costs, payback periods, annual dollar savings, and percent yield increases. The factors motivating source reduction action are outlined along with plant characteristics and source reduction program features.

Circle No. (112) on reader service card.

Publication notice: ***"Hazardous Materials Shipping Manual,"*** **Adhesive and Sealant Council Inc.,** Washington, D.C., 1992. Full update of the original 1986 publication reflects the US DOT complete revision of HM-181, the Hazardous Materials Regulations. It is specifically designed to assist transportation and distribution personnel in the adhesive and sealant industry to prepare shipments of hazardous materials for transportation by either air, water, rail, or highway. Also included is guidance on the new regulatory mandates for training employees whose occupations include manufacture, handling, preparation and/or packaging, documenting, loading, and transporting hazardous materials. A free copy of DOT's HM-181 regulations and amendments is included, while supply lasts.

Circle No. (113) on reader service card.

Integrated Environmental Services, Danbury, Connecticut, is a comprehensive consulting organization with the ***diverse technologies and resources necessary to solve a wide variety of problems involving hazardous and nuclear materials.*** It applies the most appropriate scientific and engineering technology in a cost-effective manner, while assuring adherence to federal, state, and local regulations, and has the capability of providing responsive and innovative solutions to environmental problems.

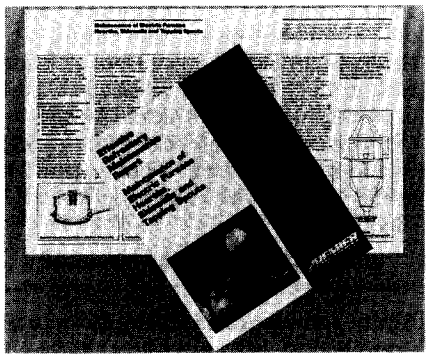
Circle No. (114) on reader service card.

Workshops on ***"Environmental Laws and Regulations,"*** sponsored by the **Office of Environmental Guidance (EH-23)** of the EPA are scheduled at two DOE facilities: Las Vegas, Nevada 23-26 Feb; Washington, DC 16-19 March 1993. The sessions have been updated to reflect changes in federal regulations, DOE orders, and the environmental requirements.

Circle No. (115) on reader service card.

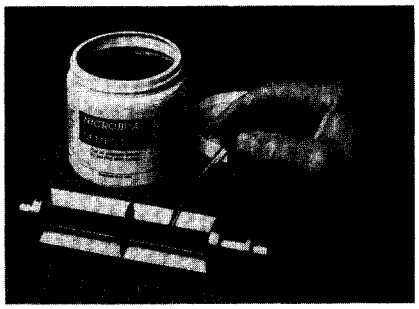
Heat Treat Hotspot

Premier Services Corp., King of Prussia, Pennsylvania, has issued a series of 4-page reports covering effective refractory maintenance procedures for the steel industry. The reports establish some of the ***best possible maintenance practices for electric furnace hearths, sidewalls, and tapping spouts.*** The demand for high production rates from electric furnaces for stainless, alloy, and carbon steels has made this type of protection more important than ever. Preparation procedures, the appropriate refractories, and emplacement equipment are outlined in detail.



Premier Services Corp.

Circle No. (116) on reader service card.

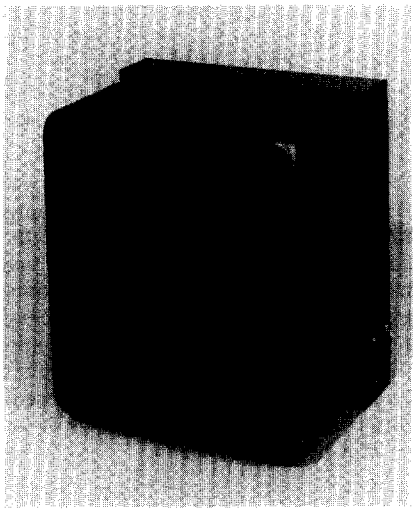


Wall Colmonoy Corp.

