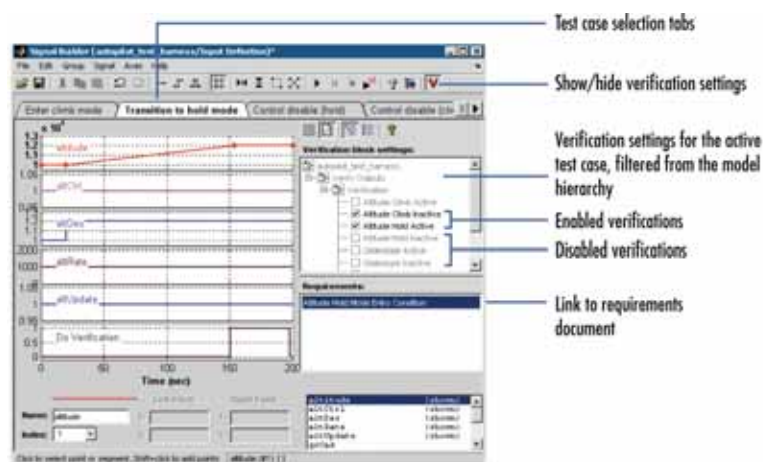


Design validation

Simulink Verification and Validation from **The MathWorks** accelerates and simplifies the design workflow by enabling system designers and test engineers to produce a validated executable specification and perform continuous testing and verification throughout the development process.



The software allows for requirements-based design and test of models by providing engineers with the ability to link their requirements to formal requirements-management systems, and navigate back and forth between the requirements and model. Coverage reports can then be generated to view untested design elements. Metrics can be displayed in the model, allowing users to traverse the model for missing coverage and navigate to the associated requirements. Engineers can include requirement descriptions as comments in the embedded code generated from the validated model, providing a full traceability path from requirements to model to code.

Booth 2323

Cylinder knock detection

The SmartFire Ionization System from **Woodward** performs in-cylinder knock detection. This method allows for direct readings that are uncorrupted by engine noise and vibrations. The system provides



100% misfire detection, making it fully OBD II compliant. Pre-ignition detection is also built in for spark plug heat range development. The system uses closed-loop control from ionization to perform misfire prevention. This means that it delivers a second spark only on the individual combustion cycle when it is needed. Woodward recently acquired ionization feedback and ignition specialist company **Adrenaline Research**. The company expects the acquisition of the company to contribute to its combustion control strategy.

Booth 1372

Vehicle dynamic simulation

TESIS DYNAware's R 3.2 contains engine dynamics innovations (enDYNA 1.6) as well as vehicle dynamics (veDYNA 3.9). In addition, it supports **The MathWorks** version R14 and the latest hardware platforms of **dPACE** and other manufacturers. The enDYNA 1.6 software offers a package to simulate turbocharged SI engines with fuel direct injection. Advanced pre-processing features a better integration into the workflow and enhanced reporting functions. The veDYNA 3.9 software contains a 3-D animation tool, which enables displaying motion results during run-time. Relevant state variables such as speed, accelerations, brake pressures, and others are available as head-up displays. Using different camera views in separate windows allows immediate comparisons of the simulated vehicle.



Booth 1528

Emissions test instruments

Four instruments from **Engine Control & Monitoring** aid engineers with emissions testing. The AFR 5200 Analyzer (pictured) is a single-/dual-channel Lambda meter with CAN, analog, USB, and RS232 outputs. Lambda is measured using ceramic sensors placed in the engine's exhaust. The EGR 5210 NOx Analyzer also is a single-/dual-channel meter with CAN, analog, USB, and RS232 outputs that uses ceramic sensors placed in the engine's exhaust. The EGR 4830 Analyzer is an exhaust gas recirculation meter suitable for diesel-engine development, calibration, and testing. Ceramic sensors placed in the diesel engine's intake and exhaust are used to determine both mass and volume-based %EGR. Intake and exhaust %O₂ and pressures are also reported. The company's AFM1540 Lambda Module measures air:fuel ratio using a wideband exhaust sensor. Analog and serial outputs make the device compatible with all data-acquisition systems including **ETAS' INCA**.



Booth 706

**Come See
What We Have Been Thinking**

Visit The Canadian Pavilion
SAE Booth 915-1323



cars on the brain

See and experience creative and innovative solutions in design, vehicle safety, research and development and world class expertise in manufacturing and assembly.

Canada

What's New
from the exhibitors

Embedded software tool

The **SAE** Architecture Analysis & Design Language (AADL) from the **Software Engineering Institute** was recently approved and published as SAE AS5506. It is a notation for modeling the run-time architecture of embedded software systems including their execution platform and the interfaces to the physical plants being controlled; analyzing properties such as timing, reliability, and safety criticality; and generating model-compliant run-time systems. Although it was developed by SAE's AS-2C Avionics Systems Division AS-2C Subcommittee, it is designed to support modeling of embedded systems in the automotive domain as well. The standard was developed with participation from European organizations such as the **European Space Agency, Airbus Industries, and EADS**, and U.S. organizations including the **U.S. Army, the Software Engineering Institute, Honeywell, Lockheed Martin, Rockwell Collins, and Boeing**.
Booth 2312

CFD code

CD-adapco's STAR-CD CFD (computational fluid dynamics) code features ECFM and ECFM-3Z Extended Coherent Flame Models that extend



beyond the single-mixture restriction of traditional combustion models. The models are equally valid whether the charge is pre-, partially, or not mixed, or any combination of the three. Jointly developed by **Renault** and **Institut Francais du Petrole**, the models address the combustion challenges posed by direct-injection (DI) engines, which have a high degree of charge stratification. The models are valid in all mixture regimes, from very lean to very rich, and are equally applicable for gasoline (using a spark-ignition model), homogenous-charge compression-ignition, and DI diesel engines (using an auto-ignition model). New interfaces are provided between the code and **Gamma Technologies'** GT-Suite and **Ricardo's** WAVE code.
Booth 2027

Monday, April 11, 2005

Piezoresistive accelerometer

Model 3901F3HB2000G is a lightweight, piezoresistive accelerometer from **PCB Piezotronics** that is suited for automotive crash-test instrumentation. The unit's maximum range is $\pm 2000\text{ g}$ ($64,000\text{ ft/s}^2$) and its frequency range is up to 5000 Hz ($\pm 5\%$). The 2.0-g (0.06-oz) sensor maximizes mass loading and can fit into vehicle recesses such as frame members, floorpan, and engine compartment where



crash data are required. The sensor provides acceleration data in front, side, and rear crash testing.
Booth 827



A Passion

CREATIVITY FOR PEOPLE

for Safety

Integrated Child Booster Seat

In its normal position, the integrated child booster seat serves as a seat for adults. It can adjust to securely hold and protect children from nine months to 12 years of age. Separate five-point safety belts for smaller children and lateral head supports provide outstanding safety.



Active Head Restraint

The active head restraint uses either a pyrotechnic device or a spring mechanism. In the event of a rear collision, it launches the head restraint forward in milliseconds – before the seat occupant's head and body are impacted, arriving in a position to meet the occupant's head and prevent whiplash injury.



Greater protection and comfort for people on the go – that's GRAMMER's commitment. We apply our know-how, experience and personal dedication to develop innovative solutions that make automotive travel safer. And we're setting new standards with the automotive industry while meeting our customers' and consumers' growing needs for safety.



