



A RESOURCE FOR WORLDWIDE ELECTRONICS CUSTOMERS OF AIR PRODUCTS AND CHEMICALS, INC.

electronics update

inside this issue:

- new controller, VMB extend
GASGUARD® line **3**
- 3** SEMICON West
'05 preview
- Carlsbad ESM facility presents
Hockenhull Science Grant **3**
- more customers using
APDirect® ordering **4**
- Asia customers benefit from
supply chain improvements **4**
- 4** Korea Electronics team,
individuals receive awards
- company develops novel sub-
atmospheric gas supply tech-
nologies for ion implanters **5**
- 5** company celebrates
ECRV milestone
- Air Products' UNAXIS NF₃
team honored **5**
- 6** technical papers
- news of interest **6**

BSGS offering expands with pipeline supply

Air Products' popular Bulk Specialty Gas Supply System (BSGS), comprising more than 250 installations worldwide, has been expanded to include pipeline supply.

Bob Ford, manager of BSGS systems, said the first pipeline configurations were installed in Korea. "Anything we can supply via BSGS can be supplied via BSGS pipeline," Ford said. Today, the company operates numerous UHP bulk specialty gas pipelines for electronics customers, and it has linked seven ISO units on one site supplying ammonia, NF₃, and silane.

Since installing its first BSGS system at Salem, Oregon in 1993, Air Products has become the world leader in the technology. "We offer existing and potential customers one-stop shopping with a focus on solutions covering equipment, multiple bulk source options, and a total turnkey project with an own and operate option," Ford stressed.

While a reduced cost of ownership is the major advantage, BSGS brings others:

- Better consistency and increased process quality; there is less variability in BSGS purity versus cylinders.

[continued on page 3]

Flow, cost savings, reliability, consistency of supply, and improved safety are among the many benefits of traditional and pipeline BSGS systems.



ESM offerings match industry's ever-changing applications

Air Products' Electronics Division's global Electronic Specialty Materials (ESM) portfolio continues to grow to match not only ever-changing applications, but also the very specific material demands of individual customers.

According to Division Vice President and General Manager Jerry Ermentrout, Air Products is no longer content just to have the industry's broadest portfolio. "Our goal is to be the first company our customers look to for a materials partner. With our experience and global reach, we have the ability to understand their challenges and to individually solve them by developing new materials and/or technologies that suit their needs."

In addition, he cited the global network of relationships and alliances the company has established to help advance its portfolio.

Terrence Hahn, business area commercial manager for ESM, said Air Products is focused on a "ring of value" in adding to its industry-leading materials portfolio. "This is more important than ever to us. We now have material in every cycle of wafer manufacturing. These materials are all integrated because physics and chemistry are more complicated than ever. We like to think we are unique as a supplier. We're an integrator of materials regardless of the phase; it's all material science."



A commercial-scale cluster tool, capable of processing eight-inch wafers is now being used in our new class 100-cleanroom area at our Allentown Pennsylvania R&D facility.

The company's ESM offerings comprise three basic areas: product, equipment, and facilities/infrastructure. Here are a few examples of recent developments from the three areas that exemplify the company's commitment to ESM.

Products

According to Hahn, there are very few materials used in the wafer manufacturing cycle that are not available from Air Products. Our portfolio includes an array of electronic specialty gases (ESG) and chemicals for etching, doping and diffusion, ion implants, inter-layer dielectrics, optoelectronics, chamber cleaning, CMP slurries, and photoresist ancillaries and developers.

"We manufacture virtually all of these materials," said Hahn.

[continued on page 2]

electronic
specialty
gases



“ I manage the growth and profitability of ESM by working with our account teams and product management on business retention, commercial strategy, product placement. ”

Lois J. Wong, Regional Marketing Manager
North America East

1.

“Our growing expertise in chemicals is more recent, driven by our acquisitions of Schumacher, Solkatronic, and the electronic chemicals business of Ashland Chemical. And, recent product introductions for our Solkatronic and ACT offerings underscore how we strive to match individual customer or market segment needs,” Hahn said.



Air Products operates a nitrogen plant, pipeline and specialty materials center in the Wai Gao Qiao park near Shanghai, supplying several major electronics manufacturing customer.

