THE DISRUPTIVE SEMICONDUCTOR TECHNOLOGIES MAGAZINE

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EDITORIAL

Happy New Year!

We at Micronews would like to wish all of our readers a happy and prosperous New Year.

Although the 2012 economic situation is full of uncertainties, we believe it will be a year full of unexpected and surprising technological and business news. As always, Micronews will be here to keep you abreast of every contribution to our world's technological evolution.

For our first installment of 2012, we've selected some very interesting topics:
- On the Advanced Packaging side, Elpida has started sample shipments of wide IO memory
- On the inertial MEMS side, where there never seems to be a shortage of fresh news, two competing industry leaders have each released new products: InvenSense has introduced the world's first integrated 9-axis motion tracking device, and STM has launched the world's first dual-core gyroscope for phones and tablets
- Other noteworthy items include the announcement of the first successful development in Japan of a six-inch diameter silicon carbide single crystal wafer by Nippon Steel, the acquisition of Novellus Systems by Lam Research, and, on the R&D side, the demonstration by UCLA researchers of fully-printed carbon nanotube transistor circuits for displays.

Note that « Photonics » column is now « Optoelectronics » and « Microfluidics » column is now « Medtech ». We rename them to broaden the scope of the columns. Optoelectronics covers optical telco, nanophotonics ... Medtech now covers microfluidics and bioMEMS.

Stay tuned – much more to come in the weeks and months ahead!

Dr. Éric Mounier
Editor-in-chief

MEMS

World's first dual-core gyroscope from STMicroelectronics handles smart user interface and image stabilization in phones and tablets

STMicroelectronics has introduced the market's first dual-core gyroscope capable of handling both user-motion recognition and camera image stabilization.

With the innovative system architecture of the ST device, equipment manufacturers only need to use a single gyroscope for the two different functions, reducing the size, system complexity, and cost in mobile phones, tablets, and other smart consumer devices.
The innovative design of ST's dual-core gyroscope employs separate output paths optimized for the two different functions in a 4x4x1 mm package…

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L3G4IS dual (Courtesy of STMicroelectronics)

PHOTOVOLTAICS

Soitec purchases manufacturing facility in San Diego to locally produce CPV modules for the U.S. renewable energy market

Soitec has purchased a manufacturing facility in California, and will soon begin fitting the factory to produce its concentrator photovoltaic (CPV) modules for the U.S. renewable-energy market.

The site, acquired from Sony Electronics, will enable a manufacturing capacity of 200 MW of Soitec's fifth generation Concentrix™ CPV modules and with future expansion to double the capacity to 400 MW per year. This major project for Soitec represents an investment of more than $150-million (and will create 450 on-site jobs in the City of San Diego and more than 1,000 indirect jobs at full capacity (200 MW))…

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ADVANCED PACKAGING

LAM Research to acquire Novellus Systems for $3.3 billion

The combined enterprise, which will retain the name of Lam Research Corp., will be a semiconductor equipment company with a broad portfolio of market-leading products and multiple opportunities to drive value creation through significant revenue and cost synergies. Total cost synergies are expected to be approximately $100 million on an annualized basis by the fourth quarter of 2013.
In addition, Lam announced a $1.6 billion common stock repurchase program. This new program, which replaces Lam's existing share repurchase program, is targeted to be executed over the 12 months following the close of the transaction. Lam expects the transaction to be accretive to its non-GAAP earnings within one year after transaction close.
The two companies possess complementary product capabilities, with Lam's leadership in etch and single-wafer clean equipment aligning with Novellus's leadership in thin-film deposition and surface preparation technologies…

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Microfluidic Market Briefing

Technologies & Applications Trends

On Monday, February 6, at 12:30 PM - 2:00 PM

Tutorial room #8

Microfluidics has entered the Life Sciences market as a key technology to provide solutions adapted to the market requirements. Yole Développement follows innovations and key players in this market for several years. This is a fast evolving market, starting its consolidation phase. Combined analysis of the technologies, key players, applications and requirements is essential to understand this market dynamics.

PROGRAM

Opening and company presentation

- **Emerging markets for microfluidic applications**
  Frédéric Breussin, Business Unit Manager,
  Microfluidics & Medical Technologies, Yole Développement

- **Microfluidic technology as an optimization tool for the pharmaceutical research processes**
  Benjamin Roussel, Technology & Market Analyst
  Microfluidics & Medical Technologies, Yole Développement

FREE ENTRANCE

For more information, please contact
S. Leroy (Leroy@yole.fr)

Organized by:

YOLE DÉVELOPPEMENT

This Market Briefing is part of:

slas 2012 1st annual CONFERENCE & EXHIBITION

TO MEET US

Feel free to ask for a meeting with Yole Développement's analysts. Contact: S. Leroy (Leroy@yole.fr)

● **SPIE Photonics West**
Booth #4441
January 21 to 26 - San Francisco, USA
Register online and come to walk the floor, see the latest products, top companies, and industry leaders. SPIE Photonics West showcases the tools, applications, and innovations that are critical to your success.

● **7th European Advanced Technology Workshop on Micropackaging and Thermal Management**
February 1 to 2 - La Rochelle, France
The event will feature 20 papers from leaders in the field along with a tabletop exhibition. Do not miss this opportunity to learn from and network with the European and international community of thermal management of electronic systems!

● **SLAS**
Booth #740
February 4 to 8 - San Diego, USA
Whether you are looking for diverse industries - including drug discovery and development, clinical diagnostics, food and agricultural sciences, forensics and security sciences... - or hope to raise your company profile by getting in front of high-caliber decision makers, SLAS2012 is the opportunity for you. With SLAS as your marketing partner, success in 2012 begins in San Diego!

● **APEC - The Applied Power Electronics Conference and Exposition**
Booth #327
February 5 to 9 - Orlando, USA
As the premier event in applied power electronics™, APEC focuses on the practical and applied aspects of the power electronics business. This is not just a designer's conference, APEC has something of interest for anyone involved in power electronic.

GOLD PARTNERS

Vitens taps into 'smart systems' for water quality

Vitens, a large water supply company based in the Netherlands, may just be setting a trend that all water companies across the globe will follow—by incorporating smart systems into their distribution networks to monitor water quality.

As the largest water supplier in the Netherlands, Vitens firmly believes innovation will play a critical role in its future, so the company is the first in the industry to tap into using "smart systems" to monitor the water quality within its distribution network.
Vitens is participating in a pilot project with Optisense, a fellow Dutch company and creator of inline smart systems, and another R&D partner, the Public Utility Board of Singapore, all collaborating to test out Optisense's lab-on-chip optical sensors, which can be custom tailored to detect any specific chemical substance.

"We're a water supply company serving one third of the Netherlands, which is quite large, so in terms of monitoring the quality of our water for chemical and microbiological contaminants, smart systems are very attractive to us—all the way from the well to the tap," says Rik Thijssen, Vitens' manager of business development, and director of Vitens Solutions.

In the Netherlands, drinking water comes primarily from the tap, and chlorine isn't applied to the water in Vitens' distribution network because it isn't needed, which speaks volumes about the exceptional water quality.

"It's quite a unique situation we have in the Netherlands," Thijssen notes. "From that perspective, it's a bit odd that the only lab analysis takes place after the water has been consumed."

But that's changing. Rapid analysis and detection based on smart systems are becoming increasingly desirable to the water supply industry. Vitens is now pursuing smart system diagnostics for inline monitoring—centimeter-scale inline sensors that can sense changes in water quality and transmit data so it's possible to switch off systems to prevent water from moving any further into the distribution network.
Smart systems are strategically placed within Vitens' network, starting in the well, production facilities, distribution system, but there are many other areas where sensors will useful in the future.