Nicrobraz Cement 650, a ***new filler metal binder used in furnace brazing operations,*** is available from **Wall Colmonoy Corp.,** Madison Hts., Michigan. This low-viscosity liquid is mixed with brazing filler metal powders to permit easy application by brush, eyedropper, syringe, or spray system. The binder completely volatilizes below 540 °C (1000 °F), leaving no residue, and may be used in vacuum or high-purity dry atmospheres. The binder is nontoxic, nonflammable, and contains no ozone-depleting solvents.

Circle No. (117) on reader service card.

A compact ***protection device that reduces field installation time and expense on gas-fired combustion equipment,*** such as furnaces and ovens, is available from **Protection Controls, Inc.,** Skokie, Illinois. The MINI-UNIFIED, with an optional purge control, costs less and takes less space than separate, externally-mounted and inter-wired components. The device combines the flame safeguard with prewired pushbuttons and indicating lights. The hard-wired unit with plug-in interchangeable relays is more rugged than printed circuit designs under harsh

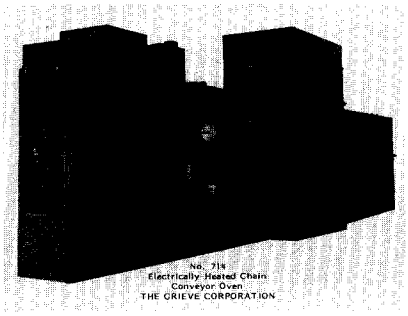


Protection Controls, Inc.

conditions. The units have a high signal strength to reduce nuisance shutdowns.

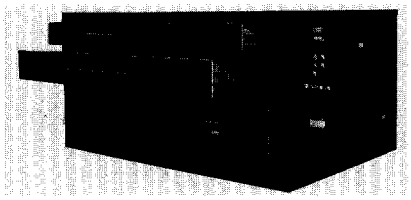
Circle No. (118) on reader service card.

The No. 714 electrically heated 400 °F chain conveyor oven from **Grieve Corp.**, Round Lake, Illinois, currently is being ***used for curing plastisol coating on pliers***, which are held on a roller conveyor by specially designed fixture supports, enabling parts to ride through the oven in a vertical position at all times. There are shelves along the entire length of the oven below the top and bottom pass to catch fallen parts. The conveyor speed varies from 1 to 2.8 ft/min



Grieve Corp.

Also from Grieve, the No. 730, a 500 °F electric cabinet oven, is ***applicable for heating flat urethane sheet material prior to vacuum forming***. The two drawers are on rollers and are fully gasketed with latches. Continuous solid bottoms on the drawers prevent marring of the plastic sheet during processing.

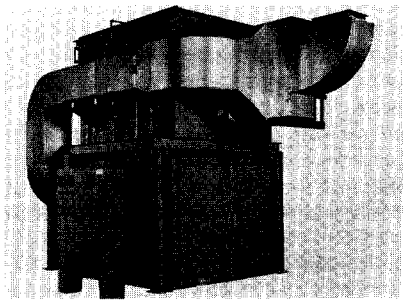


Grieve Corp.

Both ovens include safety features: purge timer, manual reset excess temperature controller, separate heating element control contactors, 975 CFM-powered forced exhauster, powered forced exhauster air flow safety switch, and recirculating blower in air flow safety switch. Temperature uniformity is maintained evenly throughout the workspace, through the use of SCR power controllers.

Circle No. (119) on reader service card.

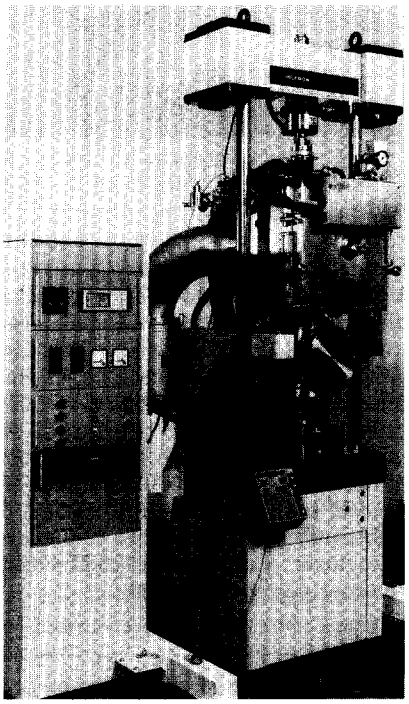
A ***new batch oven with built-in fume incinerator and heat recovery system*** has just been introduced by **Precision Quincy Corp.**, Woodstock, Illinois. The Tri-Pak™ single-package integrated system is guaranteed to achieve 97 to 98.5% destruct based on solvent properties. It is available in a large variety of batch oven sizes and configurations and meets applicable EPA, OSHA, IRI, and UL codes.



