

Automated valve insertion

A new system from **Cincinnati Lamb Assembly & Test** for automated transmission valve assembly uses patented tooling to align and insert spool valves into precision bores in aluminum valve bodies or channel plates. The gap between the outer surface of the



spool valve and the interior of the valve bore is ± 0.0005 in (0.0127 mm), making it difficult to insert a valve into a bore without damage or jamming. The system uses air pressure to concentrically align and draw the valve into the bore.

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Adhesive dispenser

FusionMate Adhesive Dispensing Systems by **Plexus** are suitable for high-volume bulk adhesive dispensing applications. The all-pneumatic system is powered by



shop air at 100 psi (690 kPa) and provides precise, continuous metering at ratios from 6:1 and 15:1 and flow rates from 0.1 to 1.3 gal/min (0.4 to 4.9 L/min). Separate chain drives for adhesive and activator allow each to be purged independently. Simple, reliable valve guns accept standard static mix nozzles and provide precise bead control.

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Injection-molding press

The V88 is an 800-t (880-ton) clamp force press from **REP Corp.** with 1000 x 1000-mm (39.4 x 39.4-in) platens and three-shot volume models: 4000/6400/8500 cm^3 (136/217/288 oz). The press



features the REP injection unit that separates the plasticizing and injection functions. It is monitored by Intelinject controls, a closed-loop system for the entire injection-molding process of the press. Additional standard features are Thermotrac3, the auto-calculation software from REP that electronically adjusts PID coefficients of the mold temperature to yield consistent parts from each press cycle, as well as Mastertrac software, which replicates all press parameters and mold conditions for any designated part, in a self-teaching mode.

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Horizontal machining center

EX-CELL-O Machine Tools, Inc.'s XHC 341 high-speed horizontal machining center features 800-mm (31-in) x-y-z axis travels and a rotary table measuring 630 mm (25 in) in diameter. The unit is suited for the machining of larger parts as well as



for processes requiring multiple clampings. Features include 120 m/min (394 ft/min) feed rates in x, y, and z axes; 16,000 rpm spindle; and 4.6-s chip-to-chip time for the dial magazine (2.7 s for the rack type magazine). It is equipped for wet and dry machining, and chip disposal in dry and minimum-quantity-lube applications.

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Lubricant and coolant

Boeing Aircraft Company (BAC) revised its 5008 process specification, giving Hocut 795-B approval for use in any BAC metalworking application. The



material can be used as a lubricant and coolant for manufacturing aid. Hocut 795-B from **Houghton International** incorporates additives to protect aluminum, stainless steel, titanium, and inconel. The heavy-duty, non-foaming, biostable fluid enables longer sump life and near-zero counts of bacteria and fungus without the use of biocides.

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Pressure-compensation seal

Schreiner ProTech's pressure-compensation seals (PCSs) are water-repellent, air-permeable membranes suitable for fully automated dispensing and application. The type of adhesive



used for attaching the PCS to the component can be specifically adapted to the respective substrate. The PCS blocks water while allowing large amounts of air to flow through the membrane. PCSs are small, lightweight parts, available in various shapes, which can be applied to components quickly and efficiently. Other uses for PCSs include ignition switches, electric motors for car windows, and ABS control units.

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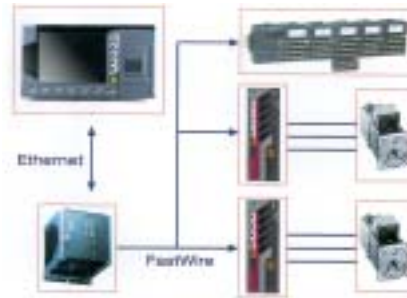
Matting agents

Degussa's ACEMATT HK440 untreated matting agent is designed for matte surfaces in the coatings industry. The product was specifically developed for applications requiring low gloss-to-sheen ratios (60°/85°) and provides good surface appearance and viscosity stability. The company also has developed two soft-touch matting agents for coatings including EXP 3200-1 and EXP 3300-1, which can provide a wide spectrum of tactile properties.

