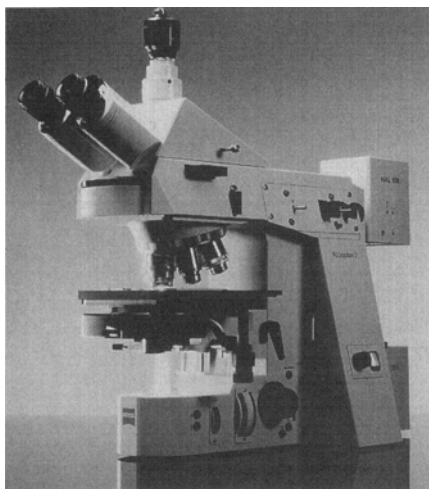


Materials/Products

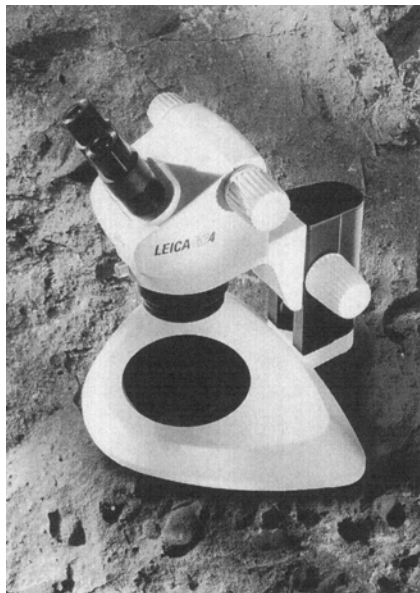
Kro-Lon from **Tools for Bending Inc.** is a **60% hard-chrome/40% PTFE surface with a low coefficient of friction.** Achieved without galling or metal transfer, this surface extends the life of tube bending mandrels and wiper dies by 85 to 260%. Also, less bending lubrication is required, and the process enhances antigall or tube scratching. The process will soon be tested on hydroforming tooling. For further information, contact: Dr. W.F. Lang, Tools For Bending Inc., 194 W. Dakota Ave., Denver, CO 80223-2195; tel: 1/800/873-3305; fax: 303/777-4749.

With a wide 11:1 zoom range, the Stemi SV 11 Apo **stereomicroscope** from **Carl Zeiss Inc., Microscope Div.,** gives brilliant, high-contrast, deep-field, color images. The Plan-Aprochromat S 1.0 \times and 1.6 \times objectives, which provide a magnification range of 6 \times to 264 \times and working distance of 40 to 80 mm (1.57 to 3.15 in.), allow ample room for illumination and manipulation of a specimen. For further information, contact Carl Zeiss Inc., One Zeiss Dr., Thornwood, NY 10594; tel: 1/800/233-2343; fax: 914/681-7446; e-mail: micro@zeiss.com.



Carl Zeiss Inc.

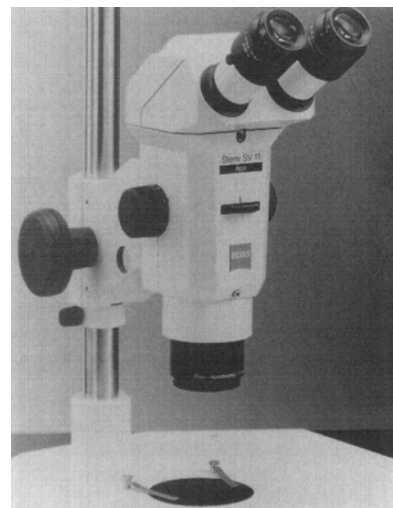
The GZ4 **stereomicroscope** from **Leica Inc.,** has a 4:1 zoom with precentered optical mounting system for consistent alignment, a working distance of 35 to 243 mm (1.38 to 9.57 in.), and magnification ranges from 2.1 \times to 180 \times . A protective material that dissipates static charge prevents electrostatic discharge and reduces dust attraction, and large knobs provide even torque throughout zoom motion. For more information, contact: Leica Inc., 111 Deer Lake Rd., Deerfield, IL 60015; tel: 708/405-0123; fax: 708/405-0147.



Leica Inc.

Carl Zeiss is producing Axioplan 2 and Axiophot 2 **universal digital research microscopes.** Ideal for fluorescence microscopy, the microscopes have doubled light efficiency and permit quick changes among five filter/reflector combinations. A new system condenser allows seven contrasting elements with easy switching between contrasting techniques in transmitted light at all magnifications. For further information, contact Carl Zeiss Inc. One Zeiss Dr., Thornwood,

NY 10594; tel: 1/800/233-2343; fax: 914/681-7446; e-mail: micro@zeiss.com.

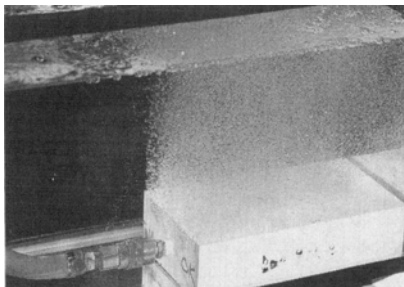


Carl Zeiss Inc.

DeWal Industries has developed D/W FST, a **supertensitized PTFE tape** with silicone adhesive and enhanced physical properties, including tensile strength of >18 ksi and elongation at break of >100%. The product is useful for protection of rollers in the high-speed and high-temperature flat die extrusion coating of paper with polyethylene. It is also good as a high-temperature electrical insulation tape. For information, contact DeWal Industries, 15 Ray Trainor Dr., P.O. Box 372, Saunderstown, RI 02874; tel: 401/789-9736.

Blasch Precision Ceramics has developed **high-performance ceramic diffusers** with precisely controlled porosity and permeability for better bubble distribution, thus allowing copper and aluminum melters to treat molten metal with much less gas. The small pore size created by this process also reduces blockage of the gas stream by liquid metal. For information, contact Bud Webster, Blasch Precision Ceramics, 580 Broadway, Albany,

NY 12204; tel: 518/436-1263; fax: 518/436-0098.

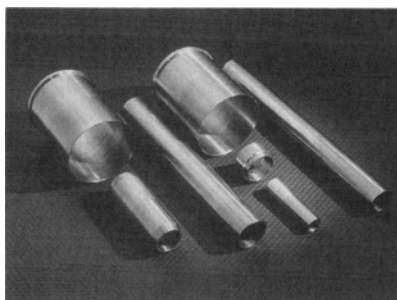


Blasch Precision Ceramics

Owens Corning has available **ZenTron fiber, with 15 to 50% higher tensile strength than other glass fibers**. The fiber's resilience improves impact resistance up to 50% over other fibers. Compatible with epoxy and vinylester resin systems, it has good adhesion, tensile strength of 550 ksi and intralaminar shear strength of 10 ksi. For information, contact Owens-Corning World Headquarters, Fiberglas Tower, Toledo, OH 43659; tel: 419/248-8000.

DeWal Industries Inc. has **PTFE films, fluoropolymer and UHMW films treated to be bondable to elastomers**. The films can be supplied with primers that further enhance the bond. They are usable in such applications as the production of septa for sample vials in EPA and pharmaceutical applications or on the bottoms of skis or pressure-sensitive tapes. For more information or samples, contact DeWal Industries, 15 Ray Trainor Dr., P.O. Box 372, Saunderstown, RI 02874; tel: 800/366-8356.

Nuclear Metals has available **bimetallic transition joints unaffected by severe thermal or pressure cycling**. Fabricated by coextruding and metallurgically joining two dissimilar metals, the bond is



Nuclear Metals

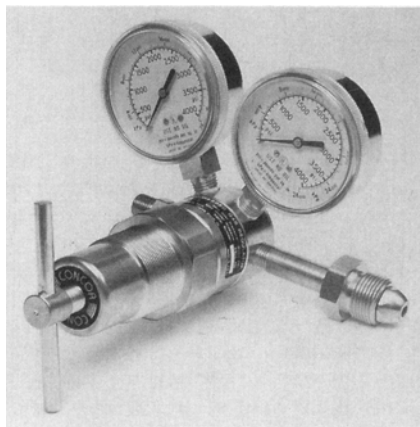
stronger than the parent materials. Eliminating the need for bulky fastening techniques, these joints do not leak when tested at 1×10^9 cm³/s sensitivity on a helium mass spectrometer. One sample joint passed a burst test at 42 ksi and has a tensile strength of 44.8 ksi. For information, contact John Nicolson, Mgr—Specialty Products, Nuclear Metals Inc., 2229 Main St., Concord, MA 01742; tel: 508/369-5410; fax: 508/369-4045.

Aero-Motive has introduced low-price D412 and D413 **hose reels for pneumatic power tools**. These models feature swinging wall or ceiling mounting to keep them off the workshop floor. For information, contact Aero-Motive, P.O. Box 2678, Kalamazoo, MI 49003-2678; tel: 616/337-7700; fax: 1/800/333-6119; web: <http://www.industry.net/aero-motive>.



Aero-Motive

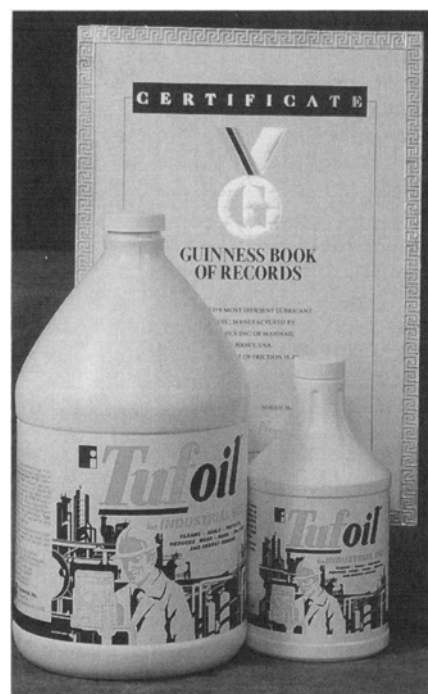
Concoa has introduced a series of **single-stage cylinder gas regulators for high-pressure environments**. These are useful



Concoa

for maintaining accurate fixed pressures in closer systems and provide gas delivery at pressures to 4500 psi. Applications include bomb calorimetry, high-pressure hydrogenation, accelerated age testing, catalytic reduction, bubbling operations, maintaining special atmospheres, and aircraft strut/tire filling. For more information, contact Concoa, 1501 Harpers Rd., Virginia Beach, VA 23454; tel: 1/800/225-0473.

