Conference Chairman

Prof. Dr.-Ing. Frank Atzler
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Conference Location

Hilton Dresden
An der Frauenkirche 5, 01067 Dresden, Germany

Registration

IMAS GmbH, Dorfstrasse 10F
93188 Dettenhofen, Germany

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The registration form at https://aufladetechnische-konferenz.de contains further information and the general terms and conditions.

Participation Fee	onsite	virtual participation
Teilnehmer	1.695,- €	1.200,- €
Hochschulangehörige	1.200,- €	950,- €

All prices plus 19 % VAT!

The conference fee includes the participation in the conference, the conference documents as well as for the participants on site the catering during the coffee and lunch breaks and the evening event.

Participation is free of charge for speakers.

Associated Exhibition

An associated exhibition runs alongside the conference where interested companies will have the opportunity to present their products, processes and services on the subject and to explain them through personal consultation. Further information can be obtained from the conference management or at our website https://aufladetechnische-konferenz.de.

Hotel Reservation

Please have a look at our conference website for booking infomation: https://aufladetechnische-konferenz.de.

28th SUPERCHARGING CONFERENCE 2024

The 28th SUPERCHARGING CONFERENCE on September 26th/27th, 2024 in Dresden provides a forum to experts from all over the world. The latest developments in supercharger technologies will be presented by OEMs and suppliers. The conference will be held in German and English supported by simultaneous translation. The conference will also be held as a hybrid event.

Supercharging is one essential key technology in future powertrain systems. It is imperative for high-efficiency combustion engines, including engines run on eFuels like hydrogen, ammonia and methanol. Also, fuel cells rely on optimised supercharging for best operating conditions. Supercharging not only facilitates high power densities from these power plants, but also helps to reduce emissions. One challenge is the transient operation of turbo chargers. In order to improve the delay in boosting upon sudden load demands, new solutions are being developed. In particular downsized, friction reduced engines with low exhaust gas mass flows pose a challenge which is approached by smaller turbochargers, the variable turbine and compressor geometries as well as sequential or multi-stage charging. These technologies are also important for fuel cells! Apart from exhaust gas other sources of energy are being used in order to facilitate extremely short response times i.e. with mechanically or electrically driven chargers. With respect to the power plant emissions exhaust gas recirculation poses an additional challenge to boosting as well as the potential necessity for oil free operation. Particular operating regimes, e.g. the early or late intake valve closing or the increased air demand for particular fuels as well as lean burn systems put additional burdens on the charging system. The introduction of emissions testing under realistic operating conditions (RDE) requires additional solutions for optimum operation of the powertrain and its charging system.

The optimization of supercharging systems requires a thorough knowledge of the overall powertrain system. Simulation models in 0D, 1D and 3D help to predict the operational behaviour very well. The 3D calculation is an important tool for the optimization of the intake, reaction and exhaust paths. Today the control of the corresponding systems is also done by real-time and physical models. These must be tested, validated and improved on highly dynamic test benches.

This requires a enormous effort of all members in the supercharging community as well as learning and networking, but also fruitful competition !

With respect to this, the SUPERCHARGING CONFERENCE in Dresden focuses on recent developments, results and methods. Speakers will be development and research engineers, research institutes and manufacturers of supercharging systems and components. A wide range of powertrains will be discussed at the conference, ranging from motorcycle and car engines up to the largest slow-speed two-stroke marine engine.

This conference offers an excellent exchange of knowledge and experience, as well as the networking opportunities for our community!

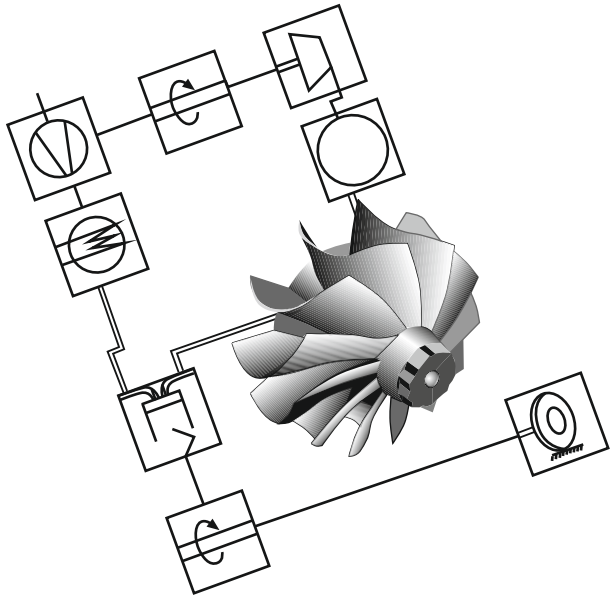
Main focus subjects:

