

Materials/Products

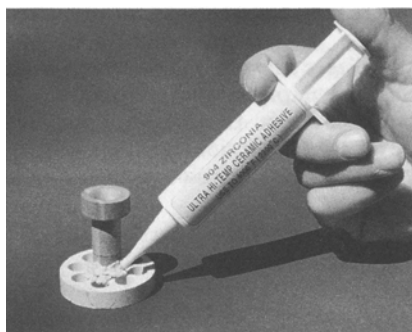
HTR multistep *surface enhancement coating for molds and dies* from **General Magnaplate** increases the mold release efficiency and wear resistance of plastics and metals by creating a surface with an extremely low coefficient of friction. It maintains these release properties under high pressures and temperatures. For more information, contact: General Magnaplate, 1331 Rte. 1, Linden, NJ 07036; tel: 908/862-6200 or 800/852-3301; fax: 908/862-6110; e-mail: info@magnaplate.com.

Anti-slip/anti-stick tape 5461 from **3M** can be used in a variety of applications. When used on rollers as a wrap, the tape assists in driving a web, while helping prevent coating buildup on the drum. Spiral-wrapped idler rollers spread the web, helping reduce bunching and wrinkling. In one strip application, the tape can help regulate product movement on production line chutes. Tape flexibility allows it to handle easily. At 9.1 mil, the overall tape thickness reduces size change on the application surface and a rubber resin adhesive gives good adhesion and clean removal. Additionally, the tape can help regulate product movement on product line conveyors. For more information, contact: Lee Glover; tel: 612/733-0643; fax: 612/733-0729.

Cogetherm from **Cogebi** is an *asbestos substitute insulation* made from sheets of mica flakes impregnated with resin. The sheets have heat resistance to 980 °C (1800 °F), low thermal conductivity, good electrical insulation and mechanical properties, and good chemical resistance. The insulation is also machinable with high-speed or tungsten carbide tooling. For more information, contact: Cogebi Inc., Customer Service, 14 Faraday Dr., Dover, NH 03820; tel: 603/749-6896; fax: 603/749-6958; e-mail: cogebi@nh.ultranet.com.

Ultra Temp 904 from **Cotronics** is a *zirconia adhesive paste that can be brushed onto ceramics, graphite, or metals, to*

form adhesive bonds and coatings with 4000 °F continuous service, for resistance to oxidizing and reducing atmospheres, chemicals and solvents, molten metals, flame impingement, or x-ray radiation. For more information, contact: Cotronics Corp., 3379 Shore Pkwy., Brooklyn, NY 11235; tel: 718/646-7996; fax: 718/646-3028.

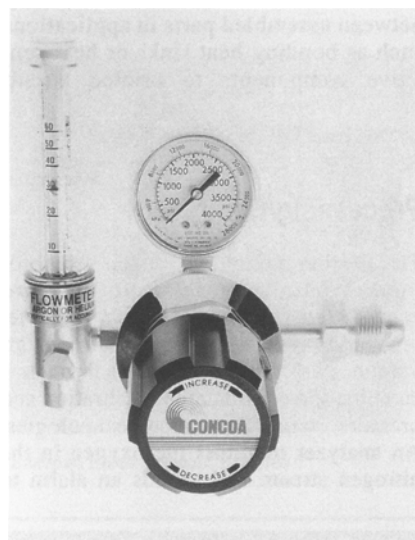


Cotronics Corporation

XT 2000 from **Cyrol** is an *acrylic-based multipolymer compound*, a transparent, impact-modified product for injection-molding applications. It is tough and chemical resistant, has a haze value of 4%, and meets the requirements for a USP Class VI material. For more information, contact: Cyrol Industries, 100 Enterprise Dr., Ste. 700, P.O. Box 5055, Rockaway, NJ 07866; tel: 201/442-6000 or 800/631-5384.

Vyntek *color concentrates* from **Lancer Dispersions** are designed for PVC compounds and processors, *for use in applications where a custom color match has not been indicated*. The series includes concentrates based on yellow iron oxide, red iron oxide, carbon black, and titanium dioxide. Custom colors can be formulated as well. Particle size of all concentrates is less than 20 mesh. For further information, contact: Lancer Dispersions Inc., 1680 E. Market St., Akron, OH 44305-4246; tel: 800/722-9911; fax: 330/794-1510.

Certurion 5570, 6570, and 9400 *industrial metering devices* from **Concoa** *measure and dispense high-pressure gas flow and supply*. The 5570 guards against downtime by preventing problems caused by insufficient flow. The 6570 provides a safe working level of 30 psi and precise flow rates for gas-mixing applications. Because of a lower end point, the 9400 yields more gas and welds per cylinder than the other two. For more information, contact: Concoa, 1501 Harpers Rd., Virginia Beach, VA 23454; tel: 800/225-0473.



Concoa

Dual Lock *reclosable fasteners* from **3M** provide ease of attachment, cushioning for vibration control and sound dampening, adhesion to a variety of surfaces, and performance in challenging environments. They are ideal for attaching many frequently removed items such as access doors, signs, and displays. They also work well for products that must be dismantled for cleaning, repair, or maintenance. The fasteners consist of continuous strips of plastic backing, with plastic mushroom-shaped stems protruding up from the backing strip. When two pieces of the fasteners are pressed together, the mushroom heads interlock with one another, with an audible

"snap!" They have a life cycle of 1000 reclosures. For more information, contact: Lee Glover; tel: 612/733-0643; fax: 612/733-0729.

Hocut SymC from **Houghton** is a *machine-tool cleaner formulated to clean deposits and residues off machines, coolant sumps, and coolant distribution systems*. The cleaner has good solvency and corrosion/rust protection. A combination of two biocides has been added to dislodge accumulated biofilms. Rust and corrosion inhibitors provide short-term protection of metal surfaces and prevent flash rusting of machinery. For more information, contact: Bill Vickers, Houghton International, Madison and Van Buren Aves., Valley Forge, PA 19482; tel: 610/666-4000; fax: 610/666-1376.

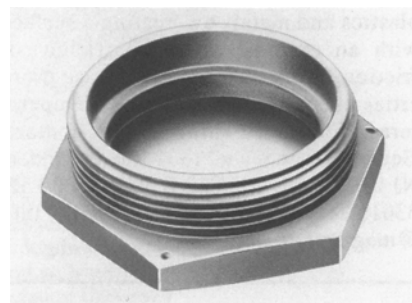
Multi-cure 991 from **Dymax** is an *adhesive that increases thermal conductivity* between assembled parts in applications such as bonding heat sinks or heat-sensitive components to printed circuit

boards. The adhesive can be cured by UV/visible light, heat, or an activator. For more information, contact: Dymax Corp., 51 Greenwoods Rd., Torrington, CT 06790; tel: 860/482-1010; fax: 860/496-0608.

