10th Congress of

The International Federation for Heat Treatment and Surface Engineering

1-5 September 1996 The Brighton Centre, Brighton, UK

Incorporating the 3rd ASM Heat Treatment and Surface Engineering Conference in

Europe

Organised by the Institute of Materials

10th Congress of the

International Federation for Heat Treatment and Surface Engineering

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The 1996 IFHT congress incorporates the third ASM Heat Treatment and Surface Engineering Conference in Europe. The event is organised and managed on behalf of IFHT by the institute of materials, London. IFHT and the organisers also acknowledge the generous support of Bodycote international plc.

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THIS BOOKLET INCLUDES ABSTRACTS OF PRESENTATIONS AVAILABLE AT TIME OF PRINT
MONDAY 2 SEPTEMBER 1996

09.00 Registration
10.00 Coffee
10.30 Congress Opening Ceremony
Opening Statement by Congress Chairman: Dr WH Roberts
Welcome Address by IFHT President: Professor P Mayr,
Stiftung Institut für Werkstofftechnik, Bremen, Germany

11.00 The 12th Harold Moore Memorial Lecture
"The Performance of Tempered Martensite"
Professor G Krauss - John Henry Moore Professor, Colorado School of Mines, USA

12.00 Lunch

PARALLEL SESSION 1A: Carburizing

Session Chairman: WT Cook (British Steel Technical, Swinden Technology Centre, UK)

14.00 Parameters, Uniformity and Trends in Plasma Carburizing
F Hoffmann, S Dorn and P Mayr (Stiftung Institut für Werkstofftechnik, Germany)

14.20 Plasmacarburizing Furnaces in European Industry
W Gräfen (Ipsen Industries International GmbH, Germany)

14.40 Vacuum Carburizing with High Pressure Gas Quenching - An Application for the Future
P Heilmann (ALD Vacuum Technologies GmbH, Germany)

15.00 Carburizing: Theoretical Approach and Experimental Anticipation
I Montevecchi (Bioteco, Italy)

15.20 Refreshment Break

15.50 New Aspects and Observations in Fluidized Bed Carburizing
JA Virta (VTT Manufacturing Technology, Finland)
16.10 Effect of Alloying Elements and Oxygen Potential on Equilibrium Carbon
Content in Gas Carburizing
N Murai (Sumitomo Metal Industries Ltd., Japan), T Tsumura (SMI TechnoAce Inc., Japan)
and M Hasebe (Kyushu Institute of Technology, Japan)
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16.30 Fatigue Behaviour of Case-Hardened Low Alloy Cr-Mo Steel
MA Golozar, A Saatchi and MA Soltani (Isfahan University of Technology, Iran)
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Session Chairman: Professor BL Mordike (Technical University of Clausthal, Germany)

14.00 Laser Transformation Hardening and Thermochemical Alloying
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P Jurci, (SVUM, Czech Republic), P Stolar (VSCHT, Czech Republic) and J Dlouhy (ASCR, Czech Republic)

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PARALLEL SESSION 2A: Ferrous Heat Treatment I
Session Chairman: Or B Edenhofer (Ipsen Industries International GmbH, Germany)

9.00 The Role of Sensors in Heat Treatment
B Edenhofer (Ipsen Industries International GmbH, Germany)

9.30 CFD Modelling of Quench Tank Agitation
DS MacKenzie (MacDonnell Douglas Aerospace, USA), GE Totten (Union Carbide Corporation, USA) and N Gopinath (Fluidtherm Technologies Ltd., India)

9.50 PAG Polymer Quenchants: Increasingly Viable Quench Oil Replacements
ZH Ou (BRIMET, China), GE Totten and GM Webster (Union Carbide Corporation, USA)

10.10 Contribution to Numerical Estimation of Hardness Penetration Depth in Steel Specimens
B Smoljan (The University of Rijeka, Croatia)

10.30 Recent Investigation on Bainite and Martensite Transformation Mechanism and Air-Cooled Bainitic Steels
HS Fang, ZG Yang, JJ Wang and YK Zheng (Tsinghua University, P.R. China)

10.50 Refreshment Break

11.10 Modelling of Heat Treatment of Steels: From Concepts to Process Simulation
S Denis and A Simon (Ecole des Mines de Nancy, France)

11.30 Comparative Analysis of Non-Isothermal Austenite Transformation
R Kohlheb, G Buza, I Felde, B Vero (Bay Zoltan Institute for Materials Science and Technology, Hungary), T Reti (Banki Donat Polytechnic, Hungary) and M Gergely (SACIT Steel Advisory Centre, Budapest, Hungary)
11.50 **Embrittlement of Steel 12Cr1MoV Due to Tempering**  
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11.10 Biasing Voltage as a Tool for Diamond Nucleation and Growth Control in a Hot-Filament CVD Reactor
G Negrea, G Vermesan, V lancau and D Nica (Technical University of Cluj-Napoca, Romania)

11.30 Chemical Vapor Deposition of Hard and Superhard Coatings onto Hardmetals by Use of Barrier Interlayer
IY Konyashin (Hard and Refractory Metals Institute, Russia)

