

6^{èmes} journées européennes du freinage

6th european
conference
on braking **JEF 2010**

24-25 November 2010
LILLE-FRANCE

**Nouveau Siècle
Congress Center**

PROGRAM

The JEF conferences are well known for presenting research progress and industrial innovations, with active participation from the academic as well as from the industrial community. The Sixth JEF Conference will promote braking excellence across all sectors – rail, road and air

3 keynote lectures

42 communications

Forum discussion on the “Future goals in the railway, automotive and aeronautic industries”

Exhibition:

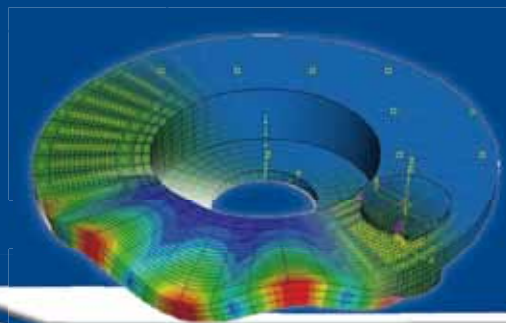
an exhibition will be held at the Conference Center to offer companies and suppliers the opportunity to showcase their products, leading technologies and services involved in braking applications.



www.jef2010.com



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Université Lille Nord de France
Pôle de Recherche
et d'Enseignement Supérieur

cisit
International Campus on
Safety and Intermodality
in Transportation



i-trans
Railways, the heart of innovative
transport systems

-GRRT-
Groupe de Recherche et de
Recherche en Transport

Context

The world is facing some real challenges in reducing energy consumption and harmful emissions for creating environmentally friendly transportation. In addition, further requirements are related to reliability improvements, operating cost reduction and capacity increase. These are huge challenges, never experienced before at such a scale, leading to the evolution of the braking system technology to successfully cope all these issues. To attain this objective, scientific locking have to be cleared in the understanding of real physical mechanisms involved in braking.

This two-day Conference will address latest understanding and developments in various processes and procedures related to brakes, braking and vehicle deceleration in general, forward-looking into the solutions for the challenges the world is facing.

Aiming at the development of environmentally friendly rail, road and aerospace vehicles, the conference is intended for specialists, practicing engineers and researchers in transportation interested in current braking challenges combining improved safety and reliability while reducing operating costs and harmful emissions. The insights on show will be helpful to rail, road and aerospace braking systems.

Main topics

Design of components	Thermal effects
NVH (Noise Vibration Harshness)	Materials
Braking systems	Environment
Reliability and life assessment	Energy recovering