SandForm Zr from **DTM** is a *rapid prototyping material for use in sand casting*. Sand casting molds and cores are produced from coated, powdered sand, using heat generated from a CO₂ laser in a Sinterstation. The sand core is the inner positive pattern, within a mold, around which the molten metal flows. This material can provide prototypes and preproduction molds. For further information, contact: DTM Corp., 1611 Headway Circle, Bldg. 2, Austin, TX 78754; tel: 512/339-2922; fax: 512/339-0634.

Canadize, a *surface-enhancement treatment for titanium and titanium alloys*, available from **General Magnaplate**, solves wear, friction, galling, seizing, moisture, and corrosion problems. The

coating creates a permanent surface that augments surface hardness (50 to 55 HRC). Coated parts or assemblies achieve high fatigue strength-bearing surfaces and fracture toughness superior to steel. The problem of hydrogen absorption, typical of titanium surface, is eliminated. For further information, contact: General Magnaplate, 1331 Rte. 1, Linden, NJ 07036; tel: 908/862-6200 or 800/852-3301; fax: 908/862-6110; e-mail: info@magnaplate.com.



General Magnaplate

Processing/Equipment

The Balston monobed nitrogen generator from **Whatman** *transforms standard compressed air into nitrogen* at safe, regulated pressures, without operator attention. Nitrogen is produced through a combination of contaminant filtration and pressure swing absorption technologies. An analyzer monitors the oxygen in the nitrogen stream and sounds an alarm to



Whatman Inc.

signal high or low concentrations. For further information, contact: Whatman Inc., 260 Neck Rd., P.O. Box 8223, Haverhill, MA 01835-0723; tel: 800/343-4048; fax: 508/374-7070.

The GZ7 *stereomicroscope* from **Leica** has 7:1 zoom range; up to 80 mm (3 in.) field of view; 2.5 to 420 magnification range; working distance to 266 mm (10 in.); 45° viewing angle; 180° rotatable pod for multiviewing; coaxial illuminator for shadowless illumination; and CCTV and 35 mm (1.4 in.) capabilities. A standard "C" mount camera and video coupler are also available to project images onto film or a monitor. For further information, contact: Leica Inc., 111 Deer Lake Rd., Deerfield, IL 60015; tel: 847/405-0123; fax: 847/405-0147.

A U.S. government facility is using an electrically heated *elevator furnace* to "heat treat" nonmetallic-matrix composite aircraft brake disks in a nitrogen atmosphere at 790 °C (1450 °F). Supplied by **Grieve** the furnace provides a total power input of 63 kW, a maximum operating temperature of 1095 °C (2000 °F), and a

work chamber of 61 × 61 × 122 cm (24 × 24 × 48 in.). For further information, contact: Grieve Corp., Attn: Frank Calabrese, 500 Hart Rd., Round Lake, IL 60073-9989; tel: 847/546-8225; fax: 847/546-9210.

The E-Lab US-450 is a Windows-based *eddy current instrument* for thickness, conductivity, and crack detection, from **United Western Technologies**. It has a frequency range of 100 Hz to 10 MHz,



United Western Technologies

digital thickness gaging capability for both conductive and nonconductive coatings, a two-channel simulated strip chart recorder, and signal memory for comparative analysis. Frequencies can be implemented with a sine or square wave. For more information, contact: United Western Technologies Corp., 330 W. Clark St., Pasco, WA 99301-5627; tel: 509/544-0720; fax: 509/544-0868.

The 64-20 NMR gas generator from **Whatman** creates compressed air with a pressure dew point below -100°F without operator attention. Designed for NMR instrumentation, the generator is intended for use in ejecting, spinning, and lifting operations. Standard design features include: a high-efficiency prefiltration system, automatic drains, a $0.1\text{ }\mu\text{m}$ particulate final filter, a dew-point monitor, and pretested control. For further information, contact: Whatman Inc., 260 Neck Rd., P.O. Box 8223, Haverhill, MA 01835-0723; tel: 508/374-7400 or 800/343-4048; fax: 508/374-7070.

The AQE 2000 is a portable dust collector from **Air Quality Engineering** for the removal of welding fumes, grinding dust, and other industrial process smokes, dusts, and contaminants. Airborne con-



Air Quality Engineering

taminants enter the machine through the hood/arm assembly, and clean air is gently diffused out the bottom or side of the unit. Air volume is $1100\text{ ft}^3/\text{min}$, to ensure adequate suction. For more information, contact: Air Quality Engineering, 3340 Winpark Dr., Minneapolis, MN 55427-2083; tel: 612/544-4426; fax: 612/544-4013.

The CNC 15 from **Pines Manufacturing** is a *CNC benchtop bender* with a capacity up to $\frac{5}{8}$ in. O.D. The machine requires minimal operator assistance to produce a variety of parts. Requiring no hydraulics, it operates with electrically controlled axes and pneumatically controlled tool movements. Up to 32 bends per part can be programmed. A hitch feed feature permits unlimited part length by eliminating tool/carriage interference on the final bend. For further information, contact: Pines Manufacturing, 30505 Clemens Rd., Westlake, OH 44145; tel: 216/835-5553; fax: 216/835-5556.

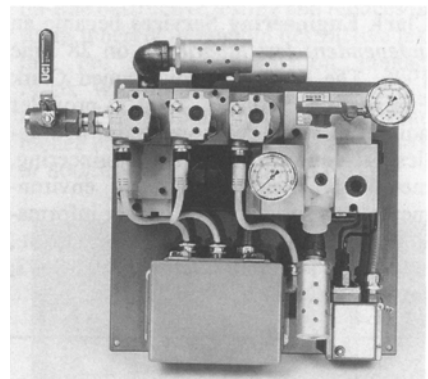
Pillar Industries has developed a *heavy-duty induction vertical scanning system* to process parts up to 126 in. long and weighing up to 1000 lb. The scanner itself weighs 30,000 lb and stands approximately 28 ft tall. The model pictured includes tooling to scan harden shafts for large pipeline compressors. In actual operation, it will be mounted in a pit and only stand about 20 ft above the floor. For more information, contact: Richard Martin, Manager, Pillar Michigan Induction Center, 2285A N. Opdyke Rd., Auburn Hills,



Pillar Industries

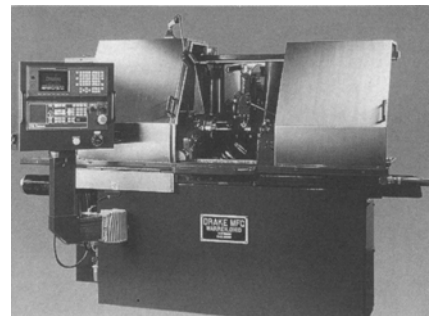
MI 48326; tel: 810/475-5580 or 800/475-5580; fax: 810/475-5587.

