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What's New in the World of Superconductivity (July)

Power

Oak Ridge National Laboratory (July 2, 2007) OK

Oak Ridge National Laboratory (ORNL) has won an R&D 100 award from R&D Magazine for the development of high-performance LMO-enabled HTS wires (LMOe-HTS). The award is given annually to 100 of the most technologically significant new products to be developed during the year. LMOe-HTS, which were developed in conjunction with SuperPower Inc., are high-current, second-generation superconducting wires with a unique combination of strength, flexibility, fabricability, throughput, and low cost. These features are vital for power-grid applications, including coils and motors. In 2006, the wires set three world records for superconductivity. The project was funded through the DOE Office of Electric Transmission and Distribution High Temperature Superconducting program.

Source:

"ORNL wins six R&D 100 Awards, pushing total to 134"

Oak Ridge National Laboratory press release (July 2, 2007)

http://www.ornl.gov/info/press_releases/get_press_release.cfm?ReleaseNumber=mr20070702-00

Zenergy Power plc (July 2, 2007) OK

Zenergy Power plc has announced that the German Ministry of Economics and Technology has awarded Trithor GmbH a developmental grant worth €825,000. The grant will be used to fund a collaborative project known as "ELSA", which will seek to advance the technical and theoretical development of production methodologies for second-generation (2G) HTS wires. The ELSA project has a total value of €1,700,000. Within the scope of the project, Zenergy will continue to advance its own proprietary lower-cost production technique for 2G HTS wires. The group then hopes to apply this technology within other core fields, including industrial applications, power distribution, power transmission, and the medical sector. The RWTH Aachen Institute for Materials in Electrical Engineering, the Research Center Jülich, and the University of Tübingen Institute for Applied Physics are also contributing to this technology transfer. In addition, Zenergy is cooperating with GTT Technologies to develop a set of automated advanced computational development tools that will then be used to accelerate systematic research on new layer materials for the further advancement of 2G wire development.

Source:

"Government R&D Grant for 2G HTS Wire"

Zenergy Power plc press release (July 2, 2007)

http://www.trithor.com/pdf/press-en/2007-07-02-GMET_Grant_TT.pdf

American Superconductor Corporation (July 11, 2007) OK

American Superconductor Corporation (AMSC) has announced a series of orders for its

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Power Quality Static VAR Compensator (PQ-SVC™), which was added to AMSC's commercial offerings after the recent acquisition of Pennsylvania-based Power Quality Systems, Inc. The PQ-SVC eliminates voltage sags and flicker, providing a cost-effective way to safely connect large electrical loads to the local power grid. The PQ-SVC is highly portable and modular and can be modified in the field. Since AMSC's acquisition of PQS, it has received orders from four new customers totaling approximately US $1.5 million. The new customers include a steel company in Pennsylvania, a Canadian oil and gas company, a Wisconsin-based consumer goods company, and a diversified mining company based in Switzerland. Chuck Stankiewicz, executive vice president and general manager of AMSC Power Systems, reported, "We are pleased with the rapid customer acceptance of our PQ-SVC solution, which combines PQS's proprietary thyristor switch technology with AMSC's proprietary controls technology to create a powerful new industrial power quality product. We are seeing strong interest across a broad spectrum of industries for this offering. In addition, our PQS acquisition is enabling us to offer utilities large-scale SVCs that have lower operating costs and at competitive prices compared with other offerings on the market."
Source:
"AMSC Receives Series of PQ-SVC™ Orders from Industrial Sector"
American Superconductor Corporation press release (July 11, 2007)
http://phx.corporate-ir.net/phoenix.zhtml?c=86422&p=irol-newsArticle_Print&ID=1024832&highlight

American Superconductor Corporation (July 20, 2007) OK

American Superconductor Corporation (AMSC) has announced the pricing of an underwritten public offering of 4,700,000 shares of its common stock at a price of $21.25 per share. AMSC has also granted the underwriters a 30-day option to purchase up to an additional 705,000 shares of common stock. The offering is expected to close on or about July 25, 2007. Morgan Stanley & Co. Incorporated will act as the book runner for the offering.
Source:
"AMSC Announces Pricing of Public Offering of Common Stock"
American Superconductor Corporation press release (July 20, 2007)
http://phx.corporate-ir.net/phoenix.zhtml?c=86422&p=irol-newsArticle_Print&ID=1028606&highlight