“We recognized, for example, that to continue our leadership role in the compound market, we needed to produce higher purity phosphine, used in many InP applications to make LEDs, laser diodes, VCSELs, and other sophisticated products. Our goal was to reduce oxygen-bearing compounds, carbon, water, and metals. We achieved this through improved analytical techniques, better purification, stringent raw material control, and state-of-the-art cylinder conditioning. The result: Megabit III Phosphine with a 99.99995 percent purity,” said Hahn.

A new area of focus for the ACT offering is the non-volatile memory market, where we already offer a variety of products. ACT® EZStrip™ 520 was specifically formulated to clean etch residues without attacking the chalcogenide alloy (GeSbTe) material used for storing information in phase change RAM (PRAM).

Magnetic RAM (MRAM) needs a product that can clean the magnetic tunnel junction (MTJ) while maintaining the magnetic properties. ACT® EZStrip™ 602 is one of the solutions we've developed for this application. It offers low etch rates on high-k materials such as aluminum oxide while retaining good cleaning performance.

Equipment

Joe Stockunas, manager of the Electronics Equipment Solutions business unit, noted that there are eight different product lines available from Air Products to safely and reliably supply our full portfolio of ESM offerings. They include the well-known GASGUARD® equipment for gases and CHEMGUARD® equipment for chemicals, which represent thousands of installations globally.

“A major success story for us has been our GASGUARD Bulk Specialty Gas Systems (BSGS), which now include pipelines (See related story this issue). Recently we've seen significant demand for BSGS systems to support 300mm fabs and flat panel display makers. In late 2003, we introduced our GASGUARD High-Flow System designed to supply lower volume bulk gases. This has saved our customers between 30 and 70 percent, and we have delivered some 50 HFS systems.”

The company's Fast Ampoule Change System (FACS™) is another example of ESM excellence. Stockunas said the FACS system has reduced ampoule change cycles from as long as four days to less than eight hours, a significant productivity increase.



“ I help to make sure we use our facilities to the maximum, enabling us to deliver key molecules at the right cost. ”

Andre Sikkema, Product Marketing Manager
Electronics Europe

2.

In addition to being the global leader in equipment market share and manufacturing capability, the company supports its equipment for the life of the fab through a network of technical centers located in virtually every major semiconductor market area throughout the world.

Facilities/Infrastructure

We serve customers with three major regional locations in the United States, United Kingdom and Taiwan; and more than two dozen plants and R&D labs strategically located in North America, Europe, and Asia.

Air Products operates the world's largest ESG facility at Hometown, Pennsylvania, where the company continues to add to its production of gases such as NF₃, WF₆, SF₆, CF₄, and arsine. The most recent addition is a significant expansion of NF₃ capacity.

Most of the other facility additions have naturally occurred in Asia where the electronics

industry is undergoing its greatest growth. Under construction are a C₂F₆ plant at Kawasaki, Japan, and a new warehouse at Taichung on Taiwan.

Other Asian facilities added to our infrastructure since 2002 include an ultrahigh-purity nitrogen air separation plant at Tainan Science Park in Taiwan; an air separation plant and liquefier at Giheung, Korea; the Nanke, Taiwan transfill for TEOS, halocarbons, C₂F₆, NF₃, and N₂O; the bonded warehouse at Wai Gao Qiao, China; a silane manufacturing plant at Shiwah, Korea; the C₄F₆ transfill at Banwol, Korea; the TiCl₄ transfill at Shiwah; and the phosphine mix transfill at Giehung, Korea.



“ I provide all-important day-to-day ESM liaison and sales support for several key division customers. ”

Kyo-Yung Kim, ESM Manager, Samsung Focus
Account Manager, Korea Electronics

3.

Another significant infrastructure development is the addition of a new Class 100-cleanroom area at our Semiconductor Processing Applications Research Laboratory at Allentown, Pennsylvania. A commercial-scale cluster tool, capable of processing eight-inch wafers, is now being employed to support a variety of R&D and customer support projects in materials and other areas.

“I think it is also significant that we have won a number of awards from different customers, most based on the quality and consistency of our materials. We have been recognized by Intel, Samsung, ON Semiconductor, Hynix Semiconductor, Infineon, Chartered Semiconductor, TSMC, and the American Society for Quality,” Hahn noted.



