

NEW PRODUCTS

The descriptions of the new products listed in this section are based on information supplied to us by the manufacturers. PHYSICS TODAY can assume no responsibility for their accuracy. To facilitate inquiries about a particular product, a Reader Service Card is attached inside the back cover of the magazine.

LAWRENCE G. RUBIN

FOCUS ON VACUUM TECHNOLOGY

Pumping System

Helix Technology has announced its new ThinLine Waterpump system, which provides high water-vapor pumping speeds in a compact package. The system consists of a thin (1.5 in) profile in-line water pump with a small rack-mountable compressor and is suitable for turbopumped applications where fast pump downs are required, such as load locks and process or transfer chambers. Increasing the water-vapor pumping speed has a direct effect on pump-down times, and so the Thin-Line Waterpump helps achieve ultimate base pressures more rapidly. It is said to increase pumping performance by more than 500%, while decreasing pump-down times by as much as 70%. Such improvements are useful in semiconductor, flat panel, and disk drive manufacturing facilities. *Helix Technology Corp, Mansfield Corporate Center, 9 Hampshire Street, Mansfield, Massachusetts 02048*

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Ultrahigh-Vacuum Windows

Bomco's new ultrahigh-vacuum (UHV) window permits the use of optical pyrometry, ellipsometry, light scattering, and reflectance-difference spectroscopy to obtain data in real time during molecular beam epitaxy operations. Unlike conventional windows, the newly designed reentrant UHV window extends inside the vacuum chamber, thus saving space and protecting the window. The tube has a 2.25 in outside diameter with a depth of 4.5 in, and is mounted on a 4.5 in flange. To protect conventional UHV windows that extend outside the vacuum chamber, the company also manufactures a stainless steel shield, which slips over and is clamped to the UHV flange. Bomco also supplies a line of tubular quartz-to-metal seal assemblies. *Bomco Inc, 125 Gloucester Avenue, Gloucester, Massachusetts 01930-2254*

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Vacuum Gauge

To satisfy the European Common Market requirements, Granville-Phillips has introduced the CE-Compliant version of its series 275 Mini-Convector modules for measuring vacuum system performance from atmosphere to 0.1 Pa (0.1 torr). The series 275 units re-



spond to actual pressure reading changes in milliseconds (said to be orders of magnitude faster than thermocouple-type gauges). Modules can be selected with digital display (pictured), an RS-485/422 interface, an analog output that is linear in the 0 to 1 torr range, and one or two set point relays for operating control valves, pumps, heaters, and alarms. A variety of flanges and pipe fittings is available for the vacuum connection. *Granville-Phillips Co, 5675 Arapahoe Avenue, Boulder, Colorado 80303-1398*

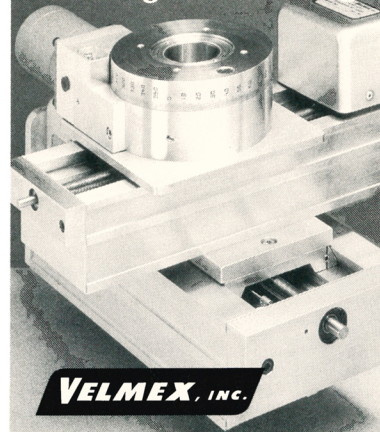
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Variable-Speed Vacuum Pump

Pfeiffer Vacuum has announced the variable-speed UniDry vacuum pump, whose tongue-and-groove design minimizes heat of compression, thereby reducing power and nitrogen consumption. The pump can operate continuously at 75 torr with air cooling only and requires only 12 l/hr of cooling water for continuous operation at atmospheric pressure. It has a high-volume flow rate of 35 cfm (17 l/s); the four-stage version has an ultimate vacuum of 0.02 torr. When used with the company's roots pump, the UniDry can achieve pumping speeds of up to 650 cfm (320 l/s).

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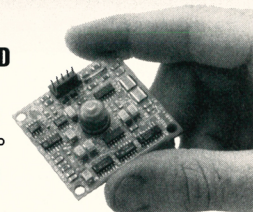
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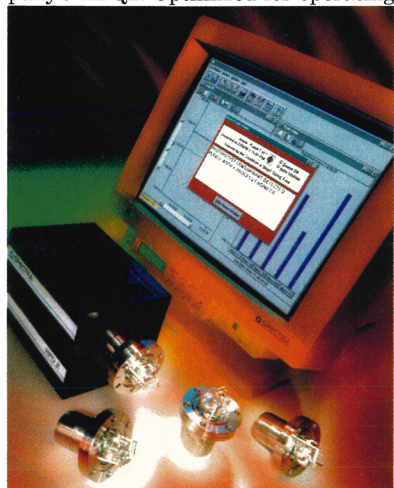
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The benefits of the variable-speed feature include faster response and better control than with throttle valves in some processes; elimination of the capital costs of throttle valves and controller; and an idle mode that prevents condensation by keeping the pump warm while decreasing electricity costs. *Pfeiffer Vacuum Inc, 24 Trafalgar Square, Nashua, New Hampshire 03063-1988*

