

## What's New in the World of Superconductivity (September)

### Power

#### **American Superconductor Corporation (September 4, 2002)**

American Superconductor Corporation (AMSC) announced that the U.S. District Court in Boston has upheld a fundamental MIT patent licensed exclusively to American Superconductor and confirmed the breadth of a fundamental composition of matter patent, owned by the Massachusetts Institute of Technology and exclusively licensed by AMSC, related to high temperature superconductor (HTS) wires.

The significance of the court's ruling is the breadth of the patent, which applies to any composite consisting of an HTS material in intimate contact with a noble metal, such as silver. The company and its competitors are employing such composites both in current manufactured HTS wire architectures and in new HTS wire architectures under development.

One of the inventors of the patent and CEO of AMSC, Dr. Gregory J. Yurek, said, "This patent is a fundamental composition of matter patent – it applies to all composite HTS wires that utilize a noble metal such as silver in intimate contact with the superconductor material," He added "It doesn't matter how you make the HTS wire and what its final architecture is – as long as a composite of HTS material and noble metal is used. This patent covers it." The court ruling further solidifies AMSC's strong market position for HTS wire.

AMSC also reported that AMSC received 46 additional issued U.S. patents and an additional 20 issued foreign patents in the area of HTS technology in the last two years.

News Source:

"Court Ruling Strengthens American Superconductor Patent Estate in HTS Technology" (American Superconductor Press Release, September 4, 2002)

<http://www.amsuper.com/press.htm>

#### **American Superconductor Corporation (September 15, 2002)**

American Superconductor Corporation and Electricité de France announced that Altis Semiconductor has installed a voltage regulation system, developed by American Superconductor, to protect its manufacturing plant from product-damaging power disturbances. Didier Lamouche, chief executive officer for Altis Semiconductor, explained, "We can't afford to lose production time to unscheduled events due to power quality problems. American Superconductor's Power Quality Industrial Voltage Regulation (PQ-IVR) system provides the protection we need against power sags that could harm our manufacturing processes and lower our overall factory effectiveness." The power quality system that has been installed is an industrial application of American Superconductor's superconductor magnetic energy storage (SMES) technology. The system protects a 7-megawatt electrical load at the Altis plant, accounting for about 30% of the site's production load. The system was originally bought by Electricité de France in 2000 and underwent about a year of rigorous testing prior to its installation.

News Source:

“American Superconductor Power Quality Solution Installed at Altis Semiconductor to Improve Productivity”

American Superconductor Corporation Press Release (September 15, 2002)

<http://www.amsuper.com/press.htm>

## **Intermagnetics General Corporation (September 19, 2002)**

Intermagnetics General Corporation (IMGC) reported that fiscal 2003 first-quarter net income increased to \$3.7 million, or \$0.21 per diluted share, from \$3.6 million, or \$0.21 per diluted share, a year earlier. Net sales for the quarter ended August 25, 2002, were \$35.2 million compared with \$40.1 million reported the prior year.

Glen H. Epstein Chairman and CEO said, “Our continued focus on effective cost controls enabled us to post a gain in net income despite relative softness in net sales,” He added, “As we had projected, sales were slightly lower than in the fourth quarter of fiscal 2002, but our emphasis on continually managing our cost structure enabled us to report increased earnings sequentially as well as in the year-over-year period. He noted that IMGC had generated a 15 percent net operating profit; their highest ever.

Epstein also noted that earnings improvements resulted even while Intermagnetics increased its research and development expenditures to 10 percent of sales compared with 9 percent of sales for ongoing operations a year earlier.

News Source:

“Intermagnetics Reports Q1 Net Income Increases to \$3.7 Million” (Intermagnetics General Corporation Press Release, September 19, 2002)

<http://www.prnewswire.com/micro/IMGC>

## **Pearl Street, Inc. (September 23, 2002)**

Pearl Street, Inc., has released a report entitled “Energy Storage: The Sixth Dimension of the Electricity Value Chain” in which it concludes that energy storage technologies will have a positive impact on the US economy equal to US \$ 175 billion over the next 15 years. Mr. Jason Makansi, President of Pearl Street, Inc., explained that “Energy storage ensures power quality, facilitates the integration of renewable generation assets into the grid, raises the productivity of existing generation, transmission and distribution assets, and increases the efficiency and security of the power generation market.” The report describes the leading storage technologies (including superconducting magnetic energy storage and flywheels), existing installations, and current market leaders. An outline of the report can be obtained by contacting Mr. Richard Baxter at [rbaxter@pearlstreetinc.com](mailto:rbaxter@pearlstreetinc.com).

News Source:

“Energy Storage Projected to Have \$175 Billion Positive Impact on US Economy According to Pearl Street’s New Energy Storage Executive Briefing Report”

Pearl Street, Inc. Press Release (September 23, 2002)

[http://www.pearlstreetinc.com/Energy%20Storage%20to%20Have%20\\$175%20Billion%20Postive%20Impact%20on%20US%20Economy.htm](http://www.pearlstreetinc.com/Energy%20Storage%20to%20Have%20$175%20Billion%20Postive%20Impact%20on%20US%20Economy.htm)

## **American Superconductor Corporation (September 30, 2002)**

American Superconductor and Bridex Technologies Pte. Ltd., a leading power system solution

integrator and technology company based in Singapore, announced the signing of a distribution agreement: Bridex Technologies will market and sell American Superconductor's complete line of power quality and reliability solutions to customers in the Asia-Pacific market (excluding Japan). The products covered by the agreement include the D-VAR™, D-SMES, and PQ-IVR™ systems. Greg Yurek, chief executive officer of American Superconductor Corporation, commented that "This agreement is strategically important for us as it broadens our market reach into one of the world's fastest growing manufacturing regions."

