

European Conference on Heat Treatment 2011 „Quality in Heat Treatment“

organised by: ASMET, A3TS, AIM, ASTT/SVW, ATZK, AWT, VWT



23-25 March 2011,
Wels, Austria

&

3rd Int. Conference on “Heat Treatment and Surface Engineering of Tools and Dies”

organised by: ASMET, CSHTSE, SSHT
with support of IFHTSE



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Organisation

The European Conference on Heat Treatment 2011 „Quality in Heat Treatment“ & 3rd Int. Conference on „Heat Treatment and Surface Engineering of Tools and Dies“ is organised by ASMET - The Austrian Society for Metallurgy and Materials and the FH OÖ Management GmbH.

Contact and Information

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Dr. Heimo Jäger



Assistant Yvonne Dworak



Prof. Reinhold Schneider

European Conference on Heat Treatment 2011 „Quality in Heat Treatment“

International Advisory Committee

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3rd International Conference on „Heat Treatment and Surface Engineering of Tools and Dies“

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Ch. Mitterer, Austria
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R. Schneider, Austria
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W. Schützenhöfer, Austria
M. Stupniksek, Croatia
B. Sustarsic, Slovenia
W. Theisen, Germany
G. VanderVoort, USA
W. Waldhauser, Austria
R. Zenker, Germany

Upper Austria University of Applied Sciences

The conference will be held at the Upper Austria University of Applied Sciences in Wels, which has a strong focus on engineering and environmental sciences.



Wels

Experience the charm of Wels and its surrounding area. This historic city is situated in the heart of Upper Austria, between Vienna and Salzburg.



Conference Dinner

The Conference Dinner will take place in the nave of the „Minoriten - Abbey“ of Wels which offers a remarkable scope for the conference dinner.

Accompanying Program

The accompanying program will be announced in January 2011.

Excursion

There are two excursions planned on Friday, 13.00 - 15.30.

You can decide between:

Rübig GesmbH & Co KG

&

EBNER Industrieofenbau Ges.m.b.H.

If you are interested in one of those please let me know:

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This Conference is a combination of the European Conference on Heat Treatment 2011 „Quality in Heat Treatment“ and the 3rd Int. Conference on „Heat Treatment and Surface Engineering of Tools and Dies“.

The Conference will bring together managers and engineers from heat treatment shops, tool makers and users, suppliers of heat treatment and surface engineering plant and equipment, as well as materials scientists.

Main Topics:

European Conference on Heat Treatment

- * Advanced equipment for high quality heat treatment processes
- * Measurement techniques, sensors and process control for heat treatment processes
- * Quality management and quality control in heat treatment
- * Heat treatment and material properties of high quality materials
- * Prediction of heat treatment processes by physical and numerical simulation
- * Analysis of the influencing factors on heat treatment processes

3rd Int. Conference on „Heat Treatment and Surface Engineering of Tools and Dies“

- * Heat treatment processes for tools and dies
- * Material process selection for tooling
- * Physical metallurgy for the heat treatment of tooling materials
- * Advanced surface engineering for tooling applications
- * Physical and numerical process simulation for the heat treatment of tools and dies
- * Heat treatment response in the context of properties and microstructures of new tooling materials
- * Advanced equipment for the heat treatment and surface engineering of tools and dies

