Racineux**, GeM, Ecole Centrale de Nantes, France.

SESSION D- Friction Stir Processing

◆ **11h45'** **Incorporation of friction stir processing into surface modification of polymeric materials**

M. Shohani, R. Bagheri and A.H. Kokabi, Sharif University of Technology, Tehran, Iran.

◆ **12h05'-12h30'** Oral presentation of the posters.

12h30'-14h Lunch

SESSION B- Processing, Microstructure and Properties

◆ 14h Keynote Lecture:

Microstructure and properties of friction stir processed materials.

A. Denquin, ONERA, Châtillon, France

Session B-1- Butt Weld Joining of Aluminium alloys

◆ 14h30' High speed friction stir welding of aluminium alloys

D.M. Rodrigues, C. Leitão, R. Louvo, H. Gouveia, A. Loureiro, University of Coimbra, Portugal.

◆ 14h50' Residual stresses measurements on friction stir welding of aluminium alloys

K. Deplus, A. Simar, W. Van Haver, B. de Meester, Université de Louvain-la-Neuve, Belgium.

◆ 15h10' Chaining of Friction Stir Welding and Machining simulations

V. Madhavan, L. D'Alvise, K. Deplus, B. de Meester, Cenaero, Belgium

Posters

◆ Effect of Joint line remnant on fatigue lifetime of an Al-Cu-Li alloy (AA-2198) Friction Stir Welds.

T. Le Jolu, T. Morgeneyer and A.F. Gourgues, Centre des Matériaux, Mines Paristech, Evry, France.

◆ Parametric study for optimization of the welding process FSW

B. Bouchouicha, A. Ghazi, M. Zemri, M. Mazari, A. Imad, Université Djillali Liabres, Sidi Bel Abbes, Algérie

◆ Fatigue crack repair using FSW technique

M. Zemri, M. Merzoug, B. Bouchouicha, M. Mazari, A. Imad, Université Djillali Liabres, Sidi Bel Abbes, Algérie

Session B-2- Butt Weld Joining of dissimilar alloys:

◆ 15h10' Material Flow and Mixing Patterns during Dissimilar FSW

P. Alvarez, A.A.M. da Silva, E. Aldanondo, E. Echevarria, Centro de Investigación de Unión LORTEK, Ordizia, Spain.

◆ 15h30' Friction Stir Welding of dissimilar aluminium alloys for tailoring properties of aerospace parts

I. Bordessoules, C. Hantrais, JC. Ehrstrom, Alcan, Vorrepe, France

15h50'-16h30' Coffee break and poster session

◆ **16h30' The challenge of the friction stir welding of dissimilar materials with emphasis on the Cu/Al case.**

M-N. Avettand-Fénoël, R. Taillard, C. Herbelot, A.Imad, Groupe de Métallurgie Physique et Génie des Matériaux, UMET, Université de Lille, France.

◆ **16h 50' Material flow in heterogeneous friction stir welding of Aluminium and Copper thin sheets**

I. Galvão, A. Loureiro, D.M.. Rodrigues, CEMUC, University of Coimbra, Portugal

◆ **17h10' Friction stir diffusion bonding of dissimilar metals**

B. Huneau, M. Girard, C. Genevois, X. Sauvage, G. Racineux, GeM, Ecole Centrale de Nantes, France.

Poster

◆ **Friction stir welding of very thin plates**

C. Leitão, I. Galvão, A. Loureiro, D.M. Rodrigues, CEMUC, University of Coimbra, Portugal.

17h 50' - 18h 20' Cocktail

20h Conference Dinner

January 29, 2010

Session B-3- Friction Stir Spot Welding:

◆ **9h** *Keynote Lecture*

◆ **9h 30' Mechanical properties of friction stir spot welds of 6063-T6 aluminum alloy**

C. Jonckheere, A. Simar, B. de Meester, Université Catholique de Louvain, Belgium

◆ **9h 50' Fatigue life estimation models for resistance and friction spot welds in lap-shear specimens of aluminum sheets**