Precision Quincy Corp.

Circle No. (120) on reader service card.

Instron Corp., Canton, Massachusetts, introduces a ***vacuum furnace for use up to 1600 °C (2910 °F) 10^{-3} torr vacuum with gas backfill capability.*** The system is comprised of a water-cooled vacuum capsule with cylindrical resistive heating element, radiation shields, and thermocouples. A second capsule fitted below the main capsule contains the LVDT. The system also includes upper and lower pullrods, bellows, two-stage pumping system, support trolly, control console with programmable temperature controller, and PLC that can handle up to 14 control cycles such as vacuum level, inert gas backfill, and heating sequences. The hot zone is 150 mm (5.9 in) in diameter by 200 mm (7.9 in) high and will take flexure fixtures. The main capsule has viewing ports for optical instruments. The furnace can be adapted to tension grips and contacting extensometers.



Instron Corp.

Circle No. (121) on reader service card.

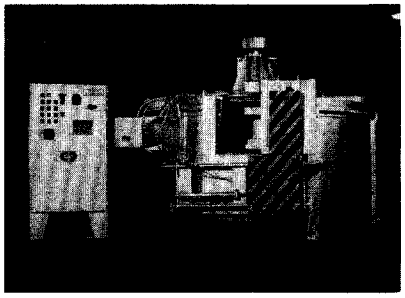
The **Thermal Products Div., Dependable Foundry Equipment Co.**, Tualatin, Oregon, has installed a rotary die heater at Hydro Aluminum Bon, Holland, Michigan, that is electrically heated and capable of reaching operating temperatures in 90 min from start. The die heater features ***internal air baffling, which allows the unit to boast of temperature uniformities of ±10 °F at operating temperatures.*** The unit is capable of processing 21 each 8 in-thick extruding dies, each die measuring 20 in in diameter. This is the first unit of its kind manufactured by Dependable under exclusive license with Mechatherm International Ltd., West Midland, England.

Circle No. (122) on reader service card.

H.P. Technologies, Cleveland, Ohio, has completed a study of the potential applications of the Horsehead Resource Development ***flame reactor for the vitrification of solid process wastes and other waste materials in the iron and steel industry***. The project development and application study was sponsored by the **Gas Research Institute**, Chicago, Illinois. The following processes were studied: mining of iron ore pellets, blast furnace operations, basic oxygen furnace operations, electric arc furnace operations, and pickling. What used to be disposed of in landfills must now be considered for further processing to remove undesirable materials, reclaim useful materials, and yield a smaller amount of material acceptable for landfills.

Circle No. (123) on reader service card.

A new, full-service **Lindberg Corp.** heat treat facility has opened in Pompano Beach, Florida. The new plant was relocated from a smaller facility in Ft. Lauderdale. It features a new 1,000 lb/hr mesh belt-hardening furnace with a polymer quench. It is the first commercially avail-



Thermal Products Div., Dependable Foundry Equipment Co.

able furnace of its kind in Florida and will allow Lindberg to ***process stampings and fasteners with minimum distortion and a high degree of cleanliness***. The plant also features vacuum heat treating equipment to serve the local tool and die market.

Circle No. (124) on reader service card.

Axel Johnson Metals, Inc., Lionville, Pennsylvania, and **Titanium Metals Corp.** have established a ***titanium hearth melting joint venture under the name "Titanium Hearth Technologies."*** This partnership has acquired the operations of Axel Johnson's existing "MaxiMelt" electron beam hearth furnace in Morgantown, Pennsylvania. "THT", with an annual melting capacity of 12 million pounds of titanium ingot and slab, will continue to provide melting services to the worldwide titanium industry. Axel Johnson Metals will continue to own and operate its titanium scrap processing facility and its smaller electron beam furnace, which will be devoted to the development of hearth melting applications in nickel-based alloys and other metals.

