

A3TS

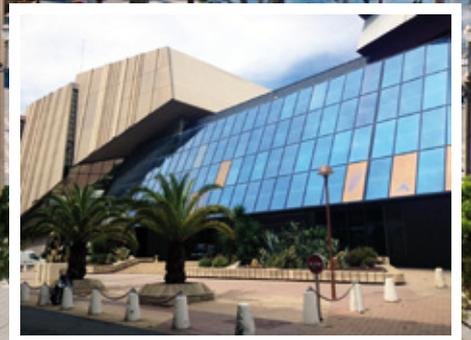
Association de Traitement Thermique
et de Traitement de Surface



INTERNATIONAL
FEDERATION
FOR HEAT
TREATMENT
AND SURFACE
ENGINEERING

24th IFHTSE CONGRESS 2017 European Conference on Heat Treatment and Surface Engineering A3TS CONGRESS

26-29 June
CONGRESS CENTER
NICE ACROPOLIS France



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24th IFHTSE CONGRESS 2017
European Conference on Heat Treatment
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A3TS CONGRESS
JUNE 26-29, 2017 - NICE (France)



Organized by
A3TS
Association de Traitement Thermique
et de Traitement de Surface

INTERNATIONAL CONGRESS 2017 ON HEAT TREATMENT AND SURFACE ENGINEERING
NEW TRENDS AND DEVELOPMENTS.

The 24th IFHTSE Congress 2017 combined with the European Conference on Heat Treatment and Surface Engineering together with A3TS Congress will take place in Nice – France from 26 to 29 June 2017. The Acropolis Congress Center is located in the heart of Nice, a few steps of the Bay of Angels.

The conference will be a forum for academics, engineers and researchers from industry to discuss and disseminate the recent advances, innovations and developments in the field of Heat Treatment and Surface Engineering. The conference will be an opportunity for those working in experimental research and physical and numerical modelling, as well as those involved in design, production, quality insurance and industrial applications.

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Gérard Crevoiserat, *SCR SA, Switzerland*
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With the support of



P R O G R A M

MONDAY, 26 June 2017

16.00-18.00 : Opening of the registration

18.00-19.00 : Welcome event & Cocktail

TUESDAY, 27 June 2017

| | ROOM ATHENA | ROOM HERMES |
|--------------------------|---|--|
| 08.00 | REGISTRATION | |
| 09.00 | Opening Ceremony by A3TS President and IFHTSE President. | |
| KEYNOTES LECTURES | | |
| 09.20 | Landing Gear Technologies : From The Beginning To Tomorrow. <i>P. Taylor</i> - Safran Landing Systems - Oloron Sainte Marie (France). | |
| 10.00 | Materials Engineering for Automotive challenges. <i>Y. Chastel</i> - Groupe Renault – Guyancourt (France). | |
| 10.40 | Focused Ion Beam methods for micro-scale residual stress assessment. <i>E. Bemporad</i> - University Roma 3 - Rome (Italy). | |
| 11.20 | Thermochemical Surface Engineering: A Playground for Science and Innovation. <i>M.A.J. Somers</i> - Technical University of Denmark - Kongens Lyngby (Denmark). | |
| 12.00 | END OF THE KEYNOTES LECTURES. | |
| 12.30 | LUNCH. | |
| | SESSION S1: FUNDAMENTAL AND PROPERTIES | SESSION S9: MODELING |
| 14.00 | Thermochemical treatments applications for helicopter gas turbine engines. <i>C. Vernault</i> , Safran Helicopter Engines - Bordes (France). | Prediction of grain size evolution during thermal and thermomechanical treatments at the mesoscopic scale: numerical improvements and industrial examples. <i>A. Settefrati</i> 1, <i>B. Scholtes</i> 1, <i>N. Bozzolo</i> 2, <i>E. Perchat</i> 1, <i>M. Bernacki</i> 2. 1 : Transvalor SA - Mougins (France), 2 : Mines ParisTech, PSL Research University, CEMEF - Sophia Antipolis (France). |
| 14.20 | Influence of the microstructure on local deformations of a homogeneously nitrated steel. <i>F. Godet</i> 1, <i>L. Barrallier</i> 2, <i>S. Jégou</i> 2, <i>S. Thibault</i> 3 1 : IRT-M2P - Metz (France), 2 : MSMP Laboratory - Aix-En-Provence (France), 3 : SAFRAN TECH - Magny-Les-Hameaux (France). | Numerical modelling of heat treated welded joint <i>B. Smoljan</i> , <i>D. Ilijkic</i> , <i>L. Štic</i> , <i>S. Smokvina Hanza</i> , <i>N. Tomašic</i> Faculty of Engineering, University of Rijeka - Rijeka (Croatia). |
| 14.40 | TEM investigation of the semi-coherent precipitation in a nitrated Fe-3Cr alloy. <i>O. Skiba</i> 1, <i>J. Dulcy</i> 2, <i>G. Marcos</i> 2, <i>J. Ghanbaja</i> 2, <i>A. Redjaïmia</i> 2, <i>S. Becquerelle</i> 3, <i>N. Caldeira-Meulnotte</i> 3, <i>T. Czerwicz</i> 2. 1 : Safran Transmission Systems / Institut Jean Lamour - Nancy (France), 2 : Institut Jean Lamour - Nancy (France), 3 : Safran Transmission Systems - Colombes (France). | Experimental Study and Modelling of Phase Transformation Kinetics During Austenite Decomposition in Carbonitrated Low Alloyed Steel. <i>S. Catteau</i> 1, <i>H.P. Van Landeghem</i> 2, <i>J. Teixeira</i> 2, <i>J. Dulcy</i> 2, <i>S. Denis</i> 2, <i>M. Dehmas</i> 2, <i>A. Redjaïmia</i> 2, <i>M. Courteaux</i> 3. 1 : Ascometal CREAS - Hagondange (France), 2 : Institut Jean Lamour - Nancy (France), 3 : PSA Peugeot Citroën - Voujeaucourt (France) |