GRAMMER

GRAMMER Industries Inc. · 1550 West Maple Road · 48084 Troy, MI · USA
Phone +1 248 786 0440 · Fax +1 248 786 0444 · www.grammer.com · E-mail: info@grammer.com

Please visit us at SAE Show Booth# 1537

Modular power platform

Agilent Technologies' N6700 modular power system is a 1U—1.75 in (45 mm)—high, multiple-output dc power supply targeted at automated test equipment (ATE) applications. It gives test-system designers the flexibility to configure a one- to four-channel dc power system at up to 100 W per channel that is optimized to meet specific test requirements. For example, the system offers 16 different dc power modules from which test system designers can select both power and performance within a single, multi-channel package—providing users with a command processing time of less than 1 ms. The N6700 also saves rack space for ATE applications with the smallest, highest-density modular power supply available at only one rack unit high. A built-in digital multimeter measures the power supply's voltage and current. An optional built-in digitizer makes measurements on time-varying voltage and current in the design under test.

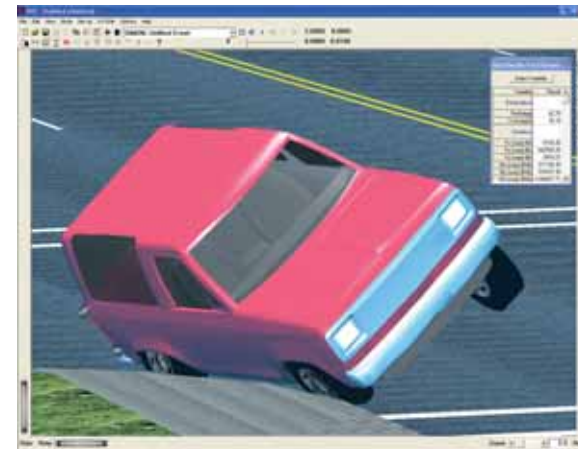
Booth 1601



Tire-terrain models

Three tire-terrain models from **Engineering Dynamics** operate within the HVE (human-vehicle-environment) simulation environment. The software is used by vehicle design engineers and safety researchers to perform simulation studies of vehicle handling and response, crashworthiness, occupant kinematics, and compliance issues such as brake system effectiveness. These tire-terrain models extend the capabilities of safety researchers to study vehicle handling and safety issues that can arise when tires travel over non-rigid and uneven surfaces. The radial spring model enables simulation of tires mounting curbs and rolling over potholes. The sidewall-impact model allows for a rigorous modeling of the force applied to the sidewall of a tire as occurs in a curb-tripped rollover (see illustration). The soft-soil model calculates tire drag for a vehicle that has left the roadway.

Booth 435



Circuit protection

The Low Profile JCASE fuse from **Lit-telfuse** provides fuse characteristics and performance similar to its larger cousin, the JCASE fuse, and is a safe and reliable circuit-protection alternative for fusing applications. The lower overall height reduction allows for more space, weight, and material savings in fuse box designs. The devices come in current ratings of 20, 25, 30, 40, 50, and 60 A.

Booth 1717



Shaft horsepower meters

MCRT shaft horsepower/kW-h meters from **S. Himmelstein and Company** have full-scale ranges from 5 to 76,000 hp (3.7 to 56,700 kW). They produce ± 10 V analogs of power, torque, speed, and energy as well as data in engineering units via a resident com port. Operation is bidirectional, and measurements are valid to zero speed. Two accuracy grades of 0.08% and 0.13% are offered.



No manual adjustments are required: calibration values, null, scaling, and units of measure are

stored in nonvolatile memory and automatically loaded on power-up. Internal signal processing is accurate to 14 bits. PC interface software can be used to display and plot real-time data, perform X-Y plots, change units of measure, select signal filters, and archive calibration history.

Booth 1401

Visit us & **RT-LAB** **TestDrive™**

Complete systems on demo stations in our booth for you to discover

Attend one of our in-booth presentations and get one 64MB USB memory stick

Presentation Schedule:
daily at
10:30 am,
1:30 pm
and 3:30 pm

At the SAE World Congress in the Cobo Hall
Booth #2313



Contact and register with **Opal-RT Technologies Inc.**

Toll Free: 1-877-935-2323
(North America only)
Phone: 1-514-935-2323
(Outside North America)
info@opal-rt.com

www.opal-rt.com

RT-LAB TestDrive ▶

- ◆ Fully programmable, cost-effective replacement for static simulators
- ◆ Powertrain and vehicle simulation for ECU-in-the-loop
 - ◆ Scalable solution for open and closed loop testing



NOW AVAILABLE
Reconfigurable
FPGA for
distributed I/O
and signal
conditioning

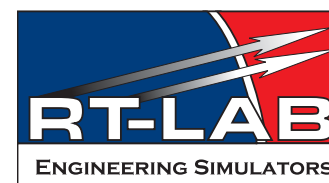


▲ RT-LAB Hilbox

- ◆ For Hardware-in-the-Loop applications such as ECU development and testing
 - ◆ Compact, rugged chassis designed, fully enclosed signal conditioning modules for rapid deployment and replacement
 - ◆ Single-target system or grouped as a multiple-target distributed computation system

◀ RT-LAB Electric Drive Simulator

- ◆ Detailed hard-real-time simulation of power electronic converters and drives
- ◆ Test your electrical drive controller with close-to-reality simulation
- ◆ Reduce prototyping time and costs



What's New
from the exhibitors

CAE optimization

ESTECO s.r.l.'s modeFRONTIER allows product engineers to integrate their CAE tools such as CAD, FEA (Finite Element Analysis), CFD software, and one-dimensional programs; direct interfaces are provided to Matlab, Simulink, and Excel. More

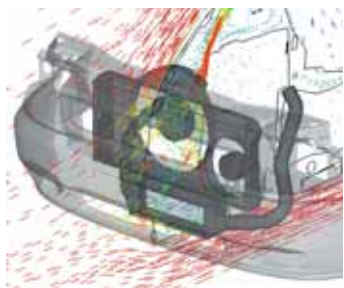


than 50 commercial CAE tools are coupled with the software using the intuitive interface, as well as many in-house programs. Using various optimization methods ranging from gradient-based techniques to genetic algorithms, the process or design of interest can be optimized by specifying objectives and defining a wrapper around the CAE tool, performing the optimization by modifying the value assigned to the input variables, and monitoring the outputs of interest. The software performs multi-objective optimization, thus creating a Pareto Frontier (or tradeoff curve) of all possible optimal solutions. This feature recognizes the fact that multi-objective optimization rarely produces a single optimum point, but rather leads to multiple solutions, each of which will be a compromise.

Booth 1641

CFD services

Mindware is a full-service product-development firm and a provider of CFD services. The company supports



clients with engineering services, as well as develops, distributes, and supports engineering analysis tools. Software offerings include ANSYS ICEM CFD cabin modeler, ANSYS ICEM CFD IC3M engine-simulation tool, EnSight post-processing and visualization tool, RadTherm thermal-analysis modeling tool, Radioss/CFD Mcube fluid/structure interaction solver, UH3D underhood three-dimensional cooling simulation tool, and Virtual Paint Shop for paint-drying simulation.

