ATZK ASSOCIATION for the Heat Treatment of Metals

Association for the Heat Treatment of Metals

Preliminary

Program

European Conference on Heat Treatment 2025

and

5th International Conference on Heat Treatment and Surface Engineering in Automotive Applications

4 – 6 June 2025

Prague, Czech Republic

Conference sponsored by

WEDNESDAY, 4.6.2025

8:00 Registration

SESSION A
MAIN CONFERENCE HALL

Opening Ceremony

9:00 Introduce and Welcome
Filip Vráblík, ATZK President

Keynote lectures

9:10 **Application of physics-informed neural networks for heat treatment operations**
I.Felde, IFHTSE, *France*

Opening of the Exhibition

Digitalization - Industry 4.0, Artificial Intelligence (AI)
Quenching technology, equipment and quenchants

Chairpersons:
Filip Vráblík - ATZK

9:50 **From automation to intelligent autonomy: AI and Edge Control in sustainable heat treatment**
P.Sherwin, *Eurotherm by Watlow, United States*

10:10 **Analysis of effects due to stepped quenching during case hardening of gears**
M.Hunkel, *Leibniz-Institut für Werkstofforientierte Technologien – IWT, Germany*

10:30 **Water spray quenching – a new process option for intensive quenching of serial parts**
V.Heuer, *ALD Vacuum Technologies GmbH, Germany*

10:50 – 11:10 Coffee Break
1st Floor by Exhibitions

11:10 **Limitations of standard probes for the measurement of spray quenching**
S.MacKenzie, *Quaker Houghton, United States*

11:30 **Modern quenching oils for use in low-pressure carburising processes: requirements – properties – applications**
R.Braun, *BURGDORF GmbH & Co. KG, Germany*

11:50 **Vacuum oil quenching system : an enabler for treatment of massive pieces**
Ch.Moiroud, *ECM Technologies, France*

12:10 **Cooling curve analysis of an aqueous polyvinylpyrrolidone (PVP) polymer quenchant as a function of fluid velocity**
S.Gallegos Cantu, *Quaker Houghton, United States*

12:30 **Flexible and modular multiprocess installations**
K. Beaujon, *ECM Technologies, France*

12:50 – 14:00 Lunch
1st and 2nd Floors

Thermochemical Treatments
Treatment of Additive Manufactured Parts

Chairpersons: Massimo Pellizzari - IFHTSE

14:00 **Microstructure and mechanical properties of low-carbon steels quenched and tempered after gas carburizing, carbonitriding, and nitriding**
K.Kawata, *Kawata PE Office, Japan*

14:20 **Effectiveness of surface activation in correlation with surface finishing condition for expanded austenite formation during plasma nitrocarburizing of AISI 316L**
S.M. Jafarpour, *Technische Universität Bergakademie Freiberg, Germany*

14:40 **Influence of HIP on the mechanical properties of selected metallic materials**
T.Čegan, *Technical University of Ostrava, Czech Republic*

15:00 **Center of excellence for medical applications**
J.Stanislav, *JST Consultancy, Czech Republic*

15:20 **Heat treatment strategies for tailoring the microstructure of aluminium matrix composites fabricated via LPBF**
M.Bona, *Politecnico di Milano, Italy*

15:40 – 16:00 Coffee Break
1st Floor by Exhibitions

Heat Treatment of Steels, Non Ferrous and Complex Alloys

Chairpersons: Pavel Novák – University of Chemical Technology in Prague
Bernard Kuntzmann – Listemann AG

16:00 **Grades for power transmission parts with improved tempering and fatigue resistance**
T.Picot, *Arcelormittal Maizieres Research SA, France*

16:20 **Intermetallic composites as wear resistant materials**
P.Novák, *University of Chemical Technology in Prague, Czech Republic*

16:40 **Mechanical properties of 6000 series aluminum substrates joined together using a flux-free brazing technology in a graphite vacuum furnace**
A.Hadian, *University of Applied Science Northwestern Switzerland, Switzerland*

17:00 **Effect of heat treatment on the microstructure and properties of FeSi-NiAl composite prepared by induction melting**
V.Kaloč, *Technical University of Ostrava, Czech Republic*

17:20 **Innovations in vacuum aluminum brazing furnaces for contemporary EV thermal management systems**
G.Valsecchi, *TAV VACUUM FURNACES, Italy*

SESSION B
MEETING´S ROOM

Chairpersons: Martin Kuřík

14:00 **Reduction of distortion by using of fixture hardening machines**
H. Juretzko, *HEESS GmbH & Co KG, Germany*

