

What's New in the World of Superconductivity (February and March)

Power

American Superconductor Corporation and Siemens AG (February 1, 2006)

American Superconductor Corporation (AMSC) and the Corporate Technology unit of Siemens AG have renewed their strategic alliance to explore the commercialization aspects of HTS fault current limiters (FCLs). In this second year of their alliance, the two companies will continue to build and test FCL components using AMSC's second-generation HTS wire; they plan to demonstrate a small-scale 2G HTS FCL by the end of the year. Siemens and AMSC also announced that they had exceeded technical performance expectations during the first year of their alliance. The two companies successfully demonstrated the fast and uniform switching of AMSC's 2G HTS wire to a resistive state in response to current surges. The wire's response was much better than expected at this early stage of development. These results have confirmed the functionality of AMSC's 2G HTS wire for use in economically viable FCLs, which should become commercially available over the next few years.

Source:

"American Superconductor and Siemens Exceed Technical Performance Expectations - Renew Strategic Alliance to Develop and Commercialize Advanced Grid Reliability Technology"

American Superconductor Corporation press release (February 1, 2006)

http://phx.corporate-ir.net/phoenix.zhtml?c=86422&p=irol-newsArticle_Print&ID=811116&highlight

American Superconductor Corporation (February 2, 2006)

American Superconductor Corporation (AMSC) has reported its financial results for the third fiscal quarter ending December 31, 2005. Revenues for the quarter amounted to US \$13.5 million, compared with \$23.2 million for the same quarter in the previous fiscal year. The net loss for the quarter amounted to \$7.5 million, compared with \$2.5 million for the same quarter in the previous fiscal year. AMSC received \$32.8 million in new orders and contracts during the third quarter – more than the total amount of new orders received in either of the previous two fiscal years. As of December 31, 2005, the company's total backlog of orders and contracts was \$37.1 million. Revenues for the fiscal 2006 are forecasted to be in the range of \$52 – 57 million, with a forecasted net loss of \$22 – 25 million. The company ended the quarter with \$71.1 million in cash and no long-term debt.

Source:

"American Superconductor Reports Fiscal 2006 Third Quarter and Nine-Month Results"

American Superconductor Corporation press release (February 2, 2006)

http://phx.corporate-ir.net/phoenix.zhtml?c=86422&p=irol-newsArticle_Print&ID=811805&highlight

Intermagnetics General Corporation (February 21, 2006)

Intermagnetics General Corporation (IMGC) has filed a shelf registration statement with

the U.S. Securities and Exchange Commission. A shelf registration statement prepares new issues to be registered up to two years in advance, allowing the issues to be offered quickly when funds are needed or market conditions become favorable. The statement filed by IMGCC will enable the company to offer preferred stock, common stock, senior and subordinated debt and warrants, as well as units and purchase contracts that may include one or more of the above securities. Glenn H. Epstein, Chairman and Chief Executive Officer of IMGCC, commented, "While we have no imminent needs or present plans to issue securities, we are positioning ourselves to be increasingly nimble and flexible as we pursue a variety of opportunities to continue to increase stockholder value."

Source:

"Intermagnetics Files Shelf Registration Statement"

Intermagnetics General Corporation press release (February 21, 2006)

<http://phx.corporate-ir.net/phoenix.zhtml?c=88261&p=irol-newsArticle&ID=819981&highlight>

American Superconductor Corporation (February 22, 2006)

American Superconductor Corporation (AMSC) has received a follow-on order for its PowerModule™-based wind turbine generator control systems from Windtec Systemtechnik GmbH, an Austrian supplier of wind turbine components and system technology. The PowerModule-based control systems will be utilized in 150 1.5-MW wind turbine generators that Windtec plans to ship to China during calendar 2006. This is the third and largest order that Windtec has placed with AMSC. Gerald Hehenberger, President of Windtec, commented, "AMSC's PowerModule systems provide us with a critical competitive edge to penetrate the rapidly growing Chinese wind market. We are very excited to have a strong foothold in what is anticipated to be the largest wind turbine market in the world."

