



Program

European Conference on Heat Treatment 2010

NITRIDING AND NITROCARBURISING

29/30 APRIL 2010
AACHEN
GERMANY

organized by:



ASMET



The official conference languages will be **German** and **English**, both simultaneously translated.

■ The Scientific Committee:

François **Cortinovis**, AIMT, France | Brigitte **Haase**, University of Applied Sciences Bremerhaven, Germany | Franz **Hoffmann**, IWT Bremen, Germany | Heinrich **Klümper-Westkamp**, IWT Bremen, Germany | Rosemarie **Leppik**, Stihl Kettenwerk GmbH & Co KG, Switzerland | Danilo **Petta**, Houghton, Italy | Reinhold **Schneider**, University of Applied Sciences Wels, Austria | Marcel A. J. **Somers**, Technical University of Denmark, Denmark | Bernard **Vandewiele**, Direktor STC, Belgium | Hans **Veltrop**, Netherlands |

■ The International Committee:

Stefan **Hock**, Chairman AWT, Germany | Heimo **Jäger**, Chairman ASMET, Austria | Bernard **Kuntzmann**, President SVW, Switzerland | Robert **Moulin**, President A3TS, France | Emilio **Ramous**, AIM Heat Treatment Study Group, Italy | Pavel **Stolar**, Chairman ATZK, Czech Republic | Bernard **Vandewiele**, Chairman VWT, Belgium |

in collaboration with:



WELCOME

Dear guests at the **European Conference on Heat Treatment 2010 – Nitriding and Nitrocarburising**, the organising committee would like to welcome you to the 4th conference on nitriding. After being held in Darmstadt and Weimar since 1991, this year's venue is again Aachen – for the second time in row.

The importance of both nitriding and nitrocarburising needs no particular emphasis. This process group is well established within the realm of industrial production. Nevertheless, there are still open questions as well as new fields of application that deserve focus. As the comprehension of the basic principles will evolve, the growing know-how in key technologies will boost the development of applications. An increasing number of clients and potential purchasers are aware that nitriding can be completely different from nitriding – which applies even more to nitrocarburising. In fact, this process group offers a wide range of treatments that can be adapted to the individual operational demands.

We hope to stimulate the discussion between providers and clients of heat treatment services. May this conference contribute to better knowledge and comprehension as a basis of broad application.

Moreover, we hope that you will enjoy your stay in Aachen so that you can take home unforgettable impressions from our host city.

Furthermore, we wish to thank those persons that have contributed prior to and in the course of this conference, particularly the involved heat treatment associations AWT, A3TS, AIM, ASMET, SVW/ASTT, and VWT as well as the companies that support our work.

We are happy to welcome you to Aachen and we wish you a successful time at the conference.

Franz Hoffmann and Heinrich Klümper-Westkamp



DAY 1 THURSDAY, 29 APRIL 2010

08:00	Registration of participants	
08:50	Welcome	F. Hoffmann

FORMATION OF NITRIDE LAYER

09:00	M. A. J. Somers	Formation of white layer during nitriding and nitrocarburising
09:35	H. Pedersen, T. L. Christiansen, M. A. J. Somers	Nitrocarburising in ammonia-hydrocarbon atmospheres
10:00	T. Wöhrle, A. Leinweber, E. J. Mittemeijer	Influence of the carbon activity on the microstructural and compositional evolution of the compound layer developing upon nitrocarburising of α-iron

10:25 - 10:45 Coffee Break**PROCESS ENGINEERING**

10:45	K.-M. Winter, S. Hoja, H. Klümper-Westkamp	Controlled nitriding and nitrocarburising - state of the art
11:20	N. Lippmann, Ü. Kizil, B. Öklü	Sensor controlled gasoxinitriding with ammonia-hydrogen mixture in industrial application

APPLICATIONS

11:45	H. Klümper-Westkamp	Load-adapted nitriding and nitrocarburising of forging dies for hot massive forming of steel
12:10 - 14:10	Lunch	

