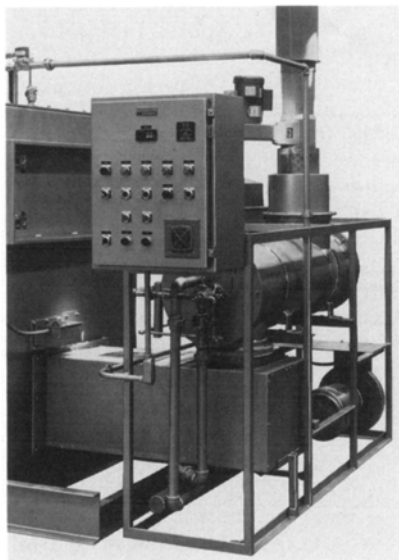


The **EPRI Center for Materials Production**, Pittsburgh, Pennsylvania, announces the availability of "Electric Arc Furnace Efficiency," bulletin CMP92-10. The report is designed to provide operators and electric utility marketers with an understanding of the *factors impacting the use of electrical energy in EAG steelmaking*. Subject areas include: furnace design, logistics, operating practices, electrical loads, supplemental energy, ladle furnaces, dc furnaces, charge materials, pollution control, scrap preheating, and developmental work. It is a summary of the relationship of equipment, raw materials, energy input and operating practices to efficient steel production. Circle (66)

A new, full-color product bulletin is available on the Statitron® **100% solid state radio frequency power supply** from **Inductoheat Corp.**, Madison Heights, Michigan. Production improvements include less downtime, because no warm-up is required, and increased versatility for various applications since a greater output frequency range is possible. Applications include heat treating and wire and strip heating at efficiencies 40% to 50% higher than vacuum tube oscillators. Part quality is improved with increased process stability since no tubes means no process drift with age. Circle (67)

Unimat® RF is presented in a free full-color, two-page product bulletin from **New Welduction Corp.**, Farmington Hills, Michigan. It is a general purpose, **radio frequency induction heat treating system** designed for small to mid-sized machine shops and commercial heat treaters. It can also be used for brazing, shrink fit, and other similar applications. Four tooling variations are offered for production flexibility. Circle (68)

New, completely self-contained afterburners, manufactured by **Lindberg, A Unit of General Signal**, Watertown, Wisconsin, can efficiently oxidize a variety of process emission gases to *help meet air-quality regulations*. The afterburners help oxidize volatile organic compounds and incinerate process fumes at a predetermined and adjustable temperature, from 600 to 2000 °F in an FM/IRI-approved combustion system. Excess air operation provides the most effective incineration; an



Lindberg

adjustable air injector and combustion blower with filter/silencer further enhance combustion efficiencies. Circle (69)

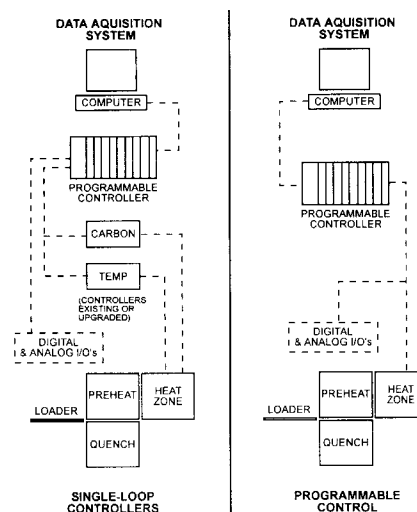
Lucifer Furnaces, Inc., Warrington, Pennsylvania, offers a line of protective atmosphere elevator quench furnaces, described in a four-page brochure, Bulletin 7000. The flyer provides complete specifications, dimensions, and work load capacities for the furnaces, which are *ideal for low-production, scale-free applications*. The units are designed for 2100 °F operation and combine the preheat section, hardening chamber, cooling vestibule, and quench tank in one integrated unit. Circle (70)

The Flexsol programmable logic controller-based system from **AACC/Zircoa**, Solon, Ohio, provides data acquisition and process control with increased flexibility to interface for the heat treater. The system regulates furnace movement, temperature, and atmosphere, and can be *configured to satisfy any heat treating process requirement*. Process variables (% carbon, temperature, and time) and other parameters including enriching gas flows, ammonia flows, and methanol flows are monitored or controlled by the system from recipes downloaded by the user. Circle (71)