Circle No. (125) on reader service card.

New low NO_x and ultra-low NO_x gas burners are featured in the just-released free Mini-Catalog from **Hauck Manufacturing Co.**, Lebanon, Pennsylvania. Other ***new products have been added, including a wide range of combustion equipment, systems, and service***. Fuel burners, pilots, ignition systems, blowers, valves and regulators, control panels, flame safety systems, and accessories are included.

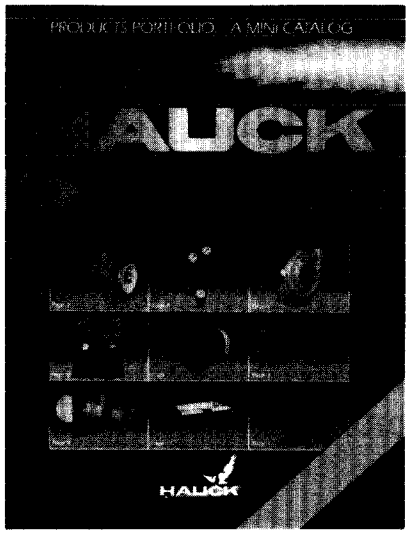
Circle No. (126) on reader service card.

A new 17,000 ft^2 facility in Romeo, Michigan, has been opened by **Inductoheat, Inc.** to house its newly formed Mass Heating Division. The new operation was ***developed to focus on servicing customer needs for induction mass heating equipment and services***. It includes equipment for heating metal for forging, warm forming, extruding, and other hot working processes. In addition to systems design and build, complete induction heating coil design, build, and repair services are available. The facility will also allow for increased production of Inductoheat's UNIFORGE®, a unitized bar/billet heating system with all power and tank circuit components and electrical controls in a single compact cabinet. Materials handling components and the induction heating coils are mounted on top of this cabinet, completing the UNIFORGE® system. This results in a system that requires minimal floor space and provides for fast, cost-saving installation.

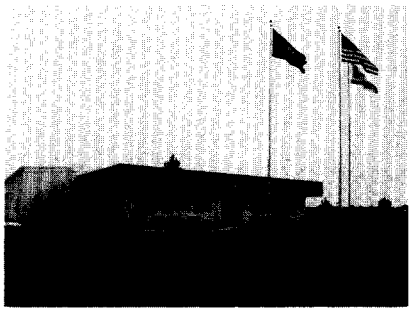
Circle No. (127) on reader service card.

Research has begun on **Heat Treating Network's**, Cleveland, Ohio, second Core Technology Project, "Heat Up and Soak Times of Bulk Materials." The project will focus on steel parts that use batch-type, indirect heating furnaces. Heat treating operations involved will include normalizing, annealing, austenitizing for quenching, tempering, and stress relieving. Participants in the project—American Gas Association, Case Western Reserve University, Euclid Heat Treating Co., Shore Metal Treating, Inc. and Conrad-Kacsik Instrument Systems—will develop ***a validated system that will accurately determine the optimal heat up and soak times for various types of steel and steel treatments***. The result will be simple and easy-to-use charts and tables enabling heat treaters to optimize furnace loading, energy consumption, and production time to yield more production at lower operational cost, and consumption of less energy, thus producing additional cost-savings. Deliverables will consist of a written training and support plan with quarterly progress reports and a final report documenting the work accomplished.

Circle No. (128) on reader service card.



Hauck Manufacturing Co.

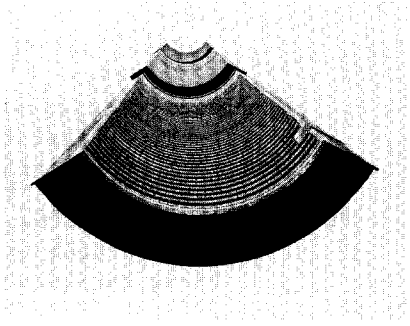


Inductoheat, Inc.