"Vitens expects to use a large number of sensors, so we require the sensor technology to be fairly inexpensive before we go ahead and make the investments," says Thijssen. "We started using Optisense's smart systems about 6 months ago, in the pilot project, and so far we've learned where to place the sensors, how to arrange the data and understand it, and we have a tool in place that responds to the signal from the sensors."
What's the primary benefit of using smart systems? Speed, according to Thijssen. "Right now if we take

Rik Thijssen, Business Development Manager and Solutions Director, Vitens

a sample it will take 2 up to 5 days to get the data. With a smart system, we can get the signal and info within 1-2 minutes, so we can take the right measures to stop further distribution of water containing contaminants," he explains.
There have been challenges associated with implementing the smart system. One, Thijssen points out, is that everything focuses on the technology, when in fact the really tricky part is figuring out how to handle all of the data for the system—essentially determining how to translate data into a specific action or response.

Another challenge is that, similar to gas and electricity industries, the processes of water supply production and distribution are managed from a production viewpoint. "We bump the water into a distribution network and assume that everything is going well," he elaborates. "What we're learning is that there is a lot of intelligence available within the network if you're able to measure it. It's important for us to be able to get information out of the process, such as pressure, speed, volume, and contamination. And there's a huge need for smart systems in the future to implement within distribution networks. It's a step toward developing smart grid approaches, since smart grids will require smart systems. That is still very much in the very early phase."

The entire water industry is now focusing on Optisense's water quality sensors, notes Thijssen, as well as investigating other options. Smart systems and smart grids are clearly part of the water industry's future. And from Vitens' perspective, Thijssen says it's impossible to believe there isn't a need for smart systems, and not just for drinking water.

One giant value-add associated with water quality monitoring using Optisense's sensors is that it will inevitably reduce costs, because collecting samples and the logistics and infrastructure involved in the process are all quite expensive. Thijssen also expects the sensor technology to become less expensive over time, which will end up leading to reduced overall reduced water quality monitoring costs and also translate into huge energy savings.

Since the global demand for clean drinking water already exceeds the supply available, and demand will only continue to increase, which is not the case in The Netherlands, Thijssen says that methods to monitor and ensure water quality are becoming absolutely critical.

Inserting more technology into our production an distribution network only will be feasible if the business case is positive. Benefits in terms of energy-use, reduce of laboratory costs and increased speed of preventive measures are key. Extracting "intelligence" from our network should beneficial for all our operations 24/7.

Europe benefits from leading R&D projects in miniaturized smart systems. For example, the European Commission is supporting innovation and research in this field, but also creating access to attractive technologies through COWIN. As Géraldine Andrieux Gustin, partner at Yole Finance and coordinator of COWIN, states: "Vitens is a strong leader in innovation. We are working with them to promote attractive smart system technologies that match their expectations and requirements. Initiating new collaborations and partnerships among leading European companies, like Vitens, with innovative solutions providers, will help to strengthen Europe competitiveness."

www.vitens.nl

COWIN Miniaturised Smart Systems

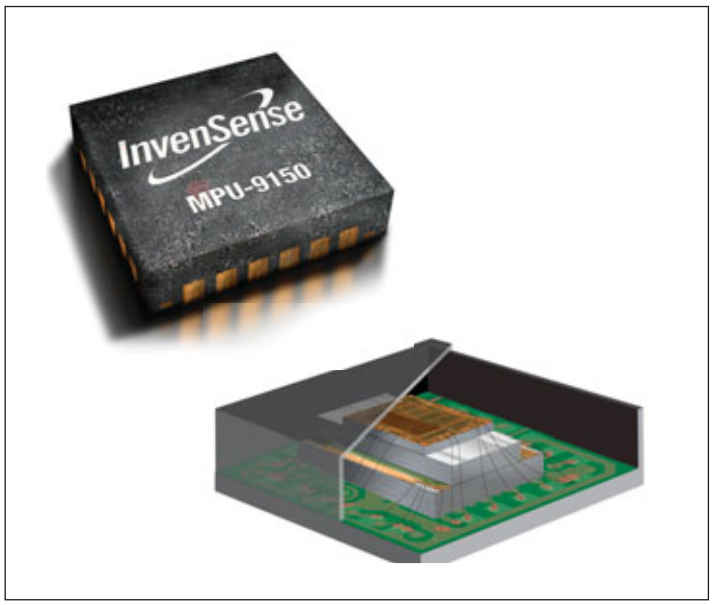
COWIN (www.cowin4u.eu) is a consortium of companies working to strengthen European competitiveness in miniaturized smart systems. The COWIN initiative is dedicated to the commercial exploitation of advanced technologies originating from collaborative European research work.

MEMS

InvenSense® introduces the world's first integrated 9-axis motion tracking device using AKM's 3-axis Compass

MPU-9150 motion tracking device integrates single Chip 6-axis accelerometer and gyroscope with AKM's 3-axis Compass into a 4x4x1mm package.

InvenSense announced the availability of the MPU-9150, the world's first fully integrated 9-axis MotionTracking device for mobile devices, which will be showcased January 10-13 at the 2012 Consumer Electronics Show in InvenSense's meeting room #MP25575 in South Hall 2. Motion-enabled products including smartphones, tablets, game controllers and wearable sensors currently incorporate discrete motion sensor components such as gyroscopes, accelerometers, and magnetometers to deliver 9-axis motion tracking capability. Selection, qualification, and system level integration of these discrete devices adds cost, complexity, and board space, as well as adding complexity to the sensor fusion algorithms and factory testing procedures that ensure optimal performance for consumers. The MPU-9150 product family and accompanied MotionFusion™ firmware is a turn-key solution that eliminates all of these challenges by providing a completely integrated 9-axis solution that is factory tested and calibrated.



MPU 9150 (Courtesy of InvenSense)

InvenSense, in partnership with Asahi Kasei Microdevices Corporation ("AKM"), has integrated the market-leading AK8975 compass with its MPU-6050, the world's only single chip gyroscope and accelerometer, to deliver the industry's first 9-axis MotionTracking device in a small 4x4x1mm LGA package. InvenSense has also incorporated AKM's compass calibration algorithms into its production-proven MotionApps™ software platform featuring 9-axis MotionFusion firmware. The MPU-9150 is compatible with the InvenSense MPU-6050 and MPU-3050 MotionProcessors that have been widely adopted by a majority of smart phone and tablet OEMs.

The MPU-9150 packages the InvenSense single chip 6-axis gyroscope and accelerometer with onboard Digital Motion Processor (DMP) hardware acceleration along with AKM's 3-axis AK8975 E-Compass die to deliver the world's first integrated 9-axis MotionTracking device. The 9-axis MotionFusion™ firmware combines raw accelerometer, gyroscope, and magnetometer sensor output into a single sensor fusion data stream so developers can easily adopt motion interface functionality in their software applications. The MPU-9150 is available for sampling to selected customers with mass production planned for Q1 2012.

www.invensense.com

World's first dual-core gyroscope from STMicroelectronics handles smart user interface and image stabilization in phones and tablets

From page 1

The device addresses, at the same time, motion and gesture recognition and optical image stabilization for sharper mobile-camera photos. "ST's dual-core gyroscope lights two candles with one flame," said Benedetto Vigna, Corporate Vice President and General Manager of ST's Analog, MEMS and Sensors Group. "Instead of using two dedicated sensors with significantly different specifications, phone and tablet manufacturers can now simply integrate a single gyroscope for both gesture recognition and camera image stabilization, which enables more reliable performance, sleeker form factors, and lower costs." Addressing power constraints in battery-operated portable devices, ST's new gyroscope includes power-down and sleep modes and an embedded FIFO (first-in first-out) memory block for smarter power management. The sensor outputs data through independent I2C and SPI interfaces and offers additional digital embedded features, such as configurable low- and high-pass filters. The gyroscope embeds a temperature sensor and can operate with any supply voltage over the range of 2.4 to 3.6V.

ST's L3G4IS dual-core gyroscope is sampling now and volume production is scheduled for Q2 2012, with unit pricing at $3.90 for volumes in the range of 1,000 pieces. For pricing at higher volumes, please contact your ST sales office.

www.st.com

NXP demonstrates ultra-compact, high-precision MEMS frequency synthesizer

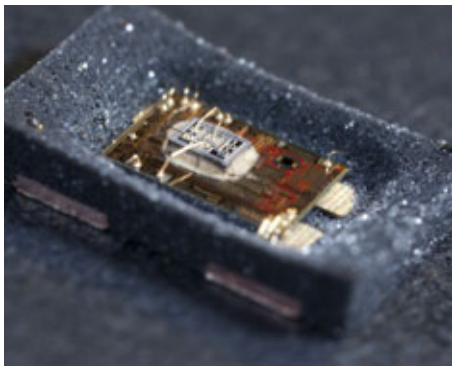
Showcases R&D strength in high performance mixed signal technologies at CES 2012.