Conference Language

The conference will be held in English

Thursday, March 24

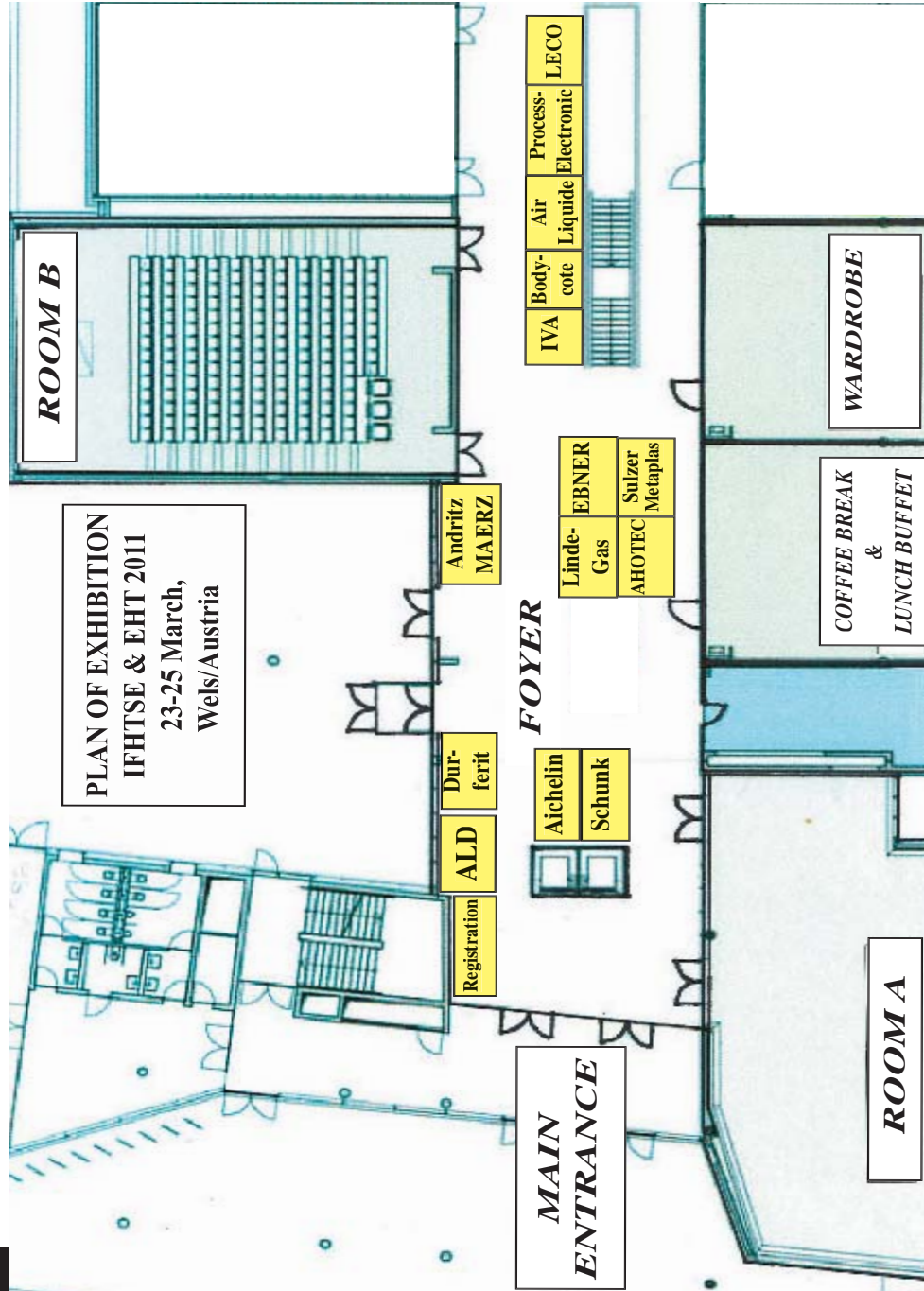
Best Paper Award

In the course of the „Conference Dinner“, the „Best Paper Award“, sponsored by

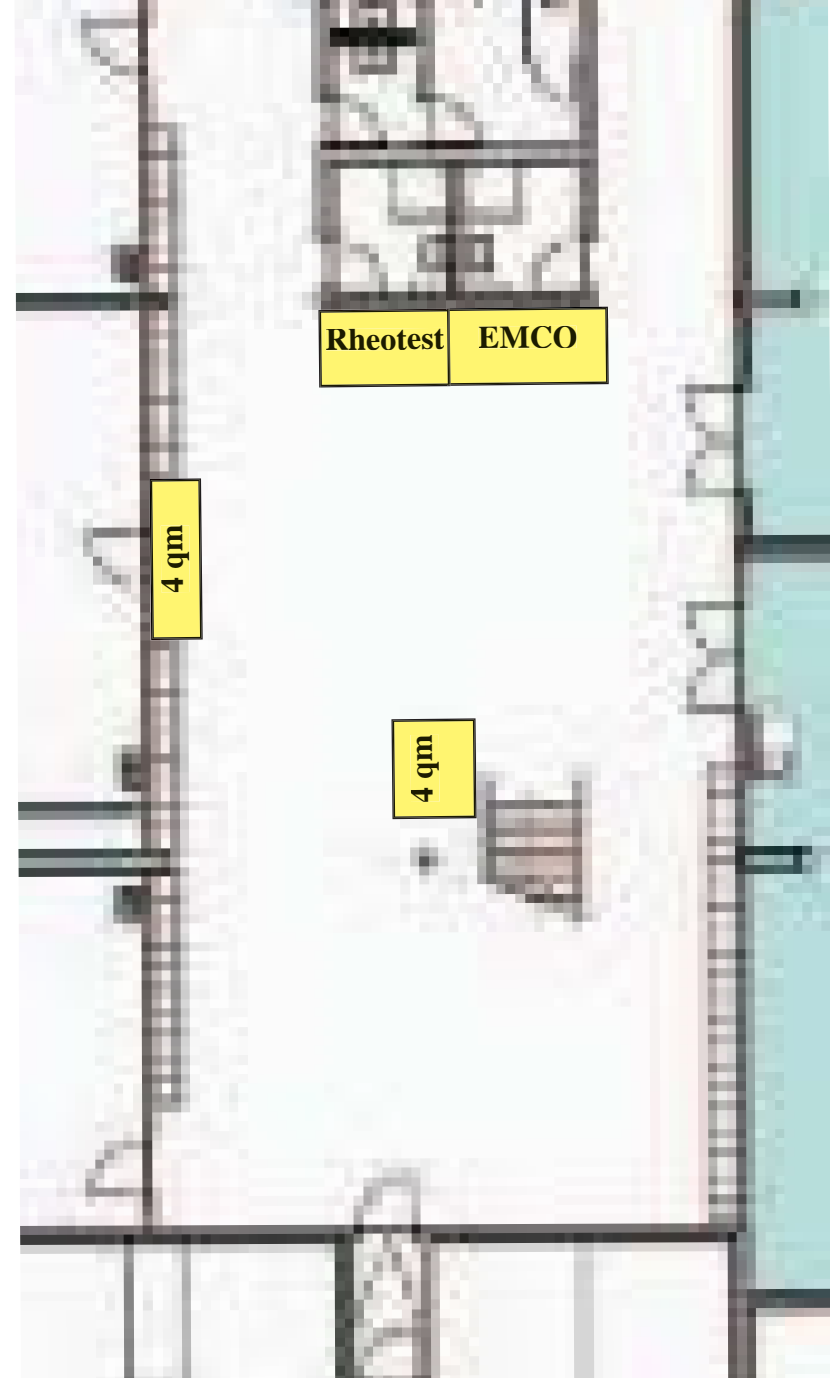
Böhler Edelstahl GmbH & Co KG, will be awarded.



Exhibition Ground Floor



Exhibition Basement



23.3.				24.3.				25.3.			
Time	Tool	Quality	Time	Tool	Quality	Time	Tool	Time	Tool	Quality	
8.00	Registration										
9.00	Gerorge VanderVoort	Metallography of tool steels	9.00			9.00		9.00			
			9.25			9.25		9.25			
			9.50			9.50		9.50			
			10.15	coffee break		10.15	coffee break		10.15	coffee break	
		10.45			10.45			10.45			
		11.10			11.10			11.10			
11.45	break		11.35			11.35		11.35			
13.00	Opening Ceremony		12.00			12.00	Closing	12.00	Closing		
13.35			12.25	lunch		12.10	soup lunch	12.10	soup lunch		
14.00			14.00			13.00	Excursions	13.00	Excursions		
14.25			14.25								
14.50			14.50								
15.15	coffee break		15.15	coffee break							
15.45			15.45								
16.10			16.10								
16.35			16.35								
17.00			17.00								
17.25			17.25								
18.00	Welcome Reception		19.00	Conference Dinner							