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| 15.00 | <p>Optimization of micro-alloying concepts and the influence of the process chain on fine grain stability of case hardening steels. J.C. Florian, H. Dickert, B. Kontiokari, O. Rösch, J. Gervelmeyer Georgsmarienhütte GmbH - Georgsmarienhütte (Germany).</p> | <p>Residual stress field prediction and high cycle fatigue post processing for a shot peened mechanical part with complex geometry. M. Gelineau 2, C. Mauduit 1, L. Barrallier 3, E. Rouhaud 4, R. Kubler 3, S. Berveiller 5, Q. Puydt 6. 1 : IRT-M2P/MSMP - Metz/ Aix-En-Provence (France), 2 : IRT-M2P/MSMP/UTT - Metz/ Aix-En-Provence / Troyes (France), 3 : MSMP - Aix-En-Provence (France), 4 : UTT - Troyes (France), 5 : LEM3 - Metz (France), 6 : IRT-M2P - Metz (France).</p> |
| 15.20 | <p>Optimization of gaseous nitriding parameters from modelling of the fatigue resistance. H. Weil 1, L. Barrallier 2, S. Jégou 2, N. Caldeira-Meulnotte 3, G. Beck 3. 1 : MSMP, Safran - Aix-En-Provence (France), 2 : MSMP - Aix-En-Provence (France), 3 : Safran - Colombes (France)</p> | <p>FEM Simulation of induction hardening: from the generator behaviour to the quenched microstructure prediction. Comparison of experiments vs simulations. V. Lejay 1, J. Barlier 2. 1 : NTN-SNR Roulements - Annecy (France), 2 : Transvalor - Mougins (France).</p> |
| 15.40 | COFFEE BREAK, EXHIBITION, POSTERS SESSION. | |
| | SESSION S2: PROPERTIES | SESSION S10: SURFACE MODIFICATION |
| 16.20 | <p>Lightweight Forging – Innovation Network for Technological Progress in Part, Process and Material Design for Forged Parts in Automotive Technology. H. Zoch 1, M. Steinbacher 1, H. Surm 1, D. Nadolski 1, R. Tinscher 1, C. Neipp 2, W. Bleck 2, C. Weber 3, M. Otto 3, K. Stahl 3, R. Meissner 4, A. Felde 4, M. Liewald 4, T. Benkert 5, W. Volk 5, R. Salomon 6. 1 : Stiftung Institut für Werkstofftechnik, Bremen - Bremen (Germany), 2 : Institut für Eisenhüttenkunde - Aachen (Germany), 3 : Forschungsstelle für Zahnräder und Getriebebau - München (Germany), 4 : Institut für Umformtechnik - Stuttgart (Germany), 5 : Lehrstuhl für Umformtechnik und Gießereiwesen - München (Germany), 6 : Forschungsvereinigung Stahlverformung-Düsseldorf (Germany).</p> | <p>Nitriding of martensitic stainless steels: impact of process conditions on wear performance and corrosion resistance. P. Reilhac 1, J. Creus 1, X. Feaugas 1, V. Branger 2, S. Frappart 2, G. Michel 3. 1 : LaSIE - La Rochelle (France), 2 : DCNS Reaserch - Nantes (France), 3 : IRT-M2P - Metz (France).</p> |
| 16.40 | <p>Automotive Designers and Heat Treaters Have Choices: Pros and Cons of Competing Hardening Processes and Materials. M. Neumann, W. Titus AFC-Holcroft - Wixom, Michigan (United States of America).</p> | <p>Stainihard®; When hardening of Stainless Steel not be at the expense of the corrosion resistance. J. Jansen, E. Maas Hauck Heat Treatment - Eindhoven (Netherlands)</p> |
| 17.00 | <p>Application of next-generation Stainless Steel and Titanium surface hardening. T. Strabo Hummelshoj, EXPANITE A/S- Hillerod (Denmark).</p> | <p>Electropolishing of Low Temperature Surface Hardened Stainless Steels. A. Karl, U. Oberste-Lehn Bodycote - Landsberg (Germany).</p> |
| 17.20 | <p>Nitriding and nitrocarburising for tribological application in automotive engines. P. F. Cardey CETIM - Saint Etienne (France).</p> | <p>Oxidation of alloys and coatings processed with Nb40wt%Al and Nb40wt%Al+30wt%Si powder mixtures. A. D'oliveira, G. Menegotto UFPR - Universidade Federal do Paraná - Curitiba (Brazil).</p> |
| 17.40 | <p>Damage and mechanical properties recovery associated with hydrogen desorption in different martensitic steels H. Morillot 1, A. Oudriss 2, J. Miallet 3, J. Creus 2, R. Millet 2, C. Berziou 2, S. Cohendoz 2, X. Feaugas 2, J.M. Sobrino 4. 1 : Cetim - Nantes (France), 2 : LaSIE, University of La Rochelle, UMR CNRS 7356 - La Rochelle (France), 3 : Lisi Automotive - Delle (France), 4 : Cetim - Senlis (France).</p> | <p>Hard anodizing of HPDC Al alloys. D. Caliari 1, G. Timelli 1, T. Salata 2, S. Maestri 2, G. Cavagnini 2, A. Manfredini 2. 1 : University of Padova - Vicenza (Italy), 2 : AlfaOssidazione - Borgosatollo (Italy).</p> |
| 18.00 | END OF THE FIRST DAY. | |
| 19.00 | OPTIONAL EVENING EVENT. | |