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High-Pressure Residual Gas Analyzer

The HPQ2-S residual gas analyzer (RGA) from Spectra International is a higher-pressure version of the company's HPQ2. Optimized for operating



pressures from 1 to 8 millitorr, the new instrument includes an ion gauge and vacuum chamber with a miniature quadrupole analyzer. The company's Process Eye 1.64 software package compensates for high-pressure effects such as pressure nonlinearity and pressure dependencies of gas-specific sensitivities. In thin film applications, the HPQ2-S can detect potentially damaging contamination from photoresist residue and other outgassing species and can monitor such contaminants in the process phase at levels down to 5 parts per million, with unit resolution. Functioning at millitorr pressures, the new RGA is said to provide performance levels comparable to that of standard RGAs operating into the 10^{-11} torr range. *Spectra International, 380 Woodview Avenue, Morgan Hill, California 95037*

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Universal Leak Detector

Alcatel's new ASM 142 leak detector features a roughing capacity of 7 cfm

($10 \text{ m}^3/\text{hr}$), a 7.5 torr inlet test pressure to permit the rapid detection of large leaks, 1.3 l/s helium pumping speed, and a helium sensitivity in the 10^{-11} mbar-l/s range. The design of the ASM 142 includes a 180° magnetic deflection mass spectrometer; a two-stage helium stable rotary vane pump; and a high-compression, low rotational speed (27000 rpm) molecular drag pump, which makes the system resistant to accidental air inrushes. Its simplicity of operation is said to result in a quick learning curve for a new user. The control panel of the leak detector has four levels of operation menus, as well as sensing switches and a vocal synthesizer to improve the operator interface. The 56 kg unit comes with a transport cart. *Alcatel Vacuum Products, 67 Sharp Street, Hingham, Massachusetts 02043*

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Magnetron Sputter Gun

APX Scientific has developed the APX Microlayer series of magnetron sputter guns. Available in standard target diameters of 1, 2, 4, 6, and 8 inches, the new guns are mounted on Conflat vacuum flanges and can be used as single guns or in unbalanced multigun configurations. They feature all metal construction, high target clamping forces for high sputter rates, rare earth magnets, and isolation of the magnets from the cooling fluids to avoid long-term corrosion problems. Magnetic field patterns can be tailored to specific applications. The magnetrons can be used with 13 MHz radio frequency or DC power. We are told that analysis of the sputtered films indicate good sample deposition uniformity and, in the case of metal films, no contamination. *APX Scientific Instruments, P.O. Box 1503, Buffalo, New York 14240-1503*

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Ultrahigh-Vacuum Foil

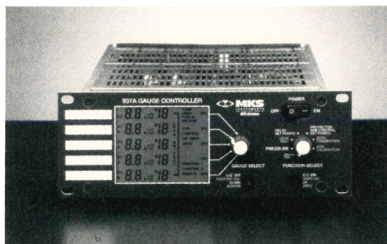
All Foils supplies ultrahigh-vacuum (UHV) foil for lining vacuum chambers, wrapping tools and components, and use in contamination-free laboratory, medical, and other applications. The UHV foil is said to be free from residual rolling oils and contaminants normally found on other grades of aluminum foil. The company will certify the UHV foil to the American Society for Testing and Material designation B 479, specification 3.1.4 and 10.3.1; an in-house water test can confirm that the foil has a test dryness of 100%. To eliminate the introduction of fiber particles, the foil is rolled on plastic cores, packaged in a plastic dispenser box and then

wrapped in film. The company offers a wide range of stock rolls, from 0.001 in $\times$ 18 in $\times$ 500 linear feet to 0.0015 in $\times$ 24 in $\times$ 500 linear feet. *All Foils Inc, 4597 Van Epps Road, Brooklyn Heights, Ohio 44131*

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Combination Vacuum Gauge System

MKS Instruments has introduced the HPS 937A, a user-configured vacuum gauge system that can operate cold cathode, standard Pirani, convection Pirani, thermocouple, and capacitance manometer sensors; all five types of sensors can be read simultaneously on the digital display. The system can



measure from 10^{-11} to 10^4 torr, and includes a rough leak detector function with a bar graph and variable beeper. The half-rack controller features five independently adjustable set points; the set point values are nonvolatile, thus remaining unchanged after power failure. There are buffered analog outputs for each gauge, incorporating a 0.6 volt-per-pressure-decade logarithmic signal. Computer interfaces are an option in the RS-232 and RS-485 standards. *MKS Instruments Inc, Vacuum Products Group, 5330 Sterling Drive, Boulder, Colorado 80301*

