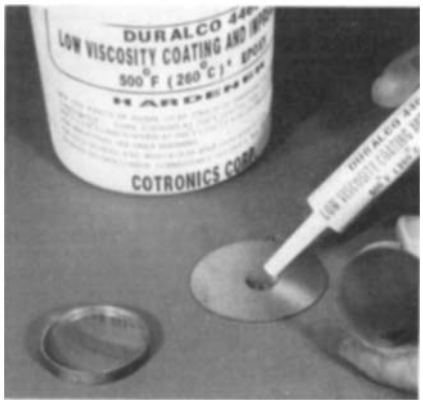
MATERIALS/PRODUCTS

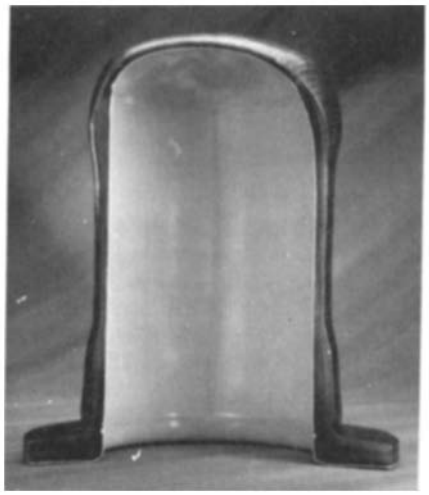
Cotronics Corporation, Brooklyn, New York, has introduced ***a low viscosity, epoxy-based impregnant coating and adhesive specially formulated for high-temperature electrical applications.*** Duralco 4461 was developed to extend the convenience of Cotronics' unique polymer system and provide users with a high temperature, low viscosity epoxy that is easily cured at room temperature. This product eliminates complicated two- or three-stage



Cotronics Corporation

cure cycles, costly furnaces, and equipment modifications. It is ideal for protective coatings, impregnating coils, forming bond lines as thin as 0.0005 inches, and electronic applications requiring a 500 °F epoxy with a room temperature cure. Evaluation kits are available for $49.95. Data and instruction sheets are available upon request by contacting Cotronics Corporation, 3379 Shore Parkway, Brooklyn, NY 11235; tel: 718/646-7996; fax: 718/646-3028.

New fiberglass-reinforced plastic (FRP) tanks and vessels lined with DuPont "Tefzel" fluoropolymer resin that meet a wide range of process industry needs for chemical and temperature resistance have been produced by **Viatec Inc.,** Hastings, Mich. Viatec's latest dual-laminated structures capitalize on the outstanding chemical and temperature resistance of "Tefzel," which is based on ethylene-tetrafluoroethylene (EFTE) copolymer. "Tefzel" is inert to strong mineral acids, inorganic bases,



DuPont Fluoropolymers

halogens, and metal salt solutions. It forms wells and has good weldability and also withstands attack by carboxylic acids, anhydrides, aromatic and aliphatic hydrocarbons, alcohols, aldehydes, ketones, esters, ethers, chlorocarbons, and polymer solvents. The sheet material of "Tefzel" employed by Viatec is manufactured by **Westlake Plastics,** Lenni, Pa. During the extrusion process, Westlake applies a glass fabric backing to the sheet to ensure good adhesion to the tank's structural outer shell of FRP. For more information about "Tefzel" ETFE Fluoropolymer resins, contact DuPont Co., Ref: "Tefzel" (A-1014), Chestnut Run Plaza, Bldg. 711, Rm. 231, Wilmington, DE 19880-0711; tel: 800/292-0181. Inquiries concerning tanks or vessels should be directed to Viatec Inc., 1220 W. State St., Hastings, MI 49058; tel: 616/954-9578.

Three ***lining materials that can control abrasion, corrosion, buildup, and noise*** are available from **ProTech International,** Johnstown, Ohio. Ultra-Wear 35, made of a pure gum rubber compound, has exceptional abrasion resistance in slurries and wet sliding abrasion. It is appropriate for use in pipes and pipes fittings, screen underflows, launders, flotation cells, chutes, and tank linings. Ultra-Wear 45, made of a natural rubber compound, has high tear strength and abrasion resistance in wet or dry applications. It is suited for nondrive pulleys, transfer points, pump discharges, launders, flotation, and mix tanks. When high resistance to heavy impact and dry abrasion is desired, Ultra-Wear 60 is the answer. Its synthetic blend easily accommodates coal, gravel, and rock in transfer points, bin linings, impact areas, nondrive pulleys, discharge, and screen underflow chutes. For more information, contact ProTech International, 200 E. Coshocton, Johnstown, OH 43031; tel: 800/433-TECH; fax: 614/967-1039.

Vitta Corporation, Bethel, Conn., announced the introduction of an improved glass transfer tape, ***G-1015, expressly made for sealing quartz (fused silica) parts.*** The new version of the tape yields uniformity in thickness in the recommended 0.001" and 0.002" thick unfired frit layer. Upon firing, the final seal will be 0.0005" and 0.001" thick, respectively. The frit material is a pure borosilicate glass type with a low expansion value. When applied in a thin and uniform layer, the quartz parts can be joined without stress due to thermal expansion mismatch. It is currently being used in the assembly of lasers, optical cells (cuvettes), constant temperature cells, transducers, lamps, scientific glassware, and various other optical and electronic devices. For information, contact Vitta Corporation, 7 Trowbridge Drive, Bethel, CT 06801; tel: 203/790-8155; fax: 203/778-6478.

Hoechst Celanese Corporation, Chatham, NJ, has developed Vectra® liquid crystal polymer resin, C810, a ***high-performance thermoplastic that is a unique combination of high-temperature resistance and the ability to be electroplated.*** Electronic component designer and manufacturer, McKenzie Technology Inc., Fremont, Calif., found Vectra® LCP to be the only suitable resin for its new low "noise" microprocessor socket, the ZGA plated socket. An electroplated socket significantly reduces electromagnetic and radio frequency interference (EMI/RFI) emissions, also called "noise," which can disrupt the orderly flow of electronic signals into and out of a microprocessor chip.

Vectra C810 is the only commercially available high-flow, high-temperature, platable molding resin suited for surface mountable devices. It offers designers and molders virtually no shrinkage, consistent quality lot-to-lot, and is available in a range of 12 standard colors as well as natural color. For more information on Vectra® C810, contact the Hoechst Celanese Information Center, 114 Mayfield Ave., Edison, NJ 08818-3053; tel: 800/235-2637; fax: 201/635-4165.