Booth 1641.3

Vehicle control unit

The multipurpose vehicle control unit from **Electronic Concepts & Engineering** has 12 analog, 13 digital, and four frequency inputs as well as five 12 V dc / 0.5 A, four 12 V dc / 3 A, and four 12 V dc / 3 A

pulse-width-modulated outputs, with CAN and RS-232 communication interfaces. The lightweight, compact controller is suited for prototype vehicle applications. This control unit can allow a company



to help clients develop custom-embedded software for a specific application.
Booth 1820

Invest in Bavaria

Pole Position for
Invest
Automotive Suppliers
in Bavaria

www.invest-in-bavaria.com

- Automotive engineering center and component suppliers' park High Franconia
- Close to all German automobile manufacturers
- Excellent infrastructure
- More than 800 supplier companies
- World leaders in R&D
- Highly skilled and experienced workers
- Tradition in manufacturing automobiles
- Top productivity

State of Bavaria

Contact	United States Office for Economic Development Ms. Dagmar A. Cassan, MBA Executive Managing Director	Bavarian Ministry of Economic Affairs, Infrastructure, Transport and Technology Dr. Markus Wittmann
Address	560 Lexington Avenue, 17th Floor New York, NY 10022	Prinzregentenstrasse 28 80538 Munich, Germany
Phone	212-317-0588 or 800-595-2990	(+49 89) 21 62-26 42
Fax	212-317-0590	(+49 89) 21 62-28 03
E-Mail	info@bavaria.org	info@invest-in-bavaria.de
Internet	www.bavaria.org	www.invest-in-bavaria.com

Invest in Bavaria – a joint project between the Bavarian Ministry of Economic Affairs, Infrastructure, Transport and Technology and Bayern International

Automotive Suppliers

Multimedia headrests

Jaguar, one brand of **Ford's** Premium Automotive Group, has selected **Grammer Automotive** to supply headrests with integrated video displays for its Jaguar XJ. All versions of this model may be optionally equipped with a multimedia system for passengers seated in the vehicle's rear. The video unit consists of two high-resolution, 6.5-in LCD monitors that are integrated into the rear of the front-seat headrests. The location is more ergonomically favorable than overhead displays, which require passengers to look up. The two headrest monitors may be operated independently. Brightness and color contrast are individually adjustable. The multimedia control panel allows playback of videos, CDs, and DVDs. Video games and laptops also can be connected. In vehicles with a navigation system that includes a TV function, it is possible to watch television programs. Sound is transmitted via headphones, which are linked to the audio system. Similar headrest-mounted multimedia video systems are available for other vehicle models.

Booth 1537



Assembly monitoring

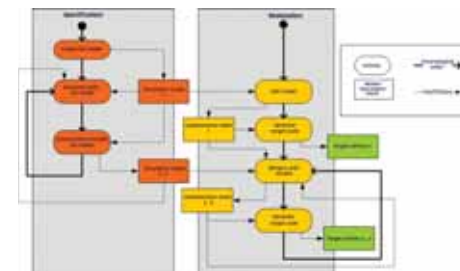
The Promess PRO from **Promess** is a stand-alone "signature" analysis monitoring system for press-fit, staking, crimping, riveting, testing, and similar assembly operations. Users can create their own programs to monitor and record single measurements such as final position or the signature of a pair of related measurements such as force vs. position, torque vs. angle, or combinations of position, force, pressure, and torque. By identifying the signature of a known good assembly and comparing the signatures of subsequent assemblies to it, the system can identify nonconforming assemblies or sort production into various tolerance classes. The system features a standard **Intel** Pentium processor, a 6.4-in LCD display, touch screen, and front-accessible USB port.

Booth 820.



Human-machine interface

Guide, the XML (Extensible Markup Language)-based human-machine interface (HMI) tool by **3Soft**, supports the entire process for developing infotainment components. Consistency of control logic and design is guaranteed even if an entire range of products is concerned.



The system consists of a WYSIWYG view-designer, UML (Unified Modeling Language)-compliant state-chart editor, on-the-fly simulator, code generators, and open plug-in interface. It can create and simulate a "living" HMI prototype during the specification process. The menu logic is modeled by illustrated states in the state-chart editor. Modifications can be implemented quickly and checked immediately during simulation so the user has permanent control over work results from the start. The machine-readable Guide specification in XML format can be adapted to different target platforms and languages with the appropriate code generator.

Booth 1536

SAE International

Members

people of uncommon commitment

Your membership in SAE International is your entrée to industry's great engineering alliance, to a world of colleagues, and a world of advanced technology.

www.sae.org/membership

Share. Serve. Advance.

Join SAE International!

automotive • aerospace • commercial vehicle



Marking Specialists Group a leader in the product identification industry with 30 years experience as a manufacturer of high-quality, high-end emblems and nameplates used in the automotive, appliance and consumer goods marketplace has just introduced **Durographic®** a revolutionary, patented emblem technology. **Durographic®** provides the greatest depth of three dimensional image and fine definitions achievable in the production of molded, fully pigmented, multi colorized or clear emblems and graphics. Various textures and finishes are available including mirror chrome to exacting automotive standards.

Visit us at SAE booth # 964.

marking specialists group

3726 N. Ventura Drive • Arlington Heights, IL 60004 • 800-678-8073 fax 847-797-9301
www.marking-specialists.com

ISO:9001:2000 • Proud Sponsor of SAE 2005 World Congress

USB sensor interface

The model 90386 USB sensor link from **Sensor Developments** is a portable sensor interface that powers and processes a strain-gauge-based sensor into USB 2.0-compatible signals. The instrument allows engineers to eliminate additional signal-processing or PC cards. In addition to monitoring and storing data for force and torque sensors, the USB sensor link can also measure and record pressure or displacement, as well as simultaneous angle or speed measurements for horsepower monitoring. Optional software packages provide remote control of up to eight devices via digital I/O control lines, statistical calculations, and other process monitoring.

Booth 745



Visit the SAE Recruitment Fair at the 2005 World Congress

We will be located in Wayne and Oakland halls on the Exhibit Show Floor.

When: Today and Tuesday from 9 a.m. to 5 p.m.

Don't miss this limited opportunity to network with some of the industry's finest employers.

What's New from the exhibitors

MultiVision video kit

InterTest's MultiVision Video Bore-scope kit provides all the necessary back-end equipment to perform video-only borescope inspections with MultiScope front ends. Included is the LSX24-VBI combination 24-W light source and Video Bore-scope Interface unit, MultiVi-sion handheld camera assembly with a 2M integrated camera/illu-



mination cable, power supply, and all the necessary video cables. The MultiScope borescope front ends are available in rigid, semi-rigid, or flexible configurations and are not included. Features of the kit include a lightweight, handheld inspection tool, high-resolution camera, swappable front-end design that accepts any of hundreds of MultiScope products, as well as a low-profile assembly and small footprint to reduce the amount of space required for the equipment. Booth 1005

Clevises

mbo Osswald produces a variety of clevises, including standard clevises, clevises with male threads, and units with elongated holes. A clevis can be found wherever simple movements are required, such



as linear pulling, pushing, or even axle offset compensation. When subjected to particularly strong alternating tensile and compressive forces, the cross hole on a clevis can deform, drastically shortening its service life. As a preventative solution, mbo Osswald offers a clevis with a hardened cross hole. Each clevis comes with a correspond-ing mating piece, which can be combined with a clevis instead of a rod end if connections are required that compensate direction offsets. Booth 1633.2

Spiral drive system

The Mortorq Spiral drive system from **Phillips Screw Company** provides full contact of the driver over the entire wing, resulting in high torque in a shallow recess design. This allows for a 15-25% reduction in overall head height as compared to a standard fastener. Thanks to the spiral-shaped design and vertical sidewalls of the recess, virtually all the rotational force of the driver is transferred to the screw in both the installation and removal mode. The open recess design also compensates for heavy coating build-up without affecting driveability. Product designers who take advantage of the low-profile/shallow recess head in their assemblies can significantly downsize components, reduce mass, provide more application space, improve packaging flexibility, and lower component material costs. Booth 2111



Frequency sensor

Taylor Engineering's high-resolution (0.05%) position sensor is the result of using a variable inductor as a reactive component in an oscillator with a feedback path through an amplifier. Taking the signal from the amplifier gives a square wave. Taking the signal from the inductor gives a sine wave that can be rectified to a dc voltage output. Sensors with superior linearity (0.5%) have the coil shorter than the sensor travel and a tapered actuator. Another sensor projects a field and can determine radial position at zero speed. Booth 2362



High-friction coatings

EKagrip from **Ceradyne** is a friction-enhancing coating used at joints in powertrain, transmission, suspension, and drive applications. The coatings are unaffected by typical in-engine environments and can be reused, easing dismantling and reassembly. They consist of an electroless nickel matrix in which a specified quantity of diamond particles of defined size is co-deposited. These coatings can be applied either to the joint components directly or to thin foils or shims for installation in the joint. Applying the bolt preload on a crankshaft with a central bolt design causes the diamond particles to press into the opposing surface of the counterpart. This creates a micro-scale form fit between the base part and its counterpart. The coatings can transmit up to three times the load of conventional systems, and the joint design does not require modification. Various engine applications primarily focusing on crankshafts, camshafts, and balancer shaft modules are in production. Several fastener applications are in test program status, with potential applications in suspension, transmission, and chassis environments. Booth 2407