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Digital protocol

The FastWire digital protocol from **OSAI-USA** permits the firm's 10/Series numerical controls to read and transfer data faster, connect and control more remote modules, and improve accuracy and productivity for the CNC machine user. With this protocol,



the 10/Series transfers data at 90 Mbaud. With synchronization between the master (CNC) and all FastWire devices totally generated by hardware, the interpolation of more axes with a greater accuracy and precision is possible even if the number of FastWire devices increases. The CNC will auto-tune the machine, reading such variables as electrical power and following error in real time, without external sensors or instruments.

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Crimping technology

Methode Development Co., a subsidiary of **Methode Electronics Inc.**, offers patented technology to create electrical connections without the use of solder, lead, or high temperatures. Sonicrimp technology can join similar or dissimilar materials to create gas-tight, moisture-resistant connections, making it suitable for use in automotive applications with temperature-sensitive components or where lead-free connection is preferred. It mass-terminates solid or stranded wire, cable, flex circuitry, conductive inks, carbon fibers, headers, or connectors directly to a PC board or



substrate. A polymer cap-and-cradle system applies high pressure to the connection, and sonic energy completes the electrical connection. Ultrasonic technology is used for an even distribution of energy applied to each circuit simultaneously.

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Industrial air cylinders

Miniature air cylinders from **Mack Corp.** are used in production tooling, automated processes, and general-purpose industrial applications. They operate on plant air using



standard valve-circuits with a choice of mounting and porting options in various materials. Both U.S. and metric versions are offered, and standard cylinders are easily modified for special user requirements.

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Conveyor-belt fasteners

The 140VP and 2VP Flexco bolt solid-plate, conveyor-belt fasteners from **Flexible Steel Lacing Co.** combine multiple steel top-plate fastener segments under a single-piece, vulcanized, rubber-top cover. The 0.125-in (3-mm) rubber-top cover's working temperature range is -40 to +180° F (4 to 82°C), and its



flexibility allows the splice to conform to belt-toughing angles. Similar to standard-bolt, solid-plate installation, bolt holes are drilled through the belt ends guided by a dichromate VP template, and bottom plates are inserted upward from the underside of the belt. Flexco piloted bolts feature a 0.25-in (6-mm) threadless shank at the tip of each bolt.

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Rapid-loading rivets

Flexco rapid loader collated rivet strips from **Flexible Steel Lacing Co.** speed up installation of its SR rivet-hinged and BR butt-rivet (solid plate) conveyor belt fasteners. Plastic strips hold four sets of five rivets in the pattern required for installation. Each block of 20 rivets, which installs four adjacent fasteners,



loads in approximately seven seconds using rapid loader strips, compared with about 35 s when rivets are loaded individually. Self-setting rivets feature breakaway pilot nails that penetrate the belt without damaging its carcass, and allow installation to be completed entirely from the belt's topside. The SR and BR rivets are suited for belts with mechanical fastener ratings up to 8000 psi (55 MPA).

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Oil-shear clutch-brakes

Force Control Industries Inc.'s Posidyne X class oil-shear clutch-brakes provide near-servo speed and precision, according to the company. Available in four model sizes that fit drives up to 10 hp (7.5 kW), the units provide torque ratings from 100 to 1000 lb•in (11.3 to 1.3 N•m). The clutch-brakes transmit torque by shearing automatic transmission fluid between

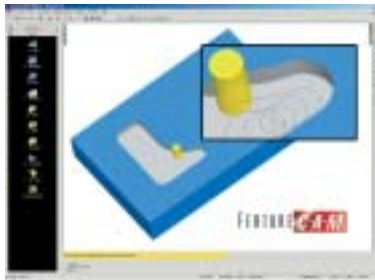


multiple friction discs. Pneumatic action allows torque and engagement speeds to be controlled via pressure change. An air-set clutch/spring-set brake, and an air-set clutch/air-set brake are available. Applications include case packers, indexing conveyors, and other high-cycle-rate machinery in 24/7 production.

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High-speed cutting

Engineering Geometry Systems' FeatureCAM 2005 software contains a new type of toolpath for high-speed machining. The curly corner toolpath allows high speeds to be maintained with a consistent cutter-load by using a trochoid path through slots and in tight corners. It helps to control the width of cut in sharp corners and slots where the



amount of material removal can place a huge load on the cutter. Sharp transitions in cutter direction are eliminated, allowing the cutter to maintain a consistent load and speed.