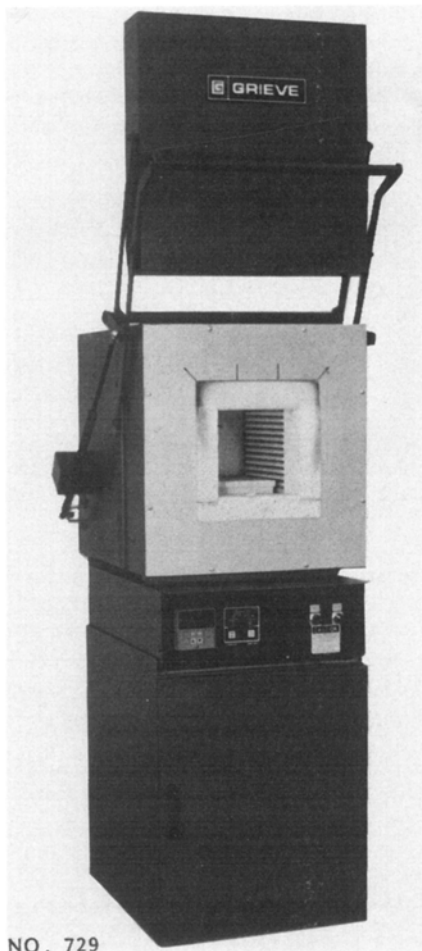
Stokes Vacuum, Inc., Philadelphia, Pennsylvania, has introduced an electronics control package that enables metals and heat-treat processors to monitor and control the operation of their Stokes® pump/blower system. The module is designed to be *easily integrated into any equipment manufacturer's process tool*. All controller functions are microprocessor controlled, including the monitoring of process sensors, pump and blower motor operation, alarm actuation, and automatic shutdown. Circle (72)

Aqua-Quench® 3150, a concentrated, **water-soluble polymer solution for induction hardening of steel**, is now available from **E.F. Houghton & Co.**, Valley Forge, Pennsylvania. For use in both immersion tank and spray-type systems, the quench provides fast and even cooling rates while inhibiting corrosion. It is nitrate free, and brings aqueous advantages, including elimination of oil smoke and fire hazards, easily cleaned parts, and cleaner operator areas. It is nonpolluting to the atmosphere and plant environment. Circle (73)

The No. 729 electrically heated bench furnace from **Grieve Corp.**, Round Lake, Illinois, is currently being used for test runs at approximately 2050 °F. It is designed for a *maximum continuous operating temperature of 2200 °F*. The furnace is equipped with a gas spring-as-



AACC/Zircoa



Grieve Corp.

sisted manually operated vertical lift door, of which the hot side faces away from the operator at all times. A door interlock switch turns off power to the heating elements when the door is opened and restores power when the door is closed. Temperature is controlled and maintained via a microprocessor-based, digital indicating temperature controller. Circle (74)

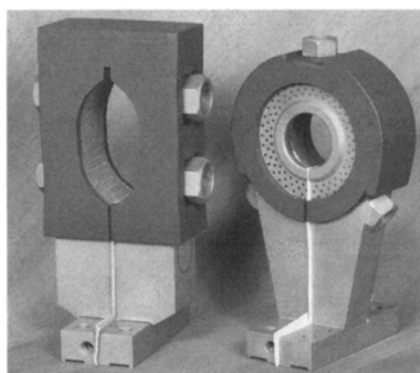
New laboratory vacuum ovens with eight exclusive features have been introduced by **Lindberg/Blue M, a General Signal Company**, Watertown, Wisconsin. The ovens can be used in a wide range of heat processing applications in a variety of industries: baking, vacuum drying, curing, aging tests, conditioning, desiccating, vacuum embedding, moisture determinations, outgassing solids and liquids, vacuum storage, plating and electronic process control. Using a nitrogen atmosphere, minerals, chemicals, food products, soil, coal and pharmaceuticals can be moisture tested. Features exclusive to these ovens include: digital electronic controls; built-in overtemperature protection; a life-



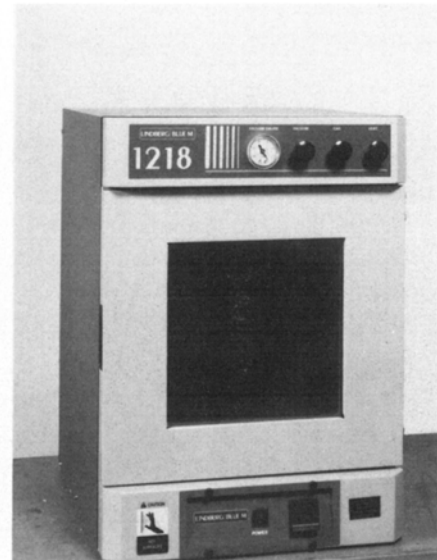
Lindberg/Blue M

time warranty on heating elements whose unique design provides unparalleled temperature uniformity; three solid anodized shelves; a gas valve to vacuum and vent gauge; a one-inch manifold; control panel access shelf and a built-in electrical outlet for easy vacuum pump connection. Circle (75)