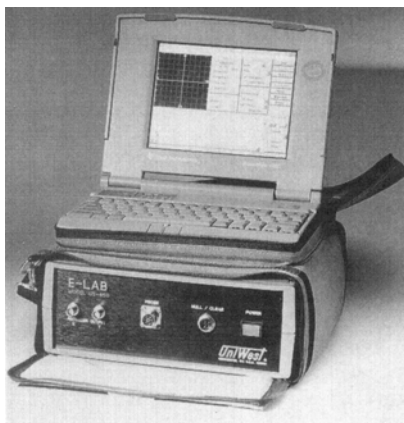
Tufoil, a **lubricant with a steel-on-steel coefficient of friction of 0.029**, is available from Fluoramics Inc. The product provides lower starting torque, less startup wear and extended oil-drain intervals in machinery. The line includes high temperature greases, easily sheared grease for bearings, and oxygen-safe high-pressure thread sealants. Custom blends are available. For information, contact Fluoramics Inc., 18 Industrial Ave., Mahwah, NJ 07430; tel: 1/800/922-0075; fax: 201/825-7035.



Fluoramics Inc.

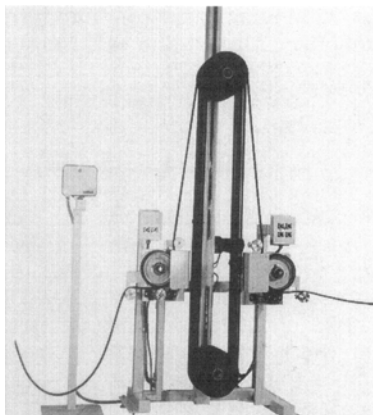
A custom carrying case is available for UniWest's **E-Lab US-450 eddy current instrument**. The soft padded case is made of tough canvas and includes space for a laptop computer, test samples, and a few probes. Zippers allow easy hookups, and a carrying strap eases transportation from office to field. For

for further information, contact UniWest, 330 W. Clark, Pasco, WA 99301; tel: 509/544-0720; fax: 509/544-0868.



UniWest

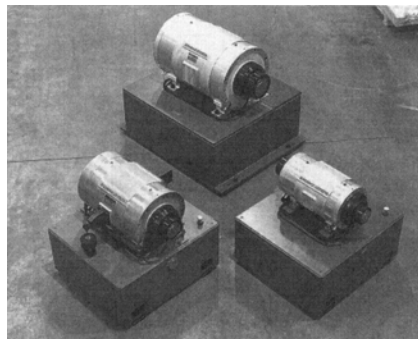
Tower-type *accumulators for such continuous strip or web process applications* as cleaning, heat treatment, and plating are available from **Coiltek**. Tower-type accumulators use a linear traveling pulley or pulley set that climbs the mast during pay-out or rewind applications and accumulates material. For further information, contact Coil Technology Inc., 9950 Rittman Rd., P.O. Box 477, Wadsworth, OH 44282-0477; tel: 330/334-1524; fax: 330/336-2046.



Coiltek

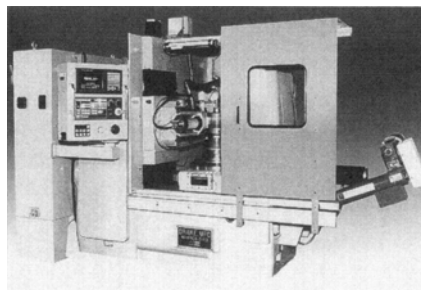
Schenck Pegasus has available the T-Dyn 100, T-Dyn 220, and T-Dyn 380 *dynamometers, with state-of-the-art AC motor and inverter technology*, including insulated gate bipolar transistors. With low inertia and overload capabilities to 200%, the T-Dyns operate at 134 to 510 hp with maximum speeds of 10,000 to 15,000 rpm

and acceleration rates to 33,000 rpm/s. For more information, contact: Schenck Pegasus Corp., 2890 John R. Road, Troy, MI 48083; tel: 810/689-9000; fax: 810/689-8578.



Schenck Pegasus

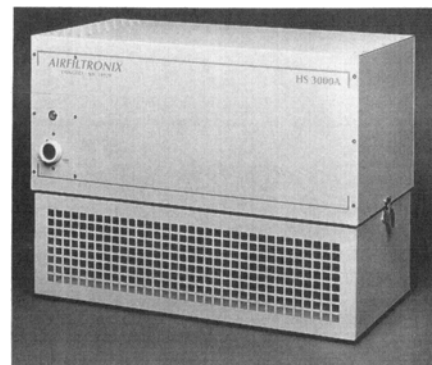
Drake Manufacturing has introduced *six machines in the CNC Gear System: Hobbing series*. Accepting workpiece diameters in 6 in. increments for 6 to 36 in., the machines can precisely hob helical and spur gears as well as worm wheels. Furthermore, they can elevate gear quality by 2+ AGMA classes. For more information, contact: Drake Manufacturing Services Inc., 4371 N. Leavitt Rd., Warren, OH 44485; tel: 216/847-7291; fax: 216/847-6323.



Drake Manufacturing

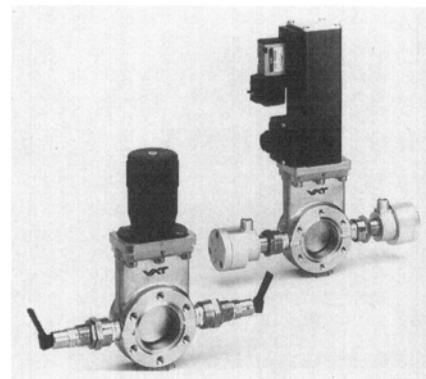
General Devices Co. Inc. has available Chassis Trak D-1050 and D-1054 *bottom-mount slides*. With weight capacity of 400 to 1200 lb, these telescoping slides are useful for service and installation of large electronic enclosures, power supplies, telecommunications racks, generators, battery backup trays, and air-conditioning units. For further information, contact: General Devices Co. Inc., 1410 S. Post Road, P.O. Box 39100, Indianapolis, IN 46239-0100; tel: 1/800/626-9484; fax: 317/898-2917.

A heavy-duty *room air purifier for filtering indoor pollutants* is available from **Airfiltronix**. Each unit handles room volumes to 2000 ft³, and no outside venting is required. Dacron and aluminum pre-filters are available for gross particulate; HEPA filters for powders, bacteria and smoke; and carbon filters for organic vapors and gases. For additional information, contact: Michele Cantwell, Airfiltronix, 154 Huron Ave., Clifton, NJ 07013; tel: 1/800/452-8510.



Airfiltronix

VAT Inc. is producing *miniature UHV gate valves* for simplifying the installation of quadrupole mass spectrometer residual gas analyzers. Their integral bypass mechanism eliminates vacuum joints, additional lines, and potential leaks. By allowing isolation of the mass spectrometer from the process chamber and opening of 1 to 2 other orifices, the particle-free valves permit controlled bleeding of process gases for sampling. For more information, contact: John Freeman, Vice President, VAT Inc., 500 W. Cummings Pk., Woburn, MA 01801; tel: 617/935-1446; fax: 617/935-3940.

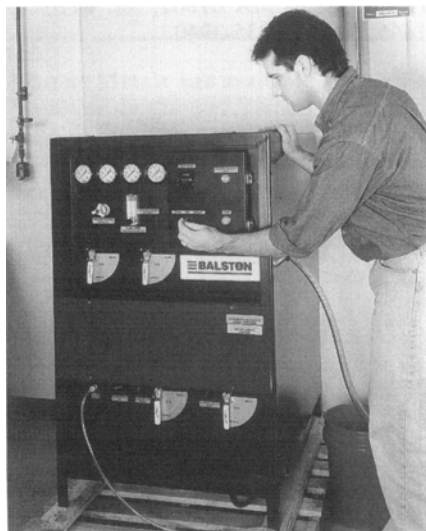


VAT Inc.

Air Quality Engineering has developed *extended service filters for filtration*. Constructed of fire-retardant raw materials and a minipleat microglass fiber element, these filters are suitable for all standard applications. They have extended service life, low-filter pressure drop, airflow capacity to 3000 ft³/min, high contaminant-holding capacity, 11.5 in. depth, no particle migration or fiber breakoff, and they fit into all AQE Inc. media air cleaners and common frames/housings. For more information, contact: Bill Reed, V.P. Sales, Air Quality Engineering Inc., 3340 Winpark Dr., Minneapolis, MN 55427-2083; tel: 1/800/328-0787; fax: 612/544-4013.

To keep its self-aligning bearing clean, **Thomson Industries** developed a *double lip seal that floats in an annular groove to maintain contact with the LinearRace (shaft)*. The Super Smart Ball Bearing is free to "tilt" relative to the shaft by $\pm 0.5^\circ$ to keep its 10 ball tracks in full contact with the shaft. The inner lip of the tough polymer seal keeps lubricants in while the outer lip keeps contaminants out. This protection helps ensure that the bearing will deliver its full potential of twice the load capacity or eight times the travel life of conventional self-aligning linear bearings. For information, contact: Thomson Industries Inc., 2 Channel Dr., Port Washington, NY 11050-2214; tel: 1/800/554-8466; fax: 516/883-9039.