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Servo motor controller

The LC8 AC servo motor controller from **SMC Corp.** is a servo amplifier/controller for the LJ, LG, and LTF series actuators. Up to seven LC8s can be slaved together for control from a single PLC, which can execute 117 steps to command any or all of the actuators to move to a specific position, to a certain distance, or apply a specific amount of torque. Position accuracy is



± 0.005 to 0.025 mm (0.0002 to 0.001 in) depending on the feed screw end of the actuator. Five palletizing steps can use the same command from the PLC to move two axes sequentially through pallets of up to 10,000 rows by 10,000 columns.

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Expansion chamber

Equalizer expansion chambers from **TRICO Manufacturing Corp.** prevent pressure increases in closed-system equipment. A rolling diaphragm provides a variable volume that maintains housing pressure at or near zero pressure. Reduced pressure extends seal life and helps prevent



leakage, according to the company. The corrosion-resistant stainless steel unit provides an air-expansion capability up to 25 in³ (410 cm³). Expansion chambers also protect the integrity of closed systems by preventing the exchange of air from the chamber to the surrounding atmosphere.

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Collet closer

Lexair's 16C pull-back style collet closers with an A2-5 spindle nose accept 16C collets up to 1.63 in (41 mm), 16C step chucks up to 6 in (152 mm) diameter, and expanding-



nose 16C collets for I.D. holding. The units operate at a maximum of 150 psi (10 bar) air or 400 psi (28 bar) hydraulic. This yields a clamping force of 5062 lb (2300 N) on air and 13,750 lb (61 kN) on hydraulic at maximum drawtube force.

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Power rotating

Herkules Equipment Corp.'s power rotate-multiple position system allows continuous part retrieval on the production line by rotating a full bin to within operational reach, keeping production on schedule. The rotating base is air-powered with a spiral gear and is equipped with an outer ring of support casters for offset loads. The bi-directional



system provides 360° of operation with zero-effort positioning. It supports up to four independent lift modules and features a 4-in (102-mm) profile, 6000-lb (840-kg) capacity, with 25 in (635 mm) of travel. The system is suited for facilities that are structured with stationary assembly operations and for plants that require a bin of parts in queue to meet production requirements.

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Filtration membrane

Koch Membrane Systems Inc.'s KPAK ultrafiltration module for electrocoat paint applications provides enhanced membrane area per cartridge, resulting in a higher permeate output relative to the paint feed when compared to several other systems. The lower paint feed flow requires smaller pumps, piping, and filters



than those needed in other ultrafiltration membranes. It also results in cost-savings, according to the company. OEMs who incorporate the KPAK module into an updated electroplating process can benefit from the easy removal and disposal of the membrane, as well as a single-unit PVC housing.

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Electric cylinder

The ILA ActionJac inline electric cylinder from **Nook Industries** is designed to withstand the pressure of operating at higher-duty cycles in harsh industrial environments. Worm gear screw jacks may be used outdoors, in high-containment environments, and in harsh settings. The cylinder is designed to couple a motor or gear reducer directly to the lift shaft, promoting higher speeds and duty cycles, and can accommodate servo motors and planetary gear reducers.

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Proximity sensor

The 8-mm (0.3-in) diameter all-metal inductive proximity sensor from **Pepperl+Fuchs** is flush-mountable and provides a life span 20 times that of conventional plastic-faced sensors, according to the company. The sensor



operates in temperatures ranging from -14° to +158°C (+7° to +316°F), features repeatability better than 0.01 mm (0.0004 in), and hysteresis of 5%. It is suited for harsh, space-restricted applications with hazards such as lubricants, cutting fluids, metal shards, and target impacts.

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Industrial coatings

PPG Industries' commercial performance (CP) coatings line combines the technology and resources of the company's Light Industrial Coatings, Architectural Finishes, and General Industrial Coatings Groups. The CP



coatings line offers refinish distributors a broader range of choices to find the products that best fit individual customer needs. The coatings include waterborne, alkyd, epoxy, high-bake, and urethane topcoats, as well as specialty primers, powder coatings, pretreatment chemicals, and solvents. The line is capable of competing in the small- to mid-size commercial and industrial manufacturing industries, according to the company.