“ I support the regional sales team to strengthen the ESM portfolio, enhance customer inquiries for ESMs and proposals. ”

Shirley Hsu, Regional Marketing Manager
Electronics Asia

4.

He stressed, “We continue to stay on the path, adding capabilities and following our customers around the globe. We are committed to earning our customers' trust and respect on a day-to-day, year-to-year basis.” ▲

new controller, VMB extend GASGUARD® line



The GASGUARD FASTE valve manifold distribution system offers flexible, simple construction and operation for high-purity gas delivery equipment.

Air Products is introducing the new GASGUARD® AP10 Controller and GASGUARD FASTE Valve Manifold Box at SEMICON West this month.

The AP10 controller represents the latest generation of control technology for the company's cutting-edge portfolio of GASGUARD specialty

gas and chemical delivery systems. It becomes the premier control system for use on the company's entire line of delivery systems.

The AP10 controller incorporates a standard commercially available industrial-grade control system based on PC104 form factor technology as its platform. Customers will benefit from more readily available replacement parts and a lower cost than legacy control systems that had less functionality. A key feature of the AP10 controller is its standard color touch screen operation.

The new FASTE VMB differs from the standard GASGUARD valve manifold box in its modular customizable construction and streamlined operation. An increased use of face seal fittings provides for flexibility in the placement and type of components used without compromising the integrity of safety features or ultrahigh-purity design standards. Operation is streamlined with the elimination of some of the features of traditional VMBs. A new specially designed, low-cost TE2 controller with a mechanical control lockout feature further enhances and simplifies operation. ▲

CONTACT: Jody Arner: arnerjr@airproducts.com

"Full-Circle Capabilities: Keeping You Ahead of the Curve" is the theme of Air Products' participation in SEMICON West 2005, which runs from July 12 through 14 at San Francisco. The company will occupy Booth 412 in the South Hall.

Air Products will be hosting a technical reception for invited guests during the week. The reception will highlight several key presentations, including:

- Ion Implant Gas Supply Technology Development. (See related story this issue.)
- Reducing the Cost of CVD Chamber Cleaning While Minimizing Environmental Emissions.
- PDEMSTM: A PECVD-based Porous Ultra Low k Dielectric Material.
- Lowering the Cost of Ownership for Flat Panel Display Chamber Cleaning.
- Post-CMP Cleaner Development for Cu-Advanced Low k Dielectrics
- Bulk Specialty Gas Solutions: From People to Pipelines (See related story this issue.)

CONTACT: Tom Yenko: yenchot@airproducts.com

BSGS offering expands with pipeline supply [continued from page 1]

- Enhanced reliability with the possibility for increasing throughput; there is a built-in redundancy for higher system uptime.
- Improved safety for peace of mind; there is less handling and connections, which reduces potential exposure to hazardous gases.

Air Products revolutionized BSGS systems with the most robust design in the electronics industry," Ford said. "We then coupled that with a 'Total Solutions' approach with its own, operate, and maintain strategy and turnkey installation. Now the company has taken the next step in delivering BSGS pipeline supply, which is similar to what we do with our on-site air separation plants.

"We provide the BSGS equipment and specialty gas supply, typically at the lowest cost in trailers. Then we pipeline long distances to feed one or multiple fabs in the same area. We've done this in numerous locations throughout the world with gases such as NF_3 , SiH_4 , and even difficult-to-handle ammonia. We even have BSGS HCl pipeline supply to one customer."

Ford stressed that customers can count on Air Products' BSGS pipelines to provide the ultimate in safety and reliability.

"We adhere to our established pipeline design standards; gas specific correct conditions; and own, operate and maintain BSGS pipelines. Customers benefit from our one-stop shopping, integrated approach, and can deal with a single point of contact. We strongly recommend that ISO BSGS systems have fully attended operation for the highest reliability and safety."

CONTACT: Bob Ford: fordrw@airproducts.com

Carlsbad ESM facility presents Hockenhull Science Grant

Social responsibility is an important tradition at Air Products, and recently the Carlsbad, Calif., Electronic Specialty Materials (ESM) facility (Schumacher product line) did its part to help make its community a better place in which to live and work.