Enerpac has introduced a system that automatically adjusts counterbalance pressure at die change and corrects it within preset tolerances for each press stroke. Through its ability to adjust counterbalance pressures, the system reduces wear on the press, its brake, and its clutch. Operating costs and energy consumption can be reduced through the application of proper forces and the elimination of excessive counterbalance pressure that consumes energy from the flywheel, leaving insufficient energy to do the work. By providing ram parallelism between upper and lower dies and applying consistent, correct die forces, parts quality and consistency are enhanced. For more information, contact: Enerpac Press Support Systems, 14 E. Stone Hill Rd., Ste. E, Oswego, IL 60543; tel: 708/554-1616; fax: 708/554-1947.



Enerpac Press Support Systems

The GS:TE series of *CNC grinding machinery* from **Drake** generates even complex geometries with consistent precision. Both models (6×36 in. and 12×45 in.) grind threads for parts such as taps, power and steering worms, and screws (lead,



Drake Manufacturing

feed, ball), with size control to ± 0.0002 in. For further information, contact: Drake Manufacturing, 4371 N. Leavitt Rd., War-

ren, OH 44485; tel: 330/847-7291; fax: 330/847-6323.

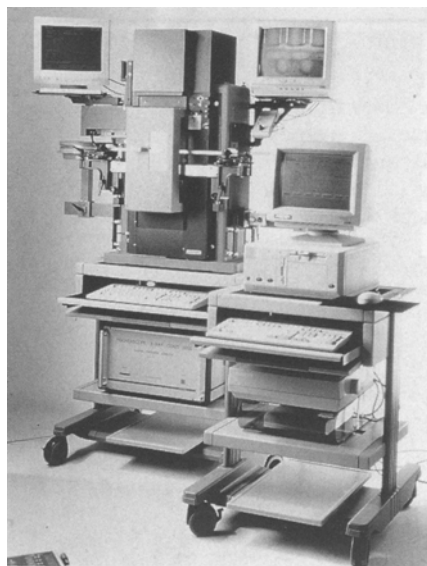
**Submitting a manuscript?
See Author Instructions,
inside the front
and back covers.**

Measurement/Testing/Evaluation

Image analysis software for the Power Macintosh is available from Carl Zeiss. The software covers the full range of counting, measurement, image, image enhancement, and image archiving applications. Users can employ gray-scale or color acquisition, processing, and analysis. Suitable for both biological and industrial research applications, the program works seamlessly with other Macintosh-based applications such as Microsoft Excel and Word. For further information, contact: Carl Zeiss Inc., One Zeiss Dr., Thornwood, NY 10594; tel: 800/233-2343; fax: 914/681-7446; e-mail: micro@zeiss.com.

Clark Engineering Services became an **independent test laboratory** on 28 June 1996. The company, now named Clark Engineering Services, L.L.C., provides noise and vibration, powertrain, hydraulics, structures, materials engineering, metallurgy, field testing, and environmental test services. For further information, contact: CES, 821 E. Front St., Buchanan, MI 49107; tel: 616/697-8632; fax: 616/697-4525.

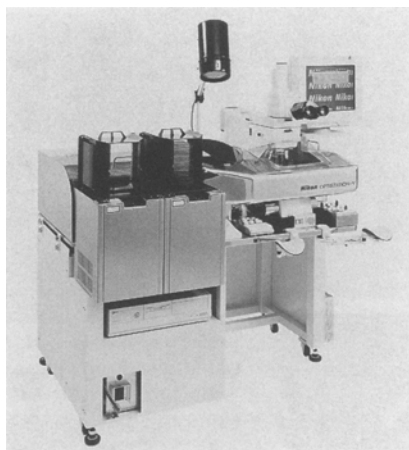
The Fischerscope X-ray Conti 3000 from **Fischer Technology** is designed for *non-*



Fischer Technology

destructive, continuous coating thickness measurement of electronic components. Measurement can be conducted on "strip on strip" material, on selectively plated perforated and preformed contact strips, or on curved areas coated in a continuous plating line. Shrinking circuit sizes are handled through measurement in small test areas (0.2 mm, or 0.01 in.) perpendicular to the direction of the product movement. For more information, contact: Fischer Technology Inc., 750 Marshall Phelps Rd., Windsor, CT 06095; tel: 800/243-8417 (in CT: 860/683-0781); fax: 860/688-8496.

The Optistation-V from Nikon is a **wafer inspection station** that accommodates wafers from 100 to 300 mm (4 to 12 in.) in size. The workstation provides good optical inspection performance using bright-field, darkfield, differential interference contrast, or fluorescence techniques, as well as an optional confocal mode. The halide illumination system has bright intensity at high magnifications, and autofocus is fast and accurate. The system has also been designed with attention to human factors/ergonomics. For further information, contact: Nikon Inc., 1300 Walt Whitman Rd., Melville, NY 11747-3064; tel: 516/547-4200 or 800/526-4566 xP659.



Nikon Inc.

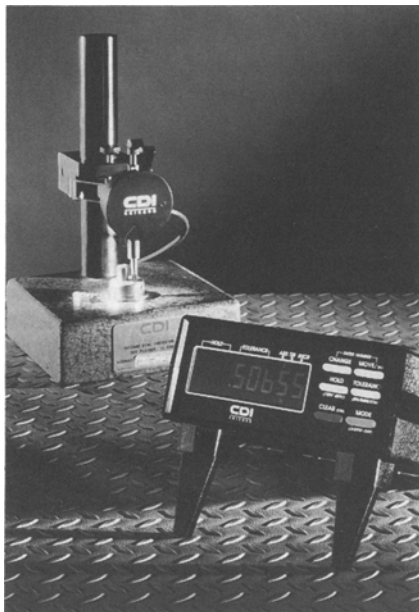
The Ultracut UCT from Leica is an **ultramicrotome for electron microscopy sample preparation**. The instrument has automatic feed in 1 nm increments from 1 to 10 nm. Variable cutting speed is controllable to 0.05 mm/s. Three light sources provide seven methods of illumination. The magnification range is 10 \times to 60 \times , and the carrier can be swung 90° for access to the knife and specimen area. For further information, contact: Leica Inc., 111 Deer Lake Rd., Deerfield, IL 60015; tel: 800/248-0123; fax: 847/405-0147.