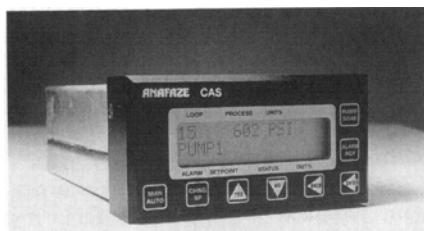
Balston oil water separator from **Whatman Inc.** produces clean water that exceeds 10 ppm storm water regulations. It can run unattended 24 h operation and will



Whatman Inc.

monitor conditions. The system reduces waste volume by 98% while concentrating lubricant for easy disposal. For information, contact Whatman Inc., 260 Neck Rd., P.O. Box 8223, Haverhill, MA 01835-0723; tel: 1/800/343-4048.

A **Compact Alarm Scanner** from **Watlow Electric Manufacturing Co.** has 16 alarm monitoring/ data acquisition channels for use in industry and labs. The unit has 16 analog and 8 digital inputs, 32 alarm output, and 2 system digital outputs. It can be connected to a computer running Anascan software via RS-232 or RS-485 ports. The software allows the user to graph channels in real-time or for the last 48 h. For information, contact: Watlow Electric Manufacturing Co., 12001 Lackland Rd., St. Louis, MO 63146; tel: 314/878-4600; fax: 314/878-6814.



Watlow Electric Manufacturing Co.

Teknor Apex Co. has received UL certification as a supplier of *polyvinyl chloride compounds for ANSI/NSF Standard 61 applications*, such as potable drinking water applications. The eight PVC compounds covered include four unfilled grades (94-A0907B-86NT White 853, 94-A0907C-80NT White 853, 94-A0907D-75NT White 853, and 94-A0907E-90NT White 853) and four filled compounds (94-A0907B-2-86NT White 853, 94-A0907C-2-80NT White 853, 94-A0907D-2-75NT White 853, and 94-A0907E-2-90NT White 853). Unfilled grades are formulated with white pigmentation, but can be provided clear or with a clear tint; filled grades can be also provided in a natural opaque hue with the white pigments removed. For more information, contact: Teknor Apex Co., Plastics Division, 505 Central Ave., Pawtucket, RI 02861; tel: 1/800/556-3864; fax: 401/724-6350.

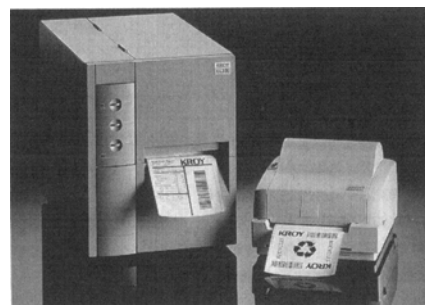
Light Weld 425 and 426 from **Dymax Corp.** form *water-clear bonds to glass substrates on exposure to long-wave UV light and cure within seconds*. Bonds

formed by these adhesives have the good strength, vibration resistance, and impact resistance that allow them to withstand thousands of dishwasher cycles. For more information, contact: Dymax Corp., 51 Greenwoods Rd., Torrington, CT 06790; tel: 860/482-1010; fax: 860/496-0608.

Jewel Fabrics from **Owens Corning** are manufactured from *texturized glass yarn, pigment dyed and coated with a DuPont Teflon stain repellent*. The fabrics are nontranslucent and do not require an interliner when laminated to a yellow ceiling, wall, or baffle panel. The fabrics are tough and durable, exceeding industry standards for resisting flammability and toxicity. They have a melting point of 1350 °F (732 °C). For information, contact Owens Corning, Fiberglas Tower, Toledo, OH 43659; tel: 419/248-8000.

Three *anti-seize compounds* from **Anti-Seize Technology** protect processing equipment, tools, and fasteners from seizing and corrosion. They leave no carbon deposits in high-temperature applications requiring frequent lubrication. Copper Plate is for grounding clamps, battery lugs and cables, compression connections, lamp sockets, and receptacles. Nickel Plate is for high-heat environments (to 2600 °F, 1426 °C). Aluminum Plate is for parts moving in a high-temperature environment to 1800 °F (980 °C). For further information, contact: Anti-Seize Technology, 2345 N. 17th Ave., Franklin Park, IL, 60131-3432; tel: 1/800/991-1106; tel: 847/455-2300 (in Illinois); fax: 847/455-2371.

Kroy Inc. has available *two bar code thermal-transfer and direct-thermal printers*. Intended for low- to medium-volume applications, the K4200 prints up to 2 in./s at 203 dpi with maximum print width of 4 in. The K4300 is for medium- to high-volume users and prints



Kroy Inc.

up to 6 in./s in widths of 1 to 4 in. For more information, contact: Kroy Inc., P.O. Box C-12279, Scottsdale, AZ 85267-2279; tel: 1/800/733-5769; e-mail: info@kroy.com.

Six **high-purity barstock gas regulators designed specifically for chromatography and analytical use** are available from **Concoa**. Labtech 300 is suited for use in the control of high-purity gases, calibration standards, and GC applications using PID, HID, or ECD detection methods; EPA Protocol gases, and purging or blanketing operations. For a catalog or more information, contact: Concoa, 1501 Harpers Rd., Virginia Beach, VA 23454; tel: 1/800/225-0473.

VCI-309 powder from **Cortec Corp.** reduces the corrosion of bare metal by 90% for the interior of vessels, tanks, pipes, and tubular assemblies, especially on interior cavities where paint and other coatings cannot be used. The powder is blown in with a spray gun for two years' protection. For more information, contact: Cortec Corp. 4119 White Bear Pkwy., St. Paul, MN 55110; tel: 612/429-1100 or 1/800/4-Cortec; fax: 612/429-1122.

Carpenter Technology has available Micromelt M-4 alloy, a **powder high-speed tool steel** with good wear resistance, strength, and toughness. The alloy is a molybdenum-tungsten-bearing powder steel with high carbon and vanadium. It is easy to grind and has a uniform structure. For a technical data sheet, contact Harrison Garner, Carpenter Technology Corp., P.O. Box 14662, Reading, PA 19612-4662. In Canada, call 1/800/268-4740.

A Static Transfer Switch from **Liebert** uses fast solid-state switching devices to transfer between two sources of AC power close to the critical load. Typical applications include precision power centers, power distribution units, and multiple uninterruptible power supplies. The STS also provides integral, key-interlocked maintenance bypass to both input sources for maintenance without load shutdown. For more information, contact: Liebert, 1050 Dearborn Dr., P.O. Box 29186, Columbus, OH 43229; tel: 1/800/877-9222 or 614/888-0246; fax: 614/841-6973; e-mail: 74603.1036@CompuServe.com; web: <http://www.liebert.com>.

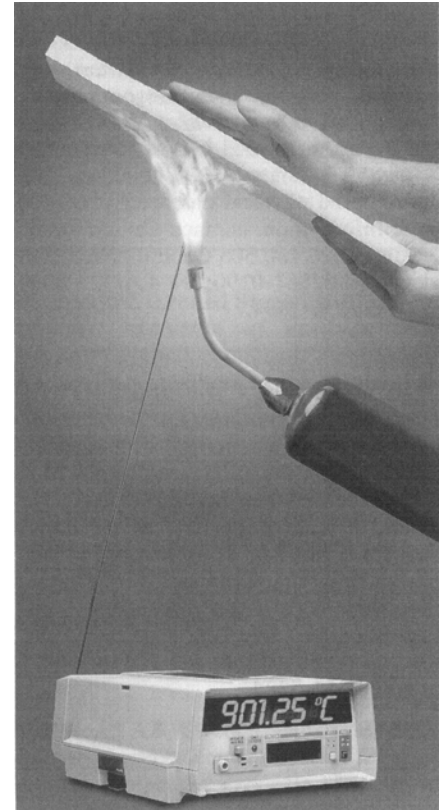
MQS Inspection and **Omega International** have jointly developed ThruVu, a portable, **on-line real-time radiography system for measuring pipe wall thickness**. The device uses a low-intensity iridium gamma ray source and a linear array of digital solid-state detectors that are positioned by an automated crawler. A portable computer collects and analyzes the data and plots thickness values instantaneously. For more information, contact: MQS Inspection Inc., 2301 Arthur Ave., Elk Grove Village, IL 60007; tel: 708/981-8777.

The Ez-Surf Grinder from **Bridgeport Machines** is a **surface grinder** that can be run manually, in "teach" mode, or automatically. In "teach" mode, the machine stores each move the operator makes and can then run through subsequently identical parts automatically. For more information, contact: Bridgeport Machines Inc., 500 Lindley St., Bridgeport, CT 06606; tel: 1/800/243-4292.



Bridgeport Machines

Magnifoam Technology has available **silicon foam in a range of ultralow densities (from under 5 to 14 lb/ft³)** and in thicknesses of up to 4 in. The foam can be used as part of solutions to current design and safety challenges in the aviation, transportation, and marine industries. For more information, contact: Thomas R. Ambeau, President, Magnifoam Technology Inc., 17-106 Saunders Rd., Barrie, Ontario, Canada L4M 6E7; tel: 705/725-0900; fax: 705/725-9055; e-mail: mti@magnifoam.on.ca.