Compact camera system

The *MotionXtra* HG-SE from **Redlake** is designed for harsh environments such as vehicle impact testing. The high-speed digital camera is small and lightweight, with stand-alone battery operation and robust high-g construction. With the wireless trigger no cables are needed—making the unit ideal for space-constrained applications. It is complementary metal oxide semiconductor-based with full resolution of 1280 x 1024 at 500 frames per second (fps) and 32,000 fps at reduced resolutions. The camera supports up to 2.6 GB of onboard memory or 4 s record time at full resolution. Booth 620

Join us today Monday April, 11

at 10:45 a.m. Room D3-20/21

French program on the impact of engine technology on particulate emissions, size distribution and composition, heavy duty diesel study

at 3:45 p.m. Room D3-24/25

1D simulation of turbocharged gasoline direct injection engine for transient strategy optimization

4 days 4 chances

to visit us at
our booth #2427



Charging

Direct Injection

Combustion

Cooling

Fuel & Lubricants

Exhaust Gas & After-Treatment

Engine Management



IFP POWERTRAIN ENGINEERING
92852 Rueil-Malmaison Cedex - France

Tel.: +33 1 47 52 59 18 - Fax: +33 1 47 52 53 04
<http://engines-fuels.ifp.fr>

bull's-eye.

When it comes to the auto industry, the Roanoke Valley of Virginia hits the spot. Prime real-estate. Low costs. Strong labor pool. Central location. And easy access. Ready to make that move?

Ready. Aim. IGNITION!

The Roanoke Valley Economic Development Partnership.
Visit www.roanoke.org or call 1-800-Locate2 today.

Manual transaxle

Aisin's AI-AY6 six-speed manual transaxle for passenger cars contains reduced weight and size thanks to new gear-train technology. Shifting effort is lowered through a reduction in equivalent gear inertias, while rattle noise is reduced by decreasing the number of idling gears and by optimizing gear tooth designs. The system is featured in Porsche sports cars.
Booth 1461



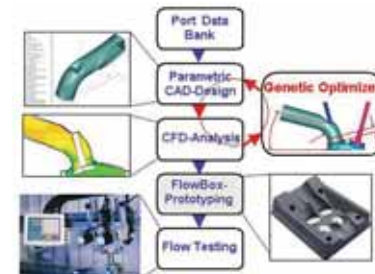
Powder metallurgy tool steel

Böhler-Uddeholm's Vanadis 4 Extra powder metallurgy tool steel is suitable for long-run tooling in applications with high demands on adhesive wear and chipping resistance, including those involving stamping or forming of ultra-high-strength steels. Thanks to carefully balanced alloying and the powder metallurgical manufacturing processes, the material has a better machinability and similar heat treatment to AISI D2 tool steel. An advantage, the company claims, is that the dimensional stability after hardening and tempering is better than all known high-performance cold-work steels. This makes the material suitable for CVD (chemical vapor deposition) coating. It can reach hardness in the mid 60s HRC (hardness, Rockwell C-scale) and is made via a process that results in superior cleanliness.
Booth 2349



SI engine port development

A process from FEV using CAE-based port development and flow design for spark-ignition (SI) engines combines pre-optimization with a CAD/CFD methodology to achieve better combustion. An



advantage to this approach for engine/vehicle manufacturers is that it reduces the number of samples required to reach the optimum design. An optimizer, starting from a base parametric design, delivers an optimal design and additional valuable information and design/performance correlations. Validation of the process is provided through CFD calculation to analyze both steady-state flow under flow test bench conditions and transient flow during engine operation. The methodology transfers the optimized port performance to the SI engine's combustion behavior and establishes a balance between increased volumetric efficiency and a demand for higher power output.
Booth 1815

T.E.S.T. Group

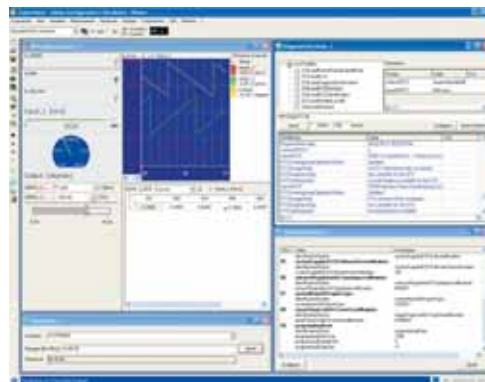
Technology
Enhanced Safety
Testing

Global Safety Testing Product & Service Suppliers
COBO Center, Detroit, MI USA
Booths 307 - 539

Suppliers: Diversified Technology, Olympus Industrial, Iwasaki Electric, Seattle Safety, TRC, AEC-America, Kistler Instrument, Engineering Dynamics, Endevco Corporation, Engineering Technology Asso., U.S. Army Yuma Proving Grounds, Calspan Corporation, Sensors Magazine, Redlake, Kayser-Threde, Denton, Inc., FalCon GmbH, NAC Image Technology, AICON 3D Systems, US Army TARDEC - NAC, KHS Technical Lighting, Vision Research, Photo-Sonics, Photon, MGA Research, Microsys Technologies, Instron Structural Safety Systems, Weinberger Vision Technology, Wayne State University, MSI Sensors.

Onboard vehicle diagnostic

ETAS Group expands on the strength of its measurement and calibration tool, INCA, with a family of products that extends its capabilities into on-board vehicle diagnostic development. With the release of ODX Product Family V1.1, ETAS offers support of the ASAM MCD 2D V2.0 specification, commonly referred to as ODX (open data exchange). The ODX product family supports all phases of onboard vehicle diagnostic development activities.
Booth E



Thermoplastic vulcanizates

Engineering thermoplastic vulcanizates from DuPont combine many of the desirable performance characteristics of cross-linked rubbers with the economical processing costs typical of thermoplastic elastomers. They extend the range of applications for thermoplastic elastomers, especially where increased resistance to heat and fluids is required. Parts made of the new material resist oil,

grease, and chemicals over a temperature range of -40° to +160°C; further testing up to 170°C is under way. Its properties make it suitable for under-the-hood automotive applications such as ducts and hoses, ignition seals, two-component seals and body plugs, hydraulic hoses, and inboard constant-velocity-joint boots.
Booth 1959



P-80® RUBBER LUBRICANTS

Improve Automotive Assembly Operations with P-80 Temporary Rubber Lubricants



P-80 provides lubrication during part assembly, then dries allowing the natural tight fit of rubber to return.

Try a FREE SAMPLE of P-80 to see how it can help you increase output rates, reduce rejects, achieve closer fits, improve product performance, and avoid injuries.

P-80 is widely used in hundreds of assembly tasks involving natural and synthetic rubber.

- ✓ A-Frame Bushings
- ✓ Electrical Grommets
- ✓ Body Molding Seals
- ✓ Boots
- ✓ Diaphragms
- ✓ O-Rings
- ✓ Mounts
- ✓ Windshield Seals
- ✓ Windshield-Washer Hoses
- ✓ Motor Insulators
- ✓ Bumpers
- ✓ Washers
- ✓ Sleeves
- ✓ Fuel-Line Hoses
- ✓ Plugs
- ✓ Exhaust Hangers
- ✓ Belts
- ✓ Tires

Three P-80® Products available: P-80® Emulsion • P-80® THIX and introducing NEW P-80® Grip-It

INTERNATIONAL PRODUCTS CORPORATION
(An ISO-Certified Company)
P.O. Box 70, Burlington, NJ 08016-0070 USA
Tel: 609-386-8770 • Fax: 609-386-8438
www.ipcol.com • SAE@ipcol.com

Visit us at SAE World Congress 2005: Booth 1044 050222

Hydraulic turbochargers

Hydraulic turbine assisted (HTA) turbochargers from Kapich Engineering aid in turbocharged diesel engine applications meeting 2007 emissions standards. HTA allows for fast transient turbocharger response, especially for engines with cooled exhaust gas recirculation systems. Improved turbocharger power balance requires less back pressure on the engine, thus improving engine volumetric efficiency at low engine speeds.