Scientific Committee

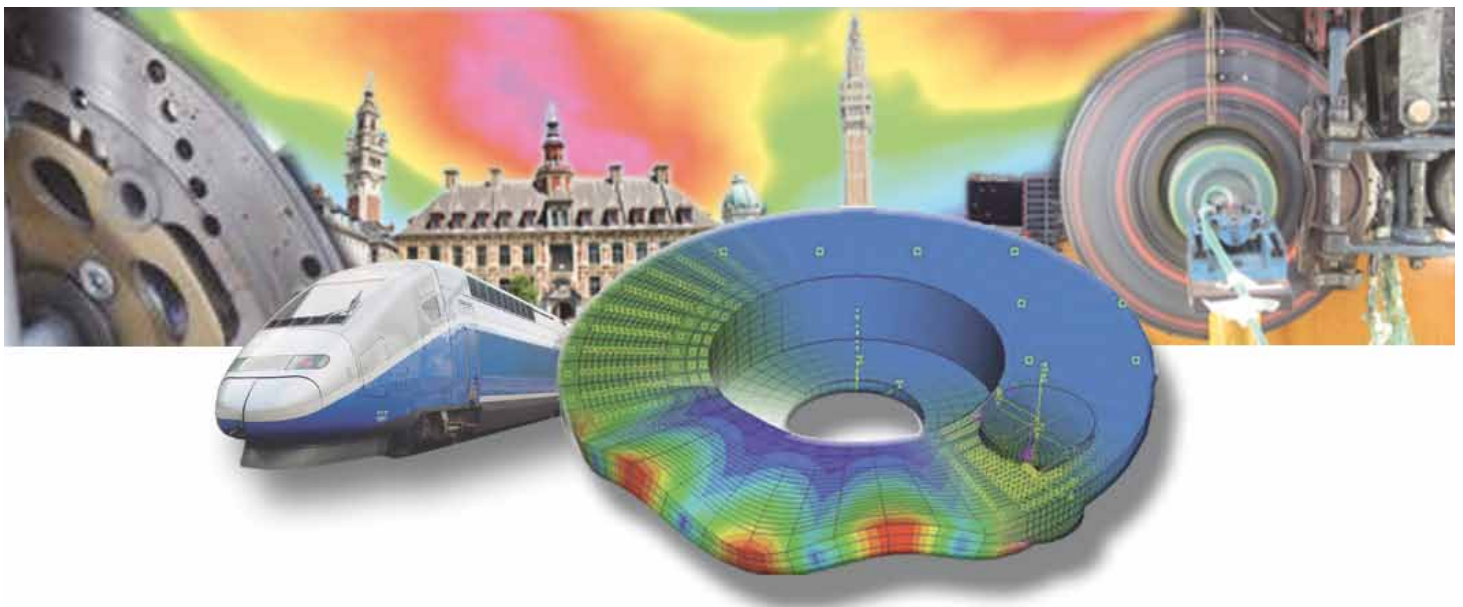
B. Desmet (Univ. of Valenciennes), Chair, France
J.C. Raoul (FIF), Chair, France
H. Abendroth (Consultant), Germany
D.C. Barton (Univ. of Leeds), UK
Y. Berthier (INSA Lyon), France
J. Bijwe (Indian Institute of Technology Delhi), India
F. Cabillon (Alstom), France
G. Couvreur (INRETS), France
G. Degallaix (École Centrale de Lille), France
F. Demilly (Valdunes), France
Y. Desplanques (École Centrale de Lille), France
P. Dufrénoy (Univ. of Lille), France
J. Dufresne (Région Nord - Pas de Calais), France
J. Fieldhouse (Univ. of Huddersfield), UK

P. Filip (Southern Illinois University Carbondale), USA
P. Jacquemard (Messier-Bugatti), France
G. Joignaux (GRRT), France
E. Markiewicz (CISIT Univ. of Valenciennes), France
Q.S. Nguyen (École Polytechnique Palaiseau), France
W. Österle (BAM Berlin), Germany
G.P. Ostermeyer (TU Braunschweig), Germany
T. Pasquet (Bosch), France
P.W. Provó Kluit (Lapinus Fibres), The Netherlands
Y. Ravalard (i-Trans), France
S.K. Rhee (Hyundai Mobis), USA
S. Ridremont (Bombardier), France
J.J. Thomas (SNCF), France
M. Tirovic (Cranfield Univ.), UK

Organizing Committee

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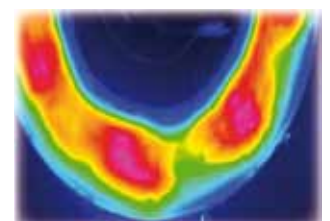
Wednesday November 24th

8h30	Québec	Accueil des participants		
9h00	Québec	Opening session / Session d'ouverture		
9h15	Québec	Innovation facilitator for transportation <i>Y. Ravalard (i-Trans, France)</i>		
9h30	Québec	Keynote lecture 1 Automotive and aircraft brakes and their tribology aspects <i>Peter Filip (Southern Illinois University Carbondale, USA)</i>		
10h00	<i>Coffee break</i>			
10h30	Québec	Material 1	Room G1	Braking systems 1 / Energy recovering
12h15	<i>Lunch</i>			
14h00	Québec	Material 2 / Environment	Room G1	NVH 1
16h30	<i>Coffee break and Exhibition</i>			
17h10	Québec	Forum discussion "Future goals in the railway, automotive and aeronautic industries"		

20h00	<i>Dinner</i>			
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Thursday November 25th