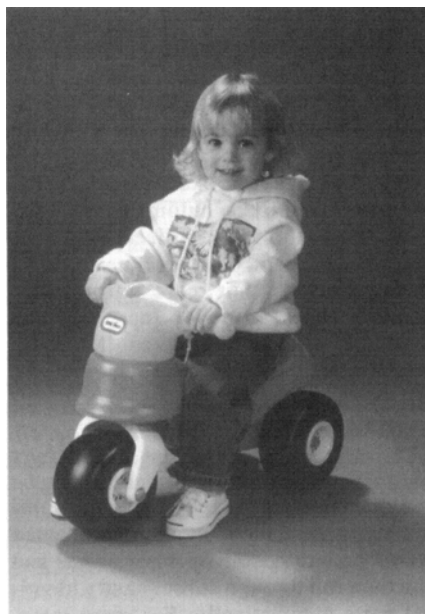
Magnifoam Technology

Low-odor, noncorrosive adhesives manufactured by **Dymax Corp.** are (meth)acrylic acid-free and meet Hazmat requirements that now restrict use of (meth)acrylic acids. They also eliminate corrosion in applications such as sealed motors, while maintaining structural integrity. For more information, contact: Dymax Corp., 51 Greenwoods Rd., Torrington, CT 06790; tel: 860/482-1010; fax: 860/496-0608.

Aavid Thermal Technologies Inc. is producing Polar Cap **bonded-fin heat sinks that use impingement cooling techniques to reduce temperature rise, increase design flexibility, and more efficiently cool high-power electronics models** like telecommunications power amplifiers and motor drives. Heat removed per cubic inch of heat sink volume is greater than conventionally cooled heat sinks. For more information, contact: Aavid, One Kool Path, P.O. Box 400, Laconia, NH 03247-0400; tel: 603/528-3400; fax: 603/528-1478; web: <http://www.aavid.com>.

Teknor Apex has developed a grade of Flexalloy *polyvinyl chloride that combines good chemical resistance and physical properties in close-tolerance die-cut gaskets and washers*. The material can be manufactured in low durometers (as low as 35 Shore A) while maintaining the required physical characteristics. For more information, contact: Teknor Apex, Plastics Division, 505 Central Ave., Pawtucket, RI 02861-0290; tel: 401/725-8000 or 1/800/556-3864.

Cyrex alloys from **Cyro Industries** have *better impact strength than polycarbonate and good processibility*. Processing conditions for injection molding are 70 to 100 °F cooler than polycarbonates. The natural opaque white base of the alloys also lends itself to being colored to specific customer requirements. For information, contact: Cyro Industries, 100 Enterprise Dr., Ste. 700, P.O. Box 5055, Rockaway, NJ 07866; tel: 201/442-6000 or 1/800/631-5384.



Cyro Industries

Processing/Equipment

General Magnaplate Corp. has developed Magnaplate HMF, a proprietary *surface enhancement process* that creates a hard (to 68 HRC) mirror-smooth (to 4 RMS) microfinish on the surface of ferrous metal, copper, or aluminum alloy components. With exceptional wear properties, this finishing is suited for applications where superior mold release properties are important. For further information, contact: General Magnaplate Corp. 1331 Rte. 1, Linden, NJ 07036; tel: 1/800/852-3301; fax: 908/862-6110; web: <http://www.magnaplate.com>; e-mail: info@magnaplate.com.

Dow Magnesium has developed a technique that *quantifies magnesium oxide impurities in recycled magnesium alloys* that, when present at high enough concentrations, can have a detrimental effect on die-cast mechanical properties. Because magnesium oxide particles are darker than the alloy, the technique correlates light reflectance to magnesium oxide content. The technique could be important, because the acceptance of recycled magnesium alloys for high-volume automotive die castings has been limited by quality concerns. For more information, contact: Dow Magnesium, 2020 Dow Center, Mid-

land, MI 48674; tel: 1/800/447-4369; fax: 517/832-1465.

SiteScan SS2W and Alert are site-management software systems from **Liebert Corporation**. SiteScan is a *site-monitoring package that allows users to monitor any piece of equipment, wherever it is*. The program has been designed for seamless integration into computer, telecommunications, and industrial applications, and is Windows-based for ease of use. Features include location-specific alarms with instructions, in-depth data for equipment performance or support facility planning programs, audit trails that pinpoint the source of a problem, analog and digital remote equipment connection, and the flexibility to manage single or multiple sites and levels of authority. For further information, contact: Liebert Corporation, 1050 Dearborn Dr., P.O. Box 29186, Columbus, OH 43229; tel: 1/800/877-9222 or 614/888-0246; fax: 614/841-6973; e-mail: 74603.1036@Compuserve.com; web: <http://www.liebert.com>.

Philips is producing the MCRS 2000-10 and 2000-30 *real-time inspection systems*. The systems allow inspection in environments ranging from high-speed



Computer Disks:

To reduce the amount of time between submission and publication and ensure accuracy, authors are requested to submit a computer disk (3.5" HD disk) containing the text of the paper along with the manuscript to the editorial office. **Make sure that the disk and hard copy match exactly.** Specify what software was used, including which release (e.g., WordPerfect 6.0). Specify what computer was used (either IBM compatible PC or Apple Macintosh). Include the tables as separate files. Keep a backup disk for reference and safety. If illustrations are available in electronic form, please include them on a separate disk labeled with the drawing program and computer type used. However, it is currently necessary to also include camera ready copies of illustrations.

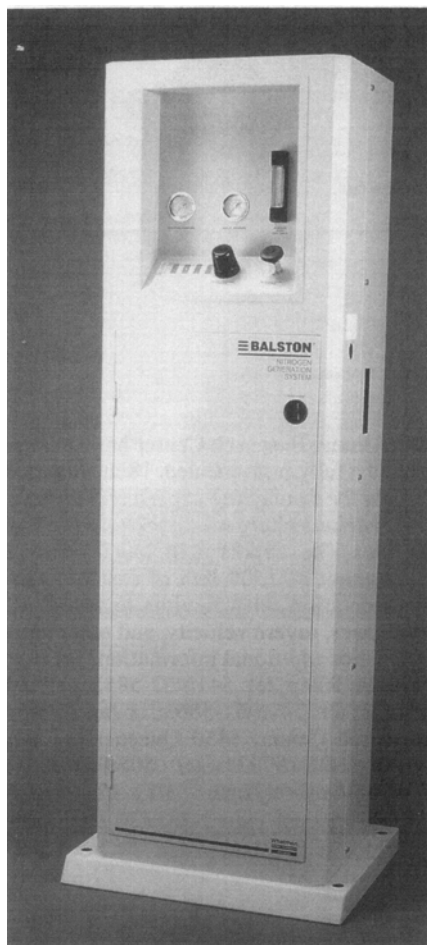
production to off-line product development and process control. Windows-based software allows automated control of manipulation, x-ray parameters, and image processing. Both are compatible with many of the company's high-stability x-ray generation systems. For more information, contact Philips Industrial Automation, 5110 McGinnis Ferry Rd., Alpharetta, GA 30202; tel: 770/751-4420; fax: 770/751-4450.



Philips Industrial Automation

The Balston Nitrogen Gas Generation System from **Whatman Inc.** *produces nitrogen gas from compressed air* and eliminates the need for nitrogen gas cylinders and Dewars. Applications include

purging or testing of tanks and vessels, solvent blanketing, chemical transferring, and sparging and mixing. For additional information, contact Whatman Inc., 260 Neck Rd., P.O. Box 8223, Haverhill, MA 01835-0723; tel: 1/800/343-4048.



Whatman Inc.

Lake Shore Cryotronics Inc.'s Model 460 gaussmeter collects information about the X, Y, and Z axes of a magnetic field with only a single placement of the

Measurement/Testing/Evaluation

ASTM Task Group G01.11.01 on Rapid Electrochemical Assessment of Coatings on Steel is developing a *test method based on electrochemical impedance and cathodic disbondment that will address the limitations of the salt spray test.* For

probe. One to three separate probes—or a single three-axis, two-axis, or differential probe—may be used. The instrument allows for auto or manual ranging of 7 ranges from 300.000 mG to 300.000 kG. For more information, contact Scott Young, Lake Shore Cryotronics Inc., 64 E. Walnut St., Westerville, OH 43081; tel: 614/891-2243; fax: 614/891-1392; e-mail: sales@lakeshore.com.

Molecular Dynamics has available Storm 820 *systems for quantitative filmless autoradiography and, with upgrades, nonradioactive gel and blot analysis capabilities.* The system accepts sequencing gels and other large samples to 35 × 43 cm and is quantitative over five orders of dynamics range. Typical applications include gel mobility shift, primer extension and nuclease protection assays, RFLP analysis, blot analysis, and whole-body autoradiography. For further information, contact: Jim Bull, Product Manager, Molecular Dynamics, 928 E. Arques Ave., Sunnyvale, CA 94086-4520; tel: 1/800/333-5703; fax: 408/773-1493; e-mail: info@mdyn.com; web: www.mdyn.com.

The Actua 2100 concept modeler from **3D Systems** allows design engineers to print *solid three-dimensional models of their design concepts* as easily as printing or plotting a document or drawing. The system builds models in successive layers using a thermopolymer material. Maximum model size is 10 × 8 × 8 in. For further information, contact: 3D Systems, 26081 Avenue Hall, Valencia, CA, 91355; tel: 805/295-5600; fax: 805/257-1200.

Ultrasonic Immersible Transducers from **L&R Manufacturing** create an *ultrasonic cleaning system from existing tanks.* Some items that can be cleaned are batches of castings, nuts, bolts, and machined parts. The transducers are available for bulkhead or rack mounting for sidewall or bottom placement, as well as flexible

additional information about the standard, contact Martin Kendig, Rockwell International, Science Center, 1049 Camino Dos Rios, P.O. Box 1085, Thousand Oaks, CA 91358; tel: 805/373-4241.

cable and standpipe mountings. For large tanks, multiple transducers can be mounted in groups, with each powered by a separate generator. For more information, contact: L&R Manufacturing Co., 7 Old Hwy. 28, Whitehouse Station, NJ 08889, tel: 908/534-4041; fax: 908/534-5023.