| | ROOM ATHENA | ROOM HERMES |
|--------------|---|---|
| | SESSION S3: PROCESSES | SESSION S11: TRIBOLOGY |
| 08.30 | <p>Determination of a new empirical Ms-formula suitable for Medium-Mn-steels. A. Watanabe 3, R. Schneider 1, K. Steineder 2 M. Okumiya 3, D. Krizan 2, C. Sommitsch 4.</p> <p>1 : Univ. of Appl. Sciences Upper Austria - Wels (Austria), 2 : Voestalpine Stahl GmbH - Linz (Austria), 3 : Toyota Technological Institute - Nagoya (Japan), 4 : Graz University of Technology - Graz (Austria).</p> | <p>Interaction of tribological coatings and lubricants. A. Gies 1, J. Becker 2, F. Seibert 1, T. Stelzig 2.</p> <p>1 : Oerlikon Surface Solutions AG - Balzers (Liechtenstein), 2 : Oerlikon Balzers Coating Germany GmbH - Bingen (Germany).</p> |
| 08.50 | <p>Uniform hardening of steel components by integrated scanning laser hardening. J. Bouquet 1, B. Peeters 1, O. Malek 2, G. Claus 3, P. Ten Haaf 2, A. Van Vlierberghe 4, B. Lauwers 1.</p> <p>1 : KU Leuven - Leuven (Belgique), 2 : SIRRIS - Diepenbeek (Belgique), 3 : SIRRIS - Gent (Belgique), 4 : Flanders Make - Leuven (Belgique).</p> | <p>Wear resistance of hot work tool steel – effect of heat treatment and correlation with mechanical properties. B. Podgornik, V. Leskovšek, F. Kafexhiu, B. Žužek. Institute of Metals and Technology - Ljubljana (Slovénie).</p> |
| 09.10 | <p>Nitriding of low alloyed steel : impact of surface preparation on industrial process reliability. B. Stauder, <i>Bodycote - Pusignan (France).</i></p> | <p>Molybdenum-Nitride based PVD Coatings for Automotive Applications. A. Gies, J. Becker 1, N. Beganovic 2, J. Karner 2, F. Seibert 2, T. Stelzig 1.</p> <p>1 : Oerlikon Balzers Coating Germany GmbH - Bingen (Germany), 2 : Oerlikon Surface Solutions AG - Balzers (Liechtenstein).</p> |
| 09.30 | <p>Effect of Aging after Gaseous Austenitic Nitriding on the Microstructure and Mechanical Properties of Low-carbon Steel. K. Kawata, T. Kidachi, <i>Oriental Engineering Co., Ltd. - Kawagoe (Japan).</i></p> | <p>Subsequent electron beam hardening of PVD coated steels – Dry sliding wear behavior of Ti1-xAlxN layers. G. Grumbt 1, R. Zenker 2, H. Biermann 1, K. Weigel 3, K. Bewilogua 3, G. Bräuer 3.</p> <p>1 : TU Bergakademie Freiberg, Institute of Materials Engineering - Freiberg (Germany), 2 : TU Bergakademie Freiberg, Institute of Materials Engineering and Zenker Consult - Freiberg, Mittweida (Germany), 3 : Fraunhofer IST - Braunschweig (Germany).</p> |
| 09.50 | <p>Kinetics analysis of austenitization in X4CrNiMo16-5-1 supermartensitic stainless steel. F. Niessen, M. Villa, J. Hald, M.A.J. Somers <i>Technical University of Denmark - Kgs. Lyngby (Denmark).</i></p> | <p>Contribution to the microstructural constitutions and properties of different nitrided as received and remelted cast irons. A. Buchwalder, H.J. Spies, J. Thronicke, N. Klose, E. Hegelmann, R. Zenker <i>IME TU Bergakademie Freiberg - Freiberg (Germany).</i></p> |
| 10.10 | COFFEE BREAK, EXHIBITION, POSTERS SESSION. | |
| | SESSION S4: SPECIAL PROCESSES | SESSION S12: CONTROL OF TREATED PRODUCTS |
| 10.50 | <p>Effects of sub-critical and heat treatments on microstructure and hardness evolution of various grades of wear resistant cast iron. F. Delaunois 1, M. Sinnaeve 2.</p> <p>1 : UMONS - Mons (Belgium), 2 : Marichal Ketin - Liège (Belgium).</p> | <p>Thermal Characteristics of Aluminium Cast Alloys. R. Colás, <i>UANL - San Nicolás De Los Garza (Mexico).</i></p> |
| 11.10 | <p>Cryogenic treatment of steel: from concept to metallurgical understanding. M. Villa, M.A.J. Somers, <i>Technical University of Denmark - Kgs. Lyngby (Denmark).</i></p> | <p>Influence of the heat-treatment on the mechanical behavior of sinter-hardened steels for applications in automotive industry. M. Gilmas 1, J. Chottin 2, E. Hug 3.</p> <p>1 : Faurecia - Caligny (France), 2 : Faurecia - Etampes (France), 3 : Normandie Université, ENSICAEN, UNICAEN, CNRS Laboratoire de Cristallographie et Sciences des Matériaux - Caen (France).</p> |