Power density of newly developed, high-speed HTA wheels is approximately 6 g/shaft horsepower, which minimizes effects on turbocharger rotor dynamics. HTAs do not require cooling and are impervious to heat soaks. A matching HTA power package, including controls and autonomous turbocharger lubrication, is designed for specific engine applications. Available HTA production models include KE2 rated 7 kW@16,000 rpm, KE6 rated



15 kW@80,000 rpm, and KE10 rated 22 kW@60,000 rpm.
Booth 2137

President...Continued from Page 1

service, our society has reached a rare and significant milestone. All of us are extremely lucky to be a part of this landmark year, and I encourage every member to make the most of this once-in-a-lifetime celebration by participating in at least one centennial event—either at the local section, at one of SAE's international conferences, or in a student competition such as the special 100-mile Mini Baja event in June.

My time this year will be focused on section activities, student competitions, and international events. The SAE 2005 World Congress incorporates all of these elements. I welcome you to this comprehensive event as it promises to celebrate SAE's thousands of achievements over the past amazing century and establish a firm foundation for the next 100 years.

To solidify this foundation, I have identified a number of focus areas, all following the theme of "Tradition, Transition, and Transformation."

I believe that SAE has an outstanding base of initiatives to continue the legacy of its first 100 years. I intend to support all of these and in particular ensure that the following traditional areas have presidential focus:

- Encourage elementary, high school, and university students to pursue careers in math and science, especially through the *A World In Motion* program and Collegiate Design Series competitions

- Continue SAE's initiative to identify key younger members and encourage them to be involved in SAE

- Solidify industry support by intensifying the society's promotion throughout the technical community and encouraging participation by the various industries being served by SAE

- Ensure continued leadership in the cornerstone of SAE—standards.

In addition, several transitional areas require presidential focus as well:

- Global growth, particularly in China, India, and other regions outside of North America

- Continued emphasis on aerospace

- Enhanced involvement with the growing commercial vehicle industry.

As we go forward into the next century of SAE, transformation will undoubtedly define the next 100 years. I am encouraged by the tremendous input that I have received from many senior industry executives—including a number of valuable suggestions for new SAE initiatives, which I vow to work toward fulfilling over the next year.

I also plan to attend many 100th anniversary celebrations throughout the year, and I hope to meet many of you at these events. The 2005 year promises to be a memorable one for all involved with SAE, and I look forward to your participation as SAE celebrates one amazing century.

The ultimate...Continued from Page 1

timetable with evening events.

This evening in Cobo's Riverview Ballroom, the SAE Detroit Section brings for the first time its monthly meeting to the show. The ticketed event (\$37 for SAE members, \$42 for non-SAE members) begins at 5 p.m. with a social hour, followed by a 6 p.m. dinner and 7 p.m. presentations by Dave Hill, Vehicle Line Executive for GM Performance Cars; Lori Cumming, Vehicle Line Engineer for GM Small and Midsize Trucks; and Doug Parks, Vehicle Chief Engineer for GM Small Cars.

Tuesday night spotlights an industry reception. The gathering takes place on the exhibit floor from 5 p.m. to 7:30 p.m. and is open to all World Congress attendees. For those who pre-registered for SAE 2005, there is an additional reason to stay late as 100 SAE-embazoned leather jackets are among special prize giveaways.

Wednesday night's international reception will be on-site, following afternoon panel discussions about the state of the automotive industries in India and China as part of the day's **FEV** Technology Innovation

Forum activities. Jim Queen, GM Vice President of Global Engineering and the 2005 SAE show's general chairperson, as well as Michigan Governor Jennifer Granholm, are slated to attend the evening event. The gathering is invitation only, but according to Amati, "even [for people] without an invitation, we're not going to say, 'no.'" The goal is to get people to interact."

Thursday night's annual banquet, sponsored by **Siemens VDO Automotive**, reveals a new networking twist. The banquet adds a pre- and post-industry networking reception in the GM World of the Renaissance Center. Headliner for the sold-out banquet is General Motors Chairman and CEO Richard Wagoner.

All show-related activities are geared toward facilitating the exchange of knowledge among engineers. "We're looking forward to just an outstanding event," said Richard Schaum, Vice President of Automotive for SAE International, and the Vice President and General Manager of Vehicle Systems at **Wavecrest Laboratories** LLC.

Kami Buchholz

GM debuts...Continued from Page 1

closed-loop feedback system that allows the differential to act as either a locked or open differential based on vehicle electronic signals," said Burghoffer. To improve handling characteristics, the demonstration car employs a variable gear ratio steering system from **Toyota** that improves low-speed maneuverability. Active steering is the next development step, and that generational upgrade is planned for future GM production vehicles.

For the exterior, **Prefix** produced a carbon fiber hood to replace the production car's sheet-molded compound component. LED low- and high-beam headlamps, daytime running lamps, and fog lamps come from **Visteon**. Supplemental passenger compartment heating is provided by an additional heat source from **Ventech**, which allows mechanical energy from the engine's accessory drive pulley to be converted into heat. The instrument cluster from **Promate** can be reconfigured for color, style, and gauge function, and it supports a 3-D navigation system from **Bosch**.

In terms of safety, the vehicle is equipped with various types of GM-developed airbags, and a **MobilEye** lane-departure warning system that alerts the driver by visual cues or by a haptic driver seat from **InSeat Solutions**. If the car drifts to the right of a lane (without turn-signal activation), the driver seat engages a right-side vibration.

While the TIV spotlights 50 technologies, about 1000 technologies were considered. "We did go through a sourcing process—quotes and bids—which is traditional business for GM," said Renee Bryant, Program Manager for the Technology Integration Vehicle, adding that to narrow the list, "we looked at developmental time, cost, and whether a particular technology would make sense for this vehicle. There are some technologies on the vehicle from suppliers that GM has never worked with before." For instance, engineers with GM's Performance Division integrated **Illinois Tool Works'** capless refuel system on the vehicle. Rather than a traditional fuel door and fuel cap, the capless system uses an electronic signal—activated by pushing an interior button—to rotate a fuel-filler pipe into position. The unit automatically closes when the fuel nozzle is removed.

Kami Buchholz

General Motors...Continued from Page 1

and other relevant issues." Queen will convey the importance of SAE to the industry in remarks at today's World Congress opening.

Putting together a successful SAE Congress requires marketplace competitors to drop arms and work together. Which is precisely what has happened. Queen, in recent months, has presided over several meetings involving more than 100 senior industry leaders to "define relevant topics and explore ways we can effectively come together to discuss solutions to issues facing the industry."

Queen had touched on the matter of intra-industry cooperation in his SAE Congress presentation on integration last year, when he made the point that, "Cooperation is absolutely essential for exchanging business and technical information for advancing our industry." He is carrying that thought through to this year's Congress, which is all about the exchange of business and technical information.

Such exchange takes place at various rates and in various currencies throughout Cobo Center, and GM trades in all of them. New products and technologies will, as usual, flood the show floor.

GM also will take up a lot of space in the meeting rooms of Cobo Center, its engineers presenting dozens of papers and presiding over dozens of technical sessions. "GM engineering is fully engaged in this year's Congress," Queen said. And executives from "The General" will be streaming on and off the stage in the

AVL Technology Theater, which is dedicated to "big-picture" keynote presentations and panel discussions.