- New supercharged diesel-, gasoline- and gas engines
- Hydrogen engines
- Methanol and Ammonia engine
- Innovative (electric) supercharging conceptions and components
- Charging systems for fuel cells
- Numerical simulation methods
- Charging to reduce exhaust emissions
- Complete system performance; control strategies
- Development methods and tools for components and for full engines

28. AUFLADETECHNISCHE KONFERENZ 2024

26. – 27. SEPTEMBER, DRESDEN

Tagungsprogramm



28th SUPERCHARGING CONFERENCE 2024

SEPTEMBER 26 – 27, 2024, DRESDEN

Conference program

Thursday, September 26, 2024

07:10 a.m.
Anmeldung / **Registration**

08:30 a.m.
F. Atzler; TU Dresden
Begrüßung / **Salutation**

08:45 a.m.
F. Atzler; TU Dresden
Keynote: Will we need turbocharged combustion engines in the future?
Keynote: Brauchen wir in Zukunft turboaufgeladene Verbrennungsmotoren?

09:30 a.m.
P. Davies
Keynote: What ultimately makes a great innovation truly successful
Keynote: Was macht eine großartige Innovation letztendlich wirklich erfolgreich?

10:00 - 10:30 a.m. – Pause / Break

10:30 a.m.
M. Müller, M. Maier, J. Grünert, R. Rehm; MAN Energy Solutions SE
TPC - Multifunctional test centre - From design to implementation and operation
TPC – Multifunktionales Prüfzentrum - Vom Entwurf über die Umsetzung bis zum Betrieb

11:00 a.m.
P. Biewer, G. Toepfer, P. Kipke; DEUTZ AG
F. Schmitt, C. Rudek, M. Gugau; BorgWarner Systems Engineering GmbH
CO_2 Reduction Potentials for NRMM Applications through Advanced Turbocharging Technology
CO_2-Reduktionspotenziale für NRMM-Anwendungen durch fortschrittliche Aufladetechnologie

11:30 a.m.
T. Waldron; SuperTurbo Technologies
I. Sandor, N. Al-Hasan; BMTS
The Challenges of Driven-Turbo Single Stage Compressor and Turbine Designs for Lean Hydrogen Combustion
Die Herausforderungen einstufiger Verdichter- und Turbinenkonzepte mit angetriebenem Turbo für die Verbrennung von magerem Wasserstoff

12:00 a.m.
M. Gfrörer; Advanced Design Technology GmbH
Design of a turbocharger especially for H_2 ICE engines
Auslegung eines Turboladers speziell für H_2 ICE Motoren

12:30 - 02:00 p.m. – Pause / Break

02:00 p.m.
M. C. Potenza, G. Cornetti, J. Exler, U. Kunzi, G. Sgroi; Robert Bosch GmbH
A. C. Kulzer; FKFS Stuttgart
Optimisation of the turbocharging concept for a hydrogen commercial vehicle engine using exhaust gas recirculation and scavenging
Optimierung des Aufladekonzeptes für einen Wasserstoffnutzfahrzeugmotor mittels Abgasrückführung und Scavenging

02:30 p.m.
G. Krachler; Pankl Turbosystems GmbH
F1 Auflade-Technologie für nachhaltige Antriebslösungen
F1 supercharging technology for sustainable powertrain solutions

03:00 p.m.
B. Suatean, A. Stanciulescu, S. Guilain, G. De-Paz-Alcolado; Renault Mécanique Roumanie S.A
Efficient Optimization of Two-Stage Boosting Systems for Hydrogen Engines in Light Commercial Vehicle Applications
Effiziente Optimierung von zweistufigen Aufladesystemen für Wasserstoffmotoren in leichten Nutzfahrzeuganwendungen

03:30 p.m.
G. Iosifidis, J. Ehrhard, L. Gibson; IHI Charging Systems International GmbH
Centrifugal compressor map width enhancement for hydrogen internal combustion engines Vergrößerung der Kennfeldbreite von Radialverdichtern für Wasserstoff-Verbrennungsmotoren