Plymouth Extruded Shapes will perform *near-net extrusion of complex steel shapes.* Original equipment manufacturers and part suppliers in the automotive, aerospace, defense, machine tool, and industrial equipment industries can use this as an alternative to welding, forging, casting, or machining of parts. For further information, contact Don Ferguson, Marketing Mgr., Plymouth Extruded Shapes, Plymouth Tube Co., P.O. Box 768, Warrenville, IL 60555; tel: 1/800/323-9506; fax: 708/393-3552.

Sintercast AB, Sweden, has developed a foundry process control system *for producing compacted graphite iron on an industrial scale.* This form of iron has greater strength, stiffness, and wear resistance than gray iron. The development gives the motor industry a way to reduce weight, noise and vibration levels, and friction losses. For further information, contact Sintercast Inc., 1000 N. Opdyke, Ste. A, Auburn Hills, MI 48326-2672; tel: 810/370-0310; fax: 810/370-0370.

The Sigma-Lok Beam from **Clymer Enterprises** is a *nonstep beam for high-traffic storage and retrieval centers*, where fast movement of products is critical. The beam is made from 12-11-10 gage American-made cold-rolled alloy steel. Heavier steel can be ordered as well. For further information, contact: Clymer Enterprises Inc., 407 E. Washington St., Pandora, OH 45877; tel: 419/384-3211 or 1/800/448-0784; fax: 419/384-7239.

MP2C and MP3C are *hand-held coating thickness measurement units* from **Fischer Technology**. They can use a variety of Fischer probes, thus allowing the operator to cover diverse measurement applications simply by changing probes. The

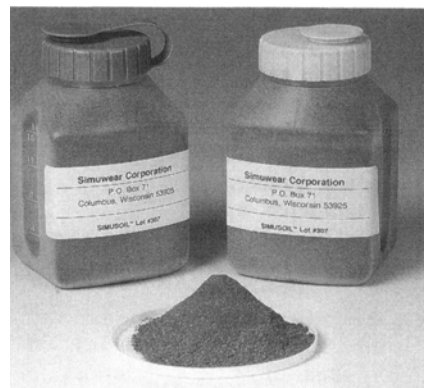


Fischer Technology

devices are both available in two models. The Deltascope measures nonconductive and nonmetallic coatings on iron and steel using magnetic induction; the Isoscope measures nonconductive coatings on nonferrous

base metals using eddy current. For more information, contact: Fischer Technology, 750 Marshall Phelps Rd., Windsor, CT 06095; tel: 1/800/243-8417 or (in CT) 860/683-0781; fax: 860/688-8496.

Simusoil from Simuwear is a "*realistic*" *test soil* for use by manufacturers of flooring materials, filters, vacuum cleaners, carpeting, carpet cleaning equipment, cleaning chemicals, household cleaners, and interior fabrics. Its test results are comparable to field use. For more information, contact: G. Wentworth Smith, Simuwear Corp., P.O. Box 71, Columbus, WI 53925; tel: 414/623-5183; fax: 414/623-2810.



Simuwear

International Research/Manufacturing Centers

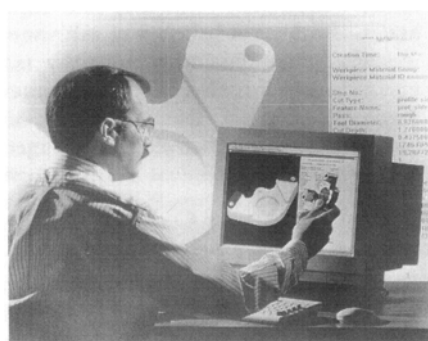
Sandia National Laboratories is now mass producing for general applications *intelligent micromachines*, tiny motors fabricated along with integrated circuit "brains" on individual silicon chips. The compact design, made possible by sinking the motors in tiny etched trenches, enables the fabrication of entire electromechanical systems on a chip. The micromachines, approximately one millimeter square, can be used in a variety of applications—from airbag accelerometers to medical drug-delivery devices and more reliable locks on nuclear devices. For further information, contact Paul McWhorter, Sandia National Laboratories, Albuquerque, NM 87185-0167; tel: 505/844-4683.

Carnegie Mellon researchers have been hard at work. Developments include a *talking robot* that can be controlled by anyone connected to its web page (<http://www.cs.cmu.edu/xavier>); an *unmanned helicopter* that can visually lock onto objects on the ground and keep them in view by autonomous maneuvers (http://www.cs.cmu.edu/afs/cs/project/chopper/www/heli_project.html); speedy *inner product mapping (IPA) of DNA*; and Credit Net, an *ATM computer network* that runs four times faster than current commercial networks. For further information, contact CMU, Department of Public Relations, Pittsburgh, PA 15213; tel: 412/268-2900; fax: 412/268-6929.

The **Albany Research Center** has commissioned a fully instrumented, 18 in. diameter *cupola for conducting experimental melts with various charges in a well-controlled system*. The cupola will have nominal throughput of 1500 lb/h of cast iron. Instrumentation will monitor temperature, exit gases, tuyere velocity, and other variables. For additional information, contact: William Riley; tel: 541/967-5851; or Paul Turner; tel: 541/967-5863; or the Albany Research Center, 1450 Queen Ave, SW, Albany, OR 97321; tel: 503/967-5851; fax: 503/967-5991.

Literature/Data Sources

EZFeatureMill 2.0 from **Bridgeport Machines** is a *CAM system for creating part*



Bridgeport Machines

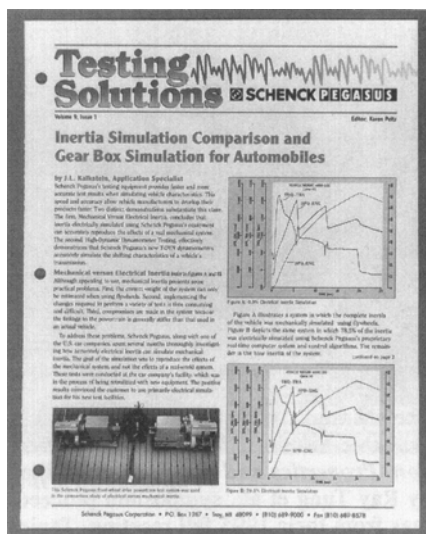
programs for virtually any CNC milling machine from 3D models. The current version supports metric measurements, has a facing feature, can finish the bottom of the profile side, has printable tool/operations lists, and improved spot drilling. English commands and feature descriptions allow rapid creation of complex models. For further information, contact Bridgeport Machines Inc., 500 Lindley St., Bridgeport, CT 06606; tel: 1/800/243-4292.

ISA, Research Triangle Park, NC, is on-line at <http://www.isa.org>. *The site features measurement and control in-*

formation, as well as reference material, news and technology updates, and more.

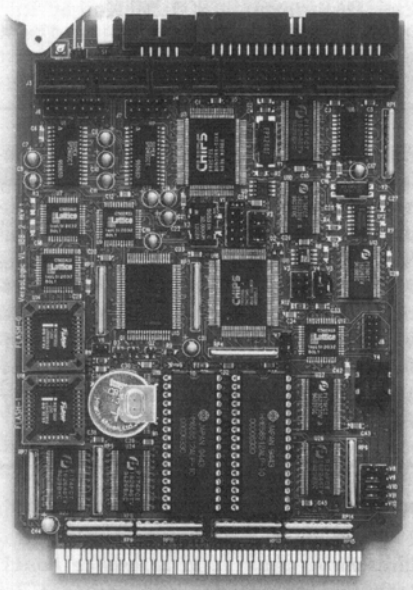
Matrix Automation has *printed a brochure on their MTS-1000 series of automated leak testing systems*. The brochure includes technical data and systems options for the systems, which provide accurate flow, pressure decay and leak testing using inert gases, air, water, or other specific fluids. For a copy, contact Matrix Automation Inc., 340 N. Main St., Huron, OH 44839; tel: 419/433-4013; fax: 419/433-6340.

Schenck Pegasus has an 8-page newsletter, *Testing Solutions*, that highlights **advancements in test systems, dynamometers, servovalves, and dynamic test services**. It also contains a feature article on "Inertia Simulation Comparison and Gear Box Simulation for Automobiles." For a copy, contact: Schenck Pegasus Corp., 2890 John R. Rd., Troy, MI 48083; tel: 810/689-9000; fax: 810/689-8578.



Schenck Pegasus

VersaLogic Corp., has introduced a **DOS-based 186 CPU board for the STD 32 Bus**. The VL-186-2 uses Intel's 16 MHz, 80C186 CPU chips, and is available with

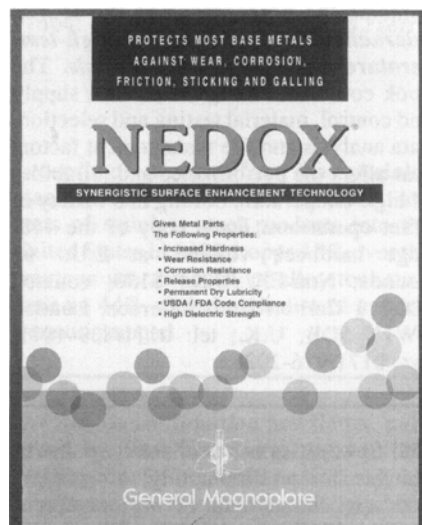


VersaLogic Corp.

1 MB RAM, Flash or EPROM memory. PC-compatible COM and LPT ports are included as well as on-board floppy and IDE interfaces. Non-DOS programming can be done using assembly or C/C++ languages along with Paradigm's PDREM and Locate utilities. For more information, contact: VersaLogic, 3888 Stewart Rd., Eugene, OR 97402; tel: 1/800/824-3163; fax: 503/485-5712.