Source:

"American Superconductor Receives Order for PowerModule™ Systems from Windtec Systemtechnik for 150 Wind Turbines to be Installed in China"

American Superconductor Corporation press release (February 22, 2006)

http://phx.corporate-ir.net/phoenix.zhtml?c=86422&p=irol-newsArticle_Print&ID=820203&highlight

Intermagnetics General Corporation (February 28, 2006)

Intermagnetics General Corporation (IMGCC) has engaged Stephens Inc. as a financial advisor to explore strategic options to maximize the value of its subsidiary SuperPower. Glenn H. Epstein, Chairman and Chief Executive Officer of IMGCC, explained, "...the ultimate separation of SuperPower from Intermagnetics is entirely consistent with our overall goal to focus our resources on expanding our longer-term growth opportunities in the medical devices marketplace." Stephens Inc. will advise IMGCC of liquidity alternatives that will realize the maximum near-term value of SuperPower for Intermagnetics' stockholders.

Source:

"Intermagnetics Engages Advisor to Examine Options for Energy Technology Subsidiary"

Intermagnetics General Corporation press release (February 28, 2006)

<http://phx.corporate-ir.net/phoenix.zhtml?c=88261&p=irol-newsArticle&ID=823463&highlight>

Trithor GmbH (March 2, 2006)

Trithor GmbH has reported the successful completion of a large-scale delivery of HTS wires to Ansaldo-CRIS (Italy). The total shipment amounted to 20 km of BSCCO HTS wire and is believed to be the largest delivery of HTS wires in Europe, to date. The wire will be used in a power quality SMES containing a 50 kJ conduction cooled magnet, the construction of which is ongoing. The project, entitled HOTSMEs, is partially funded by the European Union's 5th Framework Program.

Source:

"Europe's Energy Efficiency Wired by Trithor"

Trithor GmbH press release (March 2, 2006)

http://www.trithor.com/pdf/press-en/2006-03%20HOTSMEs%20Delivery_ENG

American Superconductor Corporation (March 8, 2006)

American Superconductor Corporation (AMSC) and China's Institute of Electrical Engineering (IEE) have announced the successful demonstration of a prototype superconductor-based power transformer in a Chinese power grid. The three-phase, 630-kVA transformer (transforming voltages from 10 kV to 400 V) was constructed by the IEE in collaboration with TBEA Industrial Transformer Group using AMSC's HTS wire. The HTS transformer was installed in a power grid in the city of Changji, in Xinjiang province, and has been operational since November 21, 2005. The total energy efficiency of the device was 98.3%, and more mature designs are expected to further improve this figure to 99.9%. The prototype transformer is expected to remain in operation for six months. HTS transformers offer the advantages of large reductions in energy loss and the use of an environmentally friendly coolant (liquid nitrogen), rather than the expensive electrical insulating oils used in conventional transformers. The U.S. Department of Energy has estimated that the worldwide market for transformers with power ratings of over 10 MVA exceeds US \$1 billion annually, with the fastest growth in transformer sales occurring outside the U.S. The rate of power consumption increased by 14.8% in China in 2004. Greg Yurek, Chief Executive of AMSC, commented, "This demonstration project is a critical step on the path to the development of practical, commercial superconductor transformers in China -- a market we believe will be very large."

Source:

"American Superconductor and China's Institute of Electrical Engineering Announce Demonstration of First Superconductor Power Transformer in Chinese Energy Distribution Grid"
American Superconductor Corporation press release (March 8, 2006)

http://phx.corporate-ir.net/phoenix.zhtml?c=86422&p=irol-newsArticle_Print&ID=828660&highlight

American Superconductor Corporation (March 23, 2006)

American Superconductor Corporation (AMSC) is accelerating its commercial manufacturing plan for second-generation HTS wires based on having met certain manufacturing benchmarks in its second-generation pilot manufacturing operation. The company now expects to more than double its planned annual wire manufacturing capacity for 344 superconductors to 720,000 meters. This increase in capacity will not require an increase in capital expenditures. AMSC expects to spend approximately US \$12 – 14 million in total on

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manufacturing equipment to meet their production goals (the previous estimate for the previous production goal was \$10 – 15 million). The increase in manufacturing capacity will be realized by improving throughput rates. AMSC has also developed processing methodologies that are expected to increase the electrical performance of the company's 344 superconductors significantly above earlier forecasts. These improvements are expected to reduce the price-performance ration of these wires to levels equivalent to that of copper wire before the end of the decade.