Interstate Engineering, designer and manufacturer of the EX-30 TriStar Vacuum Cleaning System, has recently converted its exhaust filter housing from polycarbonate to Stapron S, ***a modified styrene maleic anhydride*** from **DSM Engineering Plastics,** Evansville, Ind. Stapron S provided improved finishing characteristics for the component, which is vacuum metallized for superior abrasion resistance and a high-tech appearance. All major components of the EX-30 TriStar machine's high-tech filtration systems are made from die-cast aluminum for light-weight durability. Because the exhaust filter housing is in a reasonably protected environment, the company saw a cost/weight savings opportunity by switching to thermoplastics, but wanted to maintain the high metallic finish even in the plastic part. Stapron S gave the economic advantages without giving up the metallic finish. The material is compounded specifically for its decorability;

DSM Engineering Plastics

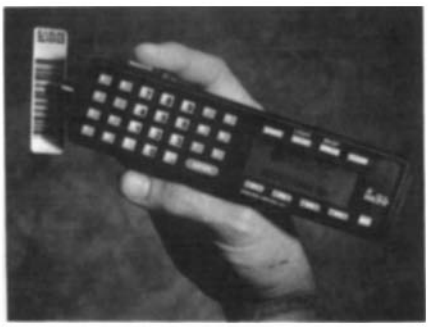
it also processes better, reducing flash and warp. For more information on Stapron S, contact DSM Primary Inquiry Response Center, c/o MBC, 5 Great Valley Pkwy., Suite 180, Malvern, PA 19355; tel: 313/827-6604.

The introduction of G-1017, ***an improved glass transfer tape for sealing Pyrex parts,*** has been announced by **Vitta Corporation,** Bethel, Conn. The new version of G-1017 tape yields improved uniformity in the recommended 0.002" and 0.004" thick unfired frit layer. The use of this product replaced the direct fusing of Purex parts, which in complicated assemblies often causes difficulties. The frit material is a blend of lead-zinc-borosilicate compounds that fire to a green color. The 490 to 540 °C firing temperature will yield hermetic seals upon cooling. The tape may be used in the assembly of scientific glassware, optical cells, and various other optical and electronic devices. For information, contact Vitta Corporation, 7 Trowbridge Drive, Bethel, CT 06801; tel: 203/790-8155; fax: 203/778-6478.

A new safety solvent, Dynasolve CU-6, is now being offered by **Dynaloy, Inc.,** Hanover, N.J., for use in cleaning urethane residues and crystallized isocyanates from various types of polyurethane processing equipment. Dynasolve CU-6 is a ***non-chlorinated, non-flammable, non-carcinogenic, non-ozone depleting solvent*** designed to replace solvents such as methylene chloride, acetone, MEK, and 1,1,1-trichloroethane. Recommended for applications in which liquid isocyanates are present either prior to cleaning, or will be introduced after cleaning (such as in a mixing tank), Dynasolve CU-6 is especially effective for cleaning of mixing and metering equipment, feed lines, and chemical holding tanks, as it quickly and completely dissolves polyols, isocyanates, and other urethane intermediates. For more information, contact Cynaloy, Inc., 7 Great Meadows Lane, Hanover NJ 07936; tel: 201/887-9270; fax: 201/887-3678.

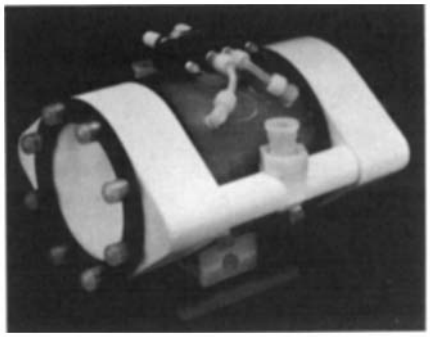
PROCESSING/EQUIPMENT

The Micro-Wand IIIE portable bar code scanner from **Hand Held Products,** Charlotte, N.C. has received an intrinsically safe approval rating from Factory Mutual Research Corporation (FMRC). The Micro-Wand IIIE is ***now certified safe for use in environments where combustible vapors or particles are present.*** The chemical, metalworking, and hazardous waste industries can now safely automate many of their data collection applications. An ergonomically designed, full integrated portable contact bar code scanner, this lightweight, 8-oz. unit contains a microprocessor, integrated contact scanner, 4 line by 20 character display, full alphanumeric keyboard, and four programmable function keys. For more information, contact Hand Held Products, 8008 Corporate Center Drive, P.O. Box 472388, Charlotte, NC 28247; tel: 704/541-1380.



Hand Held Products

A new air-powered diaphragm pump relies on pure, non-reactive DuPont fluoropolymers, automatic shutdown capability, and clean room assembly to ***combat contamination in handling aggressive, high-purity fluids.*** The "Chempure" pump developed by the **Bunnell Plastics Division of Furon Co.,** Anaheim, Calif., meets critical needs in semiconductor manufacturing and chemical processing. All of the pump's wetted components are made of DuPont "Teflon" fluoropolymer resins, which provide outstanding chemical resistance and high purity to prevent corrosion and contamination. Mean time between failure in the field is now 25 million cycles for the "Chempure" pump, according to



DuPont Fluoropolymers

Furon. The pump is available with an electronic control system that further extends diaphragm life. Stand-alone leak detection and remote air logic controls are available. For additional information contact Furon Co., Bunnell Plastics Division-Fluid Handling Products, 3336 East La Palma Ave., Anaheim, CA 92806; tel: 714/630-6068; fax: 714/630-6640.

The VMC 760 Vertical Machining Center from **Bridgeport Machines, Inc.,** Bridgeport, Conn., is now available with a DX-32, 32-bit control which ***provides faster part programming and machining throughput for improved shop productivity.*** The Bridgeport DX-32, a smart, extended PC based control includes interactive graphics as well as conversational and G-code programming. Menus easily guide the operator, step-by-step, through the part programming. Programming is as simple as filling in the field on the screen for the desired machining cycle. Concurrent programming lets the operator program a new part while another is being machines. For more information, contact Bridgeport Machines, 500 Lindley Street, Bridgeport, CT 06606. For sales and service, call 800-243-4292.