8h30	Québec	Keynote lecture 2 Brake squeal: mode coupling, flutter - and beyond? <i>Norbert Hoffman (Technische Universität Hamburg-Harburg, Germany)</i>		
9h00	Québec	NVH 2	Room G1	Thermal effects 1
10h15	<i>Coffee break and Exhibition</i>			
10h55	Québec	NVH 3	Room G1	Thermal effects 2 / Design of components
12h10	<i>Lunch</i>			
13h50	Québec	Keynote lecture 3 Frictional energy transformation at the brake friction interface <i>Andrew Day (University of Bradford, UK)</i>		
14h20	Québec	Braking systems 2 / Reliability	Room G1	Thermal effects 3
16h30	Québec	Closing session		

Materials 1**10h30 – 12h15****Wear of block brakes and disc brakes for repeated brake cycles***T. Vernersson (Chalmers University of Technology), R. Lundén***Influence of sliding speed on wear of C/C composites under different controlled contact temperatures***H. Kasem (University of Lyon), Y. Berthier, S. Bonnamy, P. Jacquemard***Influence of pad and disc contact geometry on disc brake performance in wet conditions***G. Rejdych (Robert Bosch), G. Charvet, V. Dupuis, O. Bugada, R. Raab, T. Pasquet***Mechanical behaviour of friction materials using compression creep tests***E. Wegmann (TMD Friction Services GmbH), A. Stenkamp, A. Dohle***Braking systems 1 / Energy recovering****10h30 – 12h15****Evaluation of a lightweight friction brake disc design for a regenerative braking system***S. Sarip (University of Bradford), A.J. Day, P. Olley, H.S. Qi***Tread braking improvement - Low weight, reduced size & reduced hysteresis***A. Arnell (Faiveley Transport)***Mixed-mode braking system for road vehicles with regenerative braking***Z. Zaini (University of Bradford), K. Hussain, A. J. Day***Technological improvements inside oil free compressors design***D. Barberis (Faiveley Transport), A. Beacco***Materials 2 / Environment****14h00 – 16h30****Examination of airborne brake dust***W. Österle (Federal Institute for Materials Research and Testing), H. Bresch, I. Dörfel, C. Fink, A. Giese, C. Prietzel, S. Seeger, J. Walter***Coupling between thermal localisation and friction mechanisms: heat accumulation effect***A.L. Cristol (Univ Lille Nord de France), Y. Desplanques, W. Osterle, G. Degallaix***The effect of residual Si in CMC brake pads on friction and wear***N. Langhof (University of Bayreuth), R. Voigt, H. Mucha, W. Krenkel***Tribological performance of environmentally sustainable friction materials***W. Newby (University of Exeter), M. Sloan, K. Evans***Investigation on the role of metallic fillers in brake friction materials for counterface friendliness***M. Kumar (Indian Institute of Technology), X. Boidin, Y. Desplanques, J. Bijwe***Nano-scale modeling of pad-disc interface. The influence of copper as a pad ingredient***A. Dmitriev (Institute of Strength Physics and Material Science), W. Österle, H. Kloß***NVH 1****14h00 – 16h30****Model reduction strategy for railway disc brake squeal prediction***A. Loyer (SNCF Innovative and research department), J.J. Sinou, O. Chiello, X. Lorang***Design oriented simulation of contact friction instabilities in application to realistic brake assemblies***G. Vermot Des Roches (Ecole Centrale Paris), E. Balmes, R. Lemaire, T. Pasquet***Development of intelligent tools to eliminate squeal noise in brake systems***C. Parra (Centro de Innovación Tecnológica de Automoción de Navarra), J. Olazagoitia, J. Biera***Clutch squeal noise for manual transmission: a complete approach***H. Mahé (Valeo Transmissions), B. Hervé***Friction material for reduction of windturbine brake squeal noise***L. Mortelette (Stromag), J.-F. Brunel, P. Dufrenoy, Y. Desplanques, M. Chamignon, O. Martin, M. Henrion***Contact Stiffness due to surface roughness of a composite brake material***A. Soom (University at Buffalo), C.C. Chen, Y. Berthier***Québec****Room G1**