NXP Semiconductors (NXP) unveiled its ultra-compact, high-precision MEMS-based frequency synthesizer, which presents a compelling alternative to quartz crystal-based timing devices. NXP's MEMS technology replaces a quartz crystal with a bare silicon die that is more than 20 times smaller than the smallest crystal available today. The MEMS die does not require any dedicated, quartz-like, ceramic or metal-can hermetic package. Instead, it can be merged with other ICs into a standardized, low-cost plastic package. The crystal-free frequency synthesizer is one of several advanced High Performance Mixed Signal technologies which NXP is showcasing this week at CES 2012 (booth CP8).

High-Precision MEMS Resonator Technology

NXP's proprietary resonator technology for MEMS-based timing devices features higher frequency stability, lower timing jitter and lower temperature drift compared to other CMOS oscillators. The first prototype currently released for production enables a highly stable clock reference that is ideal for communications equipment using Gigabit Ethernet, USB, PCI-Express and S-ATA, plus CPU timing, memory and control in consumer electronics devices. Its high level of system integration and very small form factor make it a compact, robust and highly cost-effective alternative to quartz crystal-based timing devices.

www.nxp.com



NXP ultra-compact, high-precision MEMS-based frequency synthesizer (Courtesy of NXP)

MEMS components: two billion Bosch MEMS sensors

Production volumes growing steadily since 1995.

Bosch sets a new production volume record: the technology company has manufactured two billion MEMS sensors since production began 16 years ago. While it took 13 years to produce the first billion, the two-billion mark was recently crossed, just three years later. And production volumes are still growing. Recently, annual production has reached almost half a billion units – more than 1.3 million every working day. Bosch is by far the world leader in the MEMS sensor market. The automotive and consumer electronics industries are the biggest users of these sensors, and Bosch serves them via its Automotive Electronics division and its Sensortec and Akustica subsidiaries.

MEMS for automotive technology

The first market for MEMS sensors was in automotive electronics. Here, the miniaturization of sensors plays only a secondary role. Reliability and robustness are much more important. Bosch Automotive Electronics now produces several hundred vehicle-specific varieties of micromechanical sensor that make cars cleaner and safer, more economical and more comfortable. Each year sees an increase in the number of different varieties and in overall volumes. A modern car features up to 100 of these sensors – and the number is growing. For instance, they are the "senses" for injection systems in gasoline and diesel engines, they are what makes life-saving airbags deploy, and they are an essential part of the ESP anti-skid system.

MEMS for mobile consumer electronics

In consumer electronics, MEMS sensors make mobile devices such as smartphones or laptops safe, convenient, and user-friendly. The demands of this sector are fundamentally different from those of the automotive industry. For devices to be practical, the sensors they contain need to be tiny, and they must use very little power to conserve battery life. But most important of all, sensors must be cost-effective if many millions are to be used. Today's smallest Bosch Sensortec MEMS sensors have an edge length of two millimeters and are less than one millimeter high, and their standby power consumption is even lower than the battery's self-discharge rate. In navigation devices and cell phones with a navigation function, MEMS pressure sensors' measurements of changes in altitude are accurate enough to allow for navigation even within a multi-story building. MEMS acceleration sensors make it possible to use hand movements to control devices, switch the display of content from portrait to landscape format, prevent the loss of data on hard drives when a notebook is dropped, and open up new worlds of experiences to users of new game consoles. The latest development is a triaxial MEMS magnetic field sensor. By measuring the Earth's magnetic field, it can determine the geographic direction. An integrated triaxial MEMS acceleration sensor compensates for errors caused by inclines, allowing this digital compass to maintain its accuracy whatever its position. The possible uses of this fusion of sensors extend far beyond those of a traditional compass and into the realm of augmented reality. A smartphone containing a digital compass could, for example, be used during a sightseeing tour of a city to display information about whichever sight users are pointing their phone at.

MEMS microphones for consumer applications are the specialty of Bosch's Akustica subsidiary. These tiny microphones, measuring just a few millimeters, stand out for their small size, robustness and immunity to high-frequency signals from surrounding circuitry and displays, enabling consumer device manufacturers to integrate two or more microphones for enhanced noise suppression.

The potential for new developments in the consumer market is as high as ever, so we can expect further spectacular innovations based on MEMS components in the years to come.

www.bosch-presse.de

MEMS

VTI Technologies launches CMR3100: World's smallest gyro halves current consumption

With significantly lower current consumption and an even smaller size than any other consumer gyro available on the market, the CMR3100 demonstrates how VTI has once again raised the bar for MEMS miniaturization.

"A year ago we launched the CMR3000, the world's smallest and lowest power consuming gyroscope for consumer electronics, and volume production began in 2011. But this was only the beginning, and we decided to do even better to satisfy the growing gyro demand and rapidly increasing number of motion control applications. The CMR3100 challenges all existing consumer gyros with its small size, high performance and lowest current consumption," announces Mr. Juha Lahtinen, Product Manager at VTI Technologies.

The CMR3100 is optimized to improve the user interface experience of any battery operated mobile device, such as pointers, handsets and tablets. It offers a significant size advantage, as the 3x3mm² dimensions will help designers to fit the CMR3100 inside any mobile device. In addition to its compact size, the CMR3100 surpasses all rivals with its extremely low power consumption. "So far gyros have suffered from high power consumption levels," says Mr. Lahtinen. "The new CMR3100 drops gyro active current consumption to a completely new level: the CMR3100 draws only 2.5mA in active operation. This new power level increases battery life significantly, making motion enabled user interface controlling more appealing to use."

With its 2.5mA current consumption, the CMR3100 offers full digital gyro functionality with flexible configurations, including four measurement ranges and user selectable signal bandwidths with the option of high pass filtering. Host resources can be offloaded by buffering angular rate data into the CMR3100 FIFO. The CMR3100 utilizes unique phase shift sensing technology based on VTI's MEMS expertise and proprietary MEMS processing. The CMR3100 MEMS design ensures very robust and stable operation in real life applications over the product's entire lifetime.

www.vti.fi

Multitest MEMS test and calibration equipment now available for MT9510 pick-and-place test handler

Multitest, a designer and manufacturer of final test handlers, contactors and load boards used by integrated device manufacturers (IDMs) and final test subcontractors worldwide, has shipped the first Multitest MEMS equipment for the MT9510 pick-and-place test handler to an IDM in the U.S.

This new combination is based on the two well-established platforms: MT MEMS and MT9510.

The installation is for MEMS gyroscope test and has already been successfully installed. This setup leverages our long-term MEMS test expertise as well as our thorough understanding of the challenges in DUT handling. Thus, the industry-leading positioning accuracy and tri-temp performance of the MT9510 also is now available for MEMS test.

Multitest already has received additional orders for package conversion kits and another systems.

MT MEMS 9510 (Courtesy of multitest)

www.multitest.com

Affymetrix to acquire eBioscience

eBioscience is involved in flow cytometry for oncology and immunology research reagents, with double-digit historical revenue growth and EBITDA margins of ~ 30%.

Affymetrix announced that it has signed a definitive agreement to acquire eBioscience with a position in flow cytometry and immunoassay reagents for immunology and oncology research and diagnostics. Under the terms of the agreement, Affymetrix will acquire eBioscience for $330 million in cash subject to certain customary adjustments. The transaction is subject to customary closing conditions and is expected to close late in the fourth quarter of 2011.