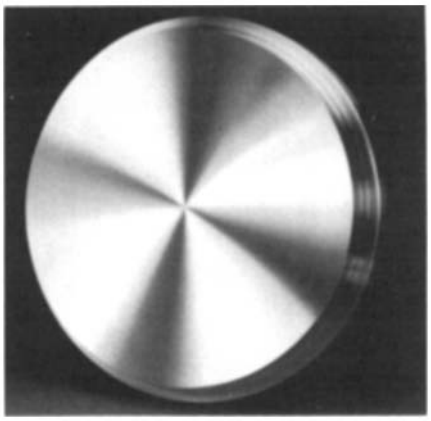
Carl Zeiss, Thornwood, N.Y., has introduced a new microscope camera, the MC 100 SPOT, which builds on the widely used Zeiss MC 100 camera with new features for ***faster and easier documentation of even the most critical specimen images.*** The option of manual override allows the expert user to select exposure parameters to enhance specific specimen features. For specimens with uniform distribution of features over the recorded field as well as those where substantial brightness differences need to be considered, the exposure can now be determined by both centerweighted averaging or Spot metering. The SPOT reading covers 3% in the center of the film format and assures a correct automatic exposure for small specimen areas on either a black background (darkfield, fluorescence, polarized light) or a white background (brightfield). For detailed information, contact Carl Zeiss, Inc., Microscope Division, Thornwood, NY 10594; tel: 800/233-2343; fax: 914/581-7446.

Carl Zeiss, Inc.

ASC Machine Tools, Inc., Spokane Wash., has introduced the CNC 500+, a command driven controller, ***requiring short, one word instructions in order to execute a batch run.*** When the CNC 500+ is given commands, it responds with appropriate data, sent to the production line, or prompts the user for specific input. The system utilizes a closed loop, numerically controlled computer, which can be used with feed-to-stop, break and hump, or flying cut-off die acceleration software formats. For more information contact ASC Machine Tools, Inc., N. 900 Fancher Road, Spokane, WA 99211-1619; tel: 509/534-6600; fax: 509/536-7658.

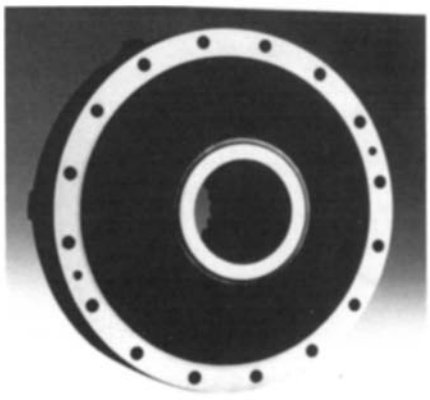
ASC Machine Tool, Inc.

The Advanced Materials Division (AMD) of Materials Research Corporation (MRC), Orangeburg, N.Y., has introduced the SPA 12 Single Piece Aluminum target for the ECLIPSE and ECLIPSE Mark II sputtering systems. The SPA 12, which is available for 12-inch ECLIPSE cathodes, can replace existing RMA targets that include bonded copper backing plates. The performance characteristics of the SPA and RMA targets are identical, so requalification is unnecessary. THE SPA 12 has a lifetime 10 percent greater than the RMA — more than 5,500 one-micron depositions — offering ***improved system uptime.*** The use of SPA targets also eliminates the administrative and shipping costs involved in the return of backing plates. For information, contact Materials Research Corporation, Orangeburg, NY 10962; tel: 914/359-4200.



Materials Research Corporation

A newly developed series of radial piston hydraulic motors by **Hägglunds Drives AB** brings more power into less space than ever before, the Swedish company claims. At ***about half the size of other drives with the same displacement,*** the four "Compact" models' power-to-weight ratios range from 1.5 to 2.0 kilowatts per kilogram (0.9-1.2 hp/lb), which is between three and eight times better than the competition, according to Roger Sundelin, the firm's marketing manager for the process



Hägglunds Drives AB

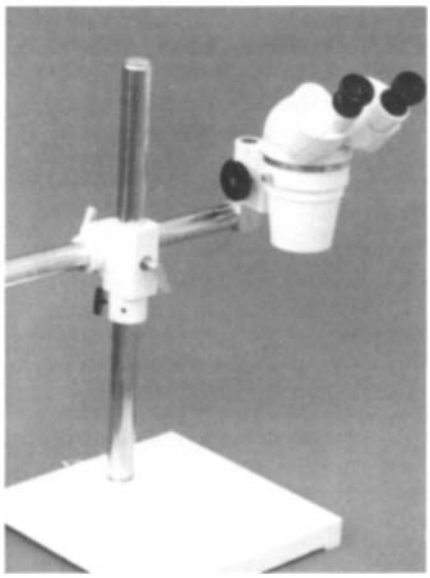
industry. The motors are especially useful on injection molding machines, which repeatedly alternate between no load and maximum load and require very high intermittent capacity. The "Compact" drives have a 100-120 mm (4-4.7 in.) hole through the center and internal splines, as one option, which makes it possible to further save space by mounting them directly on the rotating machine shaft, thus integrating the motor right into the machine. For further information contact Hägglunds Drives Inc., Frank Ratliff, P.O. Box 1210, 4868 Blazer Pkwy, Dublin, OH 40317; tel: 614/791-7400; fax: 614/791-7401.

A new integrated circuit, the VN622, offered by **WGL & Associates,** San Antonio, Texas, gives irrigation equipment manufacturers the ability to ***control a large number of electric irrigation valves over a single pair of control wires.*** This provides a saving in copper wire and installation labor over conventional irrigation controls that require a separate wire for each valve. Each valve is paired with its own VN622, either built into the valve housing itself or mounted externally. The chip monitors the 2 wire bus for the correct digital address, checks for errors, and controls the flow of power that opens or closes its valve. Signals can originate as well as terminate at each valve location. This enables an external pressure sensor or flow meter connected to one of the VN622 inputs to send back a positive confirmation that the valve has opened. Data sheets, application information, and pricing are available from WGL & Associates, 5418 Lancashire, San Antonio, TX 78230; tel: 210/342-2858.

An economical method of alloy identification, Metal IDentification System 6800, now offered by **Koslow Scientific Company,** Edgewater, N.J., combines thermoelectric (Seebeck) and chemical spot test methods. The combined use of these two methods allows ***positive identification of 98% of all alloys*** by anyone — no special training is required. In a typical test, the thermo-electric number of any unknown

Koslow Scientific Co.

alloy is measured and compared with a table. Each alloy is listed with the TE number plus its chemical alloying elements. In the event of overlap of TE numbers, a glance at the chemical elements suggests which spot test to apply. Identification is verified by comparison with a known standard alloy. Test time is just minutes and results are obtained on the spot. For additional information, please contact Koslow Scientific Co., 75 Gorge Road, Edgewater, NJ 07020; tel: 800/556-7569; fax: 201/941-4485.