NVH 2

9h00 – 10h15

On the dynamic adaptation of the friction layer in the low-frequency range

G. Ostermeyer (Braunschweig University of Technology), K. Bode

Control of friction by in-plane and out-of-plane ultrasonic oscillations

V. L. Popov (Berlin University of Technology), J. Starcevic, E. Teidelt

A cellular automaton approach to simulate the contact situation between the pad and disc in disc brakes

J. Wahlström (Royal Institute of Technology Stockholm), A. Söderberg, U. Olofsson

Thermal effects 1

9h00 – 10h15

Thermal measurements by IR Camera and two-color pyrometer during railway braking tests

J. Thevenet (Univ Lille Nord de France), H. Kasem, M. Siroux, P. Dufrénoy, B. Desmet

The bedding-in process on disc brakes contact pressure distribution and its effects

A. Loizou (University of Bradford), H.S. Qi, A. J. Day

Thermal study of pin on disc sliding contact in automotive braking conditions

D. Meresse (Univ Lille Nord de France), M. Siroux, M. Watremez, L. Dubar, S. Harmand

NVH 3

10h55 – 12h10

On the need for new approaches for brake squeal prediction and suppression

F. Massi (University of Lyon), Y. Berthier, A. Akay

Influence of contact conditions and pad geometry on disc brake squeal noise

M. Duboc (Univ Lille Nord de France), V. Magnier, J.F. Brunel, P. Dufrénoy, G. Rejdych, T. Chancelier

Investigation of brake squeal and the influence of the abutment faces

J.D. Fieldhouse (University of Huddersfield), D. Bryant, C.J. Talbot

Thermal effects 2 / Design of components

10h55 – 12h10

Simulative analysis and experimental investigation of innovative lightweight brake-discs

F. Fuellgrabe (Technische Universität Darmstadt), H. Winner, A. Kiefer, S. Fischer, I. Hoffmann

Tread braking of railway wheels State-of-the-art survey

S. Teimourimanesh (Chalmers University of Technology), R. Lundén, T. Vernersson

Plasma Electrolytic Oxidation (PEO) treated aluminium metal matrix composite rotors for lightweight automotive brakes

M.A. Alsaif (University of Leeds), K.L. Dahm, S. Shrestha, P.A. Dearnley, D.C. Barton

Braking systems 2 / Reliability

14h20 – 16h30

Thermal mechanical limits of railway wheels: what solutions for a braking with chilled discs or tread brake shoes?

F. Demilly (Valdunes), Y. Flament, F. Fortin

VE mechatronic brake: a simple electro mechanical brake with automatic release

M. Putz (Vienna Engineering Forschungs- und Entwicklung GmbH), R. Maier

COMORAN - Condition Monitoring for Railway Applications as an integral part of a brake control and wheel slide protection system

M.O. Herden (Knorr-Bremse), U. Friesen

S-EoT : end of train device for rail freight

S. Poinsel (Freinrail Systèmes Ferroviaires)

Smart Brake

JP. Bouteille (Faiveley Transport), G. Boisseau, C. Goncalves, J. Sales, J. Beaulande

Thermal effects 3

14h20 – 16h30

Double direction fgm modeling of brake disk against tei

S. Hernik (Cracow University of Technology)

Quantitative identification of braking disc cracking parameters: hot spots, pad type, disc material

P. Dufrénoy (Univ Lille Nord de France), H. Kasem, P. Wicker, G. Degallaix, W. D'hardivilliers

Thermal aspects in electric parking braking of commercial vehicles

R. Leiter (Cranfield University), K. Stevens, M. Taylor, P. Gibbens, P. Roberts, J. Jackson, P. Thomas, M. Tirovic

Plastic work in thermal fatigue design

E. Charkaluk (Univ Lille Nord de France), A. Constantinescu

Heat dissipation in the interface of braking systems using the Discrete Element Method

V.D. Nguyen (Univ Picardie Jules Verne), V. Magnier, J.F. Brunel, P. Dufrénoy, P. Coorevits