Queen said GM is providing information about the Congress to its engineers in the hopes that many of them will attend. For the past several years, he has held staff meetings with his senior engineering leaders at Cobo Center during the SAE Congress. While at Cobo, the teams take tours of the exhibit floor, stopping at about eight displays.

"At two of these stops" last year, Queen said, "we looked at specific technologies and decided right there on the steps to follow up on those technologies—to understand them, and to look at integrating them into one of our product programs. That's powerful interaction, and it shows the importance of 'being there' at the World Congress, both for OEMs and for suppliers."

Other automakers have held engineering staff meetings at Cobo Center during Congress week, as well. This year, **DaimlerChrysler** and **Ford** will do so again, as will some suppliers, including **Delphi** and **Sekisui**.

"I think the SAE World Congress is the best place for engineers, myself included, to identify and explore new technologies," Queen said. "The cost of attending the Congress is so small; SAE membership is a bargain. At Congress, you'll find thousands of technical sessions, technical papers, industry people, and technology displays where attendees can learn. It's really very efficient to have access to all of this under one roof and concentrated into a few days."

Patrick Ponticel

ISO/TS 16949

This plug

is tight!

Our plug (specification HN 8-WD) is tight up to 400 bar!

Because of the integrated sealing ring, made of high-quality material NBR (Nitrile Butadiene Rubber), our plug seals not only against hydraulic and transmission oils and against compressed air. Moreover the plug can be used repeatedly.

Assembly is simple and safe, because no sealing ring is either forgotten or lost. The integrated soft sealing ring, made of high-quality NBR material is useful for temperatures between -35°C and +100°C. For higher temperature applications we recommend FKM sealing rings.

Convince yourself of the functionality and quality of our components. Why don't you ask for a complimentary sample. We look forward to your enquiry.

heinrichs

drehteile

Heinrichs & Co. KG • D-56290 Dommersh.-Dorweiler
Phone +49 6762 93050 • Fax +49 6762 930555 • www.heinrichs.de • info@heinrichs.de

Exhibit Directory Addendum

The following is a Directory update as of March 31, 2005

Ballard Power Systems

www.ballard.com

Booth 1306

Ballard Power Systems is recognized as the world leader in developing, manufacturing, and marketing zero-emission proton-exchange-membrane fuel cells. Ballard's mission is to develop fuel-cell power as a practical alternative to internal-combustion engines through technology leadership. Ballard-powered fuel-cell vehicles accumulated more than 925,000 km in 2004.

Canadian Association of Mold Makers

2000 Talbot Rd. W Mail Box #16
c/o St. Clair College
Windsor, ON N9A 6S4 Canada
www.cam.ca

Booth 1320

The Canadian Association of Mold Makers is an organization consisting of mold makers, suppliers, and service member companies. It was formed for the sole purpose of fostering the interest and concerns of Canadian mold makers.

Cefamol

Av. D. Dinis N-17
Marinha Grande, PORTU 2431-903 Portugal
www.cefamol.pt

Booth 2533

Cefamol, the Portuguese Mould Industry Association, is a nonprofit organization that works to develop the country's mould industry and sub-sectors. Since its foundation, Cefamol has contributed significantly to the industry's progress, particularly in facilitating communication between member companies and fostering the collaborative spirit of the sector in Portugal.

Chomerics

77 Dragon Ct.
Woburn, MA 01801-1039 United States

Booth 2662

Cyclone Technologies Ltd.

601 NE 26th Ct.
Pompano Beach, FL 33064 United States
www.cyclonepower.com

Booth 1659

Cyclone Technologies is developing a high-efficiency, compact, multi-fuel, external-combustion, heat-regenerative engine, patents pending. On display will be the Mark II, 2 cylinder and the Mark V, 6 cylinder. Our technology can be scaled to 2000 hp. We are actively seeking a licensing agreement with an automotive, truck, or engine-building company.

DaimlerChrysler

Booth 1306

The DaimlerChrysler F-Cell is currently in operation in the world's first small-fuel-cell car series for joint-venture partners in Europe, the U.S., Japan, and Singapore. The entire Ballard fuel-cell system of the F-Cell is located in the sandwiched floor. Development of fuel-cell technology is now being carried forward in practical application and extensive field tests via the DaimlerChrysler 100-plus fuel-cell vehicle fleet.

Data Physics Corp.

2025 Gateway Pl., Ste. 260
San Jose, CA 95110-1007 United States
www.dataphysics.com
sales@dataphysics.com

Booth 340

Data Physics has been supplying high-performance solutions in signal processing to the noise and vibration community for more than 20 years. With the addition of a full line of electrodynamic shakers to complement its vibration controllers and dynamic signal analyzers, Data Physics is a total solution supplier for noise and vibration applications. Data Physics will be exhibiting SignalCalc Dynamic Signal Analyzers, SignalStar Vibration Controllers, and SignalForce Shakers and Amplifiers.

Federal Laboratory Consortium

600 N Kings Hwy. PMB#172
Cherry Hill, NJ 08034-1505 United States

Booth 2664

Ferris State University

AUT-103
Big Rapids, MI 49307 United States

Booth 451

Ford Motor Company

Booth 1306

Ford's Sustainable Mobility Technologies prototype fuel-cell vehicles represent Ford's dedication to preserving the environment. They combine high fuel economy, performance and comfort with zero emissions. Therefore, Ford has taken a leadership role in moving fuel-cell technology from the laboratory to vehicles on the road.

Gore Fuel Cell Technologies

www.gore.com

Booth 1306

As the world's leading supplier of MEAs for PEM fuel cells, Gore works closely with nearly all the major fuel-cell system developers, delivering a steady stream of innovations designed to lower total system cost while improving durable performance. Winner of the Frost & Sullivan 2005 Excellence in Technology Award.

Harita Infoserv Inc.

27260 Haggerty Rd., Ste. A9
Farmington Hills, MI 48331-3400 United States
www.harita.com

Booth 2252

Harita Infoserve provides engineering design services to customers in the automotive sector. The company offers end-to-end solutions for next-generation automotive products by leveraging more than two decades of accumulated technical expertise in engineering. With the experience and strong engineering background of the TVS Group, the company provides value-added services to its customers in all phases of the product development cycle.

Invest In Sweden Agency

Klarabergsviadukten 70 B6
Stockholm, SWEDE SE-101 21 Sweden
www.isa.se

Booth 1713

Invest in Sweden Agency (ISA) is the government agency assisting and informing foreign investors about business opportunities in Sweden. Companies planning to establish or expand business operations in Sweden can, free of charge, obtain information and assistance from ISA and its regional and international network.

Ixxat Inc.

120 Bedford Center Rd.
Bedford, NH 03110-5442 United States
www.ixxat.com

Booth 2626

IXXAT is featuring a new FlexRay Car Communication Module for rapid prototyping, development, and diagnosing of FlexRay networks. Ixxat specializes in CAN, LIN, and FlexRay software and hardware tools for development, testing, and servicing plus software protocol stacks for J-1939 and CANopen in mobile equipment.

Kettering University

1700 W 3rd Ave.
Flint, MI 48504-4898 United States
www.kettering.edu

Booth 773

Kwame Nkrumah University of Science & Technology

Knust Faculty of Mechanical Aero & Agric
Kumasi, GHANA Ghana

Booth 254

Lawrence Technological University

21000 W 10 Mile Rd.
Southfield, MI 48075-1051 United States
www.ltu.edu

Booth 455

Lifelong India Ltd.

D-1 Saomi Nagar South
New Delhi, DEL 110017 India
www.lifelongindia.com

Booth 2333

Lifelong India is an auto component manufacturing group with multiple locations and system suppliers. Product range within the group: plastic components, air cleaners, assemblies, handle steering systems, aluminum die casting and machined parts, sheet metal and tubular parts. All companies are either QS 9000 or TS 16949 certified. Supplying to global OEMs across North America and Europe.