14:10	Th. Müller, R. Noebauer, A. Luttinger, O. Irretier	Technical expertise of puls-plasma nitriding technology for gear and power train application
14:35	T. Fuchs, G. Pöckl, J. Mittmansgruber, R. Schneider	Nitriding of powder-metallurgical high alloyed resin mould steels
MECHANISMEN		
15:00	S. Meka, R. E. Schacherl, E. Bischoff, E. J. Mittemeijer	Internal gaseous nitriding of Fe-2at%Si alloy: Ideally weak nitriding interaction and formation of amorphous silicon-nitride precipitates
15:25 - 16:30	Coffee Break and Poster Session	
16:30	K. S. Jung, R. E. Schacherl, E. Bischoff, E.J. Mittemeijer	Nitriding response of ferritic Fe-Cr-Ti alloys
16:55	G. Miyamoto, T. Maki, T. Furuwara	New ferrite grain formation by plasma-nitriding of Fe-high Cr-alloys
PROCESSES		
17:20	H. Le Thien, H.-J. Spies, H. Biermann	Investigation of active screen assisted plasma-nitriding
17:45	Je. Georges, Ju. Georges, J.-P. Lebrun	Plasma-nitriding and postoxidising: An innovative and eco-friendly solution with strong reduced consumption of gas and energy

19:00	CONFERENCE DINNER AT RATSKELLER AACHEN	
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DAY 2 FRIDAY, 30 APRIL 2010

PROPERTIES		
09:00	Th. Hirsch	Residual stresses due to nitriding
09:35	S. Jegou, L. Barrallier, R. Kubler	New development on precipitation-induced residual stresses during nitriding
10:00	K. Arimoto, F. Ikuta, S. Yamanaka	Studies on distortions in nitrided steel cylinders using computer simulation
10:25 - 10:45	Coffee Break	
10:45	Th. Tobie	Load capacity of nitrided gears - strength property, influencing parameter and critical review in respect of application in gear boxes
11:20	A. Trausmuth, I. Gódor	Lifetime analysis under contact loading of nitrided and carburised parts
11:45	R. Sola, G. Poli, P. Veronesi, R. Giovanardi, A. Zanotti	Effects of post-treatment surface morphology on the wear and corrosion resistance of nitrided and nitrocarburised 42CrMo4 steel
12:10 - 14:10	Lunch	
PROCESSES		
14:10	M. A. J. Somers, T. L. Christiansen	Low temperature surface hardening of stainless steel through gaseous nitriding and carburising - from fundamentals to application
14:45	P. Gofas, K.-M. Winter	Breakthrough in nitriding austenitic stainless steels

15:10	A. Yokoo	Salt bath nitriding method for simultaneous formation of a nitride layer and oxide layer on a steel surface
15:35	A. Dalke, H.-J. Spies, H. Biermann	Surface alloying and nitriding of aluminium alloys
QUALITY ENSURANCE		
16:00	P. Sommer, W. Weiß	Validation of process capability of nitriding and nitrocarburising processes and plants
16:25	Summery	F. Hoffmann
16:30	End of the conference	

POSTER		
	M. Reinhold, D. Salerno	Oxicad NT - further devolpment of nitrocarburising and post oxidising
	B. Haase, H. Ludewig	Minimizing of ammonia emissions of nitriding furnaces by catalytic dissociation
	J. Dong, F. Hoffmann, S. Hoja, H. Klümper-Westkamp, J. Osmer, R. Gläbe, H.-W. Zoch	Gas nitrocarburising of steels for precision contour grinding
	H. Selg, R. Schacherl, J. Schwarzer, E. J. Mittemeijer	Surface residual stress evolution during low-temperature gaseous nitriding of Fe-5wt.%Mo alloy



CONFERENCE VENUE

Novotel Aachen City
Peterstraße 66 | 52062 Aachen

A contingent of rooms has been reserved.
Special rates for conference visitors:
Single room **122 €** or double room **147 €** per night, incl. breakfast.
This offer or other hotels can be booked with **Aachen Tourist Service**,
phone: +49 241 1802951
fax: +49 241 1802930
or wire **www.awt-online.org**

CONFERENCE FEE

Conference fee: **500 €**
Reduced attendance fee by registration until 31 January 2010: **450 €**
Speakers / University members: **350 €**
Students / Retired persons: **250 €**

Prices do not include 7% VAT.
The conference fee includes the catering during the conference days, one dinner and one conference proceedings.

CONFERENCE ORGANISATION AND REGISTRATION

AWT

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