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| 11.30 | <p>Deep Cryogenic Treatment of the D2 Tool Steel. D. Hradil, P. Suchmann, J. Dlouhy, COMTES FHT a.s. - Dobruška (Czech republic).</p> | <p>A comparison of different temperature measurement methods for dual frequency induction hardening of gears. C. Grau 1, A. Osuna Arrieta 2, S. Dietrich 1, V. Schulze 1. 1 : Institute for Applied Materials - Materials Science and Engineering (IAM –WK), Karlsruhe Institute for Technology (KIT) - Karlsruhe (Germany), 2 : Facultad de Ingeniería Mecánica y Eléctrica, Universidad Autónoma de Nuevo León - San Nicolás De Los Garza (Mexico).</p> |
| 11.50 | <p>Influence of pre- and post- surface treatments on the corrosion resistance and the surface hardening of stainless steels hardened by an industrial low temperature nitrocarburizing treatment. Q. Contrepois 1, S. Chomer 2. 1 : THERMI-LYON - Lyon (France), 2 : TLD - Lyon (France).</p> | <p>Testing for hot galling resistance of materials. P.F. Cardey 1, C. Combe 1, D. Cazé 2. 1 : CETIM - Saint Etienne (France), 2 : CETIM - Senlis (France).</p> |
| 12.10 | <p>Integrated Computational Modelling of Thermo-chemical Surface Engineering of Stainless Steel. Ö. Kücükyıldız 1, M.R. Sonne 1, J. Thorborg 2, M.A.J. Somers 1, J.H. Hattel 1. 1 : Department of Mechanical Engineering, Technical University of Denmark - Kgs. Lyngby (Denmark), 2 : MAGMA GmbH - Aachen (Germany).</p> | <p>Characterization of mechanical properties of metallic foams by Instrumented indentation test. A. Nayebi, Mechanical Engineering Department, Shiraz University - Shiraz (Islamic Republic of Iran).</p> |
| 12.30 | END. | |
| 12.30 | LUNCH. | |
| | SESSION S5: PROCESSES | SESSION S13: ADDITIVE MANUFACTURING |
| 14.00 | <p>Low Pressure Carburizing of PM-components in serial production. K. Faerber 2, V. Heuer 1, P. Kauffmann 2, R. Shivanath 3, G. Schmitt 1. 1 : ALD Vacuum Technologies GmbH - Hanau (Germany), 2 : Stackpole, R&D - Aachen (Germany), 3 : Stackpole - Mississauga (Canada).</p> | <p>Essential contribution of heat treatment and surface engineering operations for metal parts made by additive manufacturing methods. P. Jacquot, G. Fürst, N. Jacquot, B. Stauder BODYCOTE - Pusignan (France).</p> |
| 14.20 | <p>Optimization of Low Pressure Carburizing and High Pressure Gas Quenching for Cr-alloyed PM parts. E. Pauty 1, P. Bertoni 1, M. Dahlström 2, M. Larsson 2. 1 : ECM Technologies - Grenoble (France), 2 : Höganäs AB - Höganäs (France).</p> | <p>New Development on Low Pressure Carburizing Techniques for Additive Manufacturing Parts. J. Kowalewski, Ipsen International - Kleve (Germany).</p> |
| 14.40 | <p>DoE – Interrupted Gas Quenching in a Single Chamber Vacuum Furnace. A. Stormvinter 1, A. Goldsteinas 2, M. Rink 3. 1 : Swerea IVF AB - Mölndal (Sweden), 2 : Ipsen USA - Cherry Valley (United States of America), 3 : Ipsen International GmbH - Kleve (Germany).</p> | <p>Manufacturing of tomorrow : a changing company in defense activity. F. Frascati, MBDA - Bourges (France).</p> |
| 15.00 | <p>Development of combined methods of application of zinc coatings on steels for increase of their corrosion resistance. L. Petrova, P. Demin, A. Kosachev Moscow Automobile and Road Construction State Technical University (MADI) - Moscow (Russian federation).</p> | <p>Transformation kinetics during heat treatment of additive manufactured AISi10Mg & X5CrNiCuNb16-4. B. Milkereit 1, C. Rowolt 2, M. Gebauer 3, B. Müller 3, T. Kamps 4, O. Kessler 2. 1 : CALOR, University of Rostock - Rostock (Germany), 2 : Chair of Materials Science, University of Rostock - Rostock (Germany), 3 : Fraunhofer Institut für Machine Tools and Forming Technology IWU - Chemnitz, Dresden (Germany), 4 : Fraunhofer Research Institution for Casting, Composite and Processing Technology IGCV - Augsburg (Germany).</p> |