Optro-Mechanics (USA) Corp.

Optro-Mechanics (USA) Corp., has presented its new microscope line, the LCO-TX series of Zoom Stereo Microscopes made in China. This series incorporates ***quality optics with modern design at affordable prices.*** The standard LCO-TX equipment includes a pair of 10X eyepieces, 45-degree inclined binocular tubes with a 3.75:1 Zoom Stereo objective (87 mm Working Distance), a focusing mount, and a stand. Various conversion objective lenses, stands, illuminators, and other accessories are available. For more information, contact Sal Cortorillo, Optro-Mechanics (USA) Corp., One Blue Hill Plaza, Pearl River, NY 10965; tel: 800/890-3333; fax: 914/620-1950.

TESTING/ MEASUREMENT/EVALUATION

WGL & Associates, San Antonio, Texas, has announced the availability of the IDC630, ***a complete, software configurable control station IC.*** It supports eight switches and eight LEDS plus eight bits of address information over a transmission medium of choice. Data packets of 16 bits are transmitted and received at 900 baud. The data collision detector makes a real time comparison of the actual state of the data bus against the data bit being transmitted. Should a discrepancy be found, the transmission stops; after random interval delay, the original outgoing signal is retransmitted. Built-in timers code the outgoing switch closure signals according to the length of time closed, allowing for more that one function for each of the switches. Data sheets, application information, and pricing are available from the manufacturer: WGL & Associates, 5418 Lancashire, San Antonio, TX 78230; tel: 210/342-2858; fax: 210/342-3959.

A complete family of Computerized Quality Testers is now available from **QTest,** a Division of MTS Systems Corporation, Cary, N.C. These universal test machines are ***suitable for many typical material tests including tensile, flex, and compression.*** Seven QTest models are available and range in capacities from 225 lbs. to 22,500 lbs. The systems are the only computer automatic test systems which are delivered ready to plug-in and start testing. Each QTest load frame comes com-

QTest

plete with QTest materials testing software, an IBM-compatible 386 computer, monitor, mouse, and printer. A new brochure is available describing the full QTest product line by contacting QTest, 1001 Sheldon Drive, Cary, NC 27513; tel: 919/677-0263; fax: 919/677-2480.

LFE, Clinton, Mass., has introduced an Operator Station for their PROFITMASTER® product family of measurement and control equipment for the web and sheet process industry. The Operator Station consists of a 14" resistive touchscreen with a tilt and swivel pedestal mount. The touchscreen panel provides ***color graphics, profile and trend displays, color alarms, measurement data, and operator commands*** which allow users to configure and control their processes by activating the appropriate command buttons on the screen with a fingertouch. The touchscreen panel can display three profiles simultaneously on the same screen for maximum control of a process. Included in the panel are strategies for speed, side/side roll gap, crown, and automatic profile control. For further information, contact Steve Eakman, Product Manager, LFE Industrial Systems Corp., 55 Green Street, Clinton, MA 01510.; tel: 508/365-3453; fax: 508/365-3455.

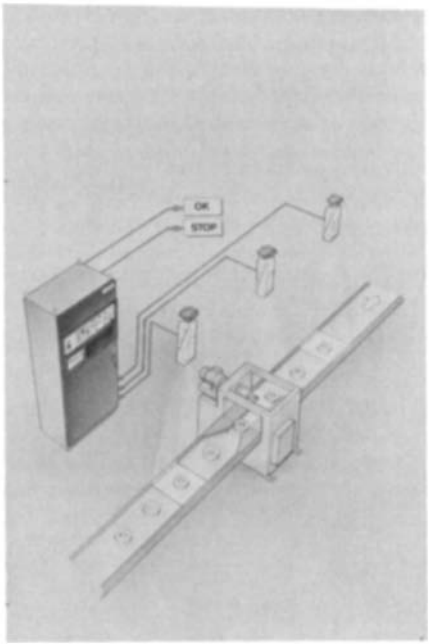
Micro Photonics, Allentown, Pa., introduces the CSEM Indentation and Crack Test instrument (ICT). This equipment is designed to ***measure the mechanical properties of thin films and coatings and to provide data about the failure mechanisms of such coatings***. Failure mechanisms include adhesive failure of the coating substrate system and cracking failure of the coating The ICT functions by measuring the load on, and subsequent displacement of a diamond indenter tip in contact with the coating surface. The load displacement curves produced give information about the hardness and elastic modulus of the coating material. An acoustic sensor records high frequency vibrations as a result of fracture and adhesive failure. Applications include mechanical properties of all kinds of thin films and coatings including sub-micron films, semiconductor technology films, wear resistant coatings, oxides and magnetic media, polymers, ceramics, and metals. The instrument is computer controlled and menu driven and includes an optical microscope. It is supplied as a ready to use package for R&D, quality control, and testing. For information, contact Micro Photonics, 4949 Liberty Lane, Suite 170, Allentown, PA 18106-0129; tel: 215/366-7103; fax: 215/366-7105.

Micro Photonics

John Chatillon & Sons, Inc. has added a new, 200lbf motorized stand to their line of force measurement gauges, test stands, and specialty instruments. The new TCM-201 stand further enhances the capabilities of the current Chatillon model TCM-200. It includes ***adjustable overload protection*** for DFI, DFIS, and DFGS force measurement gauges The TCM-201 stand features two adjusting pots (compression and tension) to stop the stand at any load between 0 and 100% capacity of the mounted gauge, a selector switch to permit the ram to return to its starting point at either the set test speed or at maximum speed, five front-panel LEDS to clearly indicate ram status (moving up, moving down, stopped) and position (at upper limit, at lower limit), digital and analog output of force gauge readings, ands controls to start and stop peripheral chart recorders. For further information contact John Chatillon & Sons, Inc., Greensboro, NC; tel: 910/668-0841.

John Chatillon & Sons, Inc.