Affymetrix expects the acquisition of eBioscience to:
• Create significant new commercial opportunities in the key post-genomic applications of immunology, oncology, cell biology, stem cell biology, and diagnostics
• Diversify the Company's revenues to complement its genomics franchise
• Augment the Company's growing business in molecular diagnostics
• Expand the Company's product portfolio to include multicolor flow cytometry reagents and a broad spectrum of reagents for the analysis of cytokines, growth factors and other soluble proteins
• Enhance the operational and new product opportunities for Panomics RNA and protein analysis products
• Leverage the commercial capabilities of both companies to generate new opportunities for growth
The transaction will be funded using a combination of roughly 50% cash-on-hand and 50% committed debt to avoid dilution and maximize value to shareholders. Affymetrix has obtained a fully underwritten senior secured financing commitment in the amount of $190 million (including a $20 million revolving credit facility) led by administrative agent GE Capital, Healthcare Financial Services and including, as lenders, Silicon Valley Bank, CIT Healthcare LLC and CIT Bank. Affymetrix will be required to retain cash-on-hand of approximately $95 million to cover its outstanding convertible debt that can be put to the Company in January of 2013. GE Capital Markets, Silicon Valley Bank and CIT Capital Securities LLC will serve as joint lead arrangers and bookrunners for the transaction.

www.affymetrix.com

Qualcomm forms Qualcomm Life subsidiary to deliver comprehensive wireless solutions for medical devices

Qualcomm announced the formation of a wholly owned subsidiary, Qualcomm Life., which will operate the business formerly known as Qualcomm Wireless Health, as well as the establishment of a $100 million Qualcomm Life Fund, an investment allocation established by Qualcomm and to be managed by Qualcomm Ventures, Qualcomm's investment group.

Qualcomm Life's first offerings, the 2net™ Platform and Hub for use in connection with wireless medical devices, are now available in the U.S. and are designed to interconnect wireless medical devices via cloud-based solutions so that biometric information is easily accessible by device users, their health care providers and caregivers. The platform and hub are intended to transfer, store, convert and display medical device data. The Company also announced that more than 40 customers and collaborators are either integrating with or considering the 2net ecosystem, creating an interoperable and value-enhancing ecosystem of medical devices, mobile medical applications and health services companies. Qualcomm Life is showcasing the 2net Platform, Hub and its integrated customers' devices and applications at the third annual mHealth Summit.

The 2net Platform makes it easy for companies to connect wirelessly to their medical devices so that data can be made available across the continuum of care. Data is obtained from a patient's medical device through several gateways, such as the 2net Hub, a mobile phone, another cellular-enabled device or application programming interfaces that connect to the customer service platform. Once the data is acquired from the medical device, it is encrypted and then stored in the 2net Platform over a cellular connection. After the 2net Platform has received the transmission, patient medical device data is transferred to the manufacturers' interface of choice for the end-user. The 2net Platform is designed to meet HIPAA security requirements and is ISO 13485 certified, meaning it aligns with the quality requirements of U.S. and international regulatory agencies in the health care industry.

The 2net Platform and Hub are individually listed with the FDA as Medical Device Data Systems (MDDS). The 2net Hub plugs into a standard electric outlet and seamlessly connects to integrated partner medical devices via shortwave radio, uploading biometric data over the cellular network to the 2net Platform's data center, where it can be transferred to the manufacturer-chosen interface, for access by the user. The 2net Hub provides a plug-and-play connectivity solution for medical device manufacturers looking for quick and simple solutions to integrate their devices with the health network and it enables health care services companies to kit together disease management solutions based on multiple medical devices that can communicate with one another and with a single user interface for patients, their providers and caregivers.

More than 40 medical device manufacturers, application developers, health care services companies and payors are either integrating with or considering the 2net ecosystem.

The mission of the Qualcomm Life Fund is to accelerate wireless health services and technology adoption. The Qualcomm Life Fund will be part of the existing allocation for Qualcomm Ventures, but will specifically focus on wireless health business initiatives that will help accelerate 2net Platform adoption and the adoption of other wireless health initiatives. The fund size is currently $100 million. Qualcomm Ventures has already invested in five wireless health companies—Sotera Wireless, Telcare, AliveCor, Cambridge Temperature Concepts and WorkSmart Labs—and these investments will be part of the fund. The areas of specific interest to the fund range from personal wellness to disease management. Investments are expected to be made in a variety of areas, including:
• Biosensors or devices for vertically focused applications like chronic disease care, medication compliance and fitness or wellness
• Integrated system providers that provide remote diagnosis or monitoring, or that specialize in independent living
• Software health IT applications
• Health-related informatics/analytics

www.qualcomm.com

Agilent Technologies grows life sciences business with strategic acquisitions in next-generation sequencing and automated analytical solutions for pharma

Halo Genomics, a provider of innovative technology for the rapidly growing next-generation DNA sequencing market, has now joined Agilent.

In addition, Agilent has signed a definitive acquisition agreement with BioSystem Development, a company that creates and manufactures solutions to meet the analytical needs of the life sciences industry.
Both companies are privately held. Financial details were not disclosed.
The acquisition of Halo, based in Uppsala, Sweden, is now final. The asset acquisition of BioSystem Development, headquartered in Madison, Wis., is expected to be completed by the end of the calendar year, subject to customary closing conditions.

Halo Genomics simplifies resequencing
Halo Genomics' technology addresses sequence-selective (or "target enrichment") sample preparation in next-generation sequencing. The company's proprietary HaloPlex technology combines the speed and specificity of polymerase chain reaction-based systems with the scalability and capture-size flexibility of solution-based hybridization formats, thus eliminating the need for library preparation. This fast and simplified target enrichment solution for next-generation sequencing helps to remove bottlenecks associated with targeted resequencing without the use of expensive, dedicated instrumentation or laborious protocols.

Halo Genomics' current HaloPlex technology is offered as a customizable product, using a Web-based design tool called Web Design Wizard. This highly intuitive tool enables users to create designs in less than 10 minutes, at no charge.

Agilent's market-leading SureSelect target enrichment platform was the first commercial in-solution target enrichment offering launched in the market. It has grown to a wide portfolio of products, from all-exon kits to custom designs and preset panels. With its high performance and flexibility, SureSelect has become the most commonly cited target enrichment tool in the market. HaloPlex technology complements SureSelect by providing a high-performance solution for small capture sizes, at a speed that specifically addresses the needs of the desktop sequencing market and clinical sequencing space.

BioSystem Development addresses evolving sample-prep needs for drug development
BioSystem Development currently supplies Agilent's Automation Solutions business with AssayMAP cartridges used in conjunction with Agilent's Bravo liquid-handling platform for protein purification and characterization workflows. The Agilent Bravo automated liquid-handling platform and BioSystem Development's AssayMap technology combine high throughput and best-in-class automated liquid handling with AssayMAP microchromatography technology to enable true chromatographic separation with precision flow control.

As life science discovery and development continues to move toward a better understanding of biological responses to disease, the need for high-throughput, quality protein sample preparation and analysis becomes even more critical. BioSystem Development's AssayMAP platform, based on disposable microchromatography cartridges, enables high-throughput protein purification, characterization and analysis solutions for bioprocess development, biomarker identification and analysis, as well as a variety of other life science research applications. The enabling AssayMAP technology, combined with Agilent's automated liquid-handling capabilities, reduces drug discovery and development time and increases lab efficiency.

www.agilent.com

Tegal invests in medical device developer

Technology targets a nearly $23 billion global wound care market.

Tegal announced it made a $300,000 strategic investment in NanoVibronix which develops medical devices and products that use its proprietary therapeutic ultrasound technology.

This is part of a shift at 39-year-old Tegal, started in earnest in February, away from its history of making semiconductor-production equipment. The first move was into photo-voltaic energy systems.

Israel-based NanoVibronix has patented a surface acoustic wave technology that transmits low-intensity, low-frequency waves through skin and tissue and other soft materials to treat chronic wounds that won't heal.

The global wound care market is estimated to reach $22.8 billion by 2017, according to a recent Global Industry Analysts report Tegal cited. Of that market, about one-third focuses on advanced wound care products. The growth of the market is being fueled by an aging population and rapid rise in diabetes cases.

NanoVibronix's first product is PainShield MD, marketed for the treatment of tendonitis, muscle pain and trigeminal neuralgia. It has gained FDA clearance for the U.S. and CE Mark certification in Europe.