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| 15.20 | <p>How to optimize surface quality of SLM metal parts ? <i>F. Moser, Airbus Safran Launchers - Vernon (France).</i></p> | <p>Influence of oxygen and humidity on quality and mechanical properties of AISiMg parts processed by Selective Laser Melting. <i>P. Forêt 1, X. Barrier 2.</i> 1 : Linde AG - Unterschleißheim (Germany), 2 : Linde France - Saint Priest (France).</p> |
| 15.40 | COFFEE BREAK, EXHIBITION, POSTERS SESSION. | |
| | SESSION S6: SURFACE HARDENING | SESSION S14: PROCESS CONTROL |
| 16.20 | <p>Short Time Austenitizing Effects on the Hardenability of Some 0.55% Carbon Steels. <i>R. Cryderman, T. Ballard, Colorado School of Mines - Golden, Co (United States of America).</i></p> | <p>Gas Nitriding: upgrading a furnace for NADCAP compliance. <i>J. Cross, Super Systems Europe - Sutton Coldfield (United Kingdom).</i></p> |
| 16.40 | <p>Gaseous thermochemical treatment of titanium and titanium alloys. <i>T. L. Christiansen, Morten S. Jellesen, Marcel A.J. Somers, Technical University of Denmark, Department of Mechanical Engineering (Denmark).</i></p> | <p>Distorsions of press formed parts after heat treatment: influence of bending parameters and heat treatment type. <i>M. Buvron, A. Maillard, G. Jalabert, E. Wasniewski CETIM - Senlis (France).</i></p> |
| 17.00 | <p>Investigation of the tempering process of martensitic AISI 4140 steel at high heating rates. <i>D. Kaiser, B. De Graaff, S. Dietrich, V. Schulze Karlsruhe Institute of Technology, Institute for Applied Materials- IAM-WK - Karlsruhe (Germany).</i></p> | <p>Comparing fast inductive tempering and conventional tempering: Effects on microstructure and mechanical properties. <i>A. Vieweg, G. Ressel, P. Prevedel, P. Raninger, S. Marsoner, R. Ebner Materials Center Leoben Forschung GmbH - Leoben (Austria).</i></p> |
| 17.20 | <p>Induction hardening: Effect of Bainite in the Case Layer on Fatigue Strength. <i>A. Stormvinter 1, J. Senaneuch 2, G. Makander 3, H. Kristoffersen 1.</i> 1 : Swerea IVF AB - Mölndal (Sweden), 2 : Swerea KIMAB AB - Kista (Sweden), 3 : Scania CV AB - Södertälje (Sweden).</p> | <p>Charpy V-notch impact test on quenching tempering low alloy steels. <i>J. Miallet 1, B. Resiak 2, P. Wanner 3.</i> 1 : LISI Automotive - Grandvillars (France), 2 : Arcelor Mittal - Gandrange (France), 3 : PSA - Belchamp (France).</p> |
| 17.40 | <p>2D and 3D numerical simulations of Laser shock peening in presence of weld residual stresses, and impact on cyclic behavior of metals. <i>E. Julian, S. Taheri, Electricité De France - Palaiseau (France).</i></p> | <p>Experimental multiscale measurements for the mechanical properties on Hot Stamped Laser Welded Blanks in Automotive Applications. <i>L. Gouton 1, L. Dusautoir 1, S. Gaied 2, V. Legrand 2, P. Feissel 1, M. Risbet 1.</i> 1 : UTC - Compiègne (France), 2 : Arcelormittal - Montataire (France).</p> |
| 18.00 | END OF THE SECOND DAY. | |
| 19.00 | GALA DINNER. | |

THURSDAY, 29 June 2017

| | ROOM ATHENA | ROOM HERMES |
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| | SESSION S7: SPECIAL TREATMENTS | SESSION S15: MODELLING OF HEAT TREATMENT |
| 08.30 | <p>Importance of surface preparation on the vacuum heat treatment and coating process of tool steel and HSS – PM. <i>S. Roggero 1, D. Franchi 1, G. Scavino 2, C. Galamand 3.</i> 1 : Trattamenti Termici Ferioli & Gianotti S.p.A. - Caselette (Italy), 2 : Politecnico di Torino - Torino (Italy), 3 : Platit - Grenchen (Switzerland).</p> | <p>Modelling induction heat treatment processes for complex parts - Computational issues. <i>F. Bay Cemef- Ecole des Mines Paristech - Sophia Antipolis (France)</i></p> |