On May 25, Eileen Turner, Carlsbad site manager, presented a check for \$5000 to the Carlsbad School district in the name of the Herman Hockenhull Science Grant.

First established in 1998, the annual grant honors the beloved memory of Schumacher employee Herman Hockenhull by supporting the development of science education in the Carlsbad community. Hockenhull greatly valued his scientific education and put it to good use in his many contributions at the Carlsbad facility.

[continued on page 6]

more customers using APDirect® ordering

More and more electronics customers are using the **APDirect**, ordering system, a convenient on-line and secure self-service portal that provides easy access to ordering and related information.

Bob Grashoff, customer engagement manager for the Electronics Division, said, "Small, medium, and large customers throughout the world have found **APDirect** ordering has done a lot to make it easier for them to do business with us. It goes hand in hand with our ongoing mission of not only being a leading, sole-source supplier, but also in striving to allow customers to focus on their core businesses."

Here are some other advantages with the **APDirect** portal. Users can:

- Review the status of an Air Products order—even if it wasn't placed online.

- Access current and historical inventory data for liquid and bulk gases, and select chemical products.
- Retrieve and print or save certificates of analysis for select chemicals and specialty gases.
- Access recent invoices and delivery notes.
- Download delivered inventory reports for liquid, bulk, and cylinder gas and chemical products shipped from or within the United States and Europe.
- Find the latest in product and process safety information related to our gases, chemicals, and equipment product lines (available in North America only).

Grashoff said, "The number of customers using the **APDirect** portal continues to grow and we feel all of our customers can benefit by using this on-line tool. To register, simply log on to www.airproducts.com and click on the **APDirect** box." ▲

CONTACT:

Bob Grashoff: grashorb@airproducts.com

Asia customers benefit from supply chain improvements

Electronics customers in Asia are benefiting from continuous improvement in the supply chain within and among Asian countries and between Asia and North America.

Dan Krippene, director of Supply Chain Management for the Electronics Division in Asia, said that until recently, Asian countries operated autonomously. Each had its own culture, regulations, standards and, in general, "a different way of looking at things." Individual countries were operating as separate entities while struggling with rapid growth and safety issues.

teams solving problems within their own countries, but they are also working closely with teams in other countries, as well as our operations in North America."

Equally important, the Electronics Division has strengthened the Asia supply chain in many other ways.

"Our supply chain mission is to simplify what we are doing, to standardize how we do it, and to get it there on time. Safety is a key part of the process, especially with the hazardous materials we are dealing with. Sales and operations are also integral to our Asia supply chain. By refining the work



Our majority-owned San Fu Gases subsidiary in Taiwan recently appointed seven experienced professionals to a dedicated supply chain team. From left are Albert Yu, Alice Hsu, Luka Lu, Jenny Lin, Joey Chen, May Lin and Stephanie Shao. Teams now serve all of our major markets in Asia.

Thus, our Asian customers were virtually totally dependent on the link with our North American supply options. That has changed.

As a company, Krippene said, Air Products has focused for the last several years on bringing its global practices to Asia, largely through its ventures in several countries, including Taiwan, Korea, China, Singapore, Thailand, Malaysia, Japan, and Indonesia. The company has also benefited from many years of experience in the region.

"The result is that we now have established supply chain teams throughout Asia. Not only are those

processes that impact the supply chain and implementing S&OP (Sales and Operations Planning), we are in a much better position to serve our customers."

Krippene said plans are in place to install SAP with planned releases in three stages: Southeast Asia (Singapore, Malaysia, and Indonesia) in November 2006, Taiwan and China in November 2007, and Japan and Korea in November 2008.

