

Catalyst monitoring

Southwest Research

Institute's Universal Synthetic Gas Reactor (USGR) is a screening tool to evaluate emission catalyst formulations. The system can monitor overall catalyst performance in automotive emissions systems under a range of operating conditions and in various applications, including three-way catalysts, diesel oxidation catalysts, lean oxides of nitrogen, catalysts/traps, and sulfur traps. Other applications include selective reduction catalysts and reforming catalysts for hydrogen production. In addition to testing exhaust gas catalysts, relative durability testing can be addressed using aged, small-core catalysts. The device can simulate engine exhaust conditions for nearly all liquid and gaseous fuels including gasoline, diesel, compressed natural gas, and liquid petroleum gas. It can also simulate exhaust emissions from future high-tech vehicle concepts that do not always have hardware available for testing, such as hybrid vehicles, lean-burn engines, and homogeneous-charge compression-ignition engines.

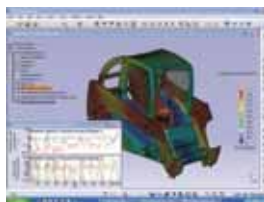


For more information, circle 1

Modeling tools

Virtual.Lab Noise and Vibration from LMS

International is a simulation solution for predicting the noise and vibration behavior of a component, subsystem, or complete vehicle under operational loading conditions, using models and load data from both CAE and test. NVH-specific post-processing tools help engineers to compare the actual response with predefined or imported targets, and to optimize noise and vibration behavior. By combining measured loads with virtual models to perform an NVH response prediction, more realistic simulation results and reliable design insights are generated. In addition to noise and vibration, LMS Virtual.Lab offers dedicated simulation solutions for structural analysis, acoustics, fatigue-life, and durability.



For more information, circle 2

Quick latch

Protex offers the under-center latch type 200-5000, a quick-action closure mechanism housed entirely within the body of the fastener to provide a near-flush method of securing a variety of assembly components. A threaded draw bar allows up to 10.4 mm (0.4 in) of grip range adjustment, and an



ergonomically designed, side-mounted safety catch offers additional security. The fasteners measure 300 x 79 x 19.5 mm (11.8 x 3.1 x 0.77 in) and engage directly with suitable profiles or lips on mating assembly components. Mild-steel variants are supplied with a yellow passivate finish and provide a strength of 2550 N (573 lb) while stainless steel variations are offered for aggressive operating environments and feature load-carrying capabilities of up to 1960 N (441 lb).

For more information, circle 3

Fatigue test

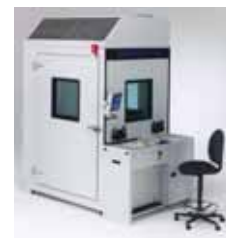
A dynamic cornering test system from **MTS Systems** uses FlexTest digital control and a rotating vector design to simulate the effects of cornering loads on light-truck and off-highway wheel discs. The system features a static wheel and a rotating lever arm to apply constant, rotating bending loads of up to 83,000 lb•ft (113,000 N•m) to wheel discs ranging from 10 to 66 in (254 to 1676 mm) in diameter. Digital control provides operators with direct control of bending moments as well as compensation techniques to ensure that loads are accurately applied. The system is suitable for both standard and custom wheel tests and can accommodate wheel discs instrumented with strain gauges or wheel force transducers. According to the company, benefits over spinning-wheel test equipment include improved operator safety, improved installation and alignment, and the ability to inspect wheel specimens during tests.



For more information, circle 4

Stress test

Thermotron Industries offers an accelerated stress test (AST) system that will demonstrate in hours how a product will sustain years of use. The AST system applies aggressive environmental stresses that accelerate product fatigue and expose potential defects that may surface after years under normal operating conditions. Tests include application of high rates of temperature change in excess of 70°C/min (126°F/min) and repetitive shock vibration at forces greater than 50 g. The liquid-nitrogen-cooled chamber features a high-volume, adjustable air distribution system that pinpoints rapid airflow directly over the product, and the shock vibration system uses Teflon-coated impactors. The AST system can simulate and monitor multiple product parameters while under stress. Benefits include reduced product development time, decreased time-to-market, and a reduction in production, warranty, and related field failure costs.