The company also has developed a family of disposable ultrasound devices to treat catheter-associated infection and injury, accomplished by preventing biofilm formation and decreasing the friction between the catheter and body tissues. The UroShield(TM)product is currently CE mark certified, and is the subject of several independent clinical trials being conducted by leading researchers in Europe and the Middle East.

NanoVibronix also has developed a line of catheter based disposable ultrasound devices designed to treat catheter associated injury including pain, discomfort and biofilm formation. The first two products in this category are the UroShield for in-dwelling urinary catheters and NG-Shield for in-dwelling nasogastric tubes.

www.tegal.com

Clearside Biomedical launched with pipeline and technology focused on drugs delivered to the back of the eye

Hatteras Venture Partners leads $4 million Series A financing.

Ophthalmic startup Clearside Biomedical and Hatteras Venture Partners announce that they have launched the company with a $4,000,000 Series A venture financing to fund the initial development of Clearside Biomedical's ocular microinjection platform and initial clinical testing of Clearside Biomedical's lead product for Macular Edema and Retinal Vein Occlusion. Clearside Biomedical's proprietary ocular microinjection platform has been designed to non-surgically deliver drugs to an area of the eye referred to as the suprachoroidal space which allows a novel way of dosing of therapeutics to the tissues of the posterior segment of the eye and retina.

Clearside Biomedical will be led by veteran ophthalmic entrepreneurs Daniel White, President and CEO, and Ben Yerxa, Ph.D., VP, Research and Development, who both have substantial experience in the development and commercialization of products for the eye.

www.clearsidebio.com
www.hatterasvp.com

First successful development in Japan of six-inch diameter silicon carbide single crystal wafer by Nippon Steel

Nippon Steel has successfully developed, at the Advanced Technology Research Laboratories of its Technical Development Bureau, six-inch diameter silicon carbide single-crystal wafer, which is a key material for mass production and spread of high-performance-power semiconductor devices in the future.

SiC wafer, a revolutionary material for realizing low-carbon society:
SiC wafer, as compared with silicon wafers being used in the manufacture of diode, transistor and other semiconductor devices, is capable of suppressing the power-conversion loss to less than half when used in various electronic devices. It is also excellent in both high-voltage and heat resistance properties, making it suitable for high-voltage, high-temperature uses in photovoltaic power generation, automotive (EV, HEV, etc.), and other applications of power electronics.
Broad-based spread of power semiconductors using SiC wafers, having such outstanding features, raises expectations of significant reductions in power loss in many segments and great effects in energy conservation and CO_2 emission reduction.

Six-inch SiC wafer to be the first in Japan. (Courtesy of Nippon Steel)

Effects of 6-inch diameter SiC wafer: Cost reduction in SiC-device manufacture and expansion of application areas:
High-quality SiC wafers now on the market predominantly have 3-inch and 4-inch diameters, and semiconductor-manufacturers' development and commercialization of semiconductors are being made based upon the availability of such SiC wafers. But, there is a very strong need for greater efficiency in device production and also for the development and commercialization of SiC device in the large-current & high-voltage segment, calling for large-aperture SiC wafer to respond to these requirements.
Six-inch SiC wafer is expected to increase the efficiency of SiC device production and to decrease the cost of device manufacture. The outcoming of 6-inch wafer will make it possible to manufacture large-area device for controlling larger current and higher voltage, thus affording to further extend applications to automobiles (EV/HEV, etc.), rapid-transit railways, and other broader areas. Because of this great potential, 6-inch SiC wafer has also been the subject of research and development in the national project of the Ministry of Economy, Trade and Industry, as a next-generation material capable of enhancing industrial competitiveness based on energy-saving technology.

Development of 6-inch Diameter SiC wafer: Overcoming the problem of large diameter by the development of our own growth technologies and operating conditions of equipment:
SiC single crystal is usually manufactured by what is called the sublimation- recrystallization method. In the manufacturing equipment heated to temperatures of over 2500°C, the growth of SiC single crystal is achieved by having vapor sublimated from SiC material in powder form recrystallize on top of seed crystals. In 2007, using our own sublimation- recrystallization method established through long years of R&D efforts, we pioneered in Japan in the development and establishment of the mass production technique for high-quality 4-inch wafer, then starting the sale in 2009fy by Nippon Steel Materials Co., Ltd..
In the sublimation-recrystallization method, the growth of crystals of compounds at ultra-high temperatures put difficulties in process control. The major problem was that with an increase in the size of crystal diameters, there was an increasing tendency for crystals to become susceptible to cracking induced by crystal defects and thermal stress. By accelerating R&D efforts to resolve these problems, and based on the numerical simulation technology, we have developed the mechanism of the ultra-high-temperature equipment and the process operating conditions, suitable for the 6-inch diameter and, by successfully restraining crystal defects and crystal cracks in the growth of large-diameter crystals, succeeded in the development and manufacture of Japan's first 6-inch aperture wafer. It should be added that part of this R&D program was subsidized under the "Novel Semiconductor Power Electronics Project Realizing Low Carbon Emission Society" of the New Energy and Industrial Technology Development Organization (NEDO). From now on, for the establishment of the 6-inch wafer manufacturing technology, we are going to continue efforts to achieve further product stability, to develop technology for productivity improvement, and to pursue the development of the 6-inch SiC epitaxial film manufacturing technology. The aim is to realize the marketing of 6-inch SiC single crystal wafer products, manufactures and sold by Nippon Steel Materials, and help realize the full-scale spread of SiC devices throughout the world.

www.nsc.co.jp

Kyma Technologies (Kyma) expands AlN template manufacturing capacity

Kyma Technologies is pleased to announce expansion of its AlN template manufacturing capacity for both sapphire and silicon based AlN template products.

Market demand is growing for Kyma's AlN templates as a replacement for bare and patterned sapphire substrates by manufacturers of blue, green, and white light emitting diodes (LEDs). Kyma's AlN templates are manufactured using its patented plasma vapor deposition of nanocolumns (PVDNC) technology, which provides LED manufacturers with throughput, cost, and performance benefits.
The expansion of Kyma's AlN PVDNC template manufacturing capacity is based on successful customer qualification of products fabricated in its newest high volume PVDNC reactor, the commissioning of which was announced by the company earlier this year.
LED customer feedback indicates significant improvements in LED brightness, reverse voltage, and electro-static discharge (ESD) yield. Similar benefits have been previously verified using Kyma's lower volume manufacturing tools which the company has used since it was founded in 1998.
Kyma has also qualified the tool for production of PVDNC AlN on silicon wafers. Several customers report improved device properties for both RF and power switching applications. Qualification of this new tool was not a small task. Its design is totally new compared to earlier designs, with key design changes targeting improved tool uptime, shorter process cycle time, and better process repeatability and uniformity.
"We are pleased to qualify our new reactor for both sapphire and silicon based PVDNC AlN template products," said Heather Splawn, Kyma's Chief Operating Officer. "Doing so represents not only a significant boost to our manufacturing capacity; it also validates our improved tool design approach which should prove beneficial for our continued expansion plans going forward."
Kyma believes that the market for nitride semiconductor devices is estimated to be $9B in 2011 and is expected to reach $90B over the long term, including $60B in visible lighting applications and $30B in power electronics applications.

www.kymatech.com

Cree licenses key Doherty amplifier patents to RFHIC

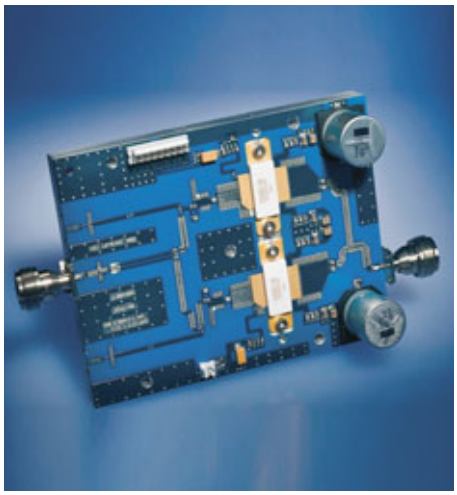
Designed to accelerate telecommunications infrastructure innovations.