V.X. Tran, J. Pan, Université Pierre et Marie Curie, Paris, France

◆ **10h 10' Acoustic emission in FSSW joint**

C. Herbelot, A. Imad, N. Benseddq, Laboratoire de Mécanique, Université de Lille1, France.

10h30'-10h50' Coffee break

◆ **10h50' Effect of microstructure and liquation cracking during AZ91 friction stir spot welding**

S. Horie, K. Shinozaki, M. Yamamoto, T.H. North, A. Gerlich, H. Nakashin, Hiroshima University, Japan.

◆ **11h10' Experimental investigation of material flow during friction spot welding**

S. Horie, K. Shinozaki, M. Yamamoto, T.H. North, Hiroshima University, Japan.

◆ **11h30' Friction stir spot welding of AA1050 aluminium alloy and hot stamped boron steel (22MnB5).**

A.A.M. da Silva, E. Aldanondo, E. Arruti, P. Alvarez, A. Echeverria, Centro de Investigación en Tecnologías de Unión LORTEK, Ordizia, Spain

◆ **11h50' Effects of weld geometry on stress intensity factor solutions for friction spot welds in cross-tension specimens of similar and dissimilar sheet materials**

V.X. Tran, J. Pan, Institut d'Alembert, Université Pierre et Marie Curie, Paris, France

Posters

◆ **Parametric study of the process of friction spot stir welding of aluminium 6060 T5 alloys**

M. Mazari, M. Merzoug, M. Zemri, B. Bouchouicha, A. Imad, Université Djillali Liabres, Sidi Bel Abbes, Algérie

◆ **A comparative study between Friction Spot Welding and riveting in aluminum alloy**

M. Zemri, M. Merzoug, B. Bouchouicha, M. Mazari, A. Imad, Université Djillali Liabres, Sidi Bel Abbes, Algérie

◆ **Influence of probe plunge depth and rotation speed on fracture mechanisms of Al-5182 Friction Stir Spot welds.**

S Bozzi, A.L. Etter, T. Baudin, V. Klosek, J.G. Kerbiguet, B. Criqui, Université de Paris-Sud, Orsay, France.

12h10'-14h00 Lunch

SESSION C- Simulation & Modelisation of the process and microstructure

◆ **14h00 Keynote Lecture**

Thermomechanical modeling of the friction stir welding process. Mechanical boundary conditions in simplified models.

C. Desrayaud, Ecole Nationale Supérieure des Mines de Saint-Etienne, France

Session C-1- Relationships between the Process and Microstructure of Butt joints

- ◆ **14h30 Experimental and numerical investigation on the Weld Growth mechanism during FSW.**

E. Feulvarch, C. Claudin, M-N. Avettand-Fénoël, R. Taillard, A. Imad, J.M. Bergheau, Ecole Nationale d'ingénieurs de Saint Etienne, France

- ◆ **14h50 3D simulation of steady and non-steady phases of FSW based on adaptative ALE formulation – calibration of friction coefficient from welding experiments.**

L. Fourment, M. Assidi, **E. Massoni**, Mines ParisTech, CEMEF, Sophia Antipolis, France

Session C-2- Relationships between the Process and Microstructure in FSSW

- ◆ **15h10 A thermo-fluid approach for modelling temperatures cycles and material flow in Friction Stir Spot Welding**

N. Poletz, L. D'Alvise, VM Group, Cenaero, Gosselies, Belgium

- ◆ **15h30 Modeling fluid/solid couplings in high temperature assembly processes: the case of the Friction Stir Spot Welding process.**

T. Heuzé, J.B Leblond, J.M. Bergheau, E. Feulvarch, Institut d'Alembert, Université Pierre & Marie Curie, Paris, France

Concluding Session

15h50'-16h30' The Future of friction stir processes

Round-table conference

The organizers reserve the right to change this program if necessary.