04:0 - 04:30 p.m. – Pause / Break

04:30 p.m.
Amy R. Mackay, Charlotte Boig, Anne M. Wontner-Smith; Cummins Inc.
J. Klütsch, C. Lenzen, M. Stadermann; FEV Europe GmbH
Experimental Investigation of PEM Fuel Cell Compressor-Expander-Module Performance under Humid Exhaust Gas Admission
Experimentelle Untersuchung der Leistung von PEM-Brennstoffzellen-Kompressor-Expander-Modulen bei feuchtem Abgaseintritt

05:00 p.m.
K. Takeda, H. Suzuki, N. Seike; MITSUBISHI HEAVY INDUSTRIES ENGINE & TURBOCHARGER, LTD.
Development of Intermediate Piping and Thermal Management in Air Compressors for Fuel Cells Entwicklung von Zwischenrohrleitungen und Thermomanagement in Luftkompressoren für Brennstoffzellen

05:30 p.m.
M. Gfrörer; Advanced Design Technology GmbH
Design and optimization of a compressor for a fuel cell system on a commercial truck under real driving conditions
Auslegung und Optimierung eines Kompressors für ein Brennstoffzellensystem in einem Nutzfahrzeug unter realen Fahrbedingungen

08:00 p.m. – Abendveranstaltung / Evening Event

Friday, September 27, 2024

09:00 a.m.
F. Langecker, F. Winkle, S. Adam, C. Brenneisen; Audi AG, Ingolstadt
The Future of the Audi R4 TFSI Engines: The Development and Matching of a Tailor-made Turbocharger to Meet Future Emission Limits
Die Zukunft der Audi R4 TFSI-Motoren: Die Entwicklung und Auslegung einer maßgeschneiderten Aufladung für die Einhaltung zukünftiger Emissionsgrenzwerte

09:30 a.m.
P. Kapus, R. Heindl, N. Diniz-Netto; AVL List GmbH
Hydrogen for Internal Combustion Engines – a Viable Alternative for Passenger Car Propulsion and Racing
Wasserstoff für Verbrennungsmotoren - eine praktikable Alternative für den Antrieb von Personenkraftwagen und den Rennsport

10:00 a.m.
M. Grassmeier, T. Roß, R. Werner, F. Atzler;
Technische Universität Dresden, Lehrstuhl Verbrennungsmotoren und Antriebssysteme
Update: **CO_2 neutral and efficient – new fun to drive with a supercharged motorcycle engine**
Update: CO_2-Neutralität und Effizienz – Neuer Fahrspaß mit aufgeladenem Motorradantrieb

10:30 - 11:00 a.m. – Pause / Break

11:00 a.m.
M. Czechanowski, X. Gao; BorgWarner Systems Engineering GmbH
Variable Turbine Geometry for High Specific Power Gasoline Engines
Variable Turbinengeometrie für Otto-Motoren mit hoher spezifischer Leistung

11:30 a.m.
R. Werner, M. Dobberkau, T. Roß, F. Atzler;
Technische Universität Dresden, Lehrstuhl Verbrennungsmotoren und Antriebssysteme
ICE Greenmaker Approach - Boosting Concept for an highly efficient range extender engine
ICE Greenmaker Konzept - Aufladung für einen hocheffizienten Range Extender Methanolmotor

12:00 a.m.
L. Rainer, A. Weise, C. Schmidt; AC TEch
tba.

12:30 - 02:00 p.m. – Pause / Break

02:00 p.m.
H. Selg, G. Wolf, T. Schild; Expanite GmbH
Surface tempering of stainless steels: Increasing the performance and service life of turbocharger components and injection systems for hydrogen applications
Oberflächenhärten von Edelstählen: Steigerung der Performance und Lebensdauer von Turbolader-Bauteilen und Einspritzsystemen für Wasserstoff-Anwendungen

02:30 p.m.
T. Kitamura, T. Hoshi, M. Harada, M. Ebisu, M. Ozaki, H. Nakagawa; Mitsubishi Heavy Industries, Ltd.
A Series of Conjugate Heat Transfer Calculations Applied to Turbochargers
Eine Reihe konjugierter Berechnungen zur Wärmeübertragung von Turboladern

03:00 p.m.
A. Macalka; NUM solution s.r.o., Prague, Czech Republic
Centrifugal compressor design using a different approaches including machine learning method Konstruktion von zentrifugalverdichtern mit verschiedenen Ansätzen, einschließlich der Methode des maschinellen Lernens

03:30 p.m.
F. Atzler; TU Dresden
Schlusswort / **Conclusion**