Cree announced a nonexclusive worldwide license agreement with RFHIC Corporation that provides access to Cree's pioneering Doherty amplifier-related patents. Cree's RF innovation and novel Doherty architecture can serve as the foundation for advanced 4G base stations that are substantially more efficient than conventional designs. 4G mobile data networks are being deployed around the world to address the burgeoning demand for mobile broadband services.

With Cree's advanced circuits, amplifier efficiency can be increased by as much as five percentage points when conventional silicon LDMOS or GaAs transistors are used. This improved performance can help meet the stringent efficiency and linearity requirements of upcoming 4G LTE base stations, and related wireless systems, that use high peak-to-average ratio signal modulation. When these circuit innovations are implemented using Cree's high-frequency, high-power GaN HEMTs and the latest generation digital pre-distortion systems, the resulting efficiency improvements can be up to a staggering 15 percentage points greater than that achieved by a conventional Doherty amplifier implemented with silicon LDMOS.

The Doherty amplifier is a fundamental RF amplifier architecture invented by William Doherty in 1936 using vacuum tubes. Modern implementations of the Doherty amplifier use power transistors. The fundamental Doherty architecture uses two parallel, equal power split transistors, a carrier amplifier transistor for low level signals and a peaking amplifier transistor for high level signals. The fundamental, equal power split Doherty architecture offers up to a 40 percent improvement in efficiency over traditional non-Doherty Class A/B approaches. Interest in Doherty amplifiers has grown with increased demand for higher-efficiency systems employing digital modulation formats, such as those used for 3G W-CDMA networks. Online applications including video chat and streaming video are driving a need for still higher-efficiency amplifiers to support 4G LTE systems.

The nonexclusive license agreement between RFHIC, headquartered in Suwon, South Korea, and Cree underscores each company's commitment to developing products that enhance the telecommunications infrastructure, while respecting the value and importance of intellectual property.



Cree CDPA21480 Doherty amplifier (Courtesy of Cree)

www.cree.com

Seoul Semiconductor and Philips enter into LED cross-license agreement

Under this arrangement, each party gains access to a substantial part of the other party's patent portfolios for various LED level technologies.

"We are very excited about our Acrich family of products and especially Acrich2, which was introduced in October 2011. Acrich2 eliminates many of the technical barriers associated with traditional high-voltage and AC-driven LED solutions"

"As cross-license agreement details are usually kept confidential, we have agreed not to disclose any of the terms," says John Bae, vice-president of Seoul Semiconductor. "We will continue to focus our attention towards innovative LED technology and driving adoption through quality and value." By entering into this cross-license agreement with Philips, Seoul Semiconductor anticipates expanding its flexibility.

Separately, Seoul Semiconductor has recently introduced Acrich2, the latest versions of its highly successful AC-driven Acriche family. "We are very excited about our Acriche family of products and especially Acrich2, which was introduced in October 2011. Acrich2 eliminates many of the technical barriers associated with traditional high-voltage and AC-driven LED solutions," says John Bae.

Seoul Semiconductor also holds patent agreements regarding LED technology with many leading LED manufacturers.

www.seoulsemicon.com

Sharp expands its portfolio with even brighter LED arrays

The new LED modules from the new Mega Zeni series from Sharp radiate with an efficiency of up to 100 lm/W, a luminous flux of up to 4770 lm and are available with a (typical) CRI value of up to 93. They are thus one of the first industrial LED solutions to replace traditional 50W HID lamps.

The 50W Mega Zeni models from Sharp maintain the same compact dimensions and high CRI values, yet with considerably greater luminous fluxes. These have a luminous efficiency of between 3590 and 4770 lm, a light output of up to 100 lm/W in standard operating mode and a long service life of 40,000 hours at an operating temperature of up to 90°C. The new Mega Zeni modules are designed for a forward voltage of 50V and a forward current of 950 mA, but can also be operated with a standard power source of 1050mA. Other important features include: R9 values of over 85 with CRI values of over 90, MacAdam 3-step Ellipse binning, as well as good colour consistency and colour stability values over time under realistic operating conditions (hot lumen).

The 50W LED array launched by Sharp can thus replace traditional HID lamps in the same performance class. Compared to halogen lamps, the service life of 40,000 h of the LED array is notably longer and has a much lower decrease in brightness over time.

The serial and parallel array of the LED matrix ensures fail-proof operation while offering the lowest possible thermal emission. The flat surface of the ceramic plate and the soldering points already in place make it possible to attach the modules to a suitable heat sink without too much effort or additional connecting material, thus guaranteeing excellent heat dissipation. The electrical wiring also leads to lower thermal stress of the single LEDs, because the heat is evenly distributed and dissipated across the entire surface of the matrix. The round light emitting surface (LES) consists of a total of 160 LEDs, sub-divided into ten parallel-connected rows of sixteen. In the Mega Zeni series, this LES is fitted evenly with LEDs up to the edge, through which the optical design of a lamp can be considerably simplified. The formation of multiple shadows can be avoided, and at the same time it is easier to focus the optics (lens, reflector) on just one light emitting surface. The slim design of the new Mega Zeni, measuring just 24 x 20 x 1.8 millimetres, together with its small LES, also increases design flexibility, as it is possible to produce smaller optics and ultimately smaller lamps.

The colour temperature of the new white light LED lighting components ranges from 2700 to 4000 Kelvin. The CRI values and colour temperatures of the Mega Zeni LED modules correspond to the requirements of the international Energy Star programme. They can be used in new LED lighting systems as well as in places where traditional light sources were previously used.

The new high-power Mega Zenigata (Courtesy of Sharp)

Altogether, the new 50W Mega Zeni LED arrays are characterised by a high quality of light and high performance in a compact form. This makes them suitable for illumination of both streets and objects, as well as for indoor applications that include spot lighting and recessed ceiling light fixtures, etc.

www.sharpsme.com

Crystal IS announces merger with Asahi Kasei

Global manufacturer of compound semiconductor devices acquires unique germicidal LED technology development company.

Crystal IS announced its merger with Asahi Kasei. As a wholly owned subsidiary of Asahi Kasei, the merger will enable Crystal IS to accelerate commercialization of its UVC LEDs leveraging Asahi Kasei's strength's in product engineering and manufacturing excellence. The effective date of the merger was December 28, 2011. Financial details of the acquisition were not disclosed.

"Asahi Kasei Group is committed to bringing to the global marketplace a family of products that contribute to life and living for people around the world. The advances in solid state UVC technology accomplished by Crystal IS will allow for clean and safe disinfection to be introduced into water, air and surface applications in multiple markets", commented Mr. Masafumi Nakao, General Manager of Asahi Kasei's Advanced Devices and Sensor Systems Development Center and responsible for this agreement. The company will organize around its respective strengths, with R&D fundamentals and entrepreneurial business development managed from Crystal IS, and product engineering and manufacturing excellence being led by Asahi Kasei.

"This is a major milestone for our company," commented Dr. Steven Berger, CEO and President of Crystal IS. "Our record LED performance in development has brought interest from global customers and we are eager to create a high-quality product to meet their needs. We recognize Asahi Kasei Group's strength as a successful developer and manufacturer of compound semiconductor devices and are confident that their support will ensure a timely and quality launch of our UVC LED business in the global marketplace."

Crystal IS has been working in a development mode for over ten years, with a history of early support from the Rensselaer Polytechnic Institute in Troy, NY, as well as continued support over the years from both regional and US government. Venture funding in 2004 and 2006 from ARCH Venture Partners, Lux Capital, the Credit Suisse/New York State Common Retirement Fund and Harris & Harris Group, helped the company scale its development, and recent collaborative and strategic support from Asahi Kasei Group and San'an Optoelectronics Company Ltd propelled the company to its current operation.

Crystal IS will continue to be based in New York State.

www.crystal-is.com

The new UV LED curing association

Market leading companies combine efforts to support rapid growth in UV LED applications.

Phoseon Technology, Integration Technology Limited and Lumen Dynamics join together to form the UV LED Curing Association. The new association has been established to address a growing need within the market for current and potential researchers, suppliers, integrators and end users to gain a better understanding about UV LED technology and the significant benefits it brings to numerous applications.