Quality control no longer requires an in-house computer department at the factory, thanks to a versatile, user-friendly, camera-based inspection system from **Sensor Control AB**, Västeras, Sweden. The Swedish firm says its OptiMaster Inspection System is ***accurate enough to handle many inspection tasks now performed by much more expensive equipment*** and is easy to use. There is no programming; all work is done via menus. The system is available as a stand-alone or as PC boards that can be integrated into existing control systems or onto an OEM customer's machinery. Capable of being used at any stage of the production cycle, the same system can simultaneously perform such tasks as identification, localization, dimensional gauging, gap and crack detection, and hole verification as well as prevent defects by monitoring tool wear and verify the size and presence of subcomponents in the finished product. Opti-



Sensor Control AB

Master gives an accuracy of one-tenth of a pixel, or about one five-thousandth the length of the scene being photographed. A typical 100 X 150mm view would achieve 0.03mm accuracy. For further information contact Catharina Limmerfelt, Sensor Control AB, Pilgatan 8, S-271 30 Västeras, Sweden; tel: +46 8 21 11 02 80; fax: +46 8 21 11 95 80.

Beckman Instruments, Inc.

The new eCAP[a] SDS 14-200 Kit for **Beckman Instruments, Inc.**, Fullerton, Calif., automates SDS protein purity determinations on the P/ACE[a] Capillary Electrophoresis System. With direct detection (UV at 214nm) the ***staining/destaining steps are eliminated and quantitation is now possible.*** Results are obtained in 15 minutes with minimal amounts of sample required. No sample clean-up is needed and one gel formulation can separate proteins ranging from 14,000-205,000 Daltons. Reproducibility is excellent with migration time RSD of less than 1%. The capillary coating considerably reduces the potential for proteins to absorb onto the capillary wall improving reproducibility. The coating also allows for acid washes between each run, eliminating any possibility of sample carryover. Due to the speed of total analysis from preparation to first quantitation the eCAP SDS 14-200 Kit is an ideal tool for the rapid analysis of naturally occurring or recombination proteins. For information contact R. Marquez, D-33-D, Beckman Instruments, Inc., 2500 Harbor Blvd., Fullerton, CA 92634-3100, USA; tel: 714/773-6707; fax: 714/773-7743.

INTERNATIONAL RESEARCH/MANUFACTURING CENTERS

Los Alamos National Laboratory
Los Alamos, New Mexico

One of the most important recent developments in materials synthesis is the discovery that certain metallic alloys can be cast in bulk amorphous form, known as "metallic glass." Although it is usually produced as a thin foil because it must cool rapidly to achieve the amorphous state (no crystalline structure), scientists at Los Alamos recently produced the ***largest single piece of amorphous alloy,*** a 200-gram rod of zirconium, titanium, nickel, copper, and beryllium. Researchers at the California Institute of Technology determined the precise composition for the alloy, and the Los Alamos team melted the components in a conventional water-cooled arc melter. Following the shut-down of the arc, the molten alloy solidified in a single amorphous ingot, demonstrating that the cooling rate imposed by the water-cooled copper hearth was sufficient to bypass the crystallization of the undercooled melt. Amorphous metallic alloys, with superior hardness, wear resistance, and thermal conductivity, can be used to prepare almost anything currently made from plastics. Scientists from Brookhaven National Laboratory, Ames Laboratory, and Cal Tech will continue to collaborate on the characterization of these alloys, and Amorphous Technologies International in California, has shown interest in developing some of the alloys for industrial applications. For technical information, contact Ricardo Schwarz, Materials Science and Technology Division, Los Alamos National Laboratory, Los Alamos, NM 87545; tel: 505/667-8454.

* * *

A new Materials Corrosion and Environmental Effects Laboratory located in the Materials Science Laboratory at Los Alamos consists of two modern labs — one for low-temperature studies (25 ° to 60 °C) and one for high-temperature experiments (up to 1700 °C). Headed by Darryl Butt, the facility provides opportunities for industrial and university researchers, as well as Los Alamos staff, to study a ***wide range of corrosion problems.*** Future studies at this new laboratory facility will involve measuring corrosion in $MoSi_2$-SiC composites for a variety of industrial environments such as glass melters, coal-fired processes, and indirect gas-fired heating systems; corrosion testing of conducting polymer coatings for the Kennedy Space Center; analyzing the titanium-tantalum alloys used in weapons components and potentially for human implants; and developing a cost-effective system for waste remediation applications to eliminate corrosion related to supercritical water oxidation. For information, contact Darryl Butt, tel: 505/667-9307.

Ames Laboratory
Ames, Iowa

An ***innovative lead-free solder alloy*** that may decrease the use of conventional tin-lead solder (which contains a know environmental toxin) has been developed at Ames Laboratory by senior metallurgist Iver Anderson and colleagues. For use in strong, high performance solder pastes, the new tin-silver-copper alloy is high in strength, low in cost, and is not hazardous to the environment. The alloy shows good flow characteristics and comes close to matching the wettability of tin-lead solder. It can be produced in sheets or wires. For more information, contact Anderson at Ames Laboratory, Iowa State University, Ames, IA 50011; tel: 515/294-8252; fax: 515/294-8727.

UNIVERSITY VIEW

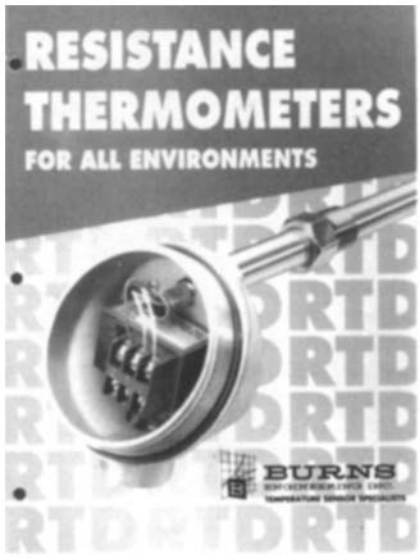
Chemical engineers at the **Georgia Institute of Technology** have observed that certain models of viscosity and free volume are acceptable measures of ion concentration. Their research is part of an effort to develop ***a rapid response, easy-to-use sensor that monitors conductivity and can interpret properties of a material during polymerization.*** Knowledge of the polymer viscosity at any state of computer chip encapsulation would permit the operator to vary processing conditions and avoid "short shots" — incomplete filling of mold cavities — or the detachment of lead wires from bond pads. Dr. Sue Ann Bidstrup and recent Ph.D. recipient J.E. Companik made their observations while conducting research relating ion conductivity to viscosity and structural properties of polymers. The study demonstrated that ionic conductivity changes with temperature and extent of polymerization, like viscosity, can be modeled using Arrhenius model ($T > Tg = 100$) and free volume

models (T < Tg = 100). In addition, the ionic conductivity models can be combined with viscosity models to develop a direct relationship between viscosity and conductivity, which can be used in cure monitoring and control. Bidstrup's ongoing research address similar monitoring and control issues in both epoxy and solution polymerization. For more information contact Dr. Sue Ann Bidstrup, Georgia Institute of Technology, Atlanta, GA 30332-0800; tel: 404/894-2872.