"This will bring further improvement to the Asia electronics supply chain by making us even more efficient," he noted. ▲

CONTACT: Dan Krippene: krippedt@airproducts.com

For more info on supply chain in Taiwan:

CONTACT: Joey Chen: chenjy@airproducts.com

Korea Electronics Team, individuals receive awards

Electronics Division Vice President **Mike Hilton** recently presented awards to six individuals from Giheung and Seoul, and honored the entire Korea Electronics team for recent contract wins and other accomplishments. Pictured (left to right) are **C.Y. Park**, Korea Electronics operations manager; **S.O. Park**, Giheung plant operations manager; **C.R. Park**, Hynix Semiconductor account manager; Hilton; **M.S. Kim**, account manager for Samsung Fab D; **Corning F. Painter**, regional vice president for Northeast Asia and Air Products Electronics Asia; **S.Y. Lee**, president of Korea Industrial Gases (KIG); and **J.W. You**, general manager of Korea Electronics. Hilton also presented awards to **J.S. Bae** and **Coray Mitchell** for upgrading safety performance for Shiwah electronic specialty materials (ESM) operations.

four

company develops novel subatmospheric gas supply technologies for ion implanters

Air Products has introduced GASGUARD® Sub-Atmospheric Systems (SAS), two novel sub-atmospheric gas supply (SAGS) technologies for ion implanters. GASGUARD SAS Complexed Gas Technology (CGT)(Fig. 1) has been developed for supplying ion implant grade PH₃, BF₃ and 11BF₃, while ion implant grade AsH₃ is supplied by the GASGUARD SAS Generated Gas Technology (GGT)(Fig. 2).

Dave Tavianini, business development manager for Air Products Electronic Specialty Gases (ESG), said that both offer ion implanters more cost-effective subatmospheric gas sources with safety features that match currently available delivery systems. Also, offering subatmospheric ion implant grade gases through the GASGUARD SAS

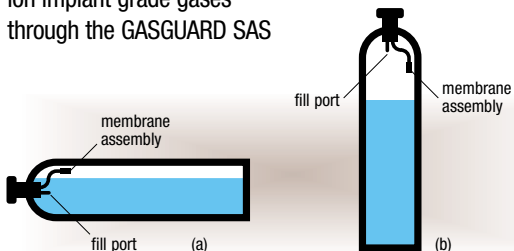


Fig. 1: Air Products' CGT cylinder can be used in a horizontal or vertical orientation.

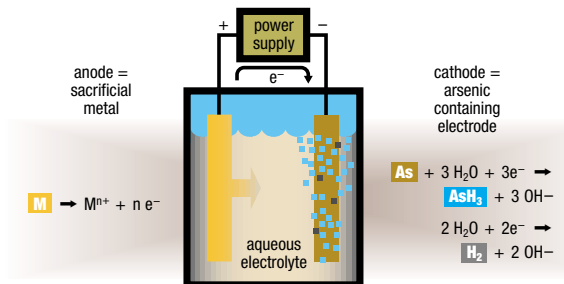


Fig. 2: This schematic shows the electrochemical generation process for AsH₃ for Air Products' GGT arsine technology.

technologies adds yet another dimension to the company's "one-stop shopping source" for the global electronics industry.

Beta tests show that the dopant gases delivered by either of these technologies achieve ion beam currents which produce commercial doped wafers that are compa-

table to those generated with other subatmospheric sources.

The CGT technology for PH₃, BF₃ and 11BF₃ uses a novel, non-volatile liquid that forms a reversible chemical complex with the dopant gases, allowing them to be stored at high capacity at subatmospheric pressure. A proprietary valve arrangement allows the cylinder to be used in vertical or horizontal ion implant gas boxes and uses the same manifold and mass-flow system as other subatmospheric sources.

Tavianini noted that the CGT system is a drop-in replacement for adsorbent-based sub-atmospheric gas sources. ▲

CONTACT: Dave Tavianini: taviand@airproducts.com

Air Products' UNAXIS NF₃ team honored

UNAXIS Semiconductor Equipment, Pfaffikon, Switzerland, honored a team of Air Products Electronics Division employees for its work in developing a chamber cleaning recipe that enabled Unaxis to switch from SF₆ to NF₃.

The changeover not only increased throughput for flat panel production, but also substituted a more environmentally friendly gas.

The Air Products team included Dr. Andy Johnson, lead research chemist; Dr. Fillipos Farmakis, R&D manager; Dr. Martin J. Plishka, OEM account exec for Unaxis; Mustapha Elyaakoubi, director of R&D; Heather Remley, global NF₃ product manager; Dr. Mark Sintern, senior principal scientist; and Benoit Rioul, engineering manager.

