

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

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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.

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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.

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**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



Doris Skoch

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.

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**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.

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**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.

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**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

information, contact Industrial Steel Treating Co., 613 Carroll Ave., Jackson, MI 49202; tel: 517/787-6312.

The new all solid state 1 KW 50-450 KHz induction heating power supply from **Ameritherm**, Scottsville, N.Y., meets the needs of the metal industry for brazing, soldering, or shrink fitting of small conductive material parts. The power supply's small physical size, remote heat station, digital control, and wide frequency range make it a **reliable, repeatable heat source for brazing, soldering, and shrink fitting applications**. The power supply operates over a broad frequency range of 50-450 KHz providing great flexibility in workpiece size and materials. It can be used in a wide range of industrial applications. The Sp-1 features an internal heat station and front panel mounted coil that provide convenient handling of the workpiece and heat controls in a manual application. The very small optional remote heat station brings the heat to the workpiece and is ideal for automated process systems. To request additional information on the SP-1, contact Jonathan Gorbold, Vice President of Sales and Marketing at 800/456-HEAT, or write to Ameritherm, 39 Main Street, Scottsville, NY 14546.

A periodic kiln designed and manufactured by **Lindberg, A Unit of General Signal**, Watertown, Wis., is the latest highlight in an on-going modernization program at Engineered Ceramics in Gilberts, Ill. Built at Lindberg's Watertown, Wis., facility, the kiln is a batch model with a dual shuttle/transfer car arrangement. It can fire very large loads — up to 6 feet tall and weighing as much as 12,000 lb. — at temperatures as high as 2700 F. Engineered Ceramics will use the kiln to increase production firing capacity for its high quality crucibles and refractories. With a process work chamber measuring 96 x 50 x 78 in. and total heating input of 3.2 million BTU, the periodic kiln will easily perform its production role. In op-



Lindberg

eration, the unit executes a **special burner-firing program during start-up that results in improved part debinding**. After soaking at process temperature, a programmed cooling routine significantly reduced overall cycle time when compared to conventional kilns. For more information about the periodic kiln, contact Lindberg, A Unit of General Signal, 304 Hart St., Watertown, WI 53094; tel: 800/873-4468; fax: 414/261-4962.

**Michigan Induction Inc.**, Canton, Mich., has announced the successful building and launch of a customer specific commercial induction heat treating system and application. State of the art induction equipment, utilizing the SLC 503 processor gives a transmission drive component, utilized in the torque converter clutch, with significant advantages over the former furnace heat treating process. Advantages demonstrated by the new process design include **improved and more consistent metallurgical and mechanical properties**, both in fatigue and wear characteristics. Dimensional movement is reduced and more predictable. Advantages in blanking operation are also realized. The induction process design allows lower carbon steel to be used in the transmission drive component reducing the overall cost of scrap product in blanking. For additional information contact Patrick Williams, Vice President, Michigan Induction, 8468 Ronda Drive, Canton, MI 48187; tel: 313/459-8514; fax: 313/459-8795.

A special multi-door oven for **drying residual moisture from epoxy-encapsulated semiconductor devices** is now available from **Blue M Electric**, A General Signal Company, Blue Island, Ill. The oven is designed for use in a 24-hour drying proc-



Blue M Electric

ess prior to packaging and shipping of devices. The unit operates at plus 125 C with low dew point nitrogen. The 32 cubic ft. oven has a stainless steel interior welded vapor tight. A 16-door insert with an 8-in.-square opening for each door replaces a standard door. A side-mounted compartment houses 16 electronic timers plus a network of indicator lights. For more information, write to Blue M Electric, A General Signal Company, 2218 W. 138th Street, Blue Island, IL 60406; tel: 708/385-9000; fax: 708/385-6236.

The New Rapid Pulse firing system, developed by **Bickley Incorporated**, Bensalem, Pa., offers **unparalleled kiln control, enhanced fuel efficiency, and improved heating uniformity**. This new firing system is capable of a one-second pulse rate thus providing the more gradual heating required by sensitive products. Each burner has a minimum firing rate as low as 1,000 BTU/hour and a maximum firing rate as high as 1,500,000 BTU/hour. The Rapid Pulse firing system has unlimited digital combustion control. For more information, contact Bickley Incorporated, 550 State Road, P.O. Box 369, Bensalem, PA 19020; tel: 215/638-4500; fax: 215/638-4334.

Substantial savings and exceptional reliability are offered by a second generation endothermic generator now available from **Lindberg, A Unit of General Signal**, Watertown, Wis. The Hyen<sup>®</sup> generator produces **protective atmospheres for a variety of heat processing applications** by cracking gas (natural or propane) with air over a heated catalyst. The unit is available in either electric-power or gas-fired designs in standard sizes of 500, 1000, 1500, and 3000 cfh. The generator automatically



Lindberg

proportions and mixes an accurately metered amount of air and gas to produce an atmosphere that is approximately 50% less expensive than a nitrogen-based atmosphere. The resulting output gas composition is 50% hydrogen, 20% carbon monoxide, 0.5 hydrocarbon, and the balance nitrogen. For more information, contact Lindberg, A Unit of General Signal, 304 Hart Street, Watertown, WI 53904; tel: 800/873-4468; fax: 414/261-4962.