14:20 **Effect of laser shock peening and hot isostatic pressing on the microstructure of MoNiCr nickel based alloy**
D.Bricín, *Research Centre Řež, Czech Republic*

14:40 **Effect of heat treatment on mechanical properties, microstructure and corrosion resistance of M789 steel produced by LPBF method**
A.Málková, *University of West Bohemia in Pilsen, Czech Republic*

15:00 **CQI-9 Guideline is an opportunity or a burden?**
S.Rašková, *Czech Republic*

15:20 **Cleaning for heat treating**
S.MacKenzie, *Quaker Houghton, United States*

15:40 – 16:00 Coffee Break
1st Floor by Exhibitions

17:40 END of the first day

19:00 – 20:00 Visit The St. Nicholas Church with a Concert

THURSDAY, 5.6.2025

MAIN CONFERENCE HALL

Surface Hardening (Induction, Laser, Electron Beam)
Hydrogen in Heat Treatment Industry

Chairpersons:

9:00 **Hidden potential of stainless steel: The role of low-temperature surface hardening before DLC coating in improving tribological performance**
M.Wendel, *Bodycote Specialist Technologies GmbH, Germany*

9:20 **Laser hardening of complex geometries with dynamic beam shaping and tempera-ture field control**
M.Seifert, *Fraunhofer IWS Dresden, Germany*

9:40 **Homogenization of the element distribution during wire electron beam cladding of CuAl8 onto AlSi10Mg**
P.Hengst, *TU Bergakademie Freiberg, Germany*

10:00 **Hydrogen susceptibility linked to the mechanical properties and microstructural aspects of common steel for future decarbonated mobility**
S.Clemang, *ABS Centre Métallurgique, France*

10:20 **Hydrogen in high-pressure gas quenching: creating opportunities**
D.Kraus, *Aichelin Holding GmbH, Austria*

10:40 – 11:00 Coffee Break
1st Floor by Exhibitions

Numerical Simulation in Heat Treatment

Chairpersons: Imre Felde - IFHTSE
Viktor Novák – MEDUNA vacuum hardening plant

11:00 **Numerical modelling of the carburization - quenching process in steels**
B.A.Salim, *GeePs laboratory, France*

11:20 **CFD simulation of air quenching**
A.Cardon, *Safran Tech, France*

11:40 **Optimizing gas flow in a furnace through numerical simulation: A case study using qobeo®**
L.Sardo, *Sciences Computers Consultants, France*

12:00 **Optimal design of steel grades to meet a target hardenability profile through evolutionary computation and autoencoders**
V.Colla, *Scuola Superiore Sant'Anna, TeCIP Institute, Italy*

12:20 **Importance of radiative heat transfer in industrial furnaces: insights from numerical simulation of single and multi-part heating**
M.Binagot, *Transvalor S.A, France*

12:40 – 14:00 Lunch
1st and 2nd Floors

Testing and Characterization of Heat Treated Parts

Chairpersons:
Klára Tesárková – Bodycote HT s.r.o.

14:00 **Non-destructive evaluation of layers after thermo-chemical treatment**
K.Tesárková, *Bodycote HT s.r.o., Czech Republic*

14:20 **Mössbauer spectroscopy and its application to the characterization of heat treated parts**
J.Pechoušek, *Palacký University Olomouc, Czech Republic*

14:40 **Laser-ultrasonics as an NDT method for non-contact determination of the surface hardening depth**
W.Haderer, *Research Center for Non Destructive Testing (RECENDT) GmbH, Austria*

15:00 **Phosphorus embrittlement in austenite during heat treatment of an air hardening steel**
D.David, *University of Applied Sciences Upper Austria, Austria*

15:20 **Metallurgical characterization of electrodeposited hard chromium from a trivalent inorganic electrolyte**
R. Le Barbenchon, *La Rochelle Université, France*

15:40 – 16:00 Coffee Break
1st Floor by Exhibitions

16:00 -17:00
POSTER SESSION

High surface hardening depths in large rolls and how specially adapted converter technology helps to achieve them
Ch.Tränkner, *ITG Induktionsanlagen GmbH, Germany*

Annealing treatment and microstructure analysis on the electroplating Ni-B alloys prepared in TMAB enriched watts baths
I.S.Yu, *National Dong Hwa University, Taiwan*

Local temperatures in mechanical alloying
J.Jeníček, *University of Chemistry and Technology, Czech Republic*