Data M has released a new version of its Copra software that **supports forming from round tubes to special geometries**. An animated version of the company's Copra Deformation Technology Module is available as well. A visualized forming process shows how the material is being deformed in the tube mill. Another product, the Copra Roll Scanner 500, a top-end optical-roll inspection machine, has also been released. For more information, contact: Albert Sedlmaier, Managing Director or Gudrun Wendt, Marketing Director, data M GmbH, Mehlbeerstrasse 2, Taufkirchen D-82024 Germany; tel: 49/89/6140077; fax: 49/89/6127327.

A 6-page brochure from **General Magnaplate Corp.** describes the **Nedox family of surface enhancement treatments**. A controlled infusion of engineered polymers or other dry-lubricating particles and/or metals is mechanically bonded to the underlying metal and becomes a permanent, integral part of the new surface. By imparting enhanced wear and corrosion resistance, the coating makes possible substitution of less expensive metals for stainless. For further information, contact General Magnaplate, 1331 Rte. 1, Linden,



General Magnaplate Corp.

NJ 07036; tel: 800/852-3301; fax: 908/862-6110; e-mail: info@magnaplate.com.

According to "Pultrusions in North America," the **market for pultrusions will expand 11% per annum to a 410 million lb market in the year 2000**. Gains will be based on price-lowering advances in processing, improved resins and technologies, product quality improvements, and growing consumer acceptance. Unsaturated polyester, presently three-fourths of all pultrusions, will remain the most widely used resin. The study, number 763, is available for \$3100 from **The Freedonia Group**, 3570 Warrensville Center Rd., Ste. 201, Cleveland, OH 44122-5226; tel: 216/921-6800; fax: 216/921-5459.

According to a report from the **Freedonia Group**, **sales of castings, forgings, and powder metals will rise 2.5% annually** to over 16 million tons at the end of this century. Powder metal shipments will grow most rapidly, at 5.8% per year. In the casting segment, which has 85% of the metal processing market, the largest gains will belong to nonferrous castings, especially magnesium, aluminum, and zinc, as they take market share from ferrous castings. The study, number 758, is available for \$2900 from The Freedonia Group, 3570 Warrensville Center Rd., Ste. 201, Cleveland, OH 44122-5226; tel: 216/921-6800; fax: 216/921-5459.

The **Auto/Steel Partnership** has available a 12-page color bulletin on the **UltraLight Steel Auto Body, a body structure design** that reduces mass 25%, improves torsional rigidity 60%, and reduces cost 14% compared to midsize sedans. The text gives an overview of the project, commissioned by the American and International Iron and Steel Institutes to demonstrate a continuing role for steel in the face of competition from aluminum and plastics. For a copy, contact Auto/Steel Partnership, 2000 Town Center, Ste. 1900, Southfield, MI 48075-1137; tel: 810/351-2661; fax: 810/351-2691.

The **Canada Institute for Scientific and Technical Information** has put their catalog on-line at <http://www.cisti.nrc.ca/cisti/>. Updated weekly, the catalog is a listing of titles for **all major publications in the fields of science, technology, engineering, and medicine worldwide**. For further information, contact CISTI; tel: 1/800/668-1222.

The **Materials Research Society** has collected *Metal-Organic Chemical Vapor Deposition of Electronic Ceramics II*, edited by Seshu Desu et al., from papers given at their fall 1995 meeting. Topics include: nonoxide ceramics, precursor chemistry and delivery, process analysis and characterization, and oxide ceramics. For a copy of the 264-page volume, at \$68 (MRS members), \$75 (list), or \$80 (non-U.S. list), contact MRS, Customer Services Department, 9800 McKnight Rd., Pittsburgh, PA 15237-6006; tel: 412/367-3012; fax: 412/367-4373.

The March 1996 *Mechanical Engineering*, the magazine of the **American Society of Mechanical Engineers**, reports on *Unmanned Aerial Vehicles*, U.S. Department of Defense *pilotless airplanes with extensive data transmission and electronic radar capabilities*. The article discusses the Predator, Tier 2 Plus Global Hawk, and Tier 3 Minus DarkStar, as well as the researchers and manufacturers chasing this \$100m per annum market. For information, contact John Varrasi, ASME, 345 E. 47th St., New York, NY 10017; tel: 212/705-8158.

Unitek Miyachi Corp. is offering free subscriptions to *Laser Nuggets*, an applications newsletter on *YAG laser spot welding, seam welding, and reflow soldering*. Also available for free is the *YAG Laser Welding Guide*, containing technical information on automotive, electronic, medical, and manufacturing applications. For copies, contact Unitek Miyachi Corp., 1820 S. Myrtle Ave., P.O. Box 5033, Monrovia, CA 91017-9953.

Ciateq USA, Inc. has produced a booklet on its *machine-building operations*, including modernization of existing equipment or the creation of customized equipment. For a copy, ask for brochure 96F from Ciateq USA, 2997 Franks Rd., Huntingdon Valley, PA 19006; tel: 215/947-0600; fax: 215/938-8980.

Dr. Walt's Keys to Cadkey, a textbook on Windows/DOS Cadkey, is available from its publisher, **Conceptual Product Development** for \$59.95. The 228-page work uses screen captures, practical tips, construction models, and step-by-step examples to teach the reader this CAD software. Walter Silva, the author, is also the "Dr. Walt" columnist on Cadkey's home page, <http://www.cadkey.com>. To order, contact

CPD at 201/731-0642 or Cadkey Inc., 4 Griffin Road North, Windsor, CT 06095-1511; tel: 203/298-8888; fax: 203/298-6401.

The **Materials Research Society** has published *Scientific Basis for Nuclear Waste Management XIX*, edited by William Murphy and Dieter Knecht. The volume offers an *interdisciplinary perspective on challenges to materials science* in this area. Topics include: excess plutonium dispositioning, spent nuclear fuel, glass waste forms, ceramic and crystalline waste forms, cement waste forms, waste processing, waste container materials, bentonite barriers, and performance assessment. For a copy of the 937-page volume, at \$60 (MRS members), \$65 (list), or \$70 (non-U.S. list), contact MRS, Customer Services Department, 9800 McKnight Rd., Pittsburgh, PA 15237-6006; tel: 412/367-3012; fax: 412/367-4373.

OSi Specialties Inc. has printed "Silicone Fluids, Emulsions and Foam Control Agents," a brochure designed to help users determine the best silicone additives for an application. The brochure covers 13 common application areas, has a brief overview of how the products are used, and product recommendations to achieve specific performance levels. For a copy contact OSi Specialties Inc., 39 Old Danbury Rd., Danbury, CT 06810-5124; tel: 800/295-2392 x3600; outside USA/Canada: 607/786-8131 x3600.

The **Institute of Materials** has published *Performance of Bolting Materials in High Temperature Plant Applications*, which contains the proceedings of the second international conference on high-temperature creep resistant materials. The book covers the design, materials supply and control, material testing and selection, data analysis and file management factors that affect the performance and reliability of high-temperature bolting in a variety of plant operations. For a copy of the 448-page hardback volume, at E.U.: 65 pounds; Non-E.U./U.S.: \$130, contact: IOM, 1 Carlton House Terrace, London SW1Y 5DB, U.K.; tel: 0171/839-4071; fax: 0171/976-2026.

OSi Specialties has available two charts, suitable for wall-mounting, of property and application data of *organosilicon-based additives and intermediates*. Silicone surfactants, organofunctional silane

adhesion promoters and crosslinkers, high-efficiency foam control agents and other additives and processing aids are covered. For copies, contact: OSi Specialties Inc., 39 Old Ridgebury Rd., Danbury, CT 06810-5124; U.S./Canada tel: 800/295-2392; other countries tel: 607/786-8131.

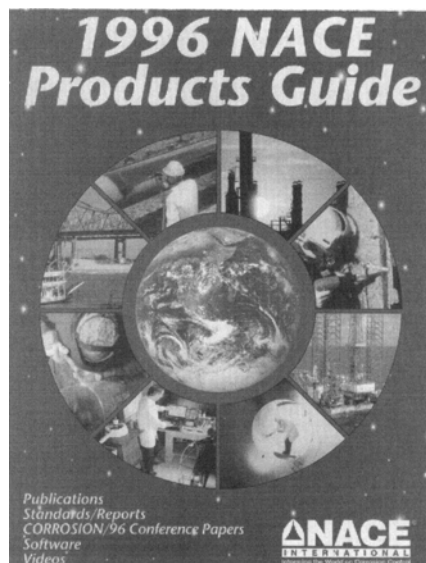
The **North American Die Casting Association** has published its *Die Casting Industry Capabilities Directory*, containing custom die casters both in and out of NADCA and the Diecasting Development Council. The \$29 volume lists 364 companies, with contact information, by state, by metal poured, and by die casting process. A \$179 disk-based version is searchable by location, metals, process, and end-use market. To order, contact Nancy Mindy, NADCA, 9701 W. Higgins Rd., Ste. 880, Rosemont, IL 60018; tel: 847/292-3600; fax: 847/292-3629.

The **Materials Research Society** has available *Silicide Thin Films—Fabrication, Properties and Applications*, edited by Ray Tung et al., symposium proceedings from their 1995 fall meeting. Topics include: silicide fundamentals—energetics and kinetics; processing of silicide thin films; ULSI issues; CVD silicides; semi-conducting silicides; processing of germanosilicide thin films; silicides and analogs for IR detection; interfaces, surfaces and epitaxy; novel structures and techniques; and properties of silicide thin films. For a copy of the 648-page volume, at \$67 (MRS members), \$73 (list), or \$78 (non-U.S. list), contact MRS, Customer Services Department, 9800 McKnight Rd., Pittsburgh, PA 15237-6006; tel: 412/367-3012; fax: 412/367-4373.