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**Lindberg Furnaces and Ovens, Asheville, N.C.**, a General Signal company, has pub-

lished a new 28-page color brochure which details the company's board selection of laboratory furnaces, ovens, and power controllers. Lindberg furnaces range in operating temperatures from 1100 to 1800 °C. Described in easy to read quick-reference charts, the Lindberg oven line includes Moldatherm™ and LGO® Series box furnaces, general purpose box furnaces, single zone and three zone tube furnaces, split-hinge tube furnaces, the adapters, and crucible furnaces. **Designed for a wide range of research and industrial applications**, the Lindberg laboratory oven line include 343 °C high performance mechanical ovens, 300 °C mechani-

cal convection ovens; 250 °C clean room ovens (mechanical convection); 260 °C gravity convection ovens; and 260 °C vacuum ovens. For a copy of the catalog, contact Lindberg, A general Signal Company, 275 Aiken Road, Asheville, NC 28804; tel: 800/509-1625; fax: 704/645-5916.

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## Environment

In the effort to preserve and maintain the fragile ecology of our planet, these recently selected abstracts are presented to help readers of *Journals of Materials Engineering and Performance* stay current on legislation and compliance with global environmental issues and regulations. They are reprinted from *Metals Abstracts* and *Materials Business File* with permission from *Materials Information*, a joint service of *ASM International*®, *Materials Park, Ohio*, and the *Institute of Materials, London, England*.

**US Ferroalloy Makers Find Costs to Clean Up Emissions Very High.** Chromium, manganese, and nickel are the three metals of highest concern to the US Environmental Protection Agency regarding hazardous air emissions for ferroalloys production facilities. Compared with other industries, ferroalloys producers do not emit enough hazardous air pollutants to be considered alarming. Nevertheless, representatives from the domestic ferroalloys industry and the EPA are working together on national emission standards for hazardous air pollutants (Neshaps). By early 1995, the EPA should propose federal regulations concerning environmental controls on ferroalloys production.

L.M. Cohn. Cited: *Am. Met. Mark.*, Vol 102 (No. 2), 4 Jan 1994, p 7 [in English]. ISSN: 0002-9998. PHOTOCOPY ORDER NUMBER: 199401-S4-0005.

**[US] Pollution Regs Seen Prompting Steelmaking Technology Shift.** Stricter environmental regulations may cause US steelmakers to change production processes to avoid increasing costs and to comply with new environmental regulations, according to a recent report. The report, put together by the International Trade Commission, said the Clean Air Act Amendments of 1990, the Clean Water Act and the Resource Conservation and Recovery Act have led to expenditures of \$635M in 1992 for carbon steelmakers and \$57M for stainless and alloy tool steel producers. Between 1988 and 1990, capital expenditures on air quality increased by >300%, rising another 95% in 1991 to \$323.2M.

L. Viani. Cited: *Am. Met. Mark.*, Vol 101 (No. 236), 8 Dec 1993, p 16 [in English]. ISSN: 0002-9998. PHOTOCOPY ORDER NUMBER: 199401-S4-0002.

**Better Science in Risk Management Rule Urged by Industry Group.** At a public hearing in Houston, Texas, USA, the Synthetic Organic Chemical Manufacturers Association (SOCMA) told EPA that its requirements for worst case scenarios in planning for accidental chemical releases need to incorporate better science. The vice president of environmental affairs for Dixie Chemical Co., Houston, told EPA that its definition of

worst case scenario was flawed. That definition requires that facilities assume a complete, instantaneous release of a substance and that all active and passive mitigations fail. Johnson said that this is a physical impossibility for most facilities and a plan based on this definition would unnecessarily alarm communities. SOCMA, which represents many custom chemical producers, recommends a tiered approach to risk planning that would give companies the ability to tailor plans to specific sites and products.

Cited: *Chem. Eng. News*, Vol 72 (No. 5), 31 Jan 1994, p 15 [in English]. ISSN: 0009-2347. PHOTOCOPY ORDER NUMBER: 199401-P7-0020.

**EPA Lists Toxic Chemicals to Help Protect Public From Accidental Releases.** The US Environmental Protection Agency (EPA) has published a new citizen's right-to-know list of toxic substances that is intended to enable communities to protect themselves from catastrophic accidental releases. This list of chemicals was mandated by the 1990 Clean Air Act Amendments. In addition to 25 substances specifically included by Congress, it contains substances EPA believes are the most likely to be accidentally released and cause injury. On a practical front, EPA's accident-prevention efforts overlap considerably with very similar requirements issued by the Occupational Safety and Health Administration (OSHA). The chemical industry is already moving to comply with OSHA's process safety standard, which also requires planning within the plant to prevent accidents. The Clean Air Act charges both OSHA and EPA with trying to prevent or minimize the consequences of a catastrophic accident. OSHA is expected to focus on effects inside the plant; EPA, on the impacts outside the plant fence.

D. Hanson. Cited: *Chem. Eng. News*, Vol 72 (No. 5), 31 Jan 1994, p 16-17 [in English]. ISSN: 0009-2347. PHOTOCOPY ORDER NUMBER: 199401-P4-0004.

**South Coast [US] Air Quality Update.** In the US, the South Coast Air Quality Management District (SCAQMD) presented its proposed amendments to Rule 1162 for polyester resin operations at a December