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Tapping fluid

The Tri-Logic RTD from **ITW Rocol North America**, a division of **Illinois Tool Works Inc.**, is a tapping fluid for demanding reaming, tapping, and drilling operations. The viscous fluid contains extreme pressure additives that fortify cutting fluid and help metalworking manufacturers improve efficiency and cut costs. It reduces friction for enhanced cutting performance. The fluid is suitable for all metals including hardened steel, titanium, and stainless steel. It will emulsify into the water mix cutting fluid, fortifying the extreme pressure cutting properties, and can be added to neat cutting oil for broaching and gear cutting.

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Indexing and rotary tables

The ITI-EXACT series of indexing tables from **Indexing Technologies, Inc.** incorporate a hirth coupling feature, non-lifting tabletops, and an integral pressurization system that eliminates the possibility of contaminants entering the

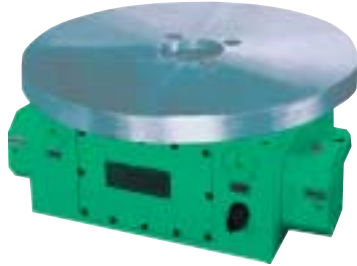


table assembly. The tables include a variety of standard frame sizes with tabletops up to 60-in (1524-mm) diameter. Single- and double-axis numerically controlled rotary tables up to 32-in (812-mm) diameter come with or without a control package, designed for interfacing with machining centers.

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Robotic programming

DELMIA's IGRIP is used by **Volvo Articulated Haulers**, a division of **Volvo Construction Equipment**, for robotic off-line programming. By simulating production in a virtual environment, the software keeps the factory running at full



capacity while changes in production are planned and tested. IGRIP may be used to upload an existing program, analyze and optimize it, and download it again. The IGRIP paint module can be used to optimize and test a program without having to stop production in the paint shop or to test-paint a real product. The result of a painting program can be verified, and the program modified, so that the requirements for paint thickness are fulfilled.

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Modular cleanrooms

Clean Air Products' Series 558 vertical-flow, hardwall modular cleanrooms are available from Class 10 to Class 100. Made from heavy-duty, 16-gauge cold-rolled steel, the rooms have a white baked-enamel or powder-coat finish. Each unit includes full-ceiling high-efficiency



particulate air filter coverage with plenum sections that provide uniform filtered laminar airflow to clean areas, with filtered air going to 100% of the available ceiling surface. Sidewall blower cabinets diffuse air into the upper filter plenums. Sidewall panels contain start/disconnect, wall receptacles, prefilters, and optional cooling coils. Options include aluminum, painted aluminum, steel, and vinyl-covered steel hardwalls; upper and lower control with humidity added by an electric-steam humidifier; and extra sound attenuation.

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Mill/turn HMC

Cincinnati Lamb's H5-1000MT five-axis mill/turn horizontal machining center maximizes productivity on parts 50 in (1270 mm) in diameter or larger by combining four- and five-axis machining and high-speed turning capabilities. Built on the H5 machining-center platform, the machine features a direct-drive motor rotary table available in high-torque (300 rpm) or high-speed (700 rpm) configurations. The A-axis tilt spindle provides a 180° sweep, permitting



efficient cutting of five sides of a part. Spindles come in high-torque or high-speed models ranging from 6000 to 24,000 rpm.

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Paint pretreatment

Gardobond A 4922 and 4923 ferroxphates from **Chemetall Oakite** replace conventional pretreatments on steel, aluminum, and zinc substrates. They provide paint adhesion and salt-spray performance at operating temperatures as



low as 80 °F (27 °C). The materials enhance paint adhesion and salt-spray performance with a variety of paints, resulting in a longer life for the finished part. The products contain no heavy metals, reducing disposal and waste treatment cost.

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Portable measurement tool

FARO Technologies Inc.'s FARO Laser ScanArm is the industry's first seven-axis contact/noncontact device with a fully integrated laser scanner. It allows users to collect simple point variations with the ScanArm's hard probe, and then laser-scan (up to 13,000 points per second) the sections requiring larger volumes of data. The scanning process can be completed without adding or removing attachments, untangling cabling, or needing a separate CMM to import data.



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