LITERATURE/DATA SOURCES

The Machine Vision Association of the Society of Manufacturing Engineers (MVA/SME), Dearborn, Mich., announces the publication of the 1994 ***MVA/SME Machine Vision Industry Directory.*** Included are over 460 suppliers of vision systems, components, and services in the United States and Canada. Each entry lists company name, address, contact name, as well as a description of the products and services offered. The 19-82-1992 Bibliography of Machine Vision Technical Resources. The bibliography lists machine vision resources published by MVA/SME from 1982-1992: abstracts of articles, technical papers , books, and videotapes. Fro ease of use, each listing is organized by category. For information contact, Society of Manufacturing Engineers, One SME Drive, P.O. Box 930, Dearborn , MI 48121-0930; tel: 313/271-1500; fax: 313/271-2861.

Burns Engineering, Minnetonka, Minn., announced the availability of its new, updated ***28-page full-line resistance thermometers*** **product catalog** which features a number of new product enhancements including: New model TL transmitter, which delivers twice the accuracy (± .05% of span accuracy linearized with temperature) at about half the price of competitive transmitters, Universal spring-loaded RTD with 1/2" NPT fitting and a 7" long lead wire that easily fits transmitters or heads., and a type "K" spring-loaded, twist lock sensor that can be easily removed through the connection head. Ideal for ISO 9000 calibration programs. Fro more information about temperature sensing products from Burns /engineering write or call Burns Engineering, Inc., 10201 Bren Road East, Minnetonka, MN 55343; tel: 800/328-3872; fax: 612/935-8782.



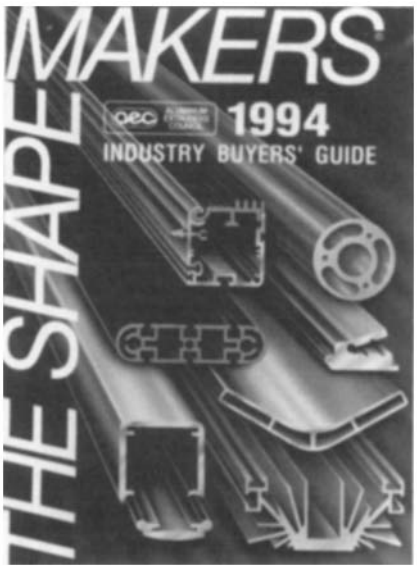
Burns Engineering, Inc.

Two new books are available from **ISO Easy,** Middletown, NJ, ***to explain the complete ISO 9001 International Standard for Quality Assurance.*** A complete step-by-step guide to interpreting and implementing the requirements Standard Interpretation is of ISO 9001 includes the full text of the Standard. For each paragraph of the standard it provides a clear explanation, a discussion of common practice in carrying out the Standard and a checklist of audit questions. It also includes a calendar of conformance activities, a suggested assignment of department responsibilities for compliance, advice on choosing a registration agency, a comparison of ISO 9001 and ISO 9002 and comparison of ISO 9001 and Total Quality Management. Companion manual, ISO 9001, the Standard Companion, has been revised and published in a 26-page-second edition. The manual provides a clear explanation of the ISO 98001 international standard for quality assurance. It is a translation of the complete text of the Standard into plain English and is designed to provide a practical and very economical way to train the people in an organization in the requirements of the standard. Written by a trained auditor who is currently leading a compliance effort, it contains practical advice on the application of the standard and identifies pitfalls to be avoided, For more information contact ISO Easy, P.O. Box 21, Middletown, NJ 07748; tel: 908/671-7130.

The new, 1994, edition of Cotronics 52 page **High Temperature Materials Handbook** is now available. The ***most up to date source of High Temperature Materials available for use to 4000 °F.*** The handbook includes literature, photographs, illustrations, technical data, and typical applications for specialty epoxies, ceramics, and high temperature adhesives. Fully revised for 1994 sections include: Machining Ceramics - pourable Ceramics - High temperature Adhesives, High temperature Epoxies - ceramic Fiber Products - High Temperature Tapes, Ceramic Cloths - protective coatings - conductive materials & user guides. New products are described for the construction and repair of high temperature equipment, prototypes, laboratory apparatus, R & D instruments, etc. For more information contact Cotronics Corporation, 3379 Shore Parkway, Brooklyn, NY 11235; Tel: 718/646-7996; fax: 718/646-3028.

Cotronics Corporation

The ***1994 edition of the Shapemakers Industry Buyer's Guide***, published by **the Aluminum Extruders Council**, Wauconda, Ill., is now available at no cast. A comprehensive resource of extruder members, the 28-page Industry Buyer's Guide contains an alphabetical directory, listing each AEC extruder member company headquarters, plants, and press sizes. Detailed capability charts indicate data such as maximum circle size of extrusion presses, forms produced, finishing and fabrication services available, and special



Aluminum Extruders Council

services and forms. For more information, or to request a free copy of the 1994 Industry Buyer's Guide, contact, the Aluminum Extruders Council at 1000 N. Rand Road, Suite 214, Wauconda, IL 60084; tel: 708/526-2010; fax: 708/526-3993.

Lord Corporation, Mechanical Products Division, Erie, Pa., has introduced its all new Engineering Guide and Product Catalog. This new 140-page guide and ***catalog focuses on vibration shock, and noise control issues and products***. The engineering guide deals with theory and the shock mechanics that are associated with vibration control. It also contains a service guide and sample problems. For more information contact: Lord Corporation, Mechanical Products Division, 1952 West Grandview Blvd., P.O. Box 10040, Erie, PA 16514-0040; tel: 800/458-0456 or 814/868-5424; fax: 814/868-3109.

Lord Corporation

A 12-page, four-color capabilities brochure is available from **Pelmor Laboratories, Inc.,** Newtown, Pa., custom manufacturer of natural and synthetic rubber parts. The literature describes Pelmor's product development services, including the compounding and mixing of formulations and the design and manufacturing of tools and dies; and the company's production capabilities, including injection, transfer and compression molding, extrusion and rubber-to-metal bonding. The brochure also emphasizes Pelmor's ***expertise in manufacturing custom constructed rubber products and high-performance fluoroelastomer (FKM) coatings, sealants, caulks and adhesives.*** For more information and a complimentary copy of the new brochure, contact: Pelmor Laboratories, Inc., 401 Lafayette St., P.O. Box 309, Newtown, Pa. 18940-0390; tel: 800/772-6969; fax 215/968-6415.