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| 08.50 | <p>Single-piece flow case hardening for in-line manufacturing. M. Korecki 1, E. Wolowiec-Korecka 2, A. Brewka 1, P. Kula 2, L. Klimek 2, J. Sawicki 2.</p> <p>1 : Seco/Warwick - Swiebodzin (Poland), 2 : Lodz University of Technology - Lodz (Poland).</p> | <p>Sensitivity analysis on inductors design. D. Ciscato, M. Cesano SAET S.p.A. - Leini (to) (Italy).</p> |
| 09.10 | <p>Contact Fatigue Strength of Austempered Ductile Iron (ADI) in Gear Applications. D. Mevissen 1, C. Brecher 1, C. Löpenhaus 1, E. Veneri 2, S. Masaggia 2</p> <p>1 : Laboratory of Machine Tools and Production Engineering (WZL) RWTH Aachen - Aachen (Germany). 2 : Zanardi Fonderie, Minerbe - Verona (Italy).</p> | <p>Application of Nature-Inspired Algorithms to Solve Inverse Heat Conduction Problems. I. Felde, Z. Fried, S. Szénási Obuda University - Budapest (Hungary).</p> |
| 09.30 | <p>Brazing filler metal behavior and metallurgical interactions with metal sheets for heat exchangers production. E. Martin 1, J. Hugues 2, J. Rocchi 1, E. Andrieu 3.</p> <p>1 : Liebherr Aerospace - Toulouse (France), 2 : IRT Saint-Exupéry - Toulouse (France), 3 : CIRIMAT - Toulouse (France).</p> | <p>Quenching : simulation is ready to optimize the process. C. David 1, A. Belhajria 1, M. Khalloufi 2, R. Valette 2, Y. Mesri 2, E. Hachem 2.</p> <p>1 : Sc consultants - Saint Etienne (France), 2 : Cemef - Sophia Antipolis (France).</p> |
| 09.50 | <p>Generation of residual stresses during the quenching of titanium alloys. Effect of phase transformations. D. Maréchal 1, J. Teixeira 1, G. Geandier 1, F. Lefebvre 2, S. Denis 1.</p> <p>1 : Institut Jean Lamour, UMR 7198 CNRS, Université de Lorraine - Nancy (France), 2 : Centre technique des industries mécaniques (CETIM) - Senlis (France).</p> | <p>Simulation of turbulent boiling with phase change and industrial steel quenching processes. M. Khalloufi 1, R. Valette 1, E. Massoni 1, E. Hachem 1, I. Poitrait 2, Z. Chebbo 2, C. David 3.</p> <p>1 : Cemef Mines ParisTech - Sophia Antipolis (France), 2 : Industeel ArcelorMittal CRMC - Le Creusot (France), 3 : Sciences Computers Consultants - Saint-Etienne (France).</p> |
| 10.10 | <p>Surface modification of aluminum powder using barrel nitriding. M. Okumiya 1, H. Takeuchi 1, Y. Tsunekawa 1, J.H. Kong 1, K. Nanbu 1, S.G. Kim 2, M. Yoshida 3.</p> <p>1 : Toyota Technological Institute - Nagoya (Japan), 2 : Korea Institute of Industrial Technology - Incheon (Korea, republic of), 3 : Daido University - Nagoya (Japan).</p> | <p>Metallurgical principles of microstructure formation in sub-zero treaded cold-work tool steels. P. Jurci 1, J. Ptacinova 1, M. Sahul 1, M. Domankova 1, I. Dlouhy 2.</p> <p>1 : Faculty of Materials Sciences and Technology in Trnava - Trnava (Slovaquie) 2 : Institute of Physics of Materials, Academy of Sciences of the Czech Republic - Brno (Slovaquie).</p> |
| 10.30 | COFFEE BREAK. | |
| | SESSION S8: CONTROL AND MODELING | SESSION S16: COATING TECHNOLOGY |
| 11.10 | <p>Use of a probe to control low-pressure nitriding treatments. P. Jacquet 1, M. Devienne 2, A. Gokelaere 1, N. Duret 1.</p> <p>1 : Université de Lyon, ECAM Lyon, INSA-Lyon, LabECAM, Lyon, (France), 2 : LaBoMaP, Arts et Métiers ParisTech, Cluny (France), 2BMI Fours Industriels, Saint-Quentin-Fallavier, (France),</p> | <p>Heat treatment behaviour of a high speed steel by mechanical milling and spark plasma sintering M. Pellizzari, F. Deirmina University of Trento - Trento (Italy).</p> |
| 11.30 | <p>Combined X-ray diffraction and photothermal radiometry methods for in-process analysis of nitriding treatments. J. Dong 1, J. Epp 1, H. Prekel 2, H.W. Zoch 1, A. Fischer 2.</p> <p>1 : IWT Bremen - Bremen (Germany), 2 : Bimaq - Bremen (Germany).</p> | <p>Abrasive impact erosion of composite Fe-based hardfacings with coarse metal reinforcement. T. Simson 1, R. Tarbe 1, T. Simson 1, M. Tarraste 1, M. Viljus 2, P. Kulu 1.</p> <p>1 : Dpt of Materials Engineering Tallinn University of Technology - Tallinn (Estonia), 2 : Center for Materials Research Tallinn University of Technology - Tallinn (Estonia).</p> |
| 11.50 | <p>Study of the high-temperature vacuum carburizing phenomenon and the carburizing prediction model based on Big data approach. S. Hiramatsu, K. Inagaki, H. Sakaue, I. Yamamoto Toyota Motor Corporation - Toyota (Japan).</p> | <p>Failure analysis of the wc-coating on continuous hot-dip galvanizing line process roll. L. Wang, Baosteel - Shanghai (China).</p> |

