Variable Compression Ratio

INTERNATIONAL FEV CONFERENCE

FEBRUARY 7th - 8th, 2017

Dorint Sporthotel, Garmisch-Partenkirchen, Germany

www.fev.com

Conference Topics

> Combustion system
  Gasoline / Diesel
> Concepts & Design solutions
> Hardware development
> Validation and calibration
> From passenger car to large bore application

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IN COOPERATION WITH
HAUS DER TECHNIK
Partner der RWTH Aachen und der Universität Duisburg-Essen
Münster - Bochum - Braunschweig
DEAR COLLEAGUES,

The variable compression ratio brings a significant benefit for several engine applications. The ongoing trend of downsizing and boosting of engines has already achieved impressive results however leads to an increased tendency of combustion knock at higher engine loads on gasoline engines. Varying the compression ratio during engine operation is one measure to avoid this limitation and to enable the demand for increased torque and power with an improved fuel consumption in the entire engine map.

Varying the compression ratio on Diesel engines results in reduced peak firing pressures (PFP) and temperatures, beneficial for lowered thermo-mechanical stress and reduced engine-out pollutant emissions. This enables two different opportunities for VCR application. First option is to extend the power output on an already PFP limited base engine. Alternatively: Rightsizing the bearing dimension according the reduced peak firing pressure enables friction reduction and finally an improved fuel consumption. On top of these mechanical advantages, VCR provides potential to lower engine-out NOx under higher operating loads, important for optimal compliance of future RDE demands.

Dual fuel engines suffer from the compromise for the compression ratio. E.g. marine engines require a low compression ratio for the gas application while running most of the time on heavy fuel oil (HFO) where the high compression ratio would enable fuel consumption and operator cost reduction. Varying the compression ratio during engine operation is one measure to optimize efficiency for the different fuels.

The new conference on „Variable Compression Ratio“ will discuss several of these aspects. The presentations will cover topics from the potentials for the combustion system for Diesel and gasoline engines via the hardware solutions for mass production to new concepts for future applications. Apart from the deep insides into latest VCR Research and developments this new platform offers multiple opportunities for mutual exchange with reputable industry representatives and engineering experts.

SCIENTIFIC COMMITTEE MEMBERS

DIPL.-ING. ANDREAS SEHR
Director Business Development Europe

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Director Business Development Europe
TUESDAY, FEBRUARY 7th

PROGRAM

COMBUSTION SYSTEM

09:00 Welcome Speech and opening, Dr. N. Alt
09:15 VCR and VVA: Substitute or Synergy? Discussion of the theoretical limits,
M. Breuer, S. Schmitt, K. Wübbeke - Pierburg GmbH
10:00 Variable Valve and Crank train systems in ICE: Still beneficial investments?
B. Salles - ThysenKrupp AG

10:45 Coffee Break

11:00 VCR-VVA-high expansion ratio, a very effective way to Miller-Atkinson cycle,
C. Constensou, V. Collee, B. Bregi, Y. Salinque - MCE-5 S.A.

11:45 Lunch Break

DIESEL

13:30 Optimized combustion system for future highly efficient VCR Diesel engines,
G. de Paola, P. Anselmi, S. Chevillard, J.-M. Zaccardi - IFP Energies nouvelles
14:15 Merits of VCR for modern Diesel Engines in view of upcoming challenges regarding Fuel
Efficiency and Clean Air Demands,

15:00 Coffee Break

HARDWARE DEVELOPMENT

15:15 Gomecsys VCR technology: System approach and evaluation,
B. de Gooijer, S. Wagenaar - Gomecsys
16:00 AVL Dual Mode VCS™ - The modular and cost efficient CO₂ reduction,
GmbH, Dr. K. Arens, Th. Weiß, M. Heller - iwis motorsysteeme GmbH & Co. KG
16:45 Processes and tools for the detailed layout of VCR-Systems,
Dr. K. Habermann - FEV Europe GmbH, M. Jesser - RWTH, Dr. J. Lehmann, Dr. M. Plettenberg, U. Schaffrath,
Dr. J. Scharf, Dr. T. Uhlmann - FEV Europe GmbH

18:30 Reception Dinner
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<tr>
<th>Time</th>
<th>Session</th>
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<tr>
<td>09:00</td>
<td>VCR – Impacts on engine controls.</td>
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<td>09:00</td>
<td>S. Gottorf, J. Fryjan, A. Schlosshauer - VKA RWTH, Dr. G. Birmes - FEV Europe GmbH</td>
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<td>09:45</td>
<td>The VCR connecting rod with eccentrically piston pin suspension - design evolutions and current status,</td>
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<td>09:45</td>
<td>Prof. Dr. K. Wittek, F. Geiger - Hochschule Heilbronn, J. Andert RWTH</td>
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<td>10:30</td>
<td><strong>Coffee Break</strong></td>
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<td>10:45</td>
<td>The Free Piston Linear Generator FPLG - VCR by simplifying the engine’s mechanics,</td>
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<td>10:45</td>
<td>Dr. F. Kock, M. Rausch - SWEngin GmbH</td>
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<td>11:45</td>
<td><strong>Lunch Break</strong></td>
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<td>13:45</td>
<td>VCR - Key technology for high efficient Dual-Fuel-Engines,</td>
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<td>13:45</td>
<td>Dr. D. Bergmann, S. Wedowski - FEV Europe GmbH</td>
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<td>14:30</td>
<td><strong>Panel Discussion</strong></td>
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<td>15:15</td>
<td>Closing Remarks,</td>
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<td>15:15</td>
<td>A. Sehr - FEV Europe GmbH</td>
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Registration

online:  www.hdt-essen.de/anmeldung
by email: anmeldung@hdt-essen.de
by fax: +49 201 1803-280
by post: Haus der Technik e.V., 45117 Essen

Conference fee: EUR 1.095,-

The conference is not subject to value added tax. The fee covers all related documents to the event, lunch, beverages and the evening event.

Event ID: H070-02-081-7

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Conference language: English

Hotel reservation
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Exhibitors
For information about the exhibition conditions please contact:

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FEV Europe GmbH
Boris Benesch
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Further Information

TARGET GROUP

- OEMs
- Tier1 & Tier2 suppliers
- Developers and engineering providers
- Scientific institutes and universities

EXCLUSIVE STAGE FOR EXHIBITORS

This conference will offer an excellent opportunity to present products and solutions to an exclusive audience and will strengthen the exchange between OEMs and suppliers.

For information about the exhibition and sponsoring opportunities please contact:

Boris Benesch
benesch@fev.com
phone +49 241 5689 9836

CONFERENCE LOCATION

Dorint Sporthotel,
Garmisch-Partenkirchen, Germany
February 7 - 8, 2017

UPCOMING EVENT:

INTERNATIONAL FEV CONFERENCE

DIESEL POWERTRAINS 3.0

taiLORED ELECTRIFICATION FOR A CLEANER ENVIRONMENT IN 2025

Nestor Hotel Ludwigsburg, 11th-12th July 2017
Conference chair:
Thomas Körfer
FEV Group Holding GmbH

IN COOPERATION WITH
Haus der Technik
Partner der Gottlieb Daimler-Stiftung
Duisburg -oodles - Braunschweig