Mercury Marine

W6250 Pioneer Rd.
Fond Du Lac, WI 54935 United States
www.mercmarine.com

Booth 764

Metacomp Technologies

28632B Roadside Dr., Ste. 255
Agoura Hills, CA 91301 United States
www.metacomptech.com

Booth 2634

Metacomp Technologies is the developer and marketer of CFD++, CAA++, MIME, and ED products for computational fluid dynamics, computational aero acoustics, mesh generation and computational electrostatic paint deposition softwares, respectively.

Metra Electronics Corp.

460 Walker St.
Holly Hill, FL 32117-2653 United States

Booth 1945

Michigan Technological University

1400 Townsend Dr.
815 R L Smith Bldg.
Houghton, MI 49931-1200 United States
www.mtu.edu

Booth 554

Monroe County Community College

1555 S Raisinville Rd.
Monroe, MI 48161-9047 United States

Booth 255

Nuvera Fuel Cells

www.nuvera.com

Booth 1306

Nuvera Fuel Cells is a global leader in the development and advancement of multi-fuel processing and fuel-cell technology for clean energy solutions in the automotive, distributed generation, and industrial vehicles and equipment industries. The company is currently working with manufacturers to commercialize fuel-cell power modules for off-highway applications.

NVision Inc.

112 Welford Ln. # 126
Southlake, TX 76092-2300 United States
www.nvision3d.com

Booth 2300

NVision is the technology leader in the 3-D digitizing industry with more than 11 years of experience. We provide unique three-dimensional scanners, software, consulting and bureau services for reverse engineering, inspection/gauging, rapid prototyping, and movie animation. NVision's proprietary and patented tools have earned clients such as Boeing, DaimlerChrysler, Disney, Ford, Harley Davidson, General Motors, John Deere, Lear, NASA, Porsche, Volkswagen, and Peterbilt Trucks.

New Day Solutions

2546 Elliott Dr.
Troy, MI 48083-4604 United States
www.newdaysolutions.com

Booth 2042

New Day is a business solution like no other. It is an integrated enterprise business solution that enables small to midsize companies to better organize and streamline day-to-day operations. Tested and implemented in a real business environment, this all-in-one business tool allows business owners, executives, and managers not to envelope themselves to overhead and operational management.

Northeast Electronics

455 Bic Dr.
Milford, CT 06460-1735 United States
www.northeast.com

Booth 2334

Ohio State University

930 Kinnear Rd.
Columbus, OH 43212-1443 United States
www.osu.edu

Booth 354

Optimal Solutions Software LLC

2825 West 1700 North
Idaho Falls, ID 83402 United States
www.optimalsolutions.us

Booth 1753

Optimal Solutions Software offers Sculptor, an engineering design software tool that provides the ability to parameterize CFD and FEA models and perform real-time shape deformation without the need to revisit the CAD model.

PipelineManager.com LLC

2414 Lake Pl
Minneapolis, MN 55405-2473 United States
www.pipelinemanager.com

Booth 2827

Only one CRM/SFA tool teaches a salesperson how to think like the best in the business every day: PipelineManager. PipelineManager

maximizes individual and team selling. Managing change becomes part of the natural rhythm—because the system reinforces the changes every day—delivering immediate rewards for the entire organization. Member: Sales Productivity Consortium.

PolySpace Technologies

400W Cummins Park
Suite #5200
Woburn, MA 01801 United States
www.polyspace.com

Booth 2704

PolySpace Technologies empowers companies building embedded software applications with a unique solution for the automatic detection of run-time errors at compile time. It streamlines white-box testing to deliver unparalleled cost and time savings while improving the reliability of software applications.

S Trade

Jeongwang-dong
3rd Fl KT Bldg. 1366-9
Sihung-si Kyunggio, 429 853 South Korea

Booth 226

Shanghai Zhongli Automobile Parts Co.

17639 Rowland St., Ste. C
City Of Industry, CA 91748-1120 United States

Booth 867

Shepherd Solutions Inc.

P.O. Box 82113
Rochester, MI 48308-2113 United States
shepherdsolutions.net

Booth 2827

Shepherd Solutions provides comprehensive consulting services internationally to automotive component manufacturers, industrial machinery and equipment manufacturers, automation systems integrators, and technical service providers. Its clients achieve improved business development speed, sales cycle reductions, aftermarket optimization, customer relationship improvements, and profit growth. Member: Sales Productivity Consortium.

Shin-Etsu Silicones of America Inc.

1150 Damar Dr.
Akron, OH 44305-1066 United States
www.smisj.com

Booth 1332

Shin-Etsu Silicones manufactures a comprehensive line of dimethyl, fluoro, and phenyl silicone sealants, adhesives, coatings, and potting materials. Stop by to learn more about the SIFEL fluoroelastomer line, which can withstand most harsh environments, and our thermal management line that will help your advanced electronics stay cool.

Solution Strategies Inc.

15985 Windmill Pointe Dr.
Grosse Pointe Park, MI 48230-1843 United States
www.solution-strategies.com

Booth 2827

Solutions Strategies, a global consulting firm, helps companies with complex sales cycles grow their businesses, manage executive relationships, and develop sales strategy. By using Solution Strategies' sales analysis and pursuit processes, clients see an immediate impact on sales team productivity and global customer development, as well as significant profit improvement. Member: Sales Productivity Consortium.

TGM Digital Inc.

29 Olivewood
Irvine, CA 92618 United States

Booth 228

The Fuel Cell Pavilion

Booth 1306

The U.S. Fuel Cell Council and the California Fuel Cell Partnership have teamed up again to bring transportation fuel-cell technologies and experts to the SAE World Congress. This year's Fuel Cell Pavilion, coordinated by the U.S. Fuel Cell Council, will include six fuel-cell vehicles, several fuel-cell stacks, a full fuel-cell engine system, a fuel reformer, and several key component displays.

Toyota

www.toyota.com/environment

Booth 1306

Toyota is committed to enriching your life with vehicles that are fun to drive and do less harm to our environment. The automobile must function in harmony with the environment. That is why Toyota is committed to reducing harmful emissions and is hard at work developing new sources of vehicle power and technologies to conserve fossil fuels.

TRW Automotive

24175 Research Dr.
Farmington Hills, MI 48335-2634 United States
www.trw.com

Booth 760

University of Michigan-Ann Arbor

1231 Beal Ave., Rm. 2032
Lay Autolab
Ann Arbor, MI 48109-2133 United States
www.umich.edu

Booth 454

University of Waterloo

Dept of Mechanical Engineering
Formula SAE
Waterloo, ON N2L 3G6 Canada

Booth 351

University of Wisconsin-Madison

1500 Engineering Dr.
Madison, WI 53706-1609 United States
www.wisc.edu

Booth 355

Vanderplaats Research & Development Inc.

1767 S. 8th St., Ste. 200
Colorado Springs, CO 80906 United States
www.vrand.com

Booth 1016

VR&D is a developer and supplier of FEA and design optimization software used by analysts and designers in several industries. VR&D provides robust software, optimization engineering services and training in software and short courses in optimization theory. Our products include GENESIS for structural optimization, VisualDOC for general optimization, Eigen value accelerator SMS, and optimization tools DOT for smaller problems, and for larger problems BIGDOT.

Wayne State University

Mechanical Engineering Dept.
Detroit, MI 48202 United States
www.wayne.edu

Booth 350

Wind River

500 Wind River Way
Alameda, CA 94501-1171 United States
www.windriver.com

Booth 2621

Booth changes

Mechanical Simulation

912 North Main
Suite 210
Ann Arbor, MI 48104 United States
www.carsim.com

Booth 1721

Mechanical Simulation develops and distributes CarSim and TruckSim software—easy-to-use programs that simulate the dynamic behavior of passenger cars, racecars, light and heavy trucks, and utility vehicles. They animate simulated tests and generate more than 500 output variables to plot and analyze, or export to other software such as Excel, and DOE optimization tools. Engineers use CarSim and TruckSim to prove initial concepts, select chassis components, and perform advanced analyses of proposed and existing vehicles. The math models can be extended with Simulink to develop electronic control algorithms for advanced safety systems. Real-time versions CarSim RT and TruckSim RT provide SIL or physical HIL testing.