The UV LED Curing Association is focused on providing greater insight into the various UV LED solutions currently in the marketplace, as well as into developing applications which are well suited to the technology. One of the goals of the association is to demonstrate how system developers around the world can effectively integrate UV LED technology into applications and, where possible, achieve better efficiencies while saving costs.

The founders of the association will work together to help define and establish UV LED-based guidelines for UV LED curing applications. This goal will become increasingly important as the adoption rate of UV LED technology continues to rise and the need for industry collaboration becomes critical. The association will also serve as a forum for fostering communication within the UV industry in order to facilitate the exchange of information and enable the entire industry to better address market needs. While complimentary to other existing and well established associations, the UV LED Curing Association focuses only on UV LED curing technology and its applications.

The UV LED Curing Association will welcome new members and any significant contributions pertaining to UV LED Curing in early 2012.

www.phoseon.com

Luminus announces the first single-chip LED replacement for 300W Xenon and 175W metal halide lamps

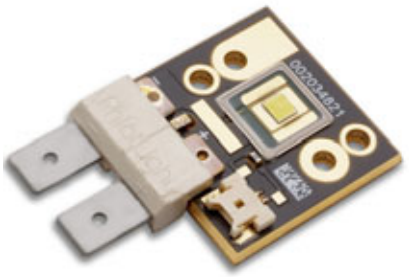
Next Generation CBT-90 LED delivers 25% increase in brightness for medical devices and entertainment lighting.

Luminus Devices has announced that its next generation CBT-90 white LED is breaking new ground by providing equivalent system-level light output within specialty lighting applications, including medical and entertainment lighting, that formerly used 300W Xenon and 175W metal halide lamps. The CBT-90, consisting of a single 3mm x 3mm chip mounted on a metal core PCB, is now 25% brighter and capable of producing more than 2,200 lumens at its top end input current.

The story in entertainment lighting is similar as spot and wash fixtures are converting from specialty high intensity discharge lamps such as 175W metal halide to the CBT-90. "We expect the new generation CBT-90, featuring our industry leading Big Chip technology, will open new doors for the adoption of LEDs in some of the world's most challenging lighting applications that have been, until now, unable to reap the benefits of solid state lighting," said Chuck DeMilo, Global Director of Product Marketing for the Lighting Business Group at Luminus Devices.

Luminus is now accepting orders and shipping the new high performance CBT-90 from stock.

www.luminus.com



Luminus devices CBT-90 (Courtesy of Luminus)

OSRAM Opto Semiconductors (OSRAM) expands its leading position in high-quality, thin-film LEDs

Success in research: First gallium-nitride LED chips on silicon in pilot stage

Researchers at OSRAM have succeeded in manufacturing high-performance prototypes of blue and white LEDs, in which the light-emitting gallium-nitride layers are grown on silicon wafers with a diameter of 150 millimeters. The silicon replaces the sapphire commonly used until now without a loss in quality. Already in the pilot stage, the new LED chips are to be tested under practical conditions, meaning that the first LEDs on silicon from OSRAM could hit the market in just two years.

"Our investments in years of research are paying off, because we have succeeded in optimizing the quality of the gallium-nitride layers on the silicon substrates to the point where efficiency and brightness have reached competitive market levels. Stress tests we've already conducted demonstrate the high quality and durability of the LEDs, two of our traditional hallmarks," says Dr. Peter Stauss, project manager at OSRAM. The company has acquired comprehensive expertise over the last 30 years in the process of artificial crystal growth (epitaxy), the foundation for this milestone in the development of new manufacturing technologies.

The German Federal Ministry of Education and Research funds these activities as part of its "GaNonSi" project network.

www.osram.com

LED maker Bridgelux closes in on 100% revenue growth in 2011

LED chip and lighting array maker reckons that market conditions and its recent achievements have positioned it for additional growth in 2012.

The firm's revenue grew as much as 792% from fiscal 2006 to 2010, and additional 100% year-on-year growth is expected by the end of 2011. The firm adds that, in the past year, it raised $76m in additional funding, added several noteworthy customers, introduced innovative products and technology, and received numerous industry awards.

The LED luminaire market is poised for dramatic expansion, with analysts predicting compound annual growth rate (CAGR) of 40% through 2015 (according to IMS Research's report 'The World Market for Lamps & Luminaires in General & Exterior Lighting' released in July). Recognizing its potential, prominent financial and strategic investors have invested $76m in Bridgelux in the past year. "We're seeing significant increases in adoption and demand for LED lighting in many sectors and regions," says CEO Bill Watkins. "In fact, we've experienced a 300% unit volume growth in LED array sales in the past year alone, dramatically increasing our market share while also delivering well over 100 million high-power LED chips to enable new and innovative product designs," he adds. "Going forward, Bridgelux is extremely well positioned to meet rising demand: we're well funded, have some of the industry's most innovative technologies and product designs, and have established strong strategic partnerships…"

To read the complete article, please go on www.semiconductor-today.com

www.semiconductor-today.com

NeoPhotonics doubles PIC production capacity

NeoPhotonics is in the process of doubling capacity for production of narrow-linewidth tunable lasers using a proprietary packaging technology.

NeoPhotonics offers these lasers in an OIF MSA standard ITLA form factor. The products are compact and widely tunable laser assemblies designed to be optimized for narrow linewidth with up to 35mW launch power in the C band and 20mW in the L band. The products' narrow linewidth and frequency stability are enabled by a NeoPhotonics phase-shifted DFB laser chip and a proprietary packaging technology, while the ITLA assembly also includes an integrated wavelength locker as well as industry standard electrical and firmware interfaces. The narrow linewidth tunable laser has been available to customers since April 2010 and has become one of the leading lasers used in coherent systems. "Our narrow linewidth tunable lasers are key components for coherent transport in telecommunications systems, which we believe is rapidly emerging as a dominate architecture for 40 and 100 Gbps networks," said Tim Jenks, CEO of NeoPhotonics. "We believe there is currently a shortage of these critical products while demand continues to grow. We are in the process of more than doubling our production capacity of narrow linewidth tunable lasers with minimal expected additional capital expenditures. We anticipate our added capacity to be on-line in the first quarter of 2012."

VOA Multiplexer / DeMultiplexer (VMUX / VDMUX) (Courtesy of NeoPhotonics)

www.neophotonics.com

Collaboration between A*STAR, GLOBALFOUNDRIES and Alcatel-Lucent to bring advanced photonics chips to market

The Institute of Microelectronics (IME), a research institute of the Agency for Science, Technology and Research (A*STAR), has announced plans to commercialize key innovations in silicon chips designed to support high speed, high bandwidth optical communications.

These chips were developed as part of IME's Silicon Photonics research platform.

Further enhancements to the chips were enabled, through strategic collaboration with Alcatel-Lucent Bell Laboratories - one of the world's leading optical communications innovators.

Working with a global semiconductor foundry, GLOBALFOUNDRIES, IME and Alcatel-Lucent plan to bring innovative silicon component designs from research to commercial fabrication readiness within the next few years. These scalable and cost-effective silicon building blocks will be made accessible to photonics developers to create new products and propagate the benefits of dramatically increased data rate and processing power, at a reduced cost to the industry. The collaboration leverages Bell Labs' extensive design experience and leading-edge research capability with the development expertise of IME to create a library of silicon photonics devices with the requisite process control monitors (PCMs) and process design kits (PDKs). These photonic devices, ranging from next-generation high-speed optical modulators, germanium photo-detectors, waveguides and other common photonic circuits found in networking equipment will be offered as a result of this collaboration.

"This milestone reflects the rapidly growing commercial significance of silicon photonics," cited Prof. Dim-Lee Kwong, the Executive Director of IME. "IME will continue to enhance our Silicon Photonics technology platform and work with our strategic partners to bring the benefits of silicon photonics to the industry worldwide." "I'm delighted that IME and GLOBALFOUNDRIES are working with Bell Labs to accelerate the development of the exciting silicon photonics technology, which holds such promise for use in communication systems," said, Alice White, Chief Scientist, Alcatel-Lucent Bell Labs. "Bell Labs has been actively engaging leading microelectronics research institutes in silicon photonics research - it is exciting to see these efforts moving forward into the commercial realm."