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General-Purpose Residual Gas Analyzer

VG Gas has launched its VGQ series of general-purpose residual gas analyzers (RGA). With ranges of 1–100 or 1–200 amu (atomic mass units), the new RGAs incorporate several functions, including histograms, multiple ion monitoring, total pressure, and analog and leak detection modes. To provide measurements with a resolution of better than 1 amu over the entire mass range, the VGQ has a twin-filament ion source, a Faraday detector, and a single 5-inch filter assembly. It offers a variable electron energy of 10–100 eV, a multihead capability of up to eight heads from one personal computer, autotuning and a wide dynamic range with an autoranging integrating amplifier. The VGQ

units are compatible with the company's GasWorks Windows 95 and NT software for instrument control and data interpretation and analysis. *VG Gas Analysis Systems, ONIX Process Analysis Inc, 1201 North Velasco, Angleton, Texas 77515*

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Oil-Free Vacuum Pump

Leybold Vacuum's EcoDry L positive displacement vacuum pump provides a clean, oil-free means of evacuation without the risk of hydrocarbon contamination. The piston principle of operation is used because of its inherent mechanical simplicity and what is said to be a high degree of reliability. The elimination of cooling water, purge gas, and oil reduces the cost of ownership. The EcoDry L has a high pumping speed at low pressure, runs at only 1200 rpm, and tolerates liquids, particles, and water vapor. The new pump is well suited for load lock chambers, electron microscopes, mass spectrometers, sterilizers, and thin film coaters. *Leybold Vacuum Products Inc, 5700 Mellon Road, Export, Pennsylvania 15632-8900*

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Mass Flow Meters and Controllers

Hastings Instruments has introduced its all-metal-seal 300 series of Metaline mass flow meters and controllers. The instruments are designed to measure mass flow without having to correct or compensate for gas pressure and temperature. They are accurate to better than 0.75% at 3 sigma and feature settling times of up to 300 ms. Recalibration consists of setting the zero and span points. The Metaline meter incorporates a replaceable sensor tube that is less likely to be clogged because of its large internal diameter (0.6 mm). *Teledyne Hastings Instruments, P.O. Box 1436, Hampton, Virginia 23661*

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New Literature

Catalog 2001 from Thermionics describes the company's vacuum components and systems, including gate and angle valves, heated viewports, sample handling and transfer devices, manipulators, ion and sublimation pumps, and differentially pumped rotary seals. *Thermionics Vacuum Products, 231-B Otto Street, Port Townsend, Washington 98368*

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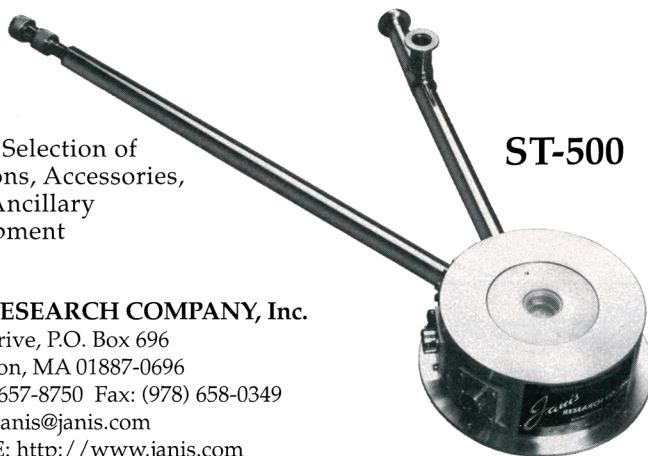
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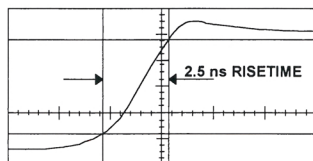
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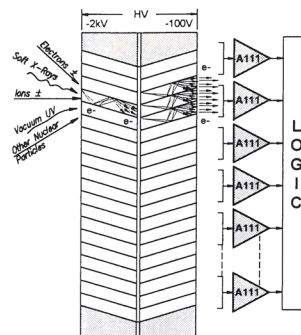
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APPLICATIONS

- Aerospace
- Portable Instrumentation
- Nuclear Plant Monitoring
- Imaging
- Research Experiments
- Medical & Nuclear Electronics
- Electro-Optical Systems

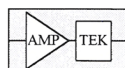
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