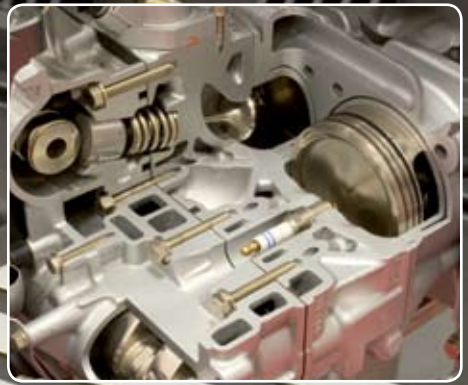


FORUM PROGRAM

engine expo 2008

6, 7, 8 May 2008 Messe Stuttgart,
Stuttgart, Germany

FREE TO ATTEND



INTERNATIONAL

engine



of the year
awards 2008

Presented by engine technology international magazine

See the highly acclaimed International Engine of
the Year Awards live on 7 May 2008

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09.45



Moderator – Puis Tommer, Market & Communications, Sulzer Metco AG

Meeting the challenge – EU CO₂ outlook

Global Insight Ltd – Tom De Vleeschauwer, associate director - automotive consulting

European technology developments are booming, all driven by the looming EU CO₂ emission standards. Global Insight's review of current CO₂ proposals sheds some light on the future outlook, and will facilitate forecasting the future CO₂ market situation and challenges.

10.10

European consumers' attitudes and perceptions toward sustainability, environment and alternate powertrains

Frost & Sullivan – Frank Leveque, program director

This review will discuss environmental priorities of consumers, and impact on their choice of powertrain, preferences for different fuel types, alternative powertrains in particular hybrids.

10.35

Light vehicle powertrains – technology and production for global markets

Knibb, Gormenzano & Partners – Alex Woodrow, international management and technology consultants

The presentation examines trends in global vehicle and powertrain production and how the key drivers of performance, comfort, cost, emissions and fuel economy are likely to be addressed with different approaches globally.

11.00

The potential of the CO₂ emission reduction with a downsized engine and waste heat regeneration system

heat2power – Randolph Toom, director

Heat2power has developed a concept that regenerates waste heat from the ICE exhaust system with a combination of key factors that makes the system appropriate for application in road cars, which in turn will help reduce fuel consumption and CO₂ emissions significantly, particularly on downsized engines where higher exhaust temperatures increase the regeneration potential. The presentation will give orders of magnitude of improvement and describe the control strategies for transparent vehicle behavior.

11.25

Reduction of parasitic losses in heavy-duty diesel engine cooling systems

Comesys Europe Ltd – Nikolas Staunton, research engineer

Heavy-duty diesel engine cooling systems are the subject of a major redevelopment in terms of their architecture and control strategy. Research has shown that a fuel consumption reduction of 10% and more is achievable through system optimization.

11.50

Air could be the answer

Scuder Group LLC – Salvatore Scuderi, president

There is evidence to suggest that adding an air tank to the drivetrain can help to increase efficiency, while reducing toxic emissions by as much as 80%. This session will explore the idea of using compressed air to reduce vehicle emissions.

12.15

Combined Z- and HCCI-combustion makes low emissions and high effective pressure possible at the same time

Aumet Oy – Timo Janhunen, engineer

Exhaust valve closes in Z-process 60° BTDC and intake valve is open 20° after that. HCCI injection occurs here. Compression end temperature stays lower than 750K. Z-combustion injection at TDC ignites 5° ATDC HCCI combustion. Emissions are lower than EU5.

12.40

Smart coatings and their contribution to emission reduction in ICUs

Sulzer Metco - Dr Peter Ernst, head of automotive venture

This paper reviews existing and future legislation on emissions, which influence technology with predicted changes in CO₂ and fuel economy. Based on these trends, the paper focuses on the Sulzer plasma coating of engine cylinder walls and transmission technology.

13.05

20% reduction of consumption and emissions with a New Transmission Technology utilizing oscillating torque

Astremo Powertrain – Terry Lester, Head of powertrain development

This presentation shows a novel automotive transmission concept that harnesses the centrifugal force of phase controllable rotating masses to produce an infinitely variable transmission. It is capable of improving both the acceleration and fuel economy, as well as emissions performance by 20%! Its simple, high-efficiency design allows the components to be sized for greater endurance and higher power while remaining smaller than competing designs, which improves reliability, lowers weight and makes it very prize competitive.