American Superconductor Corporation (July 24, 2007) OK

American Superconductor Corporation (AMSC) has received a follow-on order from Sinovel Wind Corporation Limited (Beijing, China) for wind turbine electrical systems worth US$ 70 million. AMSC's wholly owned subsidiary, AMSC Windtec, will ship the customized electrical systems to Sinovel in 2008, for use in Sinovel's 1.5-MW wind energy systems. Han Junliang, Chairman and President of Sinovel, commented, "The wind power industry is stronger than ever in China, and Sinovel is doing everything in its power to satisfy the increasing demand for environmentally friendly wind energy systems. AMSC Windtec has been - and will continue to be - a valued ally in our drive to become a leading wind energy system manufacturer in China and around the world." Sinovel manufactured more than one hundred 1.5-MW wind energy systems in calendar 2006 and expects to exceed 500 systems in calendar

2007.
Source:
“AMSC Receives New $70 Million Order from China’s Sinovel Wind”
American Superconductor Corporation press release (July 24, 2007)
http://phx.corporate-ir.net/phoenix.zhtml?c=86422&p=irol-newsArticle_Print&ID=1029686&highlight

Sensor

Georgia Institute of Technology (July 24, 2007) mail

Researchers at the Georgia Institute of Technology have discovered a phenomenon that enables the mechanical motion of nanostuctures to be measured using the AC Josephson effect. The phenomenon can be used to identify and characterize the structural and mechanical properties of nanoparticles. The researchers found that when atoms are placed within a Josephson junction, the Josephson effect can be used to detect the mechanical motion of the atoms. A microfabricated junction assembly cooled to below the superconducting transition temperature exhibited unusual features in traces of the electrical conductance measured as a function of the applied voltage. Specifically, nanowires consistently produced a series of additional peaks in the conductance versus voltage curves. The researchers hypothesized that the new peaks likely originated from the mechanical motions of dimers, which enhance the electrical current at particular applied voltages. At each of the peak voltages, the frequency of the AC Josephson current resonates with the vibrational frequency of the nanostructure in the junction, as shown by exhaustive qualitative and quantitative agreement between experimental measurements and theoretical predictions. Professor Uzi Landman at Georgia Tech commented, "… in addition to being able to detect the effects of electromagnetic radiation on the AC Josephson current, one can also use it to probe mechanical motions of atoms or molecules placed in the junction. The prospect of being able to explore, and perhaps utilize, atomic-scale phenomena using this effect is very exciting.” The research is described in the online journal, *Nature Nanotechnology*.
Source:
“Scientists discover new way to study nanostructures”
Georgia Institute of Technology press release (July 24, 2007)
http://www.gatech.edu/news-room/release.php?id=1433

Communication

ISCO International Inc. (July 25, 2007) OK

ISCO International Inc. has reported its financial results for the second quarter of 2007, ending June 30, 2007. Consolidated net revenues totaled US $3.4 million, the same as the revenue for the second quarter in the previous fiscal year. Gross margins increased to 50% from 40% for the same periods, primarily because of ongoing cost reduction activities. The consolidated net loss was $0.8 million for the quarter, an improvement from the $1.2 million for

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the same quarter in the previous fiscal year. Cash flow improved during the second quarter, compared with the same period in the previous fiscal year, as a result of improved supply chain management, inventory utilization, and manufacturing efficiencies. John Thode, CEO of ISCO, reported, "While we continue to experience demand volatility in our business segment due to structural changes in the industry, we've been able to rebound from a weak first quarter to post a much improved second quarter, particularly when taking into account our improved operational efficiencies and margins. … as other entities in our space have stated publicly, we expect continued improvement in segment demand throughout the remainder of the year."
Source:
“ISCO International Reports Financial Results for the Second Quarter 2007 and Investor Call”
ISCO International Inc. press release (July 25, 2007)
http://www.iscointl.com/news.htm

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

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