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| 12.10 | Sensor system for controlled carbonitriding. <i>H. Klümper-Westkamp, M.G. Skalecki, H.W. Zoch</i> Stiftung Institut für Werkstofftechnik - Bremen (Germany). | Surface Modification of Mg Alloy AZ91D by Means of Electron Beam Remelting and Alloying for Improved Surface Properties. <i>K. Fritzsch 1, A. Buchwalder 1, R. Zenker 2.</i> 1 : TU Bergakademie - Freiberg (Germany), 2 : Zenker Consult - Freiberg (Germany) |
| 12.30 | Carbonitriding: kinetic modeling of acetylene decomposition at high temperature and low pressure. <i>E. Vyazmina 1, J. Sheng 1, S. Jallais 1, L. Bustamante-Valencia 2, P. Bruchet 1, F.P. Richard 2.</i> 1 : Air Liquide - Jouy-En-Josas (France), 2 : Air Liquide - Bagneux (France). | Advanced high pressure cold spray coatings and selected applications. <i>M. Ducos 1, P. Richter 2, J. Kondas 2.</i> 1 : Ducos Consultant - Mornas (France), 2 : Impact Innovations GmbH - Haun/Tattenkirchen (Germany). |
| 12.50 | Simulation of Nitriding Processes. <i>K-M. Winter,</i> Process-Electronic GmbH - Heiningen (Germany). | The effect of heat treatment sequences on aluminide coating deposited by CVD on Rene80. <i>M. Bozorg Nezhad Nobijari, H. Hasani, A. Bakhshi</i> Coating Design and Qualification Expert - Karaj (Islamic Republic of Iran). |
| 13.10 | | CLOSING CEREMONY. |
| 13.30 | LUNCH. | |
| 14.30 | END OF THE CONGRESS. | |

POSTER SESSIONS

PROCESS CONTROL

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| Optimization of mechanical properties of D6AC steel by controlling austenitizing and spheroidizing processes. Y. I. Son, Agency for defense Development - Daejeon (Republic of Korea). | Corrosion inhibition of copper in 0.1M Na2SO4 BY 1,3,4-THIADIAZOLE-2,5-DITHIOL(DMTD). S. Echihi, Laboratory of Water and Environment, Faculty of Sciences of El jadida - Rabat (Morocco). |
| Production waste due to momentary short circuits or overloads in resistive furnaces for Heat Treatment. How to solve the problem with a new, patented technology embedded in power controller. F. Gaetani, Gefran Spa - Provaglio d'isseo (Italy). | Austempering massive parts. D. Forgeoux, Arcellor Mittal, J. Miallet, LISI Automotive - Grandvillars (France). |
| Development of photonic materials by Sol-Gel. S. Belhait, universit  d'Annaba - Annaba (Algeria). | TMP 4.0: The Real-Time Predictions of Microstructure Evolution During the Hot Rolling of Steel Bars – An Application of the Industry 4.0 Concept Toward an Intelligent Steel Manufacturing Process. Z. Cancarevic, Georgsmarienh tte GmbH (Germany). |
| Effect of thermal history on the formation of D03 ordered structure in Fe-Ga alloys. Z. Belamri, University Fr re Mentouri - Constantine (Algeria). | Hot Forming Processes require accurate Temperature Measurement. E. Niessner, Lumasense Technologies - Frankfurt (Germany). |
| Discharge frequency and reagent choice effects on robustness of silicon nitride thin layers deposited by PECVD (Plasma-Enhanced Chemical Vapor Deposition). C. Cazako, CEMEF - Sophia Antipolis (France). | Application and practice of ceramic fiber block technology in continuous annealing furnace. L. Wang, Baosteel - Shanghai (China). |
| Online Liquid Quenchant Database. I. Felde, Obuda University - Budapest (Hungary). | |