For more information, circle 5

Smart indicator

The Model 4215-LVDT smart indicator from **Electro Standards Laboratories** was designed for the measurement and control of dual-channel LVDT (linear variable differential transformer) measurement fixtures. In its standard configuration, the Model 4215-LVDT combines two LVDT channels, print capabilities, and RS232/485 serial communication; it is also capable of mixed transducer interfacing, including LVDT, dc strain extensometer, and quadrature encoder-based position measurement devices. The indicator's plug-and-play operation is electronically compatible with transducer electronic data sheets (TEDS) and can be programmed for full TEDS implementation. Features include 24-bit A/D, 16-bit D/A, sample rate of 60/s, and accuracy of 0.005%.

For more information, circle 6



High-speed camera

Photron USA's ultima APX-RS is a high-speed digital camera with a slow-motion video imager that captures 3000 frames/s (fps) at 1024 x 1024 pixel resolution, up to 10,000 fps at 512 x 512 resolution, and 250,000 fps at reduced resolution. A CMOS (complementary metal oxide semiconductor) sensor with true 10-bit monochrome, 30-bit color fidelity features anti-blooming properties and variable aspect ratios. The single-piece enclosure was designed to withstand harsh operating environments up to 100 g. The camera can be controlled with either the inherent FastCam Viewer software or a computerless hand-held control keypad. Memory partitioning enables multiple recordings to be made without downloading. Other features include an electronic shutter that provides sharp imagery and operates as fast as 2 μs, improved low-light performance, a dual-speed recording mode that allows users to change frame rates during recording time, and over-exposure protection to ensure image quality for each pixel regardless of illumination levels within the recorded image.

For more information, circle 7



Pilot control

Thomas Magnete's next-generation proportional pressure reducing valve was designed and developed to meet a new generation of electrohydraulic valve designs suitable for a variety of mobile and automotive hydraulic applications. The product has better performance, reduced size, and reduced cost compared with the previous-generation product. It meets market demands for proportional pressure, fast response, minimal electrical power, and compact design, allowing for smaller valve sections.

For more information, circle 8



USB interface

Sensor Developments offers a USB-compatible interface for strain-gage-based sensors. Model 90386 USB sensor link is a portable sensor interface that powers and processes a strain-gage sensor into USB 2.0 compatible signals, eliminating additional signal processing or PC cards. In addition to monitoring and storing data for force and torque sensors, the sensor link also can measure and record pressure or displacement as well as simultaneous angle or speed measurements for engine-power monitoring. Optional software packages are offered for remote control of up to eight devices via digital I/O control lines, statistical calculations, and other process monitoring.

For more information, circle 9



High-current inductor

The DR360, DR361, and DR362 Series wirewound coil inductors from **Datatronic Distribution** were designed for high-current, high-temperature applications in rugged environments. A magnetic alloy core offers extended life in temperatures from -55 to +200°C (-67 to +390°F). Other features

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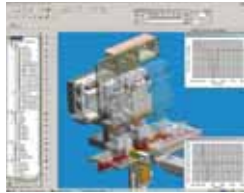
include an inductance range from 0.8 to 100⁺ mH and a DCR (direct-current resistance) specified from 0.003 to 0.43 Ω maximum over a current rating from 1.6 to 38 A. Inductors are offered in diameters from 0.86 to 1.280 in (22 to 32.5 mm), with lead spacing from 0.45 to 0.65 in (11.4 to 16.5 mm), depending on model. Typical applications include custom-designed commercial and industrial equipment and machinery.



For more information, circle 10

Motion model

MSC Software has announced the availability of MSC.Dynamic Designer for Autodesk Inventor 9 from **Autodesk**, and Solid Edge 16 from **UGS**. By seamlessly turning an existing Inventor or Solid Edge solid model or assembly into a physics-based motion model, MSC.Dynamic Designer uses the latest MSC.ADAMS motion-simulation technology to give the user the ability to understand critical performance information about a design without leaving the CAD environment or performing a physical test. The new software has improved support for compliant bushings, faster computational speed, and a complete online reference guide.