UNS 4.0 and Rampant 4.0 from **Fluent** are updated versions of **unstructured solution-adaptive computation fluid dynamics software**. These releases are the first CFD codes to combine unstructured mesh and solution-based mesh adaptation capabilities with sophisticated physical models. Capabilities and mathematical models help engineers to model fluid flow and heat transfer in the complex geometries encountered in most industrial fluid flow problems. Possible applications include transportation and metering of fluids, agitation and mixing, chemical reaction, combustion and power generation, heat and mass transfer, particle separation and classification, and pollution control. For more information, contact: Fluent Inc., Centerra Resource Park, 10 Cavendish Ct., Lebanon, NH 03766; tel: 603/643-2600; fax: 603/643-3967.

The Snap **industrial vibration accelerometer** from Wilcoxon Research is for machinery condition monitoring. Using a "snap-on" connector, the unit provides a vibration output sensitivity of 100 mV/g over a frequency range of 1 to 10,000 Hz ($\pm 10\%$) and is stable in an operating range of -50 to 80°C. For further information, contact: Wilcoxon Research, 21 Firstfield Rd., Gaithersburg, MD 20878; tel: 301/330-8811; fax: 301/330-8873.

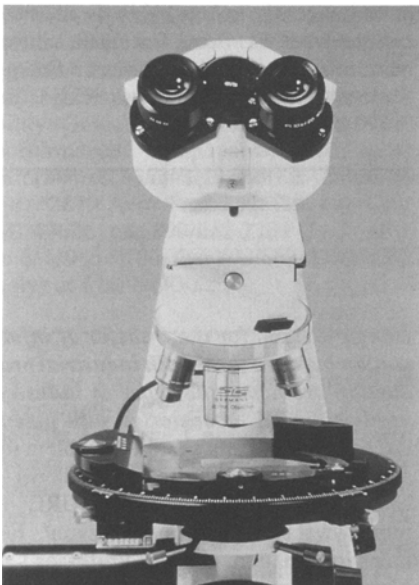
The Logic **electronic measuring systems** from Chicago Dial Indicator consist of linear probe in seven different travel ranges and remote readouts with five selectable resolutions in English or metric.

A total indicator reading continuously displays the difference between the highest and lowest measurements. Three SPC outputs are available with the system. For further information, contact: Chicago Dial Indicator Co., 1372 Redeker, Des Plaines, IL 60016; tel: 847/827-7186; fax: 847/827-0478.



Chicago Dial Indicator

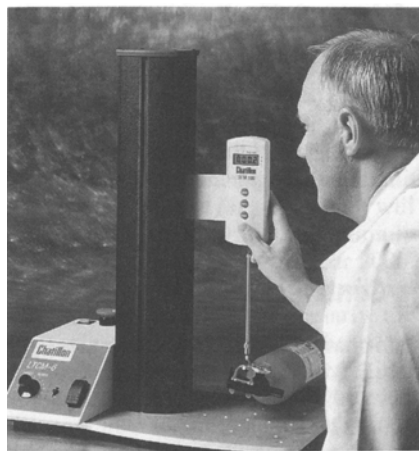
By creating high-resolution images down to 0.001 m, the Ultra objective, designed by Surface Imaging Systems GmbH, Germany, for Carl Zeiss *extends the resolution of the company's optical microscopes to*



Carl Zeiss

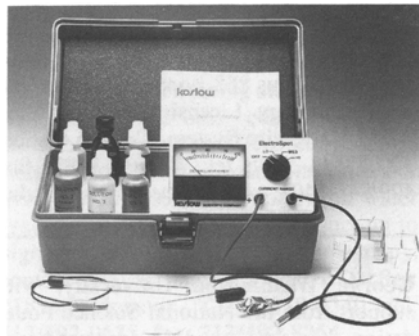
that of a scanning probe microscope. Dimension measurements can then be performed accurately. For further information, contact: Carl Zeiss Inc., One Zeiss Dr., Thornwood, NY 10594; tel: 800/233-2343; fax: 914/681-7446; e-mail: micro@zeiss.com.

The LTCM-6 from Chatillon is a *motorized testing stand with a maximum capacity of 100 lb force (500N, 45 kg)*. It mounts all types of the company's force measurement gages and accessories. It has a large sample holding area and high ram return speed. The stand has all-metal construction and includes an emergency stop button. It is available for either 115 or 220 V ac operation. It weighs 40 lb, is 25.5 in. high by 12 in. deep by 20.5 in. wide (650 × 305 × 520 mm). For more information, contact: Chatillon, 7609 Business Park Dr., Greensboro, NC 27409; tel: 800/527-9999.



Chatillon

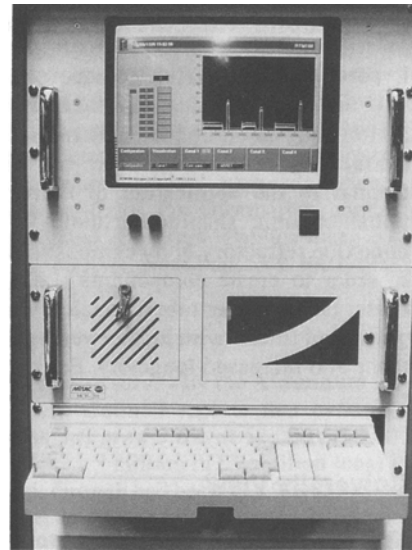
A test from Koslow Scientific *reveals the pores in anodized aluminum due to an incomplete seal.* This quick-screening test can be carried out in less than a minute



Koslow Scientific

using nonhazardous solutions. Poorly sealed aluminum is indicated by a color formation on application of a developing solution. The test is nondestructive and is available in kit form with instructions. For further information, contact: Koslow Scientific Co., 75 Gorge Rd., Edgewater, NJ 07020; tel: 201/941-4484 or 800/556-7569; fax: 201/941-4485.

The RTM 100 is a real-time monitor from Pillar Industries *for measuring and recording up to eight process parameters on one to four repetitive process stations or systems.* Any part requiring discontinuous heating times can be compared against preset parameter profiles (process signatures) set up as a benchmark by the operator. Parameters can include power, output voltage, frequency, quench temperature, flow or pressure, scan speed, part rotation speed, or part temperature. By comparing the values a part is subjected to during an actual cycle to values used to achieve an ideal part, each individual part is checked as it is run. This minimizes the need for on-line destructive testing and reduces the scrap inherent in random destructive testing. For further information, contact: Frank Wilson, VP—Sales, Pillar Industries, N92 W15800 Megal Dr., Menomonee Falls, WI 53051; tel: 414/255-6470 or 800/558-7733; fax: 414/255-0359.