Dr. Fachri Atamny, CTO for UNAXIS Display, praised the team for its "excellent ability and superb sense of customer satisfaction. A variety of joint measures for the cleaning process using NF₃ gas have been performed in our Gen7 PECVD machine in Switzerland. The cleaning process using NF₃ gas is now being integrated into our mass production KAI2500 (Gen6)."

UNAXIS is a global leader in production systems, components, and services for high-technology products based on core competencies in thin film and vacuum technology. UNAXIS has major facilities in Europe, Asia, and the U.S., as well as some 80 subsidiaries in 24 countries. ▲

CONTACT: Martin J. Plishka: plishkmj@airproducts.com

company celebrates emergency response containment vessel (ERCV) milestone

Air Products recently celebrated the 15th anniversary of its successful joint venture with Fluitron Inc., Ivyland, Pennsylvania, to produce Emergency Response Containment Vessels (ERCVs).

ERCVs are portable ASME pressure vessels that are authorized by the U.S. Department of Transportation (DOT) to contain and transport a leaking gas cylinder. ERCVs provide a safe and quick means of controlling an emergency involving gas cylinders.

In 1988, Air Products (Solkatronic) and Fluitron teamed up to develop a small ERCV for use at the company's Morrisville, Pennsylvania facility. The following year a larger ERCV was designed to accommodate the larger more common cylinders (49 liter). Recognizing the value of the ERCV's, the two companies entered into a joint fabrication/sales agreement to sell these to the global market.

Eugene Ngai, Air Products ER safety manager, said that more than 300 ERCVs are being used worldwide by ER teams from Air Products and other industrial gases companies, waste disposal companies, numerous customers, fire departments, and universities.

"Not only has this been a significant advance in safety, but also a steady and profitable business for Air Products and Fluitron. At the same time, it enables us to provide ERCVs at cost to our global ER Teams. And we can quickly design and fabricate other devices as new technology becomes available," Ngai said.

A special dinner was held in Morrisville to commemorate the occasion. Fluitron President and Owner Tony Chiccarine was presented with a scale model of the 5502 ERCV, which is the most popular model. ▲

CONTACT: Eugene Ngai: ngaiey@airproducts.com



Pictured from left are Fillipos Farmakis, Marty Plishka, Mustapha Elyaakoubi, Heather Remley, Fachri Atamny, Mark Sintern, and Benoit Rioul. Andy Johnson was unavailable for the photo.

technical papers

"Quantitative Absorption Spectroscopy of Residual

Water Vapor in High-Purity Gases: Pressure

Broadening of the 1.39253- μm H₂O Transition by N₂,

HCl, HBr, Cl₂, and O₂," Vasil Vorsa, Seksan Dheandhanoo,

Suhas N. Ketkar, and Joseph T. Hodges, Applied Optics, Vol.

44, No. 4, 1 February 2005. ▲

CONTACT: Jeannette Lang: langjp@airproducts.com

news of interest:

Chartered honors Air Products for excellence in fab support

Chartered Semiconductor Manufacturing, one of the world's top dedicated semiconductor foundries, presented Air Products Singapore with a **Silver Supplier Award** in the Materials Category during Supplier Day 2005, the company's annual event honoring the achievements of its value-chain partners in materials, equipment, and services.

"Overall, we see an improvement in our suppliers' performance due to their greater participation and contribution of technical expertise and experience to support successful execution in our fabs," said Tang Yong "TY" Ang, vice president, quality and fab support operations at Chartered. "As Chartered enters into volume manufacturing at our 300-mm Fab 7, our priorities are fast-yield ramp and excellent equipment performance. To achieve these goals, we are involving our suppliers in engineering projects with Chartered's manufacturing teams to aggressively drive throughput and productivity improvements, and to lower cost of ownership."

Chartered Semiconductor evaluated its suppliers based on criteria of quality, service, innovation, delivery, and cost.

Chartered Semiconductor offers leading-edge technologies down to 90nm, enabling today's system-on-chip designs. The company further serves the needs of customers through its collaborative, joint development approach on a technology roadmap that extends to 45nm.