For more information, circle 11

Self-sealing tire liner

QuikGel from **Arnco** is a self-sealing polyurethane liner that reduces downtime from flat tires by protecting from punctures up to 0.25 in (6.5 mm) in diameter. According to the company, the product is suitable for skid steers, agricultural and lawn/garden equipment, telehandlers, and other lightweight applications. The gel membrane is lightweight enough to allow the tire and vehicle to perform as designed. In addition, the liner is centrifugally cast-balanced to ensure a smooth ride, is re-treadable, operates cooler than solid- or filled-tire options, works well in higher-heat applications, does not leak, and is compatible with bias- or radial-ply tires. QuikGel also works with over-the-tire track applications, allowing shedding of foreign debris in the track system.



For more information, circle 12

Industrial computer

Glacier Computer has announced the GX 1000 A, a PC-compatible industrial computer with a new sunlight-readable LCD screen. Transflective displays and special coatings are often used in an effort to address sunlight readability and save cost or battery life on portable devices. The GX 1000 A uses four specially developed backlight inverters providing 1350 nits of brightness. Traditional laptops, for example, typically run at less than 300 nits and are difficult to read outside during the day. The GX 1000 A is an 800 MHz computer with display, touch screen, and multiple standard I/O ports, capable of running **Microsoft** Windows operating systems.



For more information, circle 13

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Power pots

The RL-7300 Series of powered pots from **Renco Electronics** has 23 standard values for each of the five different sizes, offering a range of inductance from 10 mH to 1 H and handling current from 12 mA to 1 A. The core design of the pot is capable of handling dc currents while maintaining a stable inductance due to high- saturation currents and self-shielding. The compact power pots are easy to mount, according to the company, and suitable for applications such as dc chokes, differential-mode chokes, filters, switching circuits, and low-power circuits.



For more information, circle 14

Industrial interferometer

Polytec offers the TMS-300/320 TopCam, a high-precision white light interferometer for on-line part inspection and production/quality control. The compact interferometer installs on a manufacturing line and verifies production part specifications for flatness and topography. Telecentric imaging—along with a Michelson interferometer, precision scanning system, and a digital camera—produce quick measurements over fields-of-view diameters up to 19 mm (0.75 in) with resolution up to 10 nm (0.4 μ m). The TopCam can be mounted in any direction and can be controlled via operator-interface software, which includes commands for instrument operation, data acquisition, analysis, and presentation.



For more information, circle 15

Dual-wavelength camera

A small, dual-wavelength imager, the Visible-InGaAs MiniCamera from **Sensors Unlimited**, simultaneously images in the visible and near-IR (Infrared) waveband regions. The 320 x 240 pixel array with a 40-nm (1575 µin) pitch offers a spectral response from 400 to 1600 nm (16 to 64 µin). Other features include quantum efficiency of 80% at 1310 nm (52 µin); 12-bit RS-422 digital output and EIA-170 analog video output; and the ability to perform inspections in both the visible and short-wave IR waveband regions with one camera. Thermoelectrically temperature stabilized, the compact camera has no moving parts and a mass of less than 0.3 kg (0.7 lb). Applications include laser-beam profiling, machine vision, imaging in low light conditions, and hyperspectral imaging across multiple wavelengths.



For more information, circle 16

High-speed sensor

LMI Technologies offers a compact, single-point industrial gauging sensor for high-speed applications.



Based on the principle of laser triangulation, the Class 3R and Class 3b Selcom SLS 5000 noncontact sensors have an integrated sensor within the head and a built-in processor for data averaging and filtering. A laser feedback loop allows measurement without regard to speed, ambient light changes, color, and temperature of material. Other features include repeatability up to 16,000/s, easy maintenance and installation, a data sampling rate of 16 kHz, high-speed resolution of ±0.2% of the measurement range, a stand-off distance up to 49.2 in (1250 mm), and a measurement range from 0.24 to 39.4 in (6 to 1000 mm). The SLS 5000 is 4.1 x 5.3 x 2.0 in (105 x 135 x 51 mm) with a mass of 2.4 lb (1.1 kg) and operates at temperatures from 32 to 120°F (0 to 50°C).