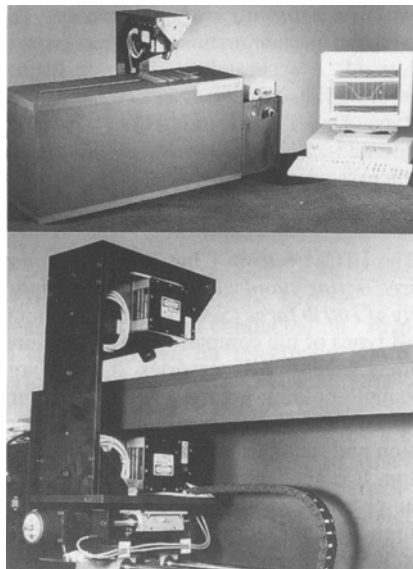
Pillar Industries

Simusoil from Simuwear is a *household dust clone for testing.* Using this dust simulant, manufacturers can learn more about how their products perform and the level of care required to maintain optimal conditions and improve results. The con-

sistency of the material allows production of empirical data to refine products before marketing production. For more information, contact: Simuwear Corp., P.O. Box 71, Columbus, WI 53925; tel: 414/623-2810.

The Scout from **MachineView**, a division of **CSI**, is a *portable condition monitoring system for continuous surveillance* of trouble machines, specification certification of new or overhauled equipment, plantwide monitoring of individual machines for production capacity improvements, and continuous service to coordinate maintenance scheduling with maximum runtime. The system is intended for use wherever a permanently installed system is not practical. For more information, contact: CSI, 835 Innovation Dr., Knoxville, TN 37932; tel: 423/675-2400 x2333 or 800/675-8033 x492; fax: 423/675-3100.

The SC Profilometer off-line profiling system from **Bytewise Measurement** automatically *depicts variations from design parameters by providing comparative analysis of multiple measurements* and identifying potential conicity effects



Bytewise

based on the difference between weighted mass moments of the left and right sides of the tread. The laser-based noncontact measurement system performs profiling of extruded rubber or related components up to 2.5 in. (63.5 mm) thick. This is done by recognizing break points on extrusion and measuring exact thickness, shoulder locations, and area parameters. Data are com-

pared to variances from design parameters or other data, with differences compiled in graphic or tabular format. For more information, contact: Bytewise, 5637 Whitesville Rd., P.O. Box 7331, Columbus, GA 31908-7331; tel: 706/323-5142; fax: 706/323-0178.

The Optical Bore Scanner from **Bicri UK's MicroPhotonics Surface Test division** is an instrument that *uses a laser scanning device*, which is lowered and rotated in the cylinder, *to assess bore finish and wear patterns*. The machine maps bore polish topography and quantifies surface wear. The resulting data can be used to correlate the degree of wear in the bore with other engine performance factors. Additionally, the machine can be used to assess surface quality in any application that involves precision finishing of bore surfaces, such as compressor pumps, high-pressure fuel pumps, and high polish tubing. For more information, contact: Surface Test, P.O. Box 3129, Allentown, PA 18106-0129; tel: 610/366-7103; fax: 610/366-7105; e-mail: surftest@aol.com; web: <http://www.microphotronics.com>.

International Research/Manufacturing Centers

Pyrotek and Industrial Research Ltd. will develop a method for fabricating Sialon and Sialon-bonded *molten metal contact refractories*. The project will emphasize the application of conventional ceramic shaping technology to nonoxide refractory body compositions, in order to create components such as heater tubes, feeder tubes, nozzles, slide gates, and filters, with higher wear resistance and increased longevity. For more

information, contact: Anna Henry, Pyrotek, E. 9503 Montgomery Ave., Spokane, WA 99206; tel: 509/926-6212; fax: 509/927-2408.

The **Concurrent Engineering Center** of the Oak Ridge Centers for Manufacturing Technology has developed at the Department of Energy's Y-12 Plant a *virtual design and manufacturing center* that

allows people located hundreds of miles apart to work together. The system works by allowing users linked up on a computer network to move or modify with a mouse three-dimensional high-resolution computer images. Everyone using the network can see what was done. For further information, contact: Lockheed Martin Energy Systems, P.O. Box 2009, Oak Ridge, TN 37831-8015.

University View

Texas Engineering Experiment Station, a state research agency and member of the Texas A&M University System, has developed a *squeeze film damper and seal mechanism* that allows axial flow of a lubricant in a squeeze film region without creating a gross distortion of pressure around a damper, thus helping distribute lubricant better in aircraft rotor systems, for increased efficiency and longer engine life. For further information, making ref-

erence to Tamus 868, contact: R. Page Heller, Technology Licensing Office, Texas A&M University System, College Station, TX 77843-3369; tel: 409/847-8682; fax: 409/845-1402; e-mail: p-heller@tamu.edu.

George Washington University, with support from the National Science Foundation, has developed an Internet-based computer application called Virtual Tech-

nology Market, *for the transfer of information between those with industrial production problems and those in industry, academia, and laboratories with potential solutions*. Users submit a problem for solution or browse the posted problems to offer solutions. The site's URL is <http://www.seas.gwu.edu/guest/vtm/>. For more information, contact: Professor Lan Xue, Department of Engineering Management, GW School of Engineering and Ap-

plied Science, Washington, DC, 20052; tel: 202/994-0179; fax: 202/994-4606; e-mail: xue@seas.gwu.edu.

BTG plc, London, U.K., has acquired U.S. patent 4,955,025, "*Fiber Optic Lasers and Amplifiers*," and corresponding foreign patents and applications, relating to an invention from the University of Southampton, U.K. The patents relate to rare-earth doped optical fiber amplifiers and lasers, with erbium as the most commonly used dopant. These amplifiers make possible the transmission of optical

signals using optical fibers over long distance without the need for regenerative repeaters. In conjunction with wavelength-division-multiplexing technology, the amplifiers increase the information carrying capability of long-distance fiber cables. For further information, contact: BTG USA Inc., 2200 Renaissance Blvd., Gulph Mills, PA 19406; tel: 610/278-1660 ext. 12; fax: 610/278-1605; e-mail: info@btgusa.com.