Fundamental quality aspects in heat treatment
Nitriding
Cryo-Technology
Simulation and physical metallurgy
Testing and simulation
New materials and manufacturing routes
Hardening technologies
Surface engineering
Heat treatment

IFHTSE

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Surface engineering	Page 18, 20, 22, 24
Heat treatment	Page 26

EURO HT

Fundamental quality aspects in heat treatment	Page 15, 19
Nitriding	Page 17
Testing and simulation	Page 21
New materials and manufacturing routes	Page 23
Hardening technologies	Page 25, 27, 29

Seminary, 9.00 - 11.45, Room A, 23.3.2011

George VanderVoort, Consultant Struers Inc., USA

“Metallography of tool steels”

Opening Ceremony,

13.00 - 13.30, Room A, 23.3.2011

Keynote Lecture, 13.35 - 14.25, Room B, 23.3.2011

Dr. Kiyoshi Funatani, IMST Institute, Japan

„ISO, TQC and real heat treatment to fabricate quality products“

Closing,

12.00 - 12.10, Room A, 25.3.2011

IFHTSE
Room A

Cryo - Treatment
13.35 - 15.15

13.35

Cold treatment of tool steel

P. Stratton
Matscribe UK, United Kingdom

14.00

Influence of different deep cryogenic treatment routes on the properties of high speed steel

M. Pellizzari¹, D. Caliskanoglu², A. Fernández³, J.I. Barbero⁴,
B. Pena⁴, T. Uemit⁵, R. Pizzaro⁶, R. Elvira⁶, L.A. Alava⁷

¹University of Trento, Italy

²Böhler Edelstahl GmbH & Co KG, Austria

³AIMEN, Spain

⁴Fundacion Labein, Spain

⁵BFI, Germany

⁶BSIDENOR, Spain

⁷CRYOBEST, Spain

14.25

Influence of deep cryogenic treatment on wear behavior of P/M S390MC high speed steel

V. Leskovšek, M. Jenko, B. Podgornik
Institute of Metals and Technology Ljubljana, Slovenia

14.50

Integration of the “sub zero” treatment in vacuum hardening processes and subsequent advantages

B. Zieger
Schmetz GmbH, Germany

EURO HT
Room B

Fundamental quality aspects in heat treatment
13.35 - 15.15

Keynote
13.35

ISO, TQC and real heat treatment to fabricate quality products

K. Funatani
IMST Institute, Japan

14.25

Necessary information for a successful heat treatment

D.Klein, V. Ermert, A. Horsch, R. Kohlmann, R. Mahlig,
B. Rentrop
IWT Bremen, Germany

14.50

Process audits in heat treatment shops as possibilities of a systematic process improvement

P. Sommer
Dr. Sommer Werkstofftechnik GmbH, Germany

IFHTSE
Room A

EURO HT
Room B

Simulation and physical metallurgy
15.45 - 17.25

Nitriding
15.45 - 17.25

15.45

Simulation of the deformation and residual stress evaluation during tempering of a hot work tool steel

A. Eser¹, A. Bezold¹, C. Broeckmann¹, K. Bambauer², W. Theisen²
C. Simsir³

¹RWTH Aachen University, Germany

²Ruhr University Bochum, Germany

³Atilim University, Turkey

15.45

Improving quality and cost savings for the TUFFTRIDE[®] process

J. Boßlet

Durferfrit GmbH, Germany

16.10

Prediction of mechanical properties of quenched and tempered steel die

B. Smoljan, D. Iljkić, N. Tomašić

Faculty of Engineering, University of Rijeka, Croatia

16.10

The world trends in nitriding R&D and new activation control of low temperature salt bath nitriding process