In Singapore, the company operates Fab 7 and four 200mm facilities. Information about Chartered can be found at www.charteredsemi.com.

Air Products, Samsung Austin Semiconductor reach BSGS supply agreement

Air Products has been selected to supply bulk specialty gases to Samsung Austin Semiconductor's dynamic random access memory (DRAM) manufacturing facility in Austin, Texas. Under the terms of this agreement, Air Products will supply bulk quantities of high-purity nitrogen trifluoride (NF₃), silane (SiH₄), nitrous oxide (N₂O), and hexafluoroethane (C₂F₆) to the recently expanded Austin operation. These gases are integral to the manufacture of chips, and are used in a variety of stages within the production process.

As part of Samsung's current \$500 million expansion of the company's only manufacturing site in the United States, Air Products also was selected to supply the specialty gas and chemical equipment required to store and distribute various ultrahigh-purity materials throughout the facility.

"As the premier materials and service supplier to the global electronics industry, we are pleased to support the continued growth and success of Samsung, one of Air Products' most valued electronics customers worldwide," said Bruce Hargus, vice president, Electronics Sales and Operations. "Air Products is committed to serving the critical electronics industry segment, and we will continue to invest in the technology and infrastructure to serve our customers' needs today and well into the future."

Air Products has served as the on-site specialty materials solutions provider at Samsung's Austin facility since its 1997 opening, where a dedicated team of Air Products MEGASYS® technicians manage all aspects of Samsung's materials and equipment requirements 24/7. Air Products also operates an on-site nitrogen generation plant and supplies Samsung Austin Semiconductor with all of its liquid bulk gas requirements. ▲

Carlsbad ESM facility presents Hockenhull Science Grant

[continued from page 3]

In April of each year, the Carlsbad facility contacts science teachers in our local community to request their grant wishes for items that they desperately need in their classrooms. "When we first began funding this annual grant, we thought that the funds would be used towards high-end items that the students needed in their science classrooms," said Turner.

"However, given the vast cutbacks that science education has been experiencing in school districts nationwide, we began to realize that some of the schools were in dire need of the basics, like beakers, textbooks, thermometers, gloves, safety glasses. The committee tried to fund some of those requests, but we wanted the funds to also be used for some of the higher-end items that we know the schools (and particularly, the teachers) could not afford to purchase," she added.

This year, the committee received 10 proposals and in the end, announced that it would fully fund three proposals and provide partial funding to six more.

This year's selection committee for the Hockenhull Grant included: Tom Gaffney, Heidi VanEe, Allison Hopkins, Julie Helsten, and Kelly Chandler (along with the administrative support of Karen Zylius). ▲

CONTACT: Carolyn Neilson: neilsoc@airproducts.com

tell me more

www.airproducts.com/electronics

company information

Air Products is a Fortune 500 company with sales over \$5 billion annually and with major operations in 30 countries around the globe. We are a leading supplier of industrial gases, related equipment and services. Our success in industrial gases has come primarily through the development of new technologies that help our customers reduce their overall costs.

AIR PRODUCTS

electronics update is published for the global electronics industry customers of Air Products and Chemicals, Inc. For more information, please call 800-654-4567 (fax: 800-880-5204), or E-mail us at mckendj@airproducts.com. From outside U.S.A., call 610-706-4730.

Air Products and Chemicals, Inc.
7201 Hamilton Boulevard,
Allentown, Pennsylvania, U.S.A. 18195-1501
Tel 610-481-4911
www.airproducts.com/electronics

Air Products PLC, Electronics Group
Hersham Place; Molesey Road,
Walton-on-Thames, Surrey, England KT12 4RZ
Tel 44-0-1932-249959
Fax 44-0-1932-258063
E-mail euroelec@airproducts.com

Air Products Asia Inc. (Shirley Hsu)
21 Chung Shan North Road
Taipei 104, Taiwan
Tel 886-2-2521-5891
Fax 886-2-2567-4704



Air Products and Chemicals, Inc.
Attention: Ed McKendry
7201 Hamilton Boulevard
Allentown, Pennsylvania, U.S.A.
18195-1501

six
AIR PRODUCTS ELECTRONICS UPDATE, SUMMER 05