13.30

LUNCH

Part 1

14.00

**Advances in engine downsizing technologies***Frost & Sullivan – Sivam Sabesan, automotive tech analyst*

This presentation looks at the various options being explored by auto manufacturers to downsize their engines for better performance and economy. It also takes a look at options on the horizon.

14.25

Supercharger matching – two speeds is better than one but is it enough?*Antonov Automotive Technologies – Chris Baylis, operations director*

Antonov has developed a two-speed supercharger system for aftermarket sales and the drivability is much better than a test bed torque curve would indicate. Why is this and what are the implications for downsizing?

14.50

A hybrid turbocharger for engine downsizing*Aeristech Ltd – Bryn Richards, managing director*

Turbochargers have the potential to improve engine performance and reduce CO₂ emissions. Hybrid turbocharger technology enables electronic control to enhance the behavior of the turbocharger and reduce turbo lag.

Part 2

15.15

**Partnering with developing economies***Infotech Enterprises Ltd – Vikash Khitha, practice head automotive*

Developing economies such as India plus the other BRIC nations are expected to overtake the developed world in consumption of vehicles in the future. The changing nature of requirements plus limited budgets indicate a need for the auto industry to reinvent itself.

15.40

Green diesel in-cylinder combustion pollution and sizing reduction by the utilization of new combustion technologies and application*Green Diesel Corp – Ron Kukler, CEO*

The application of compound ultra high-pressure diesel injection coupled with new delivery systems leading to lower pollution, higher outputs and engine downsizing.

16.05

Revolutionary new design IC engine – Synchro Engine optimal structure to produce great torque while minimizing emissions*Orbit Motor Companies – Yasuo Watanabe, president*

Synchro Engine is the result of seeking optimal structure to produce maximum torque from thermal explosion and bring it to transmission without loss. Large torque will be produced from low range. Our prototype, 802cc produces 302.5Nm/1,750rpm.

16.30

Heat and mechanical loads after downsizing – looking for the optimum*Technical University of Wroclaw – Dr.Zbigniew Sroka, lecturer / researcher*

The twenty first century started with many downsizing applications. This important trend in engine technology is still being developed. There are questions about using limits and from other hands new solutions in the face of new materials and tribological discovery.

16.55 FINISH

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Moderator – Ralf Goosens, CEO, PEC Corporation

09.30



Toward sustainable mobility by the year 2050

General Motors de Mexico – Eduardo Velasco Orosco, product engineer

This review will discuss analysis of the future propulsion system to meet global sustainable mobility by the year 2050.

09.55

Mechanical hybrid systems

Flybrid Systems LLP – Jon Hilton, managing partner

Exploring the design and development of a high-speed flywheel-based kinetic energy recovery system for F1 and looking at how this technology could provide a powerful, efficient and low-cost alternative to electric hybrid systems for road vehicles.

10.20

Advanced manufacturing technology for hybrid car batteries

PEC Corporation – Ralf Goosens, CEO

The review will discuss high volume – lights out, integrated formation – the aging process – grading and testing of advanced battery modules for hybrid car applications.

10.45

Putting fuel cells to work

Voller Energy Group PLC – Geoff Car, general sales manager

Choosing the target market, why we have chosen the large RV market, what makes the Emerald fuel cell system suitable for this application and why we chose to use LPG as the main fuel.

11.10

Hybridized PEM fuel cell engines: silent, clean, efficient and affordable

NedStack fuel cell technology BV – Erik Middelman, general manager

Today PEM fuel cells are already more efficient, cleaner and more silent than ICEs. Due to improvements in material technology, durability has improved, now exceeding that of ICEs, and within 10 years a fuel cell will cost less than an ICE.

11.35

Detailed electrochemical and fluid modeling of SOFC relating gas distribution to cell degradation

Universität Stuttgart, ITW – Nicola Bundschuh, CEO

A new electrochemical approach is integrated in the commercial CFD-code Star-CD by CD-adapco for evaluating the influence of gas diffusion processes on the electrochemical conversion rate and detecting starvation zones causing degradation effects.

12.00

Carnot's cycle DOES have a long road ahead – but do automotive fuel cells?

Glentech Inc – Dr Ian Macpherson C Phys, F InstP, automotive consultant

ICEs burning hydrogen continue to show improvements in fuel efficiency. The fuel cell when installed in a FULLY capable car may never reach levels of thermal efficiency (tank to wheel) to displace future ICEs and innovative transmissions.