A new bulletin covering a new line of 1200 °C laboratory box furnaces is available from **Lindberg/Blue M**, Watertown, Wisconsin. The new furnace line ***incorporates furnace chamber and control instrumentation in a single space-saving cabinet and is designed for continuous operation to 1200 °C***. Removable and reconfigurable shelves are included to maximize work area utilization, and a heavy-duty hearth plate provides the capability of handling dense and/or heavy workloads. An air atmosphere inlet port is provided, as well as an adjustable top vent port for injecting and removing air or inert atmosphere into the furnace chamber.

Circle No. (129) on reader service card.

A custom-designed, high-temperature electric jacket used to heat catalyst material has been built by **Trent, Inc.**, Philadelphia, Pennsylvania. The insulated brick-lined jacket has a maximum operating temperature of 816 °C (1500 °F), and uses exclusive Trent Folded and Formed



Trent, Inc.

ribbon heating elements. The jackets are designed for precise uniformity and long life.

Circle No. (130) on reader service card.

Stokes Vacuum, Inc., Philadelphia, Pennsylvania, is offering subscriptions to its new, informative publication, Vac-Tec News. It's free to purchasers, specifiers, or users of vacuum pumps, blowers, coating systems, and dryers. The flyer focuses on the use of Stokes vacuum ***technology to solve everyday and unique process problems***. Applications span many industries, with emphasis on chemical processing, heat treating, semiconductor manufacturing, pharmaceuticals, polymers, and environmental applications.

Circle No. (131) on reader service card.

A new lightweight industrial furnace burner insert with excellent thermal shock resistance has been introduced by the **Ceramic Materials Dept. of 3M**, St. Paul, Minnesota. These inserts can ***greatly extend the life of vacuum-formed burner blocks in applications where flame velocity is high***. The new Siconex brand burner inserts replace high-density monolithic ceramic burner blocks for direct gas-fired furnaces used in the heat treating, steel, aluminum, and petrochemical industries. They are particularly well suited for use with vacuum-formed burner blocks, which can erode quickly under conditions of high flame velocity and turbulence. Unlike castable ceramic blocks, the low mass

Ceramic Materials Dept. of 3M

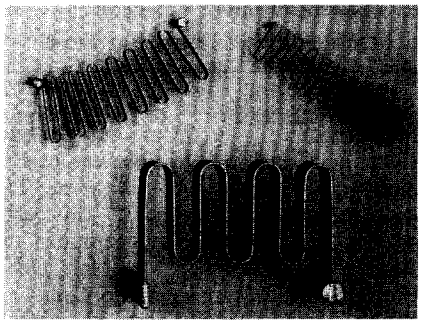
of Siconex components can reduce cycle times because they permit rapid heat up and cool down without damage, resulting in substantial cost savings due to simplified furnace maintenance and improved production time.

Circle No. (132) on reader service card.

Ion Tech, Inc., Fort Collins, Colorado, has recently produced new literature detailing linear ion beam sources. The literature illustrates applications for sources in both pre-deposition surface cleaning/conditioning and low-energy ion-beam-assisted deposition. Combined, these elements ***work to enhance films produced with conventional deposition methods such as e-beam evaporation, magnetron sputtering, molecular beam epitaxy, and thermal evaporation***. In addition, the brochure provides complete source specifications, mounting configurations, and information on Ion Tech's microprocessor-based MPS-3000 and MPS-5001 ion source power supplies.

Circle No. (133) on reader service card.

An ***expanded line of replacement ribbon heating elements for high-volume electric furnace operations*** is being offered by **Custom Electric Manufacturing Co.**, Detroit, Michigan. The elements are used in electric pit, bell, carbottom, drop bottom, rotary hearth, and vacuum furnaces, and in continuous ovens for carburizing, heat treating, and galvanizing. All elements are designed to original equipment manufacturer specifications and match application wattage requirements to enhance performance. In most operations, this also extends the operating life of the elements.



Custom Electric Manufacturing Co.

Circle No. (134) on reader service card.

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