A free brochure on Deep-Dyed Polyester Films, a specialty of **Courtaulds Performance Films,** Martinsville, Va., highlights the material's superior color consistency, clarity, transparency, and durability in diverse industrial design and manufacturing applications. The films are dyed in a patented computer-controlled process using heat to completely impregnate the film's polymer matrix with dyestuffs, stabilizers, and other chemicals for color that will not flake, scratch off, rub off, peel, or streak. The same process can be used to give the film an ultraviolet block of up to 99.9% absorbance. Courtaulds Performance Films is the only market supplier currently able to provide ***full-service performance film production, including designing, sputtering, dyeing, vacuum metallizing, coating, and laminating—or combining processes to achieve the desired effect.*** For more information, contact Courtaulds Performance Films, Attn.: Deep-Dyed Polyester Films, State Route 683, Whitby Acres, Fieldale, VA 24089; tel: 703/627-3213; fax: 703/627-3085.

The Powder Metallurgy Equipment Association (PMEA) has published a 150-page directory containing ***catalogs of major suppliers of equipment used to manufacture powder metallurgy (P/M) parts and products and products made from particulate materials.*** Technical information is given on P/M compacting presses, tools and dies, sintering furnaces and atmosphere gases, and metal grinding equipment. The directory also include a 14-page product listing of association members. For a free copy, contact the Powder Metallurgy Equipment Association, 105 College Road East, Princeton, NJ; tel: 609/452-7700; fax: 609/987-8523.

A new book on the applied science and technology of designing with engineering thermoplastics is now available from **McGraw-Hill, Inc.** Entitled ***Structural Analysis of Thermoplastic Components,*** the 384-page book was chosen as the December selection for the Engineering Book Club and is written for design engineers, structural analysts, and advanced engineering students. Featuring 255 illustrations, the volume describes the increasing use of plastics in high-performance structural applications, emphasizing the performance differences between these materials and traditional engineering materials. For more information, contact Cynthia Borg, director of publicity, McGraw-Hill Professional Book Group, 11 West 19th Street, New York, NY 10011; tel: 212/337-5947.

A technical article describing the use of resins in electrical encapsulation applications is now available from **Elf Atochem North America, Inc.,** Philadelphia, Pa. "Evaluation of Electrical Material Properties: Embedment Stress Testing on Electrical Encapsulation Resins" ***examines the properties of encapsulation resins*** including HTPB (hydroxyl terminated polybutadiene) based polyurethanes, epoxies, and silicone. To request a copy, contact Diana Melick, Elf Atochem North America, Inc., 2000 Market Street, Philadelphia, PA 19103; tel: 800/328-2811.

The **National Safety Council,** in conjunction with licensed developers of Philips Electronics, has introduced its "Confined Spaces: Training the Team" training program to Compact Disc Interactive (CDI) format. CDI is a new interactive training medium that records digitized video/film onto a common compact disc. "Confined Spaces: Training the Team" ***teaches workers how to enter and exit a confined space, identify and control hazards, and conduct rescue operations.*** The program

helps companies comply with the Occupational Health and Safety Administration's Confined Space standard which went into effect earlier this year. The Council's confined spaces training program consists of compact discs, an instructor's package, administrator's guidebook, and entrant/attendant workbook. For more information, call 800/621-7619; or write National Safety Council, Public Relations Department, 1121 Spring Lake Drive, Itasca, IL 60143-3201; fax: 708/775-2310.

IN BUSINESS

Barracuda Technologies, Inc., DeSoto, Texas, manufacturer of Divinycell, has changed its name to **Divinycell International Inc.** or **DIAB.** Divinycell is a non-biodegradable, semi-rigid foam core used in sandwich structure construction.

In response to steadily increasing sales and a growing demand for JIT deliveries, **Midland Aluminum Corporation** has expanded their Florida operation to accommodate their customers' metal needs. The company has relocated to 4522 107th Circle, Clearwater, FL 34622. The new facility equips Midland with 20,000 square feet of office and warehouse space, more than double their previous location. The expansion will allow Midland to increase their inside sales force as well as greatly increase their in-house inventory of aluminum sheet, stainless steel, stainless steel rod, aluminum extrusions, and custom shapes.

Packaging Science Inc., (PSI), King of Prussia, Pa., has been named a distributor for high quality coolants, cleaners, cutting oils, and rust preservatives from **Process Research Products, Inc. (PRP),** Ewing, N.J. This new line of materials allows PSI to offer clients a complete line of production materials, special metal preservatives, and final packaging materials that help protect precision metal products.

Foseco Int., Ltd., and **Metaullic Systems Co., L.P.,** have jointly announced their signing of a letter of intent to enter into a "Global Marketing Partnership." Foseco, with international headquarters in Birmingham, England, and North American headquarters in Cleveland, Ohio, is one of the world's foremost suppliers of consumables and systems to the foundry industry worldwide. Metaullics Systems, headquartered in Solon, Ohio, manufactures a broad line of heat exchangers, rupture disks, molten metal pumps, filters, and other products for use in hostile molten metal and corrosive chemical environments. Under their agreement, Foseco will market Metaullics Bonded Particle Filter media throughout the world. At the same time, a separate letter of intent is under negotiation for the USA.

PPG Industries, Pittsburgh, Pa., announced it has completed the sale of its architectural metals business to **Pittco Engineered Systems, Inc.,** Twinsburg, Ohio. The business, which employs about 250 people, supplied metal parts and assemblies for exterior walls and glazing of commercial buildings.