11.50 Checking the Suitability of PVD Coatings for Metal Forming and Plastic Injection Moulding by Impact Testing at Elevated Temperatures
J Steinebrunner, T Emmerich, S Heck, I Munder (Furtwangen University, Germany) and R Steinbuch (Reutlingen Polytechnical University, Germany)

12.10 Deposition and Characterization of Cathode Sputtered Ti-Al-B-C-N-Coatings
I Munder, T Emmerich, S Heck and J Steinebrunner (Furtwangen University, Germany)

12.30 Lunch

PARALLEL SESSION 3A: Nitriding (Ferrous)
Session Chairman: Professor EJ Mittemeijer (Delft University of Technology, The Netherlands)

14.00 Thermodynamics, Kinetics and Process Control of Nitriding
EJ Mittemeijer and MAJ Somers (Delft University of Technology, The Netherlands)

14.30 Modelling of Thermochemical Surface Treatments
J Agren (Royal Institute of Technology, Sweden)

14.50 The Use of Oxygen Probes for Nitriding Processes. Theory and Practice
R Hoffmann (IVA-Industrieafen, Germany)

15.10 Effects of Nitriding Temperature on Gas Nitriding Property of Steels for
Nitriding
N Ishikawa, T Shiraga and M Ishiguro (NKK Corporation, Japan), H Kabasawa (Nihon Techno Co. Ltd., Japan) Y Kuwahara (Nagaoka Denshi Ltd., Japan)

15.30 Refreshment Break

15.50 Development of a High-Pressure Nitriding Process Controlled by the Nitriding Potential
M Jung, FT Hoffmann, P Mayr (Stiftung Institut fur Werkstofftechnik, Germany) and P Minarski (ALD Vacuum Technologies GmbH, Germany)

16.10 Industrial Developments of Plasma Nitriding
JP Lebrun (Nitruvid S.N.C., France)

16.30 Effect of Atmospheric Pre-Heating on Gas Nitriding Behaviour of Austenitic Stainless Steel
H Sueyoshi, Y Nakamura, T Nishida (Kagoshima University, Japan) and K Hamaishi (Kagoshima Prefectural Institute of Industrial Technology, Japan)

16.50 Influences of Contamination on Gas Nitriding
O Irretier, J Dong, H Klümper-Westkamp, B Haase, K Bauckhage (Institut für Werkstofftechnik, Germany) and C Naber (Nabertherm, Germany)

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S Dowey and A Matthews (The University of Hull, UK)

14.30 Corrosion and Wear Response of Chromium Boride Coated 316L Austenitic Stainless Steel
PA Dearnley (University of Leeds, UK), N Dortmann, H Weiss (University of Siegen, Germany) and KL Dahm (University of Auckland, New Zealand)

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11.00 The Effect of Aluminium, Nitrogen and Assessment Method on the Grain Coarsening Characteristics of Steel
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11.20 Study of Isothermal Austenitization Kinetics in Hypoeutectoid Carbon Steels
G Maizza, D Dumitru, B de Benedetti (Politechnic of Torino, Italy)

11.40 Modelling of Austenite Formation During Rapid Heating
J ROdel and H-J Spies (Freiberg University of Mining and Technology, Germany)

12.00 Rapid Austenitizing as a Method of Martensitic Steels Toughening
I Dlouhy (Institute of Physics of Materials ASCR, Czech Republic), M Kouril (Technical University of Brno, Czech Republic) and P Stolar (University of Chemical Engineering, Czech Republic)

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14.30 The Role of Gold Silicide in Gold-Silicon Alloy Die Bonding
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RJ Rodriguez, AL Sanz and AM Medrano (Asociacion de la Industrie Navarra, Spain)

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16.10 Combined Thermodynamic and Kinetic Computational Simulation of Heat Treatments: Precipitation of Metastable Phases in Al alloys
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16.30 Mechanical Properties of High Temperature Vacuum Brazed HSS on Construction Steel with Simultaneous Heat Treatment
V Leskovsek, D Kmetic and B Sustarsic (Institute of Metals and Technology, Slovenia)

16.50 The Technology and Philosophy of the Modern Heat Treatment and Surface Engineering Sub-Contractor
M Hallas (Bodycote International plc) and B Birch (Bodycote (UK) Ltd)

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09.30 Study on the Compound Treatment of Plating Hard Chromium and Plasma Nitriding
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09.50 Metallographic Investigations of Carbon and Nitrogen Implanted TiN Coatings
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10.10 State of the Art of the Combined Surface Treatment: Plasma Nitriding and Hard Wear Resistant Coatings
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10.30 Duplex Surface Engineering of Ti-6Al-4V Alloy - Combining Oxygen Diffusion Treatment with DLC Coating
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OV Chudina (Moscow State Automobile Institute, Russia)

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MC Nestler (Sulzer Metco (Deutschland) GmbH, Germany) H-J Spies, K Herrmann (TU Bergakademie Freiberg, Germany)

12.00 In-situ Duplex Treatments for Hardened and Tempered Alloy Steels and their Performance in Rolling and Sliding Wear
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