

Marine filter media

The Racor Division of **Parker Hannifin** offers the ECO II series high-soot capacity intake filters for marine applications. The filters are designed for applications where high-soot concentrations are present. Marine-grade filter media extends service life in such environments when compared to conventional heavy-duty, paper-type air cleaners. ECO II intake filters are currently available in two sizes: 15 x 15 in (381 x 381 mm) or 15 x 24 in (381 x 610 mm). Features and benefits include extended service life, increased capacity, and lower pressure differential for improved power and fuel economy.



Combustion monitoring

PCB Piezotronics' Model 175A01 dynamic pressure sensor is suitable for measuring dynamic combustion pressure in diesel engines. The piezoelectric charge output sensor operates up to 600°F (315°C) and is structured with stable quartz sensing elements to



measure rapidly changing pressure fluctuations over various amplitude and frequency ranges. The un-cooled design measures pressure with low thermal shock error, and ground isolation avoids electrical interference from electronic ignition systems. A solid-state construction, hermetically sealed housing, and laser-welded flush diaphragm are designed for durability in harsh engine testing environments, making the sensor suitable for research and development or monitoring applications. Model 175A01 is available with a dynamic range to 4000 psi (275 bar), and alternate models and mounting adaptors are available.

EGR technology

Electrically driven exhaust gas recirculation (EGR) valves from **Mahle** enable metering and feedback concerning the current valve position and ensure the valves do not seize, even with pollution. Valves combine technologies, such as the electric drive with a direct current motor, to achieve nonlinear characteristics with low actuating speed and high opening forces. According to the company, metering is optimized, realizing large valve cross sections for a high flow rate and preventing the valve from seizing. The design enables the valve to assume a defined fail-safe position in the event of an error. Mahle optionally offers EGR valves with integrated control electronics, including wear-resistant position sensors. The company also offers EGR technology based on a rotating fast-switching charge air valve.



Long life capacitor

Cantec Systems' Cantec Can-Crank 12- and 24-V EDLC (electrochemical dual layer capacitor) capacitors can be fully recharged in less than 10 s. Models range in size to repeatedly crank 200- to 600-hp (150- to 450-kW), 8- to 18-L diesel engines and meet demand for engine cranking, accessory laden, parasitic load, cold temperature, and depleted battery vehicles in the heavy-duty off-highway industry. Features include long life in excess of 500,000 cycles; a lack of downtime and jump-start costs; rugged, noncorrosive construction; improved shock, impact, and vibration characteristics; and an operating temperature range of -45 to +50°C (-49 to +122°F).



Medium-duty fan drive

A higher-torque EC600 electromagnetic on/off fan drive from **Horton** was designed for use on medium-duty trucks, buses, and off-highway equipment. The diesel fan drive offers 125 lb-ft (170 N·m) out-of-box torque and delivers rapid cooling. It engages 10% of the time as needed, and features engine temperature control to ensure the vehicle operates at maximum fuel efficiency and can haul heavier loads and scale steeper grades with minimal drag, according to the company. Other benefits include improved engine warming, more effective cab heating, and efficient air-conditioning system operation. Suitable for vehicles without air brakes and those in highly regulated, cost-conscious environments, the EC600 requires minimal installation and requires no life-time maintenance.





Compact analog meter
Transducers Direct offers the TDRO-10, a small programmable meter for analog sensors/transducers with integrated diagnostics for I/O. The meter features two-button programming, a 67-ms update rate, and a compact size one-quarter that of conventional meters. The TDRO-10 fits into a standard 1/8 DIN cutout, improving space in control systems and offering designers layout flexibility, according to the company. Designed for standard sensor inputs of 0 to 10 V or 4 to 20 mA with over-voltage protection, the meter converts to pure volt meter readout, and a six-digit LED display offers half-inch numbers. TDRO-10 meters are suitable for dashboards in off-highway vehicles.



ters from **S. Himmelstein and Company** offer full-scale ranges from 2 to 833 lb-ft (2.7 to 1130 N-m) and output ± 10 or ± 5 V of torque. The transducers lack pots or switches and do not require manual adjustments. Calibration values, scaling, and units of measure are stored in nonvolatile memory and are automatically loaded. Internal signal processing is accurate to 14 bits. Other features include noise tolerance, high overload capacity, high over-range, bidirectional calibration, selectable signal filters, and inclusion of PC interface software. Two accuracy grades are offered: 0.2 and 0.15%.



Scalable tractor management

A scalable kit of electronic control units (ECUs) from **Bosch Rexroth** is designed to satisfy integrated tractor management requirements while increasing overall functionality. The kits include ECUs, application software, and a range of valves. The SRC6-10, SRC36-20, and SRC8-8 central ECUs can electronically reproduce the tractor's required functions, including transmission management and open- or closed-loop-controlled power take-off. The SRC8-8 central ECU was developed for mid-performance tractors in which small scope I/O functions combine with high computer requirements. It features 16 power outputs and 49 signal inputs. The SRC6-10

operates with a 16-bit controller and facilitates complex vehicle integration. The SRC36-20, with 56 power outputs, is suitable for maximum integration of control functions.