Astro Metallurgical has a brochure detailing their capabilities. The company uses titanium, zirconium, tantalum, niobium, and nickel alloys to custom manufacture *heat exchangers, reactors, piping systems, distillation columns, lined vessels, piping and anodes for lightweight high-strength, corrosion-resistant specifications*. For a copy, contact: Astro Metallurgical Inc., 3225 W. Old Lincoln Way, P.O. Box 1229, Wooster, OH 44691.

NACE International has copies of their 1996 Products Guide. The booklet features *more than 1000 reference books, technical standards, and software for corrosion control*, as well as newly pub-

lished books, Corrosion/96 conference papers, education videos, software programs, and reports. For a free copy, contact NACE Membership Services, P.O. Box 218340, Houston, TX 77218-8340; tel: 713/492-0535 x81.



NACE International

The **Materials Research Society** has printed *Diagnostic Techniques for Semiconductor Materials Processing II*, edited by Stella Pang et al., a collection of symposium reports from their 1995 fall meeting. Topics include: in situ diagnostics; proximal probe microscopies; optical probes of devices and device properties; spectroscopic ellipsometry/structural diagnostics; material analysis—x-ray techniques, strain measurements, and passivation. For a copy of the 585-page volume, at \$62 (MRS members), \$67

In Business

The **National Technology Transfer Center**, Wheeling, WV, and **Knowledge Express Data Systems** have formed a partnership between their on-line databases. NTTC Government Technologies, KEDS University Technologies, NASA Tech Briefs and Technology Express News are available in one package. For further information, contact: Knowledge Express Data Systems, One Westlakes, 1235 Westlakes Dr., Ste. 210, Berwyn, PA 19312; tel: 1/800/529-KEDS; fax: 610/251-8001; web: www.keds.com; e-mail: info@keds.com.

(list), or \$72 (non-U.S. list), contact MRS, Customer Services Department, 9800 McKnight Rd., Pittsburgh, PA 15237-6006; tel: 412/367-3012; fax: 412/367-4373.

A new family of *complete, integrated linear motion 1-to-4-axis controllers* is detailed in an 8-page designer's guide from **Thomson Industries**. TMC-1000 Series controllers feature circular interpolation, 8 inputs/8 outputs, 32-bit microprocessor, high-resolution encoders and full digital technology. Included are specifications for TMC-1100 controllers that uses high-power external drives for maximum flexibility, and TMC-1200 controllers. For information, contact: Thomson Industries Inc., 2 Channel Dr., Port Washington, NY 11050-2214; tel: 1/800/554-8466; fax: 516/883-9039.

Ceramic Sensors: Technology and Applications, by Toshko G. Nenov, Technical University of Gabrovo, Bulgaria, and Stecho P. Yordanov, Technical University of Plovdiv, Bulgaria, *systematically examines and compares the various type of sensors produced using ceramic technology*. Humidity, gas, pressure, and temperature sensors are all covered. Chapter titles include: Definitions and Classification of Sensors, Physical-Chemical and Technological Principles of Ceramic Sensors, Ceramic Humidity Sensors, Ceramic Gas Sensors, Ceramic Temperature Sensors, Ceramic Pressure Sensors, Multifunctional Ceramic Sensors, and Application of Ceramic Sensors. The \$145.00 book is available from: **Technomic Publishing Co. Inc.**, 851 New Holland Ave., Box 3535, Lancaster, PA 17604; tel: 1/800/233-9936 (U.S./Terri-

tories and Canada); tel: 717/291-5609; fax: 717/295-4538; telex: 230/753565; e-mail: marketing@techpub.com; web: <http://www.techpub.com>.

A *powder metallurgy publications guide* from the **European Powder Metallurgy Association** has 16 pages of details on more than 60 books, videos, lecture series, and education/training products. Books are classified into groups: General PM, Standards, EPMA Guidelines, Design, Education, Refractory/Hard Materials, Advanced PM, Metal Injection Molding. For a copy, contact: European Powder Metallurgy Association, Old Bank Buildings, Bellstone, Shrewsbury SY1 1HU, U.K.; tel: 44/01743-248899; fax: 44/01743-362968.

The **Fabricators & Manufacturers Association** offers a number of *technical books on metal forming and fabricating*. Among these are: *Cost Estimating for Metal Stampers and Fabricators* (\$29.95), *Sheet Metal Cutting: Collected Articles and Technical Papers* (\$29.95), *Sheet Metal Punching: Collected Articles and Technical Papers* (\$24.95), *Retrofitting for Quick Die Change in America* (\$29.95), *Introduction to Statistical Process Control* (\$24.95), *High-Involvement Training: How to Set Up ISO-Compliant In-House Training Programs* (\$39.95), *Roll Forming: Collected Articles and Technical Papers* (\$34.95), *Pipe and Tube Bending Manual* (\$39.95), *Tube Producing: Collected Articles and Technical Papers* (\$24.95), and *Tube Fabricating: Vol I & II*. For information or to order, contact: FMA International, 833 Featherstone Rd., Rockford, IL 61107-6302; tel: 815/399-8700; fax: 815/399-7279.

According to a report from the **Specialty Steel Industry of North America**, imports of stainless steel products into the United States in 1995 dropped 8% over the previous year. Imports of alloy tool steel were up 44%, and electrical steel imports were unchanged.

The *Aluminum Situation* newsletter, published by **The Aluminum Association**, Washington, DC, records that industry net shipments of aluminum mill products rose 0.4% in 1995, up to 15,722 million lb from 15,660 million in 1994. Domestic

shipments, totaling 17,965 million lb, declined 0.2% from the previous year's 17,997 million.

The **Carborundum Company's North American Fibers Division**, Niagara Falls, NY, will operate as the **Unifrax Corporation**. This division, owned by British Petroleum and with annual sales of \$80 million, was not included in the recent sale of the Carborundum Company to Saint-Gobain, Paris, France. Unifrax manufactures ceramic fiber insulation products

for high-temperature insulation applications.

PPG Industries, Pittsburgh, PA, has signed an exclusive agreement with **Proctor & Gamble**, Cincinnati, OH, to sell P&G's fatty acid-based deinking reagents to the North American pulp and paper industry. In other news, PPG has acquired Eastman Chemical Co.'s Evtech, Charlotte, NC, powder coatings business.

The American Society of Mechanical Engineers, New York, NY, has given Historic Mechanical Engineering Landmark status to a water tunnel at Pennsylvania State University that was used by the U.S. Navy to test the performance of submarines and torpedoes.

One hundred students have entered a competition given by **Owens Corning**, Toledo, OH, to develop a "World Bike" that is affordable for 80% of the world's population. In other news, the company continues to add capacity for the production of their S-2 glass fiber, ZenTron high-strength fiber, and other advanced composite materials.

Urethane Technologies Inc., Santa Ana, CA, has purchased for \$2.45 million the assets of **Brin-Mont Corp.**, Greensboro, NC, from Evans Industries Inc., Detroit, MI. Brin-Mont manufactures chemicals used in producing polyurethane systems, a product of Urethane Technologies.

Ingersoll-Rand, Washington, NJ, and the **Department of Energy** will be partners in an effort to increase awareness about strategies for advancing energy efficiency within compressed air systems. As part of the program, free audits will be offered to any manufacturing facility that meet certain employment, sales, and geographical criteria.

Climax Specialty Metals, Cleveland, OH, has changed its name to **CSM Industries**. The company's addresses and activities will remain the same.

The **Nell Register** is a new Internet business-to-business listing service for manufacturers, equipment suppliers, and consultants. The web page, at <http://nell.com>, lists

50,000 companies and thousands of pages of product and service information.

Dymax Corp., Torrington, CT, and **Chemetall GmbH**, Frankfurt, Germany, have established a joint venture, **Dymax Europe GmbH**. The new company will offer structural adhesives, UV adhesives, coatings, and equipment.

Controls Corporation of America, Virginia Beach, VA, has achieved ISO 9001 certification. The company manufactures gas control equipment for medical, industrial, and specialty applications.

Kelly Services, Troy, MI, has opened **Kelly Scientific Resources**, a business unit that will provide scientific professionals on a project or full-time basis to industrial, medical/clinical, and government customers.

The Stearns Division of Rexnord Corp., Milwaukee, WI, has received ISO-9001 certification. The division manufactures brakes, clutches, and electronic products.

In order to reduce supply costs at its Dallas/Ft. Worth hub, **American Airlines** will outsource its operations for procuring maintenance, repair, and operations supplies to **W.W. Grainger**, Lincolnshire, IL. The arrangement is intended make ordering supplies easier by reducing the total number of MRO suppliers.

Republic Engineered Steels Inc., Massillon, OH, will shut down its 8-in. bar mill at its Canton, OH, plant by summer, 1996, because the mill cannot compete with the newer mills of other producers. The company also operates three other hot-roll bar mills.

Harold Crapo has founded **Perspective Technical Services, Inc.**, Pembroke, NH. The company specializes in thermal spray coatings to protect parts from corrosion and wear.

Hamilton Precision Metals, Lancaster, PA, has received ISO 9002 certification as a total quality assurance production facility. **Bureau Veritas Quality Interna-**

tional (N.A.) Inc. performed the assessment.

Aluminum Shapes LLC, NJ, has purchased an SX-3000 degassing system to assist in an expansion of production through **Pyrotek**, Spokane, WA. The machine features sialon immersion heater technology and a monolithic-lined tilting tub.

The American Association for the Advancement of Science moved 15 April 1996 to 1200 New York Ave., NW, Washington, DC 20005. Phone and fax numbers for all departments and personnel will be unchanged.