For more information, circle 17

Encoder options

Kollmorgen AKM servomotors from **Danaher Motion** are available with high-resolution Sine-Absolute encoders as well as with resolver, encoder (commutating), and SFD (smart feedback device) options to meet specific application

requirements. AKM motors are offered in seven frame sizes with 25 stack/frame combinations, 77 windings, and 19 different mounting patterns. Available in small footprints with multiple connectivity and feedback options as well as shaft seals and integral brakes, the motors feature a continuous torque range from 0.2 to 53 N•m (0.15 to 39 lb•ft) and provide speeds up to 8000 rpm. Standard high-voltage insulation offers design flexibility and improved operation across applications.



For more information, circle 18

Rotary encoder

Heidenhain's ERO 1470 rotary encoder is offered without integral bearing



and with integrated interpolation electronics, making it suitable for use in the electronics industry. The encoder displays up to 25-fold interpolation of the scanning signals and comes standard with a mounting aid for centering and scanning gaps. Shaft diameters offered include 4, 6, or 8 mm (0.16, 0.24, or 0.31 in) with line counts of either 1000 or 1500; an installation diameter of 44 mm (1.73 in) is required.

For more information, circle 19

Rugged connector

The Tru-Lok connector series from **Amphenol Industrial Operations** features a



molded thermoplastic main plug body and secondary latch with Viton main seals and wire seals. Designed to perform in demanding environments such as under valve covers on diesel engines, the 2-pin connectors with 1.5-mm (0.06-in) sockets feature the company's RADSOK contact system—a patented electrical terminal based on hyperbolic grid configuration that ensures a large, coaxial face-to-face engagement area for a low-millivolt drop-connection with low insertion force. The stamped grid and cylinder are rugged, allowing for a large number of insertion cycles and off-axis insertions.

For more information, circle 20

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Self-locking fasteners

Nylok's True Blue self-locking fasteners stay locked until reused or re-adjusted, according to the company. A nylon patch is permanently sprayed onto the fastener threads or embedded into the threads as a pellet or strip.



When engaged with mating threads, the nylon is compressed and reacts, creating a counterforce and a positive resistance to vibration. The pliable nylon retains its locking properties at temperatures up to 250°F (121°C) and is unaffected by alcohol, gasoline, hydraulic fluids, or most commercial solvents. Other product benefits include improved sealing properties and fluid leakage prevention, the ability to assemble nuts from either end, and a reduction in assembly costs.

For more information, circle 21

Deep-cycle battery

Odyssey Batteries of EnerSys Reserve Power Group offers a Group 31-size, deep-cycle, sealed, valve-regulated lead-acid battery that provides a service life three to four times longer than typical wet-cell batteries, according to the company. The Odyssey PC 2150 military grade battery provides up to 70% more starting power at temperature of -4°F (-20°C), making it suitable for heavy-duty, deep-cycle applications such as trucks, buses, construction equipment, and RVs. The PC 2150 can



start vehicles at temperatures as low as -20°F (-29°C), lasts up to 10 years in operation, offers starting power up to 12 months in storage, and features a two-year storage life at room temperature. Sealed Drycell construction prevents external venting, reducing terminal corrosion and resulting in improved charge acceptance. The rugged 12-V battery offers cold cranking of 1090 A and hot cranking of 1500 A at 0°F (-18°C), a reserve capacity of 185 min, and a mass of 89 lb (40.5 kg).

For more information, circle 22

Torque limiters

Joyce/Dayton offers adjustable torque limiters that can be integrated within most Joyce Steelbelt Speed Reducers. The mechanical torque limiters feature a slip clutch assembly in an oil bath. The clutch slips automatically to reduce damage to equipment and machines and minimize downtime, according to the company, and the reducer returns to normal operation after the obstruction is removed. Torque limits are set at the factory; adjustments allow customers to set limits in the field. The limiters are suitable for use with equipment that requires overload protection.



For more information, circle 23

Pressure transducer

The Ashcroft G2 pressure transducer from **Dresser Instruments** offers a custom ASIC (application-specific integrated circuit) that enables improved digital compensation. Other features include 1% full-scale total error band performance including linearity, hysteresis, non-repeatability, and thermal error; improved RF/EMI (radio-frequency/electromagnetic interference) performance; an IP67 water ingress rating; and available pressure ranges from 30 to 20,000 psi (2 to 1380 bar). The compact transducer also offers a planar, micro-machined sensor, all-welded wetted materials, and a variety of pressure connections, output signals, and electrical terminations.