12.25

Combustion and exhaust gas emission in compression ignition engines with dual-fuel system

Cracow University of Technology – Professor Wladyslaw Mitianiec, associate professor

This presentation discusses the features of the dual-fuelling system (CNG+ diesel oil) in compression ignition engines, where CNG is a main fuel and diesel oil is an ignition fuel. The combustion process and gas emission are shown for different doses.

12.50

LUNCH

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INTERNATIONAL ENGINE OF THE YEAR AWARDS

DAY 2 – 7 MAY 2008 AFTERNOON SESSION

14.00



The International Engine of the Year Awards feature 11 awards categories plus the most coveted prize: The International Engine of the Year.

POWERTRAIN DEVELOPMENT

DAY 3 – 8 MAY 2008 MORNING SESSION

Moderator – Kevin Smith, Director, Global TCT

09.30



Lightweight metal matrix composites with tailored textile engineering for automotive applications

University of Stuttgart, IMTCCC – Professor Rainer Gadow

Due to their excellent mechanical properties such as high strength and high strain to failure values, in combination with low density, lightweight metal matrix composites are promising components for lightweight structures in automotive applications.

09.55

Lighter and leaner – what powder metallurgy technologies can do for you

IWM RWTH Aachen – Professor Paul Beiss

Powder Metallurgy (PM) techniques will be demonstrated as serving many applications in automobile engines, such as cylinder liners, valve seats, as die compacted structural parts or as most intricate metal injection molded components.

10.20

Multibody dynamics simulation with Abaqus from SIMULIA

Abaqus Deutschland GmbH – Dr Martin Kuessner, general manager

In addition to the traditional multibody dynamics simulation tools, Abaqus from SIMULIA offers finite element-based simulation solutions that include non-linearities in the implicit and explicit time integration scheme.

10.45

New lightweight powertrain and transmission components – Vyncolit engineering polymers for engine performance enhancement

Vyncolit Sumitomo Bakelite – Jenne De Rijcke, project/program manager

This presentation looks at polymers that offer cost and weight reductions while maintaining high design flexibility. Applications such as valve bodies in the hydraulic control system of VW's new DCT have resulted in better efficiency while enhancing engine performance.



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CLEANER CASTINGS

DAY 3 – 8 MAY 2008 – MORNING SESSION

11.10



Revolutionary rapid tool-less castings: castings that exhibit production properties but allow complete design freedom where costly tooling prevents consecutive changes. Time from design to component is days rather than weeks

Global TCT – Kevin Smith, director

The development of rapid tool-less castings doesn't cease. Better mechanical properties, casting integrity and cost reductions are a few of the exciting developments we continue to offer. Our example is the water-cooled electric motor for automotive applications.

11.35

Cutting costs, improving quality and reducing emissions by innovative technology to stir the solidifying metal in aluminum GDC castings of automotive parts with rotating plasma arc

Neatnya Plasmatec Ltd. - Dr.Ginat Muginstein R & D and process manager & Dan Yardeni, chairman of board

Low-energy plasma arc rotating above the solidifying metal creates strong stirring effect which replaces up to 80% of the risers' mass, leading to savings in energy and other costs while significantly improving the metallurgical characteristics of the casting.

12.00

Rapid casting development by means of Qualified Master Casting (QMC) and numerical simulation modeling

Grnewald GmbH & Co KG – Joachim Gundlach, sales management

This presentation describes a simultaneous and systematic approach of design, simulation and prototyping for the time- and cost-optimized production of prototypes and the pre-production of aluminum and iron castings.

VARIABLE VALVE TIMINGS

12.25



Pneumatic valve actuation – a key to camless engines, pneumatic hybrids, exhaust heat regeneration and internal cooling

Cargine Engineering AB – Urban Carlson, consultant engineer

Full valve control opens up a multitude of new ways to run an engine. In addition to Miller cycle and throttle-less operation, the engine can run in two-stroke mode and be used for pneumatic and steam hybridization to regenerate brake energy and waste heat.

12.50

A solution for the idling problem of the known throttle-less VVAs, mechanical VVAs with independently variable lift and duration, mechanical VVAs without valve springs (desmodromic) for racing engines

Pattakon – Emmanouel Pattakos, engineer

Idle valves for idling, dual-control shafts for fully variable mechanical VVA and camless, desmodromic, springless mechanical VVA for racing engines.

13.15 FINISH

Program subject to change