Flux field concentrators from **Fluxtrol Manufacturing, Inc.**, Troy, Michigan, correct a fundamental limit of even well-designed induction coils: as much as 50% of the energy generated during induction heating is lost from a bare coil into the air path external to the coil and into the surrounding equipment. The concentrators allow induction heat treaters to operate at **shorter cycle times and/or lower power levels** than can be achieved with inefficient bare copper coils. They allow the heat treater to obtain more even heat treat patterns with more uniform case depths. Improved metallurgical properties can be

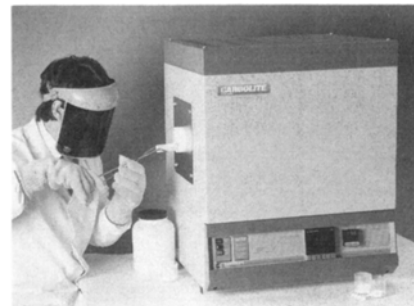


Fluxtrol Manufacturing, Inc.



achieved through more rapid and complete metallurgical transformation due to higher obtainable flux densities. Circle (76)

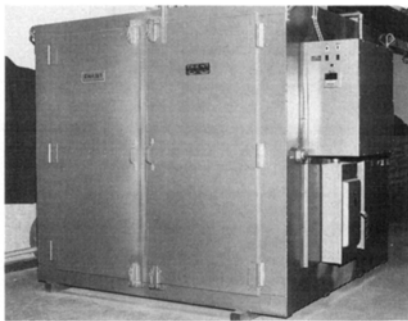
A new range of horizontal tube furnaces with a maximum operating temperature of 3100 °F (1700 °C) has been developed by **Carbolite**, Watertown, Wisconsin. They accept work tubes up to 75 mm inside



Carbolite

diameter. All the furnaces incorporate low thermal mass insulation and molybdenum disilicide elements for rapid heating and reliable performance. The furnaces have a double-skinned case and use natural air convection to keep exterior surfaces cool. Circle (77)

Trent, Inc., Philadelphia, Pennsylvania, has introduced a heavy-duty walk-in oven, which can be **used in the manufacturing of plastics** and other coating processes. It has a temperature range to 850 °F. The electric elements are Trent F&F-type ribbon elements. The oven has a uniformity



Trent, Inc.

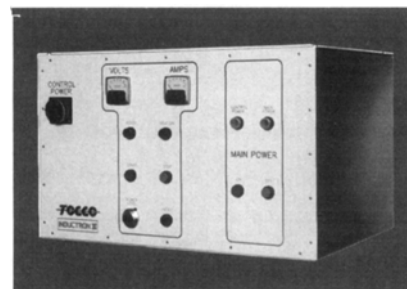
of ± 10 °F, and is controlled by a digital temperature controller with SCR Power Control. Circle (78)

A complete line of "Space Saver" dual chamber furnaces, featuring low-mass, energy-efficient ceramic fiber insulation, is available from **Lucifer Furnaces, Inc.**, Warrington, Pennsylvania. By employing lightweight, low-mass ceramic insulation instead of traditional brick, the furnaces

save operating costs by requiring less electrical power. The units also utilize unique low-mass, coil-wound heating elements mounted on ceramic rods. The result is rapid heating and cool down; more heat cycles in a work day, and greater productivity. One entire heat treat cycle with the unit can be completed in less time than it takes a brick-lined furnace to reach operating temperature. Since the heating elements are individual units, they are less costly to replace than heating elements in most bricklined and other fiber-lined furnaces. Their easy accessibility also reduces downtime. Circle (79)

Tocco, Inc., Boaz, Alabama, has introduced a bench-top, solid state, radio frequency power supply, the Inductron™. It can be used in soldering, brazing, annealing, hardening, tempering, and related low power induction heat applications. The compact size of the unit, 30 in. wide x 21 in. deep, allows it to be *installed on a workbench*. It contains solid state components for reliability. The input power factor is 93% under all operating conditions

with $\pm 1\%$ output accuracy with $\pm 1\%$ line variance. Other system features include a parallel-tuned current source inverter for tracking load resonant frequency between 100 and 400 kHz, high-speed MOSFET



Tocco, Inc.

transistors in a full bridge configuration and a three-phase, diode-type input rectifier. Circle (80)

ISTFA

ISTFA: The 19th International Symposium for Testing and Failure Analysis

ISTFA

15-19 November 1993
Los Angeles Airport Marriott Hotel
Los Angeles, California

ISTFA

If you are involved in *testing or failure analysis* of microelectronic components, ISTFA '93 is the one event you can't miss.

The combination of...

- ✦ technical symposia
- ✦ hands-on workshop sessions
- ✦ the extensive exposition featuring equipment suppliers, testing labs, and more

... provides you with an unparalleled week of technical activities and networking opportunities with the leading experts in this field.



For complete information, call ASM's Member Services Center at

216-338-5151, ext. 703

(or fax to 216-338-4634).

Circle (91) on Reader Service Card