K. Funatani

IMST Institute, Japan

16.35

Analysis of the cooling conditions during heat treatment of die casting dies by use of FEM simulation

S. Zinner, I. Siller, G. Jesner

Böhler Edelstahl GmbH & Co KG, Austria

16.35

Effect of surface cleaning on heat treatment results

B. Haase

Hochschule Bremerhaven, Germany

17.00

Prediction of properties of gas-quenched work pieces based on the modified hardenability test

D. Landek¹, T. Filetin¹, B. Liščić¹, I. Kumić¹, T. Lübken²

¹Faculty of Mechanical Engineering and Naval Architecture, Croatia

²Collaborative Research Centre “Distortion Engineering”, Germany

17.00

Ammonia flow and atmosphere control for gaseous nitriding processes

C. Huber¹, S. Bockel-Macal¹, L. Coudurier¹, O. Fontana²

¹Air Liquide GmbH, Austria

²MULTIGAS, Austria

18.00

WELCOME RECEPTION

18.00

WELCOME RECEPTION

IFHTSE
Room A

Surface engineering
9.00 - 10.15

9.00

Hardening of bending tools by using high power diode lasers steel
I.G. Claus
SIRRIS Technologypark, Belgium

9.25

Duplex and triplex surface treatment of steels used for forming and injection moulding tools
R. Zenker^{1,2}, G. Grumbt¹, H.-J. Spies¹, A. Jung¹
¹TU Bergakademie Freiberg, Germany
²Zenker Consult Germany

9.50

Laser cladding vs. laser alloying - a comparative study
R. Görgl, E. Brandstätter
Joanneum Research Forschungsgesellschaft mbH, Austria

EURO HT
Room B

Fundamental quality aspects in heat treatment
9.00 - 10.15

9.00

Global database of cooling intensities of liquid quenchants
B. Liščić, T. Filetin
University of Zagreb, Croatia

9.25

The influence of additives in quenching oils on the cooling rate
L. Pedišić¹, B. Matijević²
¹MAZIVA-ZAGREB d.o.o., Croatia
²University of Zagreb, Faculty of Mechanical Engineering and Naval Architecture, Croatia

9.50

Thermal processing systems for automotive suppliers - requirements for CQI-9 compliant automation
G. Unger, H. Steck-Winter
Aichelin Ges.m.b.H., Austria

IFHTSE
Room A

EURO HT
Room B

Surface engineering
10.45 - 12.25

Testing and simulation
10.45 - 12.25

10.45 **TiAlN/a-CN coating for protection of metal compaction tools**
P. Panjan¹, S. Paskvale¹, M. Panjan¹, M. Čekada¹, B. Fišinger²,
M. Mernik²,
¹Jožef Stefan Institute Ljubljana, Slovenia
²Unior, Kovaška industrija d.d., Slovenia

11.10 **Improvement of wear and corrosion resistance of nitrided and post-oxidized steels by additional DLC-coating**
D. Heim¹, C. Forsich¹, C. Übleis¹, A. Gebeshuber², T. Müller²
¹University of Applied Sciences Wels, Austria
²Rübig GmbH & Co KG Wels, Austria

11.35 **A comparative study on Ti_{1-x}Al_xN coatings reactively sputtered from homogeneous and from mosaic targets**
N. Schalk^{1,2}, T. Weirather¹, C. Polzer³, P. Pocik³, C. Mitterer¹
¹University of Leoben, Austria
²Materials Center Leoben Forschung GmbH, Austria
³PLANSEE Composite Materials GmbH, Germany

12.00 **The low temperature aluminizing kinetic of hot work tool steel**
B. Matijević, I. Kumić, T. Belić
University of Zagreb, Faculty of Mechanical Engineering and Naval Architecture, Croatia

10.45 **Reduction of residual stress in cylinder heads - measurement and simulation of residual stress and practical solutions**
B. Stauder, M. Rafetzeder, J. Krammerbauer
Nemak Product Development Centre, Linz