KUDOS

PPG Industries, Pittsburgh, Pa., presented its Excellent Supplier Awards for 1993 to 19 firms, recognizing for the first time suppliers in Canada, Italy, and Norway, as well as in the United States. PPG bases its awards on annual quality and performance reviews and audits. Winners for 1993 were ***A Duie Pyle, Inc.,*** West Chester, Pa.; ***Alusuisse Italia, S.p.A.,*** Milan, Italy; ***Bearings, Inc.,*** Cleveland; ***DSI Transports, Inc.,*** Houston; ***DYNO-CYTEC KS,*** Lillestrom, Norway; ***E&L Associates Inc.,*** Monroeville, Pa.; ***Footner and Co., Inc.,*** Baltimore; ***FSG Industries,*** Buffalo, N.Y.; ***Industrial Minerals, Inc.,*** Kings Creek, S.C.; ***Manfredi Special Services Division, Manfredi Motor Transit Co.,*** Newbury, Ohio; ***Matlack, Inc.,*** Wilmington, Del.; ***Industrial Chemical Division, Miles, Inc.,*** Pittsburgh; ***PHH Homequity,*** Wilton, Conn.; ***Precision Poly Screen Ltd.,*** Oshawa, Ontario, Canada; ***The Prince Manufacturing Co.,*** Fort Lee, N.J.; ***Schneider National, Inc.,*** Green Bay, Wis.; ***Seaforth Mineral & Ore Co., Inc.,*** Cleveland; ***Shell Chemical Co.,*** Houston; ***Transport Corporation of America, Inc.,*** Minneapolis.

Herbert C. Johnson, III

Herbert C. Johnson, III has been promoted to President and Chief Operating Officer of **Sokkia Corporation,** Overland Park, Kan. He was previously Executive Vice President, Sales and Marketing.

Dymax Corporation, Torrington, Conn., has announced the following appointments: ***Carl Landon,*** Senior Vice President, Operations & Finance: ***Clai Bachmann,*** Senior Vice President, Commercial Development; ***Dr. Wells Cunningham,*** Director of Research and Development; and ***Dr. John Arnold,*** Technical Service Director.

Commercial Plastics & Supply Corp., Miami, Fla., has appointed ***Dominick Mandicott*** as Southeast Regional Sales Manager, Industrial Thermoplastics Division. His responsibilities will include directing, training, and educating outside and inside sales people in the sales applications and properties of high performance plastics.

Diemasters Manufacturing, Elmhurst, Ill., has been awarded the 1993 Supplier Excellence Award by **Texas Instruments** for outstanding performance. The award, given annually, honors firms whose dedication to quality and service have met Texas Instruments high standards. Recipients are an elite group of 98 suppliers representing less than one-half of one percent of Texas Instruments over 20,000 suppliers world wide. Diemasters is a lead-

ing supplier of metal parts to the electronic, automotive, communications, power equipment, and computer industries.

The European manufacturing facility of ***Materials Research Corporation's Advanced Materials Division (AMD)*** has received ISO 9002 certification from the **Association pour l'Assurance de la Qualite (AFAQ).** The facility, located in Toulouse, France, manufactures high purity metals and alloys for thin films, sputtering targets, and vacuum evaporation products.

Four manufacturers have been recognized by **Effective Management Systems (EMS®),** Milwaukee, Wis., for achieving outstanding business results from implementation of EMS manufacturing software. All four achieved payback on their investment in nine months or less after installation. Through the company's "Partners for Profit" program, EMS recognizes customers who achieve exceptional business results by integrating EMS software into their manufacturing operations. Named as 1993 "Partners for Profit" were ***Industrial Combustion,*** Monroe, Wis.; ***K&M Associates L.P.,*** Providence, R.I.; ***Marathon Special Products,*** Bowling Green, Ohio; and ***The Master Products Company,*** Cleveland, Ohio.

Revco/Lindberg, Watertown, Wis., A Unit of General Signal, has named ***Doris Skoch*** Vice President-Finance and Operations of its newly formed organization. The new unit is the result of the recent acquisition of REVCO Scientific by General Signal and consolidation with its Lindberg Unit. Skoch, in addition to her financial responsibility for the Unit, will have responsibility for three midwestern operations serving focused industrial markets: Lindberg in Watertown, Wis., serving the industrial heat treating segment; MPH Industries in Riverside, Mich., serving the non-ferrous foundry and die casting market segment; and Engineered Ceramics in Gilberts, Ill., serving the technical ceramics market segments.

Doris Skoch

Robert Wylie has been named manager of market planning for **ITW Fluid Products Group,** Norcross, Ga., a leading supplier of environmentally-safe cutting systems, sump-maintenance fluids, and associated products for the metal working and fabricating industries. Wylie's responsibilities include executing and overseeing marketing programs for the company's Accu-Lube, Cling Surface, Dykem, Rustlick, and SafeTap product lines.

LFE Industrial Systems Corporation, Clinton, Mass., a manufacturer of measurement and control gauging systems for continuous web processes, has announced the appointment of the **R.M. Hoffman Company,** Sunnyvale, Calif., as their exclusive sales representative serving California and Nevada. The Hoffman Company will work in the industrial process control markets with the LFE Profitmaster® family of systems where product thickness, weight, and uniformity are critical to the converting industry.

HotSpot

Operating features and technical information on its line of investment casting mold preheat and burn-out furnaces is presented in literature available from **Lindberg, A General Signal Company,** Watertown, Wis. As detailed in Bulletin 41655, the furnace will ***produce cleaner shells with less exhaust smoke,*** resulting in a cleaner operating environment. A special automatic air injection system supplies a high oxidizing atmosphere during wax burn-out for cleaner shells. In addition, internal incineration of wax fumes results in an exhaust that requires neither afterburner nor scrubber. Another design feature provides energy efficiency through the use of the firm's exclusive Moldatherm® ceramic fiber insulation, which assures maximum heat-up rates and minimum fuel costs. For a copy of Bulletin 41655 on investment casting mold preheat and burn-out furnaces, write to Lindberg, A General Signal Company, 304 Hart St., Watertown, WI 53094; tel: 800/873-4468; fax: 414/261-4962.

Industrial Steel Treating, Jackson, Mich., announces the addition of Nitroflex ferritic nitrocarburizing, a gaseous low temperature heat treatment that ***improves a material's hardness, fatigue life, and resistance to corrosion.*** The AGA Nitroflex process strengthens protection against corrosion by subjecting parts to controlled oxidation as a post treatment after nitrocarburizing. This treatment creates a coating of iron oxide that preserves the surface, giving it an attractive black luster. Some materials can develop up to 300 hours salt spray protection, replacing some plating requirements. Since Nitroflex operates at low temperatures, absolute minimal product distortion is realized. Parts can be taken directly from heat treatment to assembly without straightening, grinding, or other finishing operations. The Nitroflex process is an excellent replacement for shallow case carbonitriding and salt bath nitriding. Automotive applications include clutch discs, rocker arms, crankshafts, pinion gears, wheel bearings, valves, rocker shafts, synchronizer hubs, and axles. For