Source:

“American Superconductor Accelerates Manufacturing Plan for Commercial Second Generation (2G) High Temperature Superconductor Wire”

American Superconductor Corporation press release (March 23, 2006)

http://phx.corporate-ir.net/phoenix.zhtml?c=86422&p=irol-newsArticle_Print&ID=834793&highlight

American Superconductor Corporation (March 28, 2006)

American Superconductor Corporation has received an order for a D-VAR® voltage regulation system from Econnect Construction, a U.K. company specializing in grid connections for renewable energy sources. The D-VAR system will be installed in Scotland and will provide dynamic and steady state voltage support and power factor regulation for a 35-MW wind farm. The D-VAR system will be commissioned in October 2006. According to the British Wind Energy Association, the U.K. government has targeted that 10% of all electricity generated in 2010 should come from renewable energy sources, three quarters – or roughly 8,000 MW – of which is expected to come from wind energy. Overall, this is the 13th wind farm worldwide to incorporate AMSC's advanced D-VAR dynamic voltage control technologies.

Source:

“American Superconductor's D-VAR(R) System to Enable U.K. Wind Farm to Meet Grid Interconnection Requirements”

American Superconductor Corporation press release (March 28, 2006)

http://phx.corporate-ir.net/phoenix.zhtml?c=86422&p=irol-newsArticle_Print&ID=835987&highlight

Material

Superconductive Components Inc. (March 27, 2006)

Superconductive Components, Inc. (SCCI) has announced their financial results for the fourth quarter and full year ending December 31, 2005. Total revenues for the fourth quarter reached US \$1,147,377, compared with \$551,087 for the same period in the previous fiscal year. Product revenues increased by 124% to \$1,103,621, compared with \$493,016 for the same period in the previous fiscal year. The gross margin on product revenues also increased from 13.7% to 24.1%. Contract revenues for the quarter amounted to \$43,756. The loss applicable to common shares was significantly reduced from \$213,163 in the fourth quarter of 2004 to \$38,810 for the reported quarter. Total revenues for the full year increased by 59% to \$3,457,182, compared with \$2,172,864 for the previous fiscal year. This increase was mainly

the result of the company's growing customer base and increased sales to existing customers. Product revenue increased by 65% to \$3,167,743, compared with \$1,915,732 for fiscal 2004. Contract revenue also increased to \$289,439 as a result of two Small Business Innovation Research (SBIR) awards to determine the feasibility of cost-effective, long-length round wires for very high-field magnet applications. The gross margin on product revenue improved from 12.5% for fiscal 2004 to 23.5% for fiscal 2005. The loss applicable to common shares was dramatically reduced to \$358,405 in fiscal 2005, compared with \$1,125,007 for fiscal 2004.

Source:

"Superconductive Components, Inc. Reports Improved Fourth Quarter Results"

Superconductive Components Inc. press release (March 27, 2006)

<http://www.sciengineeredmaterials.com>

Medical

CardioMag Imaging, Inc. (March 9, 2006)

CardioMag Imaging, Inc. has demonstrated its magnetocardiographic (MCG)-based sensitive Cardiac Function Mapping System at the American College of Cardiologists' Annual Meeting. During the 10-minute non-invasive and patient friendly test, the heart function of fully clothed patients was visually displayed in real-time on a computer monitor. The technology underlying the Cardiac Function Mapping System is based on SQUIDS. Two presentations by US and European cardiologists also provided comparative results and clinical evidence showing that MCG exams are as accurate as currently accepted "gold standard" tests that are not only highly invasive, but also very expensive.

Source:

"NEW CARDIAC IMAGING TECHNOLOGY EXHIBITED AT ACC CAN SAVE BILLIONS IN HEALTHCARE COSTS"

CardioMag Imaging, Inc. press release (March 9, 2006)

http://www.cardiomag.com/about/news/ACC_Release_03-09-2006.pdf

Communication

ISCO International, Inc. (February 23, 2006)

ISCO International Inc. announced its financial results for the fourth quarter and full year. ISCO's revenue for the fourth quarter nearly quadrupled to US \$2.4 million, compared with \$0.6 million for the same quarter in the previous fiscal year. Revenue for the full year also increased to \$10.3 million, compared with \$2.6 million for the previous fiscal year. Net loss for the fourth quarter improved to \$1.1 million, compared with \$2.0 million for the same quarter in the previous fiscal year, and net loss for the full year improved by approximately 57% to \$3.0 million, compared with \$7.0 million for the previous fiscal year. Product gross margins improved from 42% for the previous fiscal year to 50% for the reported fiscal year. The company particularly benefited from an improved production cost and product mix. ISCO International plans to further improve their cost structure, enabling them to become more competitive and to bid for

larger and more profitable opportunities.