11.10 **Sensor application in heat treatment processes for enhancement of the process capability**
H. Klümper-Westkamp, H.-W. Zoch
IWT Bremen, Germany

11.35 **Examination of the load-hardness problem in microhardness testing**
G.F. VanderVoort¹, R. Fowler²
¹Consultant Struers Inc., USA
²Struers Inc., USA

12.00 **Automatic vickers case depth measurement**
A. Horsch
AHOTEC e.K., Germany

IFHTSE
Room A

Surface engineering
14.00 - 15.15

14.00 **Improvement of die life with surface texture control and solid lubricant**
O. Furukimi, M. Aramaki, N. Yamada
Kyushu University, Japan

14.25 **Fatigue behaviour of hard coatings in lubricated tribological contacts for forming applications**
C. Peuker, A. Tomala, E. Badisch
AC²T research GmbH, Austria

14.50 **Effect of surface topography on galling resistance of tool steel**
B. Podgornik, J. Jerina, J. Vižintin
University of Ljubljana, Slovenia

EURO HT
Room B

New materials and manufacturing routes
14.00 - 15.15

14.00 **The creation and technologies of strengthening of new multi-functional economical (nickel free) metastable alloys which self-organizing at exploitation**
O. Cheiliakh, Y. Cheiliakh, V. Voloshyn, O. Lyuby, I. Kolodyazhna
Priazovskiy State Technical University, Ukraine

14.25 **Heat and surface treatment of nitinol - the alloy used for medical implants**
D. Vojtech
Institute of Chemical Technology Prague, Czech Republic

14.50 **Integration of high deformation by cross rolling into the thermo-mechanical treatment process**
A. Borowikow
GMT mbH, Germany

IFHTSE
Room A

EURO HT
Room B

Surface engineering
15.45 - 17.25

Hardening technologies
15.45 - 17.25

15.45 **Plasox® extended - economical fabrication of DLC coatings for heavy machine industry**
A. Gebeshuber¹, T. Müller¹, C. Lugmair¹, R. Kullmer¹, D. Heim², C. Forsich²,
¹Rübig GmbH & Co KG Wels, Austria
²University of Applied Sciences Wels, Austria

15.45 **Process step reduction in induction hardening by online frequency adaption**
A. Ulferts, F. Andä
HWG Inductoheat GmbH, Germany

16.10 **Hot friction and wear behaviour of plasma nitrided and low pressure carburized hot work tool steel for aluminium extrusion dies**
M. Pellizzari¹, I. Siller²
¹University of Trento, Italy
²Böhler Edelstahl GmbH & Co KG, Austria

16.10 **Investigating the effect of induction parameters for optimizing the heat treatment of 4620 AISI steel in steering wheel pinion**
E. Jajarmi¹, O. Fakhræi², M. Salman Khaksar²
¹Iran University of Science and Technology, School of Materials Engineering and Metallurgy, Iran
²School of Metallurgy and Materials Engineering, University of Tehran, Iran

16.35 **Effect of heat treatment on tribological properties of PM S390 MC high-speed steel**
F. Cajner¹, S. Solic¹, I. Kumić¹, V. Leskovšek²
¹Faculty of Mechanical Engineering and Naval Architecture, Croatia
²Institute of Metals and Technology Ljubljana, Slovenia

16.35 **Load-carrying capacity prediction of different plasma nitrided and case hardened specimens under rolling contact loading**
A. Trausmuth¹, I. Gódor¹, W. Eichelseder¹, M. Lengauer²
¹University of Leoben, Chair of Mechanical Engineering, Austria
²FH Joanneum Graz GmbH, Austria

17.00 **Nitriding and related processes for tools and dies - applications and quality aspects**
G. Walkowiak
Bodycote Wärmebehandlung GmbH, Germany