Howmet-Tempcraft Inc., a supplier of investment casting products and services, has received ISO 9001 for their Machinery Business Center, which builds wax and ceramic injection machines.

Adra Systems Inc. and **SAP AG Germany** will jointly develop an interface between *Matrix* data management and *R/3* business-application software.

Nicolet Electron Services has purchased the building at 7695 Formula Place, San Diego, CA, which is the operational headquarters for its electron beam processing and medical device sterilization business.

Para-Chem, Simpsonville, SC, will use **Systems and Computer Technology Corporation's**, Malvern, PA, Adage Enterprise Resource Planning software for manufacturing, distribution, and financial management.

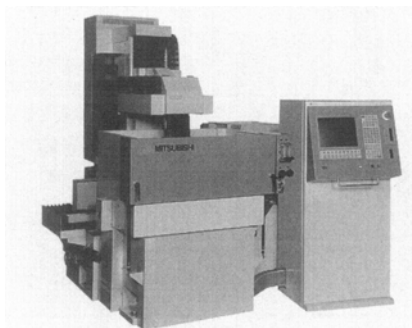
ISA, Research Triangle Park, NC, has approved a Memorandum of Understanding with **NASA's Mid-Atlantic Technology Application Center**, giving the ISA members access to Federal laboratory-developed instrumentation technologies.

The Eutectic & Castolin Group, St. Sulpice, Switzerland, has signed a marketing agreement with **Amorphous Technologies International**, Laguna Niguel, CA, for the exclusive offshore distribution of ATI's Armacor wires, used in the production of protective coatings.

Owens Corning, Toledo, OH, has established the Design Center at its Science and Technology Center in Granville, OH. The center will offer industrial design capacity, as well as software, engineering, analysis, and technology services.

Walter Metals Corp., the tool and high-speed steels distributor, has moved to a newly constructed facility at 793 Seasons Rd., P.O. Box 207, Hudson, OH 44236; tel: 216/656-5969; fax: 216/656-5970.

As part of an in-house upgrade program, **Taber Bushnell**, Minneapolis, MN, has installed a Mitsubishi CX20 Wire-Cut EDM System for fast, accurate EDM cuts essential for the intricate tooling work associated with many metal stamping projects.



Taber Bushnell

Davy International, Pittsburgh, PA, has built a facility for Inmetco, Ellwood City, PA, that recovers cadmium metal from spent nickel-cadmium batteries.

AT&T Istel, AutoSimulations, Deneb Robotics, F&H Simulations Inc., Imagine That Inc., Pritsker Corp., Micro Analysis & Design Inc. and Systems Modeling Corp. have formed **SimTech, the Simulation Software Vendors Association**. Operating as a not-for-profit trade association based in Pittsburgh, PA, the association will expand awareness and use of simula-

tion technology through conference presentations, educational materials, a web site, and communication with trade and business publications in a variety of fields.

New York State Electric & Gas Corp., Binghamton, NY, is launching an initiative to promote New York State to businesses considering relocation or expansion. Business can reach the Economic Energy Board, a collection of NYSEG economic development professionals, at 1/800/95-NYSEG or on the web at <http://www.nyseg.com>.

Commonwealth Aluminum Co., Arco Aluminum, and Ravenswood Aluminum Inc. will work with the Department of Energy on the development of a lightweight aluminum alloy for use in automobile body panels. The **American Society of Mechanical Engineers**, New York, NY, will manage the program.

The **New York Engineer's Board** will begin offering the Control Systems Engineering exam on 25 Oct 1996. The decision makes New York the 45th state to offer the exam. Successful completion allows control systems engineers to be licensed as a Professional Engineer.

Alta Group, a subsidiary of **Johnson Matthey**, Spokane, WA, has begun a three-year, \$40 million expansion of its titanium-processing facility in Fombell, PA. The expansion will increase the group's production capacity for high-purity titanium, used in sputtering targets for the semiconductor market.

Effective Management Systems Inc., Milwaukee, WI, and **Imag Industries Inc.**, China will establish EMS China Ltd., a joint venture in the Chinese manufacturing-information systems market.

With the acquisition of Anafaze, **Watlow Electric Manufacturing Co.**, St. Louis,

MO, is now the largest manufacturer of single and multi-loop controllers, with respective market shares of a 11.8% and 28.4%.



Watlow Electric Manufacturing Co.

ETC Computer Inc., Fremont, CA, has signed a distribution agreement for its line of View Magic specialty monitors with **Recortec**, Sunnyvale, CA. The agreement calls for integration of the monitors into rack-mounted 19 in. PC systems used in industrial and government applications.

Eagle Technology & Manufacturing, Roseville, MI, has opened a 38,800 ft² facility to service the North American auto industry. Eagle offers full-service OEM support for design and production of heavy equipment used in vehicle assembly.

Adra Systems Inc., Chelmsford, MA, has signed an agreement with **SAP Ag**, Germany, to develop an interface between Adra's product data management Matrix software and R/3, SAP's business-application software.

DTM Corp., Austin, TX, **Loral Vought Systems Corp.**, the **University of Texas**, and **Bayside Materials Technology**, with funding from the **Office of Naval Research**, will jointly use selective laser sintering and hot isostatic pressing to develop advanced processing technology for weapons system development.

Kudos

ICI General Chemicals has named **Stephanie W. Epply** as Technical Product Manager and **Cristina M. Manes** as Marketing Assistant for the Saffil alumina ceramic fiber product line.

Scott E. Nushart, VP-Technology for **ATM Corp.**, Milwaukee, WI, has been elected to a three-year term on the Board of Directors at **ASTM**, West Conshohocken, PA.

National Technology Transfer Center, Wheeling, WV, has chosen **Ismail Akbay** as interim executive director. Mr. Akbay, a former manager at NASA, will focus the center on assisting the space agency in the distribution of its technology to the U.S. private sector.

David Cannon has been elected Vice President of Environment, Health and Safety at **PPG Industries**, Pittsburgh, PA. Mr. Cannon has been associate general counsel to the company since 1994.

The **Society of Automotive Engineers** has announced its officers for 1996: **Claude Verbal**, GM, is president, and **Duane F. Miller**, Nissan R&D is treasurer. Board members include **James E. Brene-man**, Pratt & Whitney; **Martin G. Gabriel**, Ford Motor; **Gerald S. Jakubowski**, Loyola Marymount University; **Marc Parent**, Bombardier Canadair Inc.; **Paul P. Pataky**, GM; **Kenneth L. Peterson**, McDonnell Douglas; and **Jack E. Thompson**, Chrysler.

Davy John Brown, a subsidiary of Trafalgar House Group plc, has appointed **Jim Cribbes** the Manager of their Perth, Australia, office. The position is responsible for all marketing and operations in western Australia.

Irwin Feller, a professor of economics at Pennsylvania State University, has been granted a fellowship by the **American Society of Mechanical Engineers**. As a State Government Fellow, Prof. Feller will evaluate the impact of technology on the Pennsylvania economy.

The **Society of Automotive Engineers**, Warrendale, PA, will give its Medal of

Honor to **Warren M. Wiese**, the retired chief engineer of Delphi Harrison Thermal Systems. The award is in recognition of programs he developed for the society.

Aavid Thermal Technologies Inc., Laconia, NH, has named **James L. Liberty** as its Director of Product Marketing. Mr. Liberty will be responsible for devising advertising strategies for current and developing products.

Battelle, Columbus, OH, has named **Craig Chambers** as Vice President and Managing Director and **William J. Burke** as Vice President of Marketing Strategies. Mr. Chambers and Mr. Burke will work to expand the company's support for innovation in commercial and industrial firms.

Curtis Draper has been named marketing Director at **Howmet Corporation**, Greenwich, CT.

James A. Sharp has been promoted to vice president of **Carl Zeiss Inc.**, in which capacity he will direct R&D for the Microscope Division. **Edward T. Mancini**, promoted to general manager of the Microscope Division, will direct the division's North American sales.

The **Federation of European Materials Societies** has awarded prizes to two distinguished materials scientists. **Professor Herbert Gleiter**, a director of the Karlsruhe Research Center, Germany, won the European Materials Medal for his work in nanocrystalline materials. **Professor Yves Brechet**, University of Grenoble, France, won the Materials Science and Technology Prize for his use of modeling and calculational methods in the study of materials.

Gregory A. Schuckman has been selected by the **American Association of Engineering Societies** as its Manager for Government Relations.

Lee A. Bertram, Ph.D., has been named a Fellow of the **American Society of Mechanical Engineers**. The title designates a member with 10 or more years active

engineering practice who has made significant contributions to the field.

Howmet Corp., Greenwich, CT, has named **Michael Senesac** to be Director—Continuous Improvement, a post which provides direction for the organization's change initiatives.

NACE International, Houston, TX, has named **Seth Silverman** as editor of *Materials Performance* magazine. He will focus on ensuring that the editorial content of the magazine is properly targeted for association members and corrosion professionals.



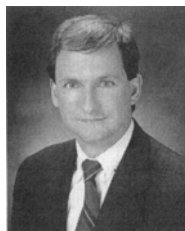
William C. Rogers

William C. Rogers has been appointed applications specialist for **Pyronics Inc.**, Cleveland, OH. Mr. Rogers will be responsible for sales and marketing of the company's complete line of valves, regulators, burners, and tubes.



Lito Toreja

Cadillac Plastic, Troy, MI, has promoted **Lito Toreja** to Engineering Plastic Specialist for the company's central region. Mr. Toreja's duties will include generating new business, finding new applications for plastics in the region, and implementing the engineering plastics training program.



Mark John Gore

Tosoh SMD, Grove City, OH, has appointed **Mark John Gore** as Engineering Group Leader for specialty and media products. Mr. Gore has a Ph.D. in Materials Science and Metallurgy from M.I.T.