Equipment simulators

Immersive Technologies has 330 Advanced Equipment (AE) Simulators operating at 130 locations in 21 countries around the world with customers including mines, equipment dealers, and operator training schools. The AE Simulator can help overcome various mining operational issues, including skill and labor shortages and a lack of resources, such as tires. Benefits of the AE Simulators, according to the company, include increased operator safety and reduced costs.



Thermal sensor
Spectrum Sensors and Controls

introduces a general-purpose temperature sensor assembly that monitors air temperatures or can be installed in a thermowell for liquid sensing, making it suitable for standard controllers or data loggers. Features include a sturdy construction with a fully potted metal housing that encloses the thermistor element and a plastic-molded shell that isolates it from the environment and adds strain relief. The sensor is available in values ranging from 2252 to 10,000 Ω ; standard temperature accuracy is $\pm 0.2^\circ\text{C}$ ($\pm 0.4^\circ\text{F}$) from 0 to 70°C (32 to 158°F). Options include various cable lengths and multiple connectors and terminations.



Space-saving connector

NTI offers a 24-way hybrid electrical connector with Ergomate technology for improved insertion and assembly. The **USCAR**-compliant APEX connector is designed for wire-to-wire sealed applications on commercial and off-highway vehicles. The connector uses two sizes of terminals: the APEX 2.8 for up to eight power circuits and the APEX 150 for up to 16 signal or mid-power circuits. Benefits include reduced packaging space and connection time. A grommet sealing system simplifies wire harness assembly, and a geared cam and slider design improves accuracy over traditional assists, according to the company. All forces to make the connection are in one axial direction.

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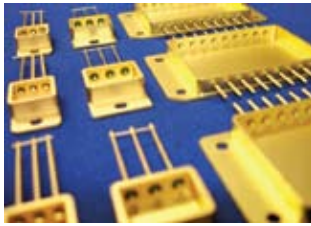
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Hermetic microelectronics

CPS Technologies' TO-250 type products can be made in various combinations and consist of a cold-rolled steel frame with hermetic seals made with alloy #52 or copper cored alloy #52 pins in a compression glass seal or ceramic terminal. Bottom choices can be OFHC copper, copper molybdenum, copper tungsten, or Glidcop. Braze material is 72% Ag/28% Cu (BT braze). The hermetic microelectronic packages enable successful communication for military and other harsh-environment applications.

Hydraulic cylinders

The **Bosch Rexroth** CDT1 and CDT4 series of tie-rod hydraulic



cylinders feature a single removable ductile iron bearing for improved service life. Designed for sealing system applications including machine tool, plastics machinery, and material handling equipment, the CDT4 series operates at a nominal pressure rating up to 3000 psi (207 bar), while the CDT1 offers 1500 psi (103 bar). Reduced guide clearance provides uniform load distribution, and a rod bearing spiral groove lubricates and compensates for pressure change. High-tensile steel tie rods with rolled threads improve strength and corrosion resistance. Piston rods are available in various diameters and stroke lengths.



LED lamps

The Step Well LED WhiteLight lamp from **Grote Industries** offers a well-lit vehicle entry point by improving visibility in floor lighting for buses and other vehicle step well applications. Designed in compliance with the Americans With Disabilities Act, WhiteLight technology provides bright white lighting while maintaining low power usage and low heat output. The Step Well lamp integrates into existing platforms; features include dissipated internal thermal heat buildup, thermal and moisture resistant potting cushioning, angled circuitry, stainless steel bezel enclosure with a polycarbonate lens, and a low operating temperature to alleviate injury during lamp contact.



Advanced bearings

Thomson Super Ball Bushing bearings—designed in various metric sizes—feature a low coefficient of friction, allowing smaller motors, belts, gears, and ball screws when replacing high friction bearings. Suitable for new applications or as a drop-in replacement, the bearings have a self-aligning capability up to 0.5° that compensates for inaccuracies and deliver acceleration rates as high as 150 m/s² (490 ft/s²). Available in adjustable, closed, and open configurations, bearings can be configured to carry heavy loads, reducing component size. Double lip integral wipers prevent contamination and preserve lubrication, while wear-resistant polymer retainers reduce inertia and noise.

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Puncture protection

Arcco's QuikGel lightweight self-sealing polyurethane liner protects from punctures up to 0.3125 in (8 mm) diameter. The flatproofing fill material improves protection to the middle of the sidewall with additional shoulder coverage for lateral punctures. Self-sealing gel membrane protects against small punctures, is cast balanced to ensure a smooth ride, is re-treadable, and allows the tire and vehicle to perform as designed. Other features include coverage in high-risk areas of the tire and protection in the tread area. QuikGel is suitable for skid steers, agricultural equipment, telehandlers, golf carts, lawn and garden vehicles, ATVs, and other reduced weight applications.



Efficient illumination

The Golden Dragon ARGUS White LED from **OSRAM Opto Semiconductors** combines ThinGaN (indium gallium nitride) technology for improved brightness and uniformity with a high efficiency backlighting and illumination lens and chip level conversion technology. Features include an operating temperature range of -40 to +85°C (-40 to +185°F) and an operating life of more than 50,000 h. Designed as a compact general-purpose LED, the ARGUS white delivers useable bright light with uniformity for applications such as backlighting and specialty illumination of more than 85%. A low-profile package reduces part count and makes the LED suitable for various lighting applications.