SURFACE TECHNOLOGIES

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| <p>Wear resistance of PVD TiAlN coating applied on high-speed steel S390 MC. D. Landek, University of Zagreb, Faculty of Mechanical Engineering and Naval Architecture - Zagreb (Croatia).</p> | <p>Understanding of galling mechanisms of stainless steels and effect of surface treatments: ASTM G-98 galling test and microstructural characterizations. T. Lesage, UTC - Compiègne (France).</p> |
| <p>Application of PACVD gradient multilayer TiCN: From laboratory tests to from to industrial trials. S. Kovačić, University of Zagreb, Faculty of Mechanical Engineering and Naval Architecture - Zagreb (Croatia).</p> | <p>Characterization of Al+Cr diffusion coatings processed with different Cr source content. A.S. D'Oliveira, UFPR - Universidade Federal do Paraná - Curitiba (Brazil).</p> |
| <p>Development of a protective thin coating deposited through CAE – PVD for a multipoint cutting tool. F. Gobber, Politecnico di Torino, Dept. of Applied Science and Technology (Italy).</p> | <p>Influence of different hardfacing processes on microstructure and wear performance of tungsten carbide reinforced nickel-base alloys. S. Lang, R. Schneider, Univ. of Appl. Sciences Upper Austria (Austria).</p> |
| <p>Influence of surface finishing and operative parameters on Al – alloy soldering resistance of a modified AISI H13 hot – work tool steel. F. Gobber, Politecnico di Torino, Dept. of Applied Science and Technology - Turin (Italy).</p> | <p>Sliding wear behavior of PVD CrN-based Coatings. K. Bouzid, Département de métallurgie et genie des matériaux université Badji Mokhtar - Annaba (Algeria).</p> |
| <p>Chromium free coatings for Aluminium alloys. J. Frayret, IPREM UMR CNRS/UPPA 5254 Université de Pau (France).</p> | <p>SnO₂; Thin film deposited by electrochemical method ; application photodégradation of methylene blue. S. Kaizra, Houari-Boumediène University - Algiers (Algeria).</p> |
| <p>The influence of Arabic gum on the catalytic properties of Ni-Mo alloy coatings prepared by electrolytic route. H. Ben Temam, Laboratoire de Physique des Couches Minces et Applications Université Mohamed Khider - Biskra (Algeria).</p> | <p>Structural and Electrochemical Study of Ni-Mo Alloy Coatings Electrodeposited at Different Current Densities. H. Ben Temam, Laboratoire de Physique des Couches Minces et Applications Université Mohamed Khider- Biskra (Algeria).</p> |
| <p>LIPSS (Laser Induced Periodic Surface Structures) surface functionalization and route to industrial applications. J. Granier, A. Hamri, B. Grangon, Manutech. C. Mauclair, X. Sedao, Université de St. Etienne. V. Dumas, ENISE, S. Valette, Ec. Lyon (France).</p> | |

THERMAL AND THERMOCHEMICAL PROCESSING

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| <p>The effects of low temperature plasma nitriding on surface properties of implant grade Titanium alloy. I. Kumik, University of Zagreb, Faculty of Mechanical Engineering and Naval Architecture - Zagreb (Croatia).</p> | <p>Control of carbide precipitation and mechanical properties in FeCrMoVC tool steel. S.J. Lee, Chonbuk National University - Jeonju (Republic of Korea).</p> |
| <p>Influence of Structural State on Mechanical Properties for Spring Steel 51CrV4. D. Hauserova, COMTES FHT a.s. - Dobruška (Czech republic).</p> | <p>Steels for Gears Used in Automobile Industries of Countries. A. Thikonov, ROMIT - Tolyatti (Russian federation).</p> |
| <p>Morphological Characterization and phases evolution of coating substrate interface on steel aluminized. S. Mendil, Mouloud Mammeri University - Tizi Ouzou (Algeria).</p> | <p>Simulation of the evolution of the (TaC/Ta₂C) bilayer formed on carburised and annealed Tantalum. L. Carette, CEA, DAM, Valduc / LaBoMaP, Arts et Métiers ParisTech / Université de Lyon, ECAM Lyon, INSA-Lyon, LabECAM (France).</p> |

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| <p>Study of differences between results from laboratory tests and test of real tools for selected tool steels. M. Kuřik, Czech Technical University in Prague, Faculty of Mechanical Engineering - Prague (Czech republic).</p> | <p>Regulation of phase composition of nitrated layers in iron and steel during thermo-gas cyclic nitriding L. Petrova, I. Belashova, A. Sergeeva, Moscow Automobile and Road Construction State Technical University (MADI) - Moscow (Russian federation).</p> |
| <p>Best Practices for the Application of Quenching Oils. F. Salawa, Houghton Deutschland GmbH - Dortmund (Germany).</p> | <p>The influence of heat treatment on microstructural features and surface layer microstructure of AZ31 magnesium alloy. J. Mizera, Warsaw University of Technology - Warsaw (Poland).</p> |
| <p>ZeroFlow gas nitriding and nitrocarburizing as a method of precise layer creation on machines, vehicles and tools parts with the minimal use of ammonia consumption and gas emission. J. Malinowski, L. Maldzinski, SECO/WARWICK Europe Sp. z o.o. - Swiebodzin (Poland).</p> | <p>Measurement using 3-omega method of the thermal conductivity of polyimide films. A.A. Guermoudi, Hassiba Benbouali university of Chlef - Tlemcen (Algeria).</p> |