17.00 **Investigation on replacement probability in the heat-treatment cycles used for surface hardening of automotive oil-pump shafts**
O. Fakhræi¹, E. Mirtaheri¹, M. Emamy¹, E. Jajarmi²
¹School of Metallurgy and Materials Engineering, University of Tehran, Iran
²University of Science and Technology, Iran

19.00 **Conference Dinner**

18.00 **Conference Dinner**

IFHTSE
Room A

EURO HT
Room B

Heat treatment
9.00 - 10.15

Hardening technologies
9.00 - 10.15

- 9.00** **Effect of the heating rate in the tempering of steel grade EN 100 V1**
F. Cajner, D. Landek, H. Rafel, S. Kovačić
Faculty of Mechanical Engineering and Naval Architecture, Croatia
- 9.25** **Effects of heat treatment on microstructure and properties of 18st%Cr-6.7wt%Mo cast iron**
A. Wiengmoon¹, J.T.H. Pearce², T. Chairuangri³
¹Naresuan University, Faculty of Science, Thailand
²National Metals & Materials Technology Centre, Thailand
³Chiang Mai University, Faculty of Sciences, Thailand
- 9.50** **Properties of an 80%H13-20%M3:2 PM tool steel by spark plasma sintering**
A. Fedrizzi, M. Pellizzari
University of Trento, Dep. of Materials Engineering and Industrial Technologies, Italy

- 9.00** **Multi-purpose LPC+LPN+HPGQ 25 bar N2/He vacuum furnaces**
Maciej Korecki, Józef Olejnik
Seco/Warwick S.A.
- 9.25** **Sinter Hardening - a special heat treatment for powder metallurgy precision parts**
M. Dlapka¹, H. Danninger¹, C. Gierl¹, B. Lindqvist²
¹Vienna University of Technology, Austria
²Höganäs AB, Sweden
- 9.50** **Low pressure carburization of chromium containing sintered steels for gear applications**
C. Gierl¹, H. Danninger¹, M. Dlapka¹, H. Altena², G. Stetina³, P. Orth¹
¹Vienna University of Technology, Austria
²Aichelin Ges.m.b.H., Austria
³MIBA Sinter, Austria

IFHTSE
Room A

EURO HT
Room B

Heat treatment
10.45 - 11.35

Hardening technologies
10.45 - 12.00

10.45 **Light weight in the automotive industry - a challenge for the tool steel industry**
I. Schruff, T. Greeb
Kind & Co., Edelstahlwerk, KG, Germany

10.45 **Low distortion case hardening of transmission components and quality control in serial production**
V. Heuer, D. Bolton, K. Löser
ALD Vacuum Technologies GmbH, Germany

11.10 **Size matters - heat treatment of hot work tool steel**
V. Strobl¹, N. Dickinger¹, R. Schneider²
¹Rübig Wärmebehandlung GmbH & Co KG, Austria
²Upper Austrian University of Applied Sciences Wels, Austria

11.10 **Heat Treatment installations for wheels (tyres/rings) in a car bottom pusher-type furnace**
E. Tschapowetz
Andritz MAERZ GmbH, Germany

Surface engineering
11.35 - 12.00

11.35 **Steel strip hardening and tempering lines**
P. Seemann
Ebner Industrieofenbau Ges.m.b.H., Austria

11.35 **Combination of deep cryogenic treatment with nitriding or oxynitriding of HS6-5-2 high speed steel**
A. Ciski, A. Nakonieczny, T. Babul
Institute of Precision Mechanics Warsaw, Poland

IFHTSE**Fourier analysis of die surface texture for improvement of die life**

N. Yamada, O. Furukimi,
Kyushu University, Japan

EURO HT**Effect of artificial ageing heat treatment on microstructure and mechanical properties of cast aluminium alloy A319**

A. Wiengmoon¹, P. Apichai¹, J. Kajornchiyakul¹, J.T.H. Pearce²

¹Faculty of Science, Naresuan University, Thailand

²National Metals & Materials Technology Centre, Thailand

Non-destructive structure test as heat treatment shop supervision for quality control

G. Dinold

NDT - Consult, Austria