In the 7th annual industry summer intern program, three transportation design stu-

dents from the **Center for Creative Studies** will *style exteriors for future hybrid vehicles that use two or more power sources*, striving to create exciting designs for a variety of vehicles while keeping down weight and cost. The students will use "Synergy," a powertrain concept platform developed by Ford Motor Co., to generate ideas for overall vehicle packaging and style. For more information, contact: CCS, 201 E. Kirby, Detroit, MI 48202-4034; tel: 313/872-3118; fax: 313/872-8377.

Literature/Data

"*Induction Vacuum Ladle streamlines liquid metalmaking through in-ladle processing*" is a four-page brochure from **Consarc**. Streamlining liquid metalmaking through in-ladle processing the IVL combines the mobility, strength, and refining flexibility of a steel ladle with the melting power, refining ability, stirring action, and precise temperature control of a vacuum induction furnace. A sidebar describes the process steps: melting and evacuation, refining, and pouring. For a copy, contact: Cosarc Corp., 100 Indel Ave., Rancocas, NJ 08073; tel: 609/267-8000; fax: 609/267-1366.

A four-page brochure, from **Boride Products**, describes finished parts and preforms custom-formulated from *Alnide sintered aluminum nitride*. This material, with thermal expansion characteristics similar to silicon, has good thermal conductivity properties for heat dissipation and thermal management. It also has good physical strength and electrical insulation capabilities, and broad chemical compatibility. Guidelines are on designing high-performance components. For more information, contact: Boride Products Inc., 2879 Aero Park Dr., Traverse City, MI 49686; tel: 800/662-2131 (U.S. only) or 616/946-2100; fax: 800/662-2132 (U.S. only) or 616/946-3025.

"*Annual Data 1996: Copper Supply & Consumption 1975-1996*," is a 20-page booklet from the **Copper Development Association**. According to the report, U.S. copper mine production rose 0.5% this past year to a new high of 4.1 billion lb. Electrowon copper production was up 8.1% at 1.2 billion lb, while smelter production at 3.6 billion lb represented a decrease of 4.7%. Total 1995 production of

refined copper was just slightly ahead (0.9%) of 1994. Even though domestic production reach an all-time high in 1995, intense demand for the second year in a row made the U.S. a slight net importer of copper and copper alloy products, with a self-sufficiency of 97.4%. For a copy, contact: Copper Development Association, 260 Madison Ave., New York, NY 10016; tel: 212/251-7200; fax: 212/251-7234.

According to a report from the **Freedonia Group**, *U.S. demand for plastic film* will increase 3.3% annually to 14.4 billion lb (or \$16 billion in sales) in the year 2000. High-density polyethylene films will exhibit the best growth, particularly the high molecular weight variety, based on cost savings achievable by downgaging. Low-density polyethylene, however, will continue to dominate, due to the film's low cost and diverse, large-volume applications. The complete study is available for \$33.00 from Freedonia Group, 3570 Warrensville Center Rd., Ste. 201, Cleveland, OH 44122-5226; tel: 216/921-6800; fax: 216/921-5459; e-mail: tfgi@ix.netcom.com.

The "*1996 to 1997 Education and Training Guide*," from **NACE** surveys twelve corrosion control courses scheduled between September 1996 and June 1997. The coating inspector training and certification program and the basic corrosion course have both been updated. Two short courses were introduced this year: one on water treatment and corrosion control in water systems, and the other an introduction to high-temperature corrosion. For a copy, contact NACE International, P.O. Box 218340, Houston, TX 77218-8340; tel: 713/492-0535; fax: 713/492-8254.

American Torch Tip has printed a 20-page catalog of *laser products for welding and cutting systems*. The number of parts in the catalog has expanded by 30% from the previous edition. Descriptions include all information necessary to make accurate selection, including focal length of lenses. Dimensions are listed in both metric and English measures. The company has three offices in North America and one in Taiwan. For a copy, contact: American Torch Tip Co., 6212 29th St. E., Brandenton, FL 34203; tel: 800/342-8477; fax: 941/753-6917.

Russian Tech Briefs is the official technology transfer publication of the **Russian Space Agency**, produced in partnership with the publishers of NASA Tech Briefs. The bimonthly newsletter covers innovations in electronics, computing, bio/medicine, manufacturing, materials science, and other fields. For information, contact: Associated Business Publications, 317 Madison Ave., New York, NY 10017; fax: 212/986-7864.

An end-use survey by the **Aluminum Extruders Council** reports that *extrusion shipments grew 3.6%* or 54,000 t (60,000 tons) to 1.5 million t (1.7 million tons) in 1995. Growth had been 17.1% in 1993 and 15.8% in 1994. Building and construction, the largest market segment, decreased shipments; while transportation, distributor, and electrical shipments increased. For more information, contact: AEC, 1000 N. Rand Rd., Ste. 214, Wauconda, IL 60084; tel: 847/526-2010; fax: 847/526-3993; e-mail: aec@mc.net.

Watlow has placed a site on the web at <http://www.watlow.com>. Users can access

information on industrial heaters, sensors, and controls; company history; and press releases. For further information, contact: Watlow Electric Manufacturing Co., 12001 Lackland Rd., St. Louis, MO 63146; tel: 314/878-4600; fax: 314/878-6814.

NACE is on the web at <http://www.nace.org>. This site has information on corrosion, including current government legislation and regulations. A section describes participation in standards-writing technical committee activities, and a calendar lists corrosion conferences and technical symposia. Visitors can order books, software, standards, and videos directly from the page. For more information, contact: NACE International, P.O. Box 218340, Houston, TX 77218-8340; tel: 713/492-0535; fax: 713/492-8254.

A four-page corporate capabilities brochure, "Materials with Exceptional Performance in Extreme Environments," is available from Ausimont USA, Montedison Group. The brochure focuses on **fluorinated products**, company fluoropolymer manufacturing facilities, and summaries of typical applications. Industries served and worldwide locations are also listed. For a copy, contact: Alison Warner, Ausimont USA, 10 Leonards Ln., Thorofare, NJ 08086; tel: 800/323-2874; fax: 609/853-6405; web: <http://ausiusa.inter.net/ausiusa/>.