For more information, circle 24

Hydraulic hoses

Europower uses Arnitel thermoplastic ether ester block copolymer elastomer from **DSM Engineering Plastics** for the core of its line of hydraulic hoses. According to the company, the Arnitel product offers a smoother inner surface, improved flexibility, and better hot oil resistance than traditional nitrile rubber. Other benefits include hose cores with thinner walls at a given pressure rating for improved flexibility and decreased mass; improved fluid pumping; and longer service life. Cores can be produced to any length, including continuous production. Arnitel requires no processing oils or plasticisers for flexibility, affording no leaching of contaminants in use.



For more information, circle 25

Locking lever switch

The 100 series K locking lever switch from **E-Switch** allows the toggle to be locked in any of three positions to prevent unintentional actuation. Designed for rugged environments, the

Rugged operator panels for automotive application



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panel-mounted switch is suitable for applications in instrumentation, test circuits, and industrial control equipment. Features include plated brass and stainless steel construction, a minimum mechanical and electrical life of 40,000 cycles, an operating temperature range of -30 to +85°C (-22 to +185°F), and dielectric strength of 1000-V ac. Overall switch dimensions are 37 x 12.7 x 6.9 mm (1.5 x 0.5 x 0.3 in). Three functional options are available, and initial contact resistance is a maximum of 0.01 Ω.



For more information, circle 26

Touch screen

IRTouch screens from **Touch International** are transparent, high-resolution screens that feature infrared touch technology to provide a stable solution for industrial process control display applications, indoors and out. Not using film or conductive layers offers standard transparency of more than 92%, and there are no fragile components to be scratched. The rugged IRTouch screens operate over a temperature range of -41 to +70°C (-41.8 to +158°F) and perform in severe weather conditions as well as in factory environments where water, acid, oil, dust, dirt, moisture, and EMI (electromagnetic interference) can be a problem. Units can be operated by finger, gloved hand, or stylus and require no pressure on the touch screen surface. Response time range is 10 to 35 ms. Standard LCD sizes are from 12 to 29 in (305 to 735 mm) diagonal, and custom sizes are available.



For more information, circle 27

Toggle switch

Cole Hersee offers an illuminated-tip toggle switch for trucking applications. The tip of the switch lights red in the on position and white in the off position, allowing for easy operator identification. The black plastic switch is offered as either on-off or on-off-on. Silver contacts provide switching at 25 A and 12-V dc. Blade terminals, nickel-plated brass mounting hardware, and standard 15/32-in thread mounting stem are included with the switch.



For more information, circle 28

Customized manifolds

Bosch Rexroth's Industrial Hydraulics business unit offers a selection of manifolds and related components engineered for specific applications. Bar manifolds, sub-plates, and coverplates are available in sizes 6 to 22. Made of aluminum and ductile iron, each component includes a mounting kit. Aluminum and ductile-iron sandwich plates are also available in sizes 6 to 22 for full flow and test port tap-in. These components, as well as Rexroth compact bodies and compact sandwich, also include **SAE**, **BSP**, or **NPT** porting. Sandwich plates include O-rings. Aluminum and



ductile-iron valve adaptors provide size adaptation for sizes 6 to 32 and include a mounting kit. Rexroth also provides logic manifolds in sizes 16 to 63 with configuration provided for each model code. All Rexroth manifolds are blackened prior to shipment.

For more information, circle 29

Industrial sensors

Series 121 industrial, dynamic ICP pressure sensors from the Pressure Division of **PCB Piezotronics**, detect small pressure fluctuations in the presence of high static background pressures. The sensors contain built-in microelectronic circuitry to deliver a voltage output signal and are offered in full-scale ranges from 100 to 5000 psi (7 to 345 bar). Units feature hermetically sealed, stainless steel construction and a 1/4 NPT or straight metric M14 mounting thread. Also offered is a 2-pin MIL (machine interface layer) connector or a submersible cable assembly. Electrical case isolation provides shielding from electromagnetic fields and eliminates ground loop problems. Applications include the detection of dynamic pulsations, surges, leaks, water hammer, cavitation, and spikes in liquid delivery systems, pumps, and compressors.



For more information, circle 30

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