DOE Notes

SSC Management and Operating Contractor Selected

The U.S. Department of Energy has selected and signed a contract with Universities Research Association Inc. (URA) to be the management and operating contractor for the Ronald Reagan Center for High Energy Physics, which will build and operate the Superconducting Super Collider.

URA, a consortium of 66 universities, leads a team including two major private companies—Sverdrup Corporation and EG&G Inc. Roy Schwitters, currently at the Harvard University physics department, will be the director of the new center to be located in Ellis County, Texas.

Sverdrup, headquartered in St. Louis, Missouri, designs, constructs and provides project management services for large-scale, advanced technical facilities. EG&T Inc., of Wellesley, Massachusetts, is a diversified company providing advanced scientific and technical products and services to commercial and government customers.

URA will establish a laboratory organization to manage and administer the design, construction and commissioning of the SSC followed by an optional five-year term for an initial operating phase. URA will also assume responsibility for the SSC R&D program.

Congress has not yet approved construction of the project, but has appropriated approximately $100 million this fiscal year for R&D, site selection, and preliminary engineering and design activities. The total estimated cost of the project is $4.4 billion in fiscal year 1988 dollars. This work would include design and construction of conventional facilities, magnet fabrication, fabrication of other technical components and provisions of other materials and equipment.

A large portion of the project work will likely be performed by additional subcontractors competitively selected from private industry. URA will select an architect-engineer/construction manager, which will in turn do the detailed design and engineering and subcontract for construction of the project's tunnel and buildings. This effort, including the money paid to construction subcontractors, is expected to cost approximately $1 billion.

NSF Notes

SBIR Program Awards $8.2 Million

Cutting-edge, high-risk, high-payoff research is the potential result of $8.2 million in grants made by the National Science Foundation's Small Business Innovation Research (SBIR) program.

This year's grantees, 149 small high technology firms, are located in 28 states, and range in size from one to 400 employees. Under Phase I of the three-phase SBIR program, NSF awarded up to $50,000 to each company. Approximately two-thirds of the awards are for projects involving materials characterization, processing, synthesis, and engineering.

Among the firms that have developed new products and processes with such grants are Charles Evans & Associates, Inc. of Redwood City, California, and Radiation Monitoring Devices, Inc. of Watertown, Massachusetts. Charles Evans & Associates has marketed its advanced imaging detector system for ion microscopy instruments. Sales now exceed $5 million, and 60% of the instruments are exported. Customers include IBM, AT&T, Xerox, Toshiba, British Telecom, and Nippon Telephone and Telegraph.

Radiation Monitoring Devices has introduced an analyzer critical to production-line quality control for glass reinforced plastics produced in billion dollar quantities, such as automobile body panels and computer cases and telephones. Sales exceeding $1 million include customers such as General Electric, Ford, Du Pont, Bayer, and Ciba-Geigy.

Abstracts of the 1988 SBIR Phase I awards and copies of the 1989 solicitation can be obtained from the National Science Foundation, Forms and Publications Office, 1800 G Street NW, Room 232, Washington, DC 20550.

NATO Countries to Host 54 NSF Fellows

NSF-NATO Postdoctoral Fellowships in Science were recently awarded to 54 young U.S. scientists and engineers for full-time postgraduate study abroad at institutions and laboratories in NATO countries.

This year NATO funds were again supplemented by contributions from the NSF research directorates, allowing an increased number of recipients in physics and engineering. Of the awards announced, 22 were for research and training in the life sciences; 30 in the physical sciences, mathematics, and engineering; and 2 in the social and behavioral sciences.

This year's NSF-NATO Fellows will be affiliated with institutions in nine other NATO countries, with the majority traveling to the United Kingdom, France, and the Federal Republic of Germany. Recipients represent 22 states and Puerto Rico; 15 women are among the grantees.

For information about NSF-NATO Postdoctoral Fellowships, contact: NATO Postdoctoral Fellowships Program, 1800 G Street NW, Washington, DC; telephone (202) 357-9466. □

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at the 1989 MRS Spring Meeting
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Atlas Ballroom

Show Hours

Tuesday . . . . . .12:00 noon - 7:00 p.m.
Reception . . . . . .5:00 p.m. - 7:00 p.m.
Wednesday. . . . . .9:30 a.m. - 5:00 p.m.
Thursday . . . . . .9:30 a.m. - 2:00 p.m.

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PROCESS: Batch Processes in a Vacuum Environment

REQUIREMENTS: MKS Baratron μBar* Six Decade Pressure Measurement and Control System

Introduction

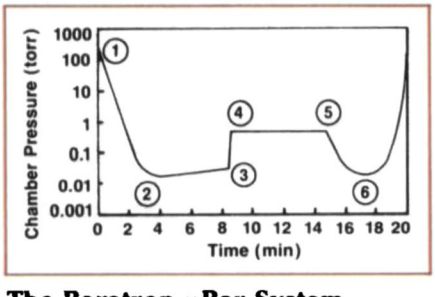
Batch processes which employ vacuum as a working environment normally pump from atmospheric pressure to a low base pressure, perform a leak test by pressure rise rate, and control system process pressure by introduction of a process gas (or gases) or by control of the exhaust rate of gas from the system.

The newly developed Baratron μBar six decade pressure measurement and control system is ideally suited for this system function application.

Typical System Process Sequence

The figure below depicts a typical process sequence, e.g. freeze drying, vacuum processing of metals, batch type semiconductor wafer processing, and a host of other applications.

Representative sequence of pressure control system operations: (1) Rough from atmosphere to 25 mTorr; (2) Leak test for 5 min; (3) Backfill to process pressure; (4) Control at 500 mTorr for 6 min; (5) Pump to base pressure; (6) Vent to atmosphere.



The Baratron μBar System

The Baratron μBar System is composed of six decade capacitance manometer sensor* and a conveniently packaged electronics unit. Each sensor is computer calibrated against MKS Baratron high accuracy Transfer Standard capacitance manometers from 1 mTorr to 1000 Torr. The non-linearity data taken in the calibration process is stored in an E PROM which is on-board the sensor electronics, hence every Type 107 Sensor is interchangeable with every Type 116 Electronics Unit.

Use of an advanced design microprocessor and graphics LCD enable display of total pressure, leak rate, deviation of pressure from set point value, as well as complete system process set up, e.g. alarm trip points, pressure control set point, PID constants for fast digital closed-loop control, and a selection of vacuum engineering units–Torr, mTorr, mbar, Pascals.

The sensor full scale can be electronically suppressed such that any value from 2 Torr to 1000 Torr can be chosen as full scale (10 volts DC).

*U.S. Patent No. 4,785,669. Foreign Patents and Patents Pending.

Precise, Responsive Closed-Loop Pressure Control

The digital pressure control system has been engineered to provide closed-loop pressure control with accuracy and performance equal to the best analog control systems.

Gas inlet control is easily accomplished by use of an MKS Type 248 proportioning control valve (full scale values, 50 sccm to 50 slm) and exhaust control by simple interface with the MKS Type 153 "Smart" Throttle Valve (sizes from 20 mm i.d. to 250 mm i.d.)

Conclusion

Wide range, automated, closed-loop control of vacuum system pressure continues to increase in importance as a process control in many high technology manufacturing operations. The 116/107 pressure measurement and control system provides many operating features that maximize control flexibility for both computer automated production and for manual laboratory operations as well.

Please visit Booth No. 211 at the MRS Show In San Diego, April 25-27.

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