

Tuesday, 27th of April 2021

09:00-09:20	No. schedule	1. Opening Session	Speaker-name	Institution/Company
9:00-9:05	5 min	Greetings Chairmen	Thomas Lübben/Jörg Kleff	(Chairmen, Germany)
9:05-9:10	5 min	Greetings IFHTSE	Eva Troell	(IFHTSE president, Sweden)
9:10-9:20	10 min	Organizational remarks	Thomas Lübben/Jörg Kleff	(Chairmen, Germany)
9:20-10:50		2. Gas Quenching	Chair: Olaf Keßler, Thomas Waldenmaier	
09:20-10:00	1 40 min	<u>Keynote lecture</u> : Quenching processes in gases	Eva Troell	(IFHTSE president, Sweden)
10:00-10:25	2 25 min	The long-term perspective – distortion capability of advanced case hardening	Volker Heuer	(ALD Vacuum Technologies GmbH, Germany)
10:25-10:50	3 25 min	Flexible and modular multi-process installations: an enabler for distortion control and decarbonation	Pierre Bertoni	(ECM Technologies, France)
10:50-11:05	15 min	Break		
11:05-12:45		3. Determination of heat transfer	Chair: Olaf Keßler, Thomas Waldenmaier	
11:05-11:30	4 25 min	An overview of researches, standardization, activities and developing prototypes on test systems for quenchant characterization	Kyozo Arimoto	(Arimotech Ltd., Japan)
11:30-11:55	5 25 min	Experimental determination of heat transfer using a polymer solution shower during induction hardening	Maria Kadanik	(University of Rostock, Germany)
11:55-12:20	6 25 min	Instrumentation study for aspersion cooling experiments aiming optimal estimation of the heat flux dissipation by 2D inverse heat conduction problems	Arthur Oliveira	(IRT M2P Metz, France)
12:20-12:45	7 25 min	Investigation of heat transfer in arrays of water jets modelling/simulation and experimental approach	Nithin Mohan Narayan	(Leibniz-Institute for Materials Engineering IWT, Germany)
12:45-13:45	60 min	Lunchbreak		
13:45-15:40		4. New aspects of quenching in liquids	Chair: Eva Troell, Rainer Fechte-Heinen	
13:45-14:25	8 40 min	<u>Keynote lecture</u> : Quenching processes in fluids	Scott MacKenzie	(Quaker Houghton Inc., USA)
14:25-14:50	9 25 min	Advanced developments in the field of liquid quenchants in order to the technological progress and the increased requirements for environmental protection.	Rainer Braun	(Burgdorf GmbH & Co. KG, Germany)
14:50-15:15	10 25 min	Applying of electric potential to control the quenching process of aluminium alloys	Peter Krug	(TH Köln, Germany)
15:15-15:40	11 25 min	Monitoring product temperature in a combined carburizing furnace and oil quench bath	Steve Offley	(PhoenixTM Ltd., UK)
15:40-15:55	15 min	Break		
15:55-17:35		5. Quenching and partitioning, quenching and tempering, austempering	Chair: Eva Troell/Rainer Fechte-Heinen	
15:55-16:20	12 25 min	Investigation of the tempering and partitioning behaviour of a martensitic stainless steel at different quenching and tempering temperatures	Simona Kresser	(FH-Wels, Austria)
16:20-16:45	13 25 min	Q&T versus Q&P - a tough competition - Comparison of the hardness-toughness relationship of medium-Mn steels after Q&T and Q&P treatments	Reinhold Schneider	(FH-Wels, Austria)
16:45-17:10	14 25 min	Experimental determination and modelling of tempering effects of martensite during quenching and annealing of a bearing steel EN 100Cr6	Martin Hunkel	(Leibniz-Institute for Materials Engineering IWT, Germany)
17:10-17:35	15 25 min	Development of a prototype austempering plant with controlled spray cooling	Sven Wagner	(Heess GmbH & Co. KG, Germany)

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09:00-10:40	No.	6. Tools for distortion understanding and case studies on distortion problems		Chair: Michael Jung/Filip Vráblik
9:00-9:25	16	25 min	Simulated strains-based approach for explaining distortion and residual stress in quenched pure iron cylinder	Kyozo Arimoto (Arimotech Ltd., Japan)
9:25-9:50	17	25 min	Advanced distortion analysis in the complex plane	Holger Surm (Leibniz-Institute for Materials Engineering IWT, Germany)
9:50-10:15	18	25 min	Dimensional stability of low temperature surface hardened stainless steel components	Alexandra Bauer (Bodycote, Germany)
10:15-10:40	19	25 min	Influence of the quenching process on the distortion behavior of a weight-reduced counter gear	Thomas Lübben (Leibniz-Institute for Materials Engineering IWT, Germany)
10:40-10:55		15 min	Break	
10:55-12:25		7. Distortion Engineering by controlled production processes		Chair: Michael Jung/Filip Vráblik
10:55-11:35	20	40 min	<u>Keynote lecture:</u> Quenching and distortion	Rainer Fechte-Heinen (Leibniz-Institute for Materials Engineering IWT, Germany)
11:35-12:00	21	25 min	Application of the Distortion Engineering Methodology to Quenched and Tempered Steam Turbine Blades	Giulio Lucacci (C*Blade S. p. A., Italy)
12:00-12:25	22	25 min	Cost- and resource-saving gearbox production by the use of distortion controlled inductive fixture hardening - A big step forward in gear manufacturing	Stefan Knauf (EMA Indutec GmbH, Germany)
12:25-13:25		60 min	Lunchbreak	
13:25-14:40		8. Distortion Engineering by controlled quenching processes and TRIP		Chair: Scott MacKenzie/Reinhold Schneider
13:25-13:50	23	25 min	Model-Based Distortion Reduction of Steering Racks	Frank Sarfert (Robert Bosch GmbH, Germany)
13:50-14:15	24	25 min	Reducing Distortion during Quenching of Steel Components using a Controlled Cooling Method	Justin Sims (DANTE Solutions, Inc., USA)
14:15-14:40	25	25 min	Transformation Plasticity in carbonitrided PM-Steels: Quantification of plasticity effects in dependence of carbon, nitrogen and density	James Damon (Karlsruhe Institute of Technology KIT, Germany)
14:40-14:55		15 min	Break	
14:55-16:10		9. In-situ analysis of material behaviour during heat treatment processes		Chair: Scott MacKenzie/Reinhold Schneider
14:55-15:20	26	25 min	Time-resolved investigations during low pressure carburizing by means of in-situ synchrotron X-ray diffraction.	Ogün Baris Tapar (Leibniz-Institute for Materials Engineering IWT, Germany)
15:20-15:45	27	25 min	Secondary tempering of a low-alloy steel with nanobainitic or martensitic microstructure: experimental study and simulation	Steve Gaudes (Institute Jean Lamour, France)
15:45-16:10	28	25 min	Effect of carbon and nitrogen enrichment in the austenitic field on the formation of microstructures and residual stresses in carburized and carbonitrided low-alloyed steel parts: experimental study and simulation	Julien Teixeira (Institute Jean Lamour, France)
16:10-16:30		10. Closing Session		
16:10-16:20	29	10 min	Aichelin Young Speaker Award	Klaus Buchner (Aichelin Holding GmbH, Austria)
16:20-16:25	30	5 min	Announcement: Next ECHT Conference in 2022	Reinhold Schneider (FH-Wels, Austria)
16:25-16:30	31	5 min	Conclusions, closing ceremony	Jörg Kleff (Chairmen, Germany)