News Source:

"American Superconductor Announces Distribution Agreement with Leading Asia-Pacific Power Systems Integrator"

American Superconductor Corporation Press Release (September 30, 2002)

<http://www.amsuper.com/press.htm>

## Medical

### National Institute of Neurological Disorders and Stroke (September 5, 2002)

Magnetoencephalography has been used to detect fetal brain activity in response to flashes of light transmitted through the mother's abdomen. This technique may eventually enable physicians to detect and prevent fetal brain damage resulting from a variety of conditions in the mother. The scanning device, known as SARA (SQUID Array for Reproductive Assessment), utilizes superconducting quantum interference devices (SQUIDs) to detect the tiny fluctuations in magnetic fields produced by fetal brain activity. The research, supported by the National Institute of Neurological Disorders and Stroke, was published in the September 7, 2002, issue of The Lancet.

News Source:

"New device detects fetal brain response to light: May help prevent brain damage"

NIH/National Institute of Neurological Disorders and Stroke Press Release (September 5, 2002)

[http://www.ninds.nih.gov/news\\_and\\_events/index.htm](http://www.ninds.nih.gov/news_and_events/index.htm)

## Communication

### Superconductor Technologies Inc. (September 12, 2002)

Superconductor Technologies Inc. announced that its flagship product, the SuperFilter® has exceed 20 million cumulative hours of operation in the field. First appearing in 1997, today the SuperFilter is the most widely deployed HTS product in the wireless industry, with more than 1,600 units deployed in the US and around the world. In the last year alone, more than 10 million cumulative hours of operation have been logged.

News Source:

"STI'S SuperFilter® Surpasses 20 Million Hours of Field Operation In Wireless Base Stations Worldwide"

Superconductor Technologies Inc. Press Release (September 12, 2002)

<http://www.prnewswire.com/micro/SCON>

## **Superconductor Technologies Inc. (September 17, 2002)**

Superconductor Technologies Inc. announced the general availability of its HTS-Ready™ Duplexer 850 Series HP, providing the highest power handling and lowest insertion loss of any duplexer currently available on the market. The new duplexer enables operators to achieve maximum base station performance. "As carriers upgrade their existing infrastructure to support next-generation networks, many are installing duplexing equipment in order to eliminate or consolidate antenna deployments," commented Neil Fenzi, vice-president of product management at Superconductor Technology. "The Duplexer 850 Series HP speaks directly to the growing trend for high-power duplexing in the marketplace and gives wireless network planners and designers new degrees of freedom in deploying efficient, high performing networks." The HTS-Ready™ Duplexer 850 Series HP was introduced in 2001; since then, more than US \$ 2 million worth of units have been deployed in approximately 800 base stations across the US.

News Source:

"Superconductor Technologies Inc. Announces General Availability Of HTS-Ready™ Duplexer 850 Series HP"

Superconductor Technologies Inc. Press Release (September 17, 2002)

<http://www.prnewswire.com/micro/SCON>

## **Superconductor Technologies Inc. (September 19, 2002)**

Superconductor Technologies Inc. announced the launch of its new SuperLink™ Rx 850, the most compact and lowest power cryogenic receiver front-end (CRFE) available to date. The product represents the next generation of SuperFilter®, currently the industry's most widely deployed HTS product. Several cellular operators in the US have expressed a strong interest in the SuperLink Rx 850; Superconductor Technologies expects to begin shipping the product in October. The unit incorporates HTS technology with a state-of-the-art, cryogenically cooled low noise amplifier to create a CRFE for use in cellular base stations, dramatically improving network performance without adding additional towers. The unit is also half the size, uses one-third less power, and delivers an even lower noise figure than its predecessor, the SuperFilter II.

News Source:

"Superconductor Technologies Inc. Expands SuperLink™ Rx Family Of Wireless Solutions With Introduction of SuperLink Rx 850.

Superconductor Technologies Inc. Press Release (September 19, 2002)

<http://www.prnewswire.com/micro/SCON>

## **Nuclear Fusion**

### **Massachusetts Institute of Technology (October 1, 2002)**

Massachusetts Institute of Technology engineers have developed a 150-ton magnet, bringing the world one step closer to being able to use nuclear fusion as a potential energy source. However, a better understanding of certain test results will be needed so that costs can be reduced and the ultimate goal of the researchers, a 925-ton magnet for use in the International Thermonuclear

Experimental Reactor (ITER), can be achieved, The US Congress has recently displayed growing interest in the ITER project, and the Department of Energy has recommended that the US re-join the multi-national collaboration (In 1999, funding was awarded to complete R&D commitments toward ITER, but not for continued US participation in the project).

News Source:

“150-ton magnet pulls world toward new energy source”

Massachusetts Institute of Technology Press Release (October 1, 2002)

<http://web.mit.edu/newsoffice/nr/2002/magnet.html>

(Akihiko Tsutai, Director, International Affairs Department, ISTEC)

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