Source:

“ISCO INTERNATIONAL REPORTS FINANCIAL RESULTS FOR THE FOURTH QUARTER AND FULL YEAR 2005; TERMINATION OF POISON PILL”

ISCO International, Inc. press release (February 23, 2006)

<http://www.iscointl.com/news.htm>

Accelerator

Oak Ridge National Laboratory (February 9, 2006)

Oak Ridge National Laboratory has announced the commissioning of the proton accumulator ring at the Department of Energy's Spallation Neutron Source (SNS), an event that marks another milestone on the way to the completion of the SNS by the end of 2006. The proton accumulator ring, which was designed and constructed at the Brookhaven National Laboratory, is the last major accelerator element to be delivered to the SNS facility. During the operation of the SNS, a superconducting linac will produce proton pulses traveling at almost 90% of the speed of light. The protons within each pulse are “accumulated” within the proton accumulator ring, thereby increasing the intensity by 1000-fold. The intense pulse is then extracted and delivered to a mercury target to produce neutrons. The SNS will become the world's leading research facility for projects using neutrons to study the structure and dynamics of materials.

Source:

“Accumulator ring commissioning latest step for spallation neutron source”

Oak Ridge National Laboratory press release (February 9, 2006)

http://www.ornl.gov/info/press_releases/get_press_release.cfm?ReleaseNumber=mr20060209-00

Basic

Delft University of Technology, Brown University, and the University of Alabama (February 15, 2006)

A team of researchers from Delft University of Technology (the Netherlands), Brown University, and the University of Alabama has created a “spin triplet” supercurrent in a unique ferromagnet. The team's experimental system converts the spins of electron pairs in such a way that suggests they exist in three quantum states inside the new magnet: “spin up”, “spin down”, and a middle state. Although theoretically predicted, the present findings represent the first experimental evidence of “spin triplet” conversion in a ferromagnet. Furthermore, the resulting current traveled a comparatively long distance: 300 nm. The ferromagnet itself was produced from vaporized chromium oxide coated on a titanium oxide film. The new magnet may help to create technologies in the popular new field of “spintronics” – short for spin-based electronics. Spintronics promises smaller, faster, and cheaper computer memory storage and processing. This research was funded by the Nederlandse Organisatie voor Wetenschappelijk Onderzoek

and the National Science Foundation and has been reported in Nature.

Source:

“A fresh spin in quantum physics: The 'spin triplet' supercurrent”

Brown University press release -Office of Media Relations (February 15, 2006)

http://www.brown.edu/Administration/News_Bureau/2005-06/05-078.html

Los Alamos National Laboratory and the University of Illinois at Urbana-Champaign (March 7, 2006)

Researchers at Los Alamos National Laboratory and the University of Illinois at Urbana-Champaign have discovered that a magnetic state can coexist with superconductivity at a specific temperature and in a specific pressure range in a cerium- rhodium-indium (CeRhIn5) compound. The researchers found that a purely unconventional superconducting phase was separated from a phase of coexisting magnetism and unconventional superconductivity; the boundary between the two phases was controlled by the laws of quantum physics. Magnetism was thought to be excluded when materials change phases, but the present research shows that magnetism can be merely hidden by unconventional superconductivity and can be caused to reappear by the application of a magnetic field. The discovery, which was reported in Nature, provides an opportunity to further our understanding of how magnetism and unconventional superconductivity are related in complex materials, in which electrons participate simultaneously in magnetism and superconductivity.

Source:

“Research reveals hidden magnetism in superconductivity”

Los Alamos National Laboratory press release (March 7, 2006)

http://www.lanl.gov/news/index.php?fuseaction=home.story&story_id=8031

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