UFE Inc.

15999 W 12 Mile Rd., Ste. 120
Southfield, MI 48076 United States

Booth 1953

Offers product engineering services, mold manufacturing services, injection molding, and insert molding of precision, tight-tolerance automotive components using CAD/CAE/CAM technology and concurrent engineering. In addition, there is a full range of secondary machinery operations and assembly capabilities, a proprietary process for molding 3-D printed circuit boards, and the design and manufacture of plastic gears.

Canceled

Baikdoo Electron Corp.

Ideas for an open world.



Global

CTS is a leading supplier of vehicle roof systems and an internationally operated full-service partner to the automotive industry – from early concept phase to series production.

Innovative

CTS products are globally recognized for their high quality and uncompromising high-tech innovations – synchronized with the special requirements of our international customers.

Experience

CTS develops and manufactures vehicle roof systems for many renowned OEMs. Our products transform automobiles into convertibles and bring freedom to the driving experience.

CTS
CAR TOP SYSTEMS

CarTopSystems North America

2110 Austin Drive
Rochester Hills, MI 48309

Phone: (248) 299 8201

Fax: (248) 299 8205

e-mail: info.usa@cartopsystems.com

www.cartopsystems.com

SAE International[™]

Leading Our World In Motion • 1905-2005

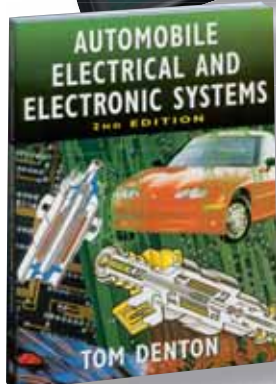
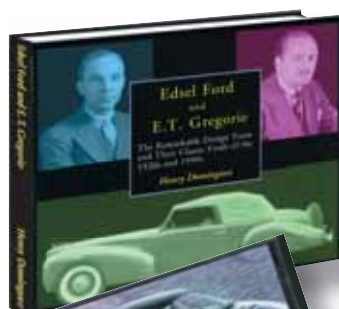
Your one-stop-SAE-shop

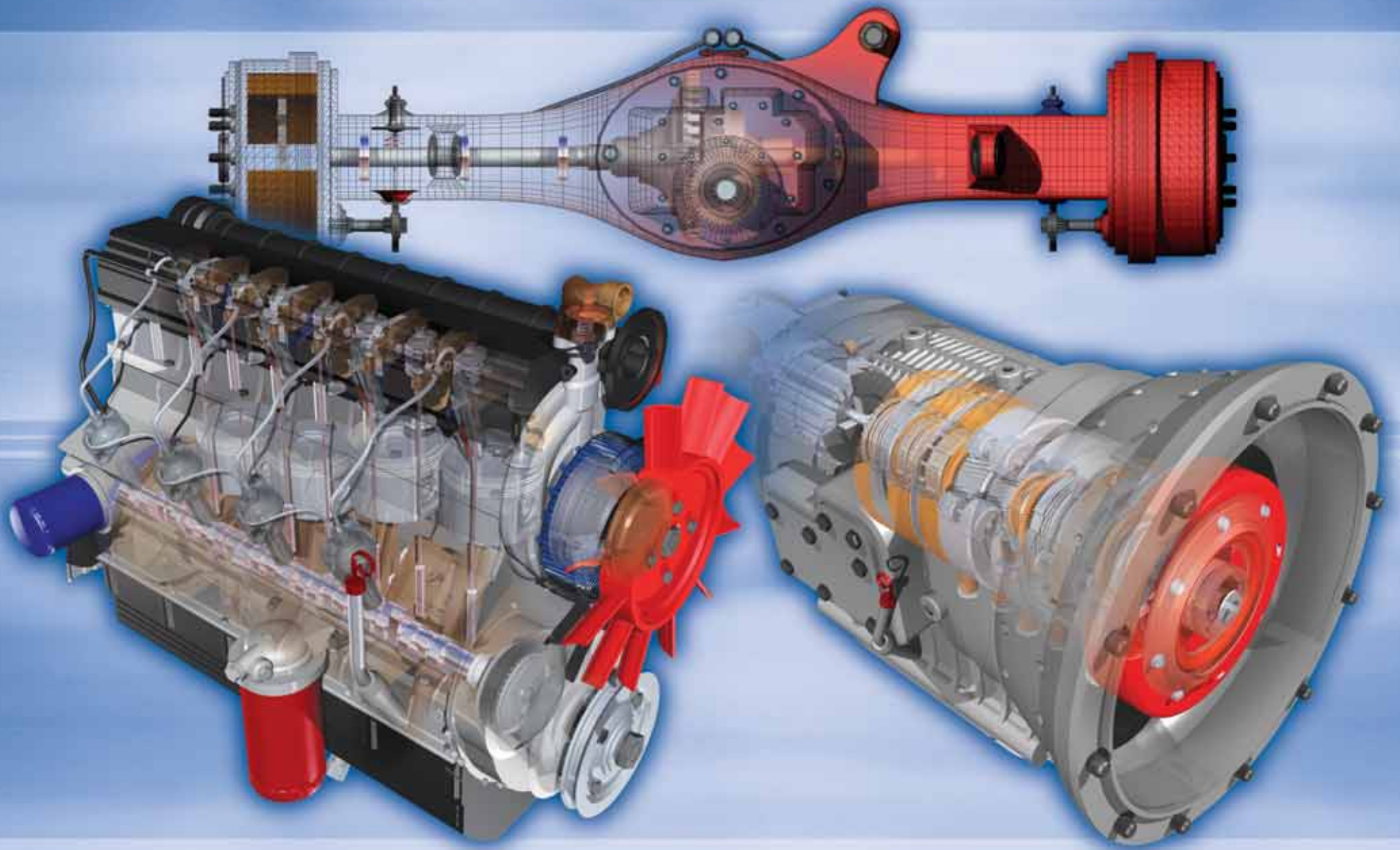
The newly redesigned SAE Store, now centrally located in the Exhibition's Wayne Hall, offers SAE technology-to-go, and much, much more...

- New SAE 2005 publications – papers and value-priced Special Publications
- SAE 100 Memorabilia - travel mugs to apparel to the new "coffee-table book"
- Book signings – John Glimmerveen, Beverly Kimes, Bill Milliken, Raymond and Matthew Brach
- Talk to someone about how you can become an SAE author
- Product demos – electronic and customized technical resources
- All your SAE needs – membership, upcoming events, what's new

Too much to carry? Ship it home at the UPS station located in the Lobby right outside of Wayne Hall.

Pre-registrants: Pick up your SAE 100 Anniversary Gift at the SAE Store and be entered to win one of the grand prizes.





We've got your powertrain covered



When you rely on Henkel for your powertrain needs, you work with a resource that is an expert in chemical management. From adhesives and sealants to corrosion protection and mold releases, Henkel's innovation and strong brands provide all your solutions.

Henkel is the market leader in adhesives, sealants and surface treatments to the automotive industry, improving the strength, endurance and reliability of today's vehicles.

For more information, call 800-521-6895 or visit www.henkel.us.



GLOBAL LEADER IN ADHESIVES, SEALANTS AND SURFACE TREATMENTS

- SOME OF OUR LEADING BRANDS INCLUDE -

LOCTITE® Autophoretic® Bonderite® Multan™ Terocore® Hysol® FREKOTE®

Please visit us at SAE Show Booth# 1135