A four-page brochure from Advanced Ceramics introduces PolarTherm **boron nitride fillers**, which improve the thermal conductivity of polymeric materials used in electronic assemblies and components. Materials with these fillers have achieved thermal conductivity levels as high as 15 W/m · K, exceeding levels for such fillers as fused silica, alumina, and aluminum nitride. The boron nitride fillers also have a low dielectric constant and high electrical resistivity. For a copy, contact: Ad-

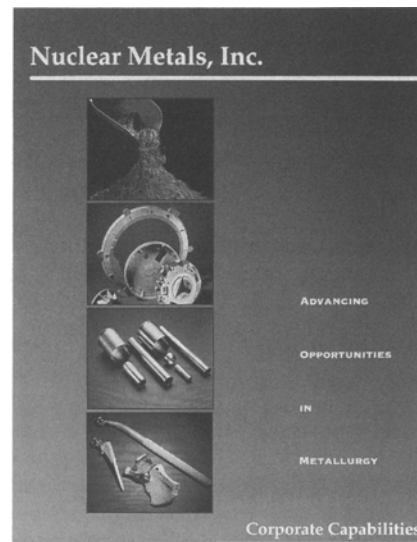


Advanced Ceramics Corporation

vanced Ceramics Corp., 11907 Madison Ave., Lakewood, OH 44107-5026; tel: 800/822-4322 or 216/529-3900; fax: 216/529-3975.

A corporate capabilities brochure is available from 4th State, a new company that specializes in advising clients on gas plasma issues and developing and installing **plasma processing systems**. Industrial applications of gas plasma—the fourth state of matter—are said to include “environmentally clean and workplace-safe” surface modification and cleaning of metals, ceramics, plastics, and elastomers. For a copy, contact: 4th State Inc., 1260 Elmer St., Belmont, CA 94002-2806; tel: 415/596-1600; fax: 415/596-1604; e-mail: gasplasma@aol.com.

Nuclear Metals has published a corporate capabilities brochure, “Advancing Opportunities in Metallurgy,” **describing their materials development, manufacturing technologies, and various specialty metal products** for aerospace, aviation, medical, and industrial applications. Featured are



Nuclear Metals, Inc.

the Beralcast family of beryllium-aluminum alloys, extruded beryllium tubing and transition joints, and high purity metal powders, as well as the company's extrusion, powder metallurgy, and melting and casting technologies. For a copy, contact: John Nicholson, Nuclear Metals, Inc., 2229 Main St., Concord, MA 01742; tel: 508/369-5410; fax: 508/369-4045; e-mail: sales@nucmet.com.

The *Rapid Tooling Selection Guide* from Paramount Industries **compares the features of various rapid tooling techniques**. The guide defines the tooling applications for the injection molding process, including prototype, preproduction, production, and short-run projects. The capabilities of assorted mold products are indicated in meeting quality standards, part functionality, and mold life. The most commonly used mold types are included, as well as technical notes explaining how cost, lead time, functionality, and surface finish can affect technological decisions in the production process. For a copy, contact: Paramount Industries Inc.; tel: 888/778-6657; e-mail: rptools@paramountind.com.

In Business

Aavid Thermal Technologies Inc., Laconia, NH, will acquire an aluminum extrusion plant in Franklin, NH, from Alumax Extrusions Inc. Aavid will use the extruded material in heat sinks and other thermal management products manufac-

tured at a nearby plant. Terms of the deal were not disclosed.

Universal Alloy Corp., Anaheim, CA, is constructing a 10,000 m² (105,000 ft²),

\$10 million aluminum extrusion mill on 9 hectares (23 acres) in Canton, GA. Scheduled to be operational by Jan. 1998, the site will serve the eastern and midwestern aircraft industry. Wakefield, Beasley & Assoc., Atlanta, GA, are the architects,

and Choate Construction Co., Marietta, GA, is the general contractor.

Garfield Alloys Inc., Garfield Heights, OH, is building a recycling facility for Type 1 scrap magnesium alloy on a 7 hectare (18 acre) site in Bellevue, OH, with an annual capacity of 13,500 metric tons (15,000 tons), expandable to 27,000 metric tons (30,000 tons). Following its second quarter 1997 startup, the facility will operate under the name MagReTech, Inc.

3M, St. Paul, MN, and **Oak Ridge National Laboratory** have won an American Ceramic Society Technical Achievement Award for the Ceramic Composite Filter, a high-temperature candle filter for hot-gas filtration used in the electric power industry to filter particle-laden gas in pressurized, fluidized bed combustion systems, integrated coal gasification combined cycle processes, and similar advanced power generation systems.

Nikon Instrument Group, Melville, NY, is expanding the sales personnel and support staff at its Microelectronics Systems Section. The company has also created an Industrial Instrument Section within its Industrial Department, reflecting the rapid expansion of the company's microscope and measuring instrument sales.

Pyrotek, Spokane, WA, has opened a plant in Geelong, Australia, and offices in North Carolina, southern Germany, and The Netherlands. The company had opened plants recently in Brazil and Thailand.

John Wiley and Sons, Inc., New York, NY, has completed the acquisition of a 90% interest in VCH Publishing Group, a scientific, technical, and professional publisher based in Weinheim, Germany, from Pallas Investment Group and the Society of German Chemists.

Branson Ultrasonics Corp., Danbury, CT, is opening a Regional Technical Center, San Dimas, CA. The center will be staffed with applications engineers with expertise in plastics joining technology and processes (ultrasonics, linear and orbital vibration welding, and hotplate welding). The site will also have an in-house service center, a plastics joining applica-

tions lab, a tooling lab, and technical seminars.

Nalco Chemical Co., Naperville, IL, has signed a letter of intent to sell its superabsorbent chemicals business to Stockhausen GmbH and Co. KG, a subsidiary of Hüls AG. The transaction includes the company's Garyville, LA, manufacturing facility.

Omni, Houston, TX, has sold its Testing Laboratories Division to **Bodycote MTS Inc.**, U.K. The new company will be incorporated as Bodycote Omnitest Inc. but will continue to do business under the existing name of Omni Testing Laboratories.

AGA Gas, Cleveland, OH, plans to acquire four air separation plants and their related businesses from **Praxair, Inc.**, Danbury, CT. The plants are located in Madison, WI; Bozrah, CT; Vacaville, CA; and Irwindale, CA. An air separation plant in Madrid, Spain, was also included in the \$200 million deal.

Neural Applications Corp., Coralville, IA, and **North Star Steel** will jointly spend \$1.2 million over four years to research "intelligent" process control systems. The funding allows North Star to investigate the application of neural network, genetic algorithms, fuzzy logic, and other technologies within the Neural's Aegis software system.

Precision Castparts Corp., Portland, OR, has agreed to acquire all the stock of Newflo Corp., Austin, TX, a manufacturer of industrial fluid management products.