Changes in mechanical properties of medium manganese steel after forming and heat treatment
R.Leták, *University of West Bohemia in Pilsen, Czech Republic*

Press-hardening of high carbon low-density steels
F.Votava, *University of West Bohemia in Pilsen, Czech Republic*

Analysis of heat treatment effects on the microstructure and mechanical properties of 3D-printed and conventionally manufactured H11 steel
P.Fialová, *University of West Bohemia in Pilsen, Czech Republic*

Innovative heat-treatment for manufacturing structural parts from high strength aluminum alloys
M.Kumar, *EBNER Industrieofenbau GmbH, Austria*

17:00 END of the second day

17:30 Guide Tour at the Restaurant Cerveny Jelen

19:00 - 22:00 Gala Dinner

Restaurant Cerveny Jelen

FRIDAY, 6.6.2025

MAIN CONFERENCE HALL

9:00 – 11:00 Panel Discussion

Chairpersons:
Filip Vráblík - ATZK

R&D
Massimo Pellizzari, *AIM / IFHTSE, Italy*
Masahiro Okumiya, *JSHT / IFHTSE, Japan*

Heat Treatment Companies
Thomas Waldenmaier, *AWT / Bosch, Germany*
Yoichi Watanabe, *JSHT, Japan*

Steel Industry
Francesca Maurigh, *AIM / Acciaierie Bertoli Safau, Italy*

Car Manufacturers
Martin Hrdlička, *Škoda Auto, Czech Republic*

11:00 – 11:20 Coffee Break
1st Floor by Exhibitions

Sustainability in Heat Treatment and Surface Engineering
Energy Savings and CO2 Reduction, Energy Efficiency Enhancement

Chairpersons: Václav Hošek, Ecosond s.r.o.

11:20 **Heat treatment path towards sustainable and CO2-neutral manufacturing through digital tools and renewable fuels**
P.Kus, *Air Products PLC, United Kingdom*

11:40 **High-temperature heat pumps for waste heat upgrading in industrial heat treatment**
J.Špale, *Czech Technical University in Prague, Czech Republic*

12:00 **Innovations in high power laser cladding: the COAXquattro and Flextrack systems for enhanced manufacturing efficiency**
L.Toma, *Fraunhofer IWS Dresden, Germany*

12:20 **Prediction of power and energy demand for hybrid furnaces to optimize the use of fluctuating green energy sources**
M.Hellwig, *Ipsen International GmbH, Germany*

12:40 **How can low pressure carburizing save your money and increase process efficiency?**
Ł. Chwiałkowski, *SECO/WARWICK S.A, Poland*

13:00 **Energy and CO2 emission evaluation of a vacuum gas quenching process**
B. Özdeşlik, *Sistem Teknik Industrial Furnaces, Turkey*

13:20 **Announcement of the Poster Award winner, sponsored by Burgdorf GmbH**

13:30 **Announcement of the Aichelin Young Speakers Award winner, sponsored by Aichelin of Mödling**

13:40 **Announcement of the European Conference on Heat Treatment 2026**

13:45 **Closing Ceremony**

13:50 **End of the Conference**

13:50 – 14:30 Lunch
1st and 2nd Floors

List of Exhibitors 2025

1st Floor

Gold Sponsor
4.5x1.5 m
table
2x chairs
counter
brochure stand

Silver Sponsor
2.5x1 m
table
2x chairs
counter
brochure stand

Exhibition
2x1 m
table
2x chairs
brochure stand

1 Fours Industriels BMI + IVA SCHMETZ GmbH

2 Air Products spol. s r.o.
3 REALISTIC a.s.
4 Cronite CZ
5 BURGDORF GmbH & Co. KG

6 ITG Induktionsanlagen GmbH
7 ROTANEO s.r.o.
8 Transvalor S.A.
9 Nippon Kornmeyer Carbon Group GmbH
10 Hi-Tech engineering srl
11 TAV VACUUM FURNACES SPA
12 Eurotherm By Watlow

13 HTS vacuum furnaces Srl
14 AICHELIN Group
15 ALD Vacuum Technologies GmbH
16
17 COMTES FHT a.s.
18 ELTRO GmbH
19 Wuxi Junteng Fanghu Alloy Casting Co., Ltd

20 SECO/WARWICK S.A.
21 Pfeiffer Vacuum Austria
22 MEAPFORNI S.R.L.
23 ICMI SRL
24 Ipsen International GmbH