ICI Surfactants, Wilmington, DE, will distribute Tween, Span, Arlacel, Arlasolve, Brij, Myrj, Renex, and Arlatone products across the U.S., Canada, and Puerto Rico, for **Van Waters & Rogers**, Kirkland, WA.

Dow Chemical Co., Midland, MI, will increase its production capacity of epichlorohydrin at its facility in Freeport, TX. Production will rise from 700 to 950 million tons per year.

Peddinghaus Corp., Bradley, IL, plans to construct a 47,000 ft² satellite manufacturing facility in Andrews, SC. The company needs the facility to meet increasing demand and to bring to market products that cannot be manufactured because of current manufacturing capacity limitations.

Daicel Polymers, Fort Lee, NJ, will marketing Dylark engineering resins for **Arco Chemical Co.**, as well as offering a worldwide line of PC/SMA alloys that use the resins under the tradename Cevian-D.

Ausimont USA, Thorofare, NJ, is undertaking a multimillion dollar expansion at its Thorofare production facility in order to produce melt-processible Hylar PVDF grades, as well as expand production of VDF monomer and Meforex 141b, 142b, 143a, and 152a refrigerant.

Degussa AG, Frankfurt am Main, Germany, has decided to increase prices for sodium cyanide in Canada, South America, Africa, Asia, Australia, and the Pacific Rim. The new base price for solid sodium cyanide will be US\$1650/mt or US\$0.75/lb cfr main port. Higher freight rates to remote destinations and higher costs for other than bulk/semibulk packaging or briquette supply form will lead to additional surcharges of up to US\$180/t or US\$0.08/lb.

Monsanto Co., St. Louis, MO, has acquired from **AlliedSignal Inc.** the worldwide patent estate for inherently conductive polymers. The acquisition is part of a broader commercialization program to develop a full line of inherently conductive polymer products for a wide range of practical and advanced applications. ICPs, sometimes referred to as "synthetic metals," are a new class of organic polymers that have the ability to conduct electricity.

Anaheim Custom Extruders extruded 50 different sizes of the evaluation model of a shrink band used as a replacement for the hose clamp for automotive coolant hoses for **Gates Rubber Co.**, Denver, CO.

Kudos

Physical Acoustics Corp., Princeton, NJ, has appointed **Dr. R.K. Miller** as Executive Director—Engineering Services and Inspection. Dr. Miller's responsibilities will include directing testing, training, certification, research, AE applications, and engineering services.



Bernard Sessman

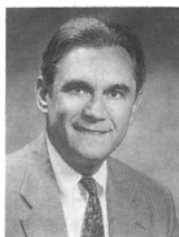
Bernard Sessman has joined **L&R Manufacturing Co.**, Kearny, NJ, as Senior Vice President for sales and marketing, at the manufacturer of ultrasonic cleaning systems.

The **International Copper Association**, New York, NY, has selected **Jan Smolders** as its President. A graduate of the University of Leuven, Belgium, Mr. Smolders has been CEO at Bekaert Corp., Akron, OH.

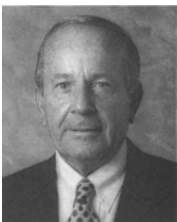
Dave Orlowski and **Bill Gilman** have been named Western Regional Manager and North Eastern Regional Manager, respectively, for **Precision Specialty Metals**, Los Angeles, CA, a stainless steel conversion mill.



Dave Orlowski



Bill Gilman



Harold Kelly

Harold Kelly, Executive Vice President, Republic Engineered Steels, has been named by the Secretary of Commerce and the U.S. Trade Representative to the

committee responsible for advising U.S. government officials on international steel trade policy, the **Industry Sector Advisory Committee on Ferrous Ores and Metals for Trade Policy Matters**.



Dr. Yehuda Baskin

of programs that promote the interests of brazing and soldering manufacturers.

Siegmar Bieber has been named president of the Polyester Film Business Unit at **Hoechst Fibers Worldwide**, New York, NY. His responsibilities will include a joint venture with Mitsubishi Chemical Corp.

John Anderson, the Gulf university professor of chemical engineering and former department head of **Carnegie Mellon University's** Department of Chemical Engineering, has been named dean of Carnegie Institute of Technology, the university's engineering college.

SME, Dearborn, MI, has named eleven individuals as Philip R. Marsilius Outstanding Young Manufacturing Engineers for 1996: **David Craig**, IBM; **Andrei Csipkes**, Lucent Technologies; **Dr. Edward De Meter**, Pennsylvania State; **Dr. Winston Ervelles**, GMI Engineering & Management; **Dr. Richard Furness**, Ford; **Andrew Hazelton**, Nikon Research; **Dr. Thomas Kurfess**, Georgia Institute of Technology; **Dr. Roland Menassa**, General Motors; **James Pellegrini**, Johnson & Johnson Interventional Systems; **Kay Starkey**, Harnischfeger; and **Albert Waverling**, NIST.

To celebrate its 50th anniversary, **Branson Ultrasonics Corp.**, Danbury, CT, a manufacturer of plastics joining and precision

The **American Welding Society** has appointed **Dr. Yehuda Baskin** as Chair of the Brazing and Soldering Manufacturers Committee, a group responsible for the development

cleaning equipment, brought together previous presidents, including co-founder **Peter Bloch**, **Robert Novello**, **Albert Ziegler**, **Stanley Jacke**, current president **Charles Nims**, **Robert Geckle**, and retired legal counsel **Irving Steinberg**.

David Humphrey is now Vice President of Manufacturing for **Hoover Materials Handling Group**. Mr. Humphrey will be responsible for focusing the manufacturing operation on customer needs in a rapidly evolving IBC marketplace.



W.W. Beible, Jr.

William W. Beible, Jr., has been appointed vice president and chief information officer, **Lukens Inc.**, Coatesville, PA. Mr. Beible received his B.S. in metallurgy and materials science at Lehigh University.

Can-Eng, Niagara Falls, Ontario, Canada, has appointed **Victor Szambor** as Quality Coordinator. His responsibilities will include setting up and overseeing the company's quality system.

Teledyne Brown Engineering Hasting Instruments, Hampton, VA, a manufacturer of instrumentation for precise measurement and control of vacuum pressures and gaseous flows, has named **Al Pichelli** to the position of General Manager. Previously, Mr. Pichelli was Senior Vice President at Teledyne Laars, Moorpark, CA.

Harper International Corp., Lancaster, NY, a supplier of thermal and furnace systems, has appointed **Dr. Junpei Zhou** as Senior Applications Engineer. Dr. Zhou had previously worked as a Research Assistant for the Mechanical Engineering Department at the Catholic University of America, Washington, DC.