"GLOBALFOUNDRIES is excited to partner with IME to deliver photonics solutions to customers such as Alcatel-Lucent. Through innovative design kits and advanced materials fabrication techniques, the GLOBALFOUNDRIES - IME team intends to expand the photonics design and manufacturing portfolio to our existing and future customers who are looking for reliable high-volume manufacturing service," said Raj Kumar, Senior Vice President for GLOBALFOUNDRIES' 200mm Business Unit and General Manager for Singapore.

www.a-star.edu.sg

Newport Corporation enters into agreement to acquire ILX Lightwave Corporation

Acquisition will expand capabilities in photonics test and measurement

Newport Corporation reported that it has entered into a definitive agreement to acquire ILX Lightwave Corporation ("ILX"), a market and technology leader in high-performance test and measurement solutions for laser diodes and other photonics components. ILX, headquartered in Bozeman, Montana, expects 2011 revenues of approximately $8 million. The company is profitable, and Newport expects the acquisition to be accretive to its earnings immediately after closing. The consideration to be paid by Newport in the transaction is $9.3 million in cash, subject to adjustment based on ILX's net assets at closing. The transaction is expected to close in January 2012.

Robert J. Phillippy, Newport's President and Chief Executive Officer, said, "The addition of ILX, together with our recent acquisition of Ophir Optronics, will further enhance Newport's position as the industry's leading provider of photonics instrumentation and measurement equipment. With our expanded portfolio of products and technology, we will offer our customers solutions to the most demanding applications in both the scientific and industrial markets."

ILX (www.ilxlightwave.com) offers a broad range of photonics instrumentation, including laser diode controllers and drivers, temperature controllers, current sources, optical power and wavelength meters, semiconductor laser/LED burn-in, test and characterization systems, and fiber optic sources. ILX distributes its products in North America, Europe and Asia, and its customers include Fortune 500 corporations, national research laboratories, and government and educational institutions, many of whom are already customers of Newport for other products. ILX will become a wholly owned subsidiary of Newport Corporation, and will operate as part of Newport's Photonics and Precision Technologies Division.

Dr. Larry Johnson, ILX's President, Chief Executive Officer and Founder, said, "I have known Newport for many years, and have great respect for the company and its management. I believe that joining Newport will provide ILX with new opportunities to increase revenues and enhance our product offerings. Newport's expansive global sales and distribution channel will immediately increase the exposure of our products, and collaboration with Newport's technical team will enable us to accelerate the development of a wide range of next generation photonics instrumentation."

www.newport.com

Soitec purchases manufacturing facility in San Diego to locally produce CPV modules for the U.S. renewable energy market

From page 1

Soitec's investment includes the acquisition of a 176,000-square-foot manufacturing center on 14.8 acres of land located within the campus of Sony Electronics' U.S. headquarters. Soitec will begin extensive upgrade of the facilities in early 2012 and plans to have its first phase (100 MW) production line operational by the fourth quarter of 2012. M+W U.S, a subsidiary of the M+W Group, has been selected as general contractor for the facility construction work.

Situated inside the San Diego factory will be the joint venture Reflexite Soitec Optical Technology, previously announced. This new company will operate its own 100-person manufacturing operation within the facility developing and manufacturing leading-edge silicone-on-glass Fresnel lens plates used in Soitec's CPV modules.

Soitec's highly efficient, durable CPV systems have enabled the company to plan for more than 300 MW in solar power plant projects throughout the Southwest U.S. including 155 MW in power purchase agreements with San Diego Gas & Electric, approved by the California Public Utilities Commission (CPUC). Additionally, a power purchase agreement for up to 150 MW for the Imperial Solar Energy Center West project, another project that currently proposes to use Soitec's CPV technology, was also approved by the CPUC on December 15. Tenaska Solar Ventures, an affiliate of independent energy company Tenaska, is developing that project.

Soitec's CPV modules to be manufactured in San Diego have performance characteristics which are specifically designed to benefit large-scale utility power plants to deliver higher efficiency and lower cost of electricity.

www.soitec.com

ABB invests in utility-scale concentrating photovoltaic solar power company GreenVolts

Strategic stake in US-based GreenVolts strengthens ABB's focus on renewables and confirm increasing interest in CPV technology.

ABB, announced that it has agreed to invest approximately $20 million as part of a $35 million financial round, for a substantial minority stake in California-based GreenVolts.

Through the investment ABB gains access to GreenVolts' proprietary technology and can now offer turnkey solutions for concentrating photovoltaic power plants in addition to its current capabilities in solar thermal and conventional photovoltaic power plants. GreenVolts' CPV system is more efficient than traditional photovoltaic and thin-film modules. By optimizing and integrating field-proven, high-performance components such as proprietary optics and tracking technology into a complete system, GreenVolts delivers energy yields that can be 30 to 40 percent higher than traditional panel-based systems.

GreenVolts solar systems are designed to meet the operational requirements of a wide range of applications for utilities and industries as well as commercial, agricultural, and public sector customers. The technology complements ABB's recent acquisition of a stake in Novatec Solar, a leading provider of Linear Fresnel concentrating solar power technology.

www.abb.com

Pufin Group takes over cell production facilities of the Solland Group

Solland Solar Group and Pufin Group have reached an agreement about the sale of Solland Solar's activities in the field of cell manufacturing to Pufin Group.

Pufin Group is involved in the PV industry through its affiliates EL.ITAL. and ELIFRANCE.

The agreement will enable Solland Solar to fully focus on its Sunweb® module and PV system business. At the same time Pufin Group will get a stronger position in the value chain, by integrating cell production into its existing PV manufacturing assets. Solland Solar Cells is one of the leading European polycrystalline cell producers, with a yearly output of up to 130 MW. The two companies already have a close relationship as the Solland Solar Group is the main cells supplier to both EL.ITAL. and ELIFRANCE. Pufin Group, through Solland Solar Cells, will continue cell production at the same location not only for ELITAL and ELIFRANCE, but the group will also try to increase its market share both in Europe and in non-European countries. At the same time Pufin Group will supply Solland's proprietary Sunweb cells to Solland for the production of its high efficiency Sunweb modules.

www.pufin.it

Back-contact module technology from Solland Solar and SCHOTT Solar receives VDE certificate

The German association for electrical, electronic and information technologies (VDE) has certified the back-contact module developed jointly by Solland Solar and SCHOTT Solar in accordance with the IEC standard 61215 ed.2 & 61730.

This is thus the first fully certified, mass manufactured module whose solar cells are manufactured on the basis of Metal Wrap Through (MWT) technology, are interconnected by a special back-contact foil located on the backside.

The back-contact module is a premium product that distinguishes itself from conventional module technologies thanks to the extremely clever way in which the backsides of the modules are connected to enable much better power flow. The backside contacts even minimize shadowing and resistive losses. In the highest performance class, for instance, the 60 multicrystalline cells contained in each module generate an energy yield of up to 260 W peak and offer efficiency of 16.4 percent.

This premium product also sets a new standard for attractive appearance. The unique visual appearance of the cells in combination with the black backside foil and frame produce a rather sophisticated and homogeneous overall design. The module is particularly well-suited for the roofs of private homes, due to the fact that it generates a high output per m².

The next step calls for Solland Solar to begin marketing the initial volumes produced during pilot manufacturing under the name Solland Sunweb®.

www.sollandsolar.com

Interdigitated back-contact silicon solar cells above 23% efficiency

Imec together with its silicon photovoltaic industrial affiliation program partners Schott Solar, Total, Photovoltech, GDF-SUEZ, Solland Solar, Kaneka and Dow Corning, have demonstrated an excellent conversion efficiency of 23.3% on interdigitated back-contact silicon solar cells.

Interdigitated back contacts are introduced to increase the conversion efficiency of crystalline silicon solar cells and allow for further reduction of the cell thickness, simplification of module fabrication and improved aesthetics of the final solar cell modules. Imec has developed a high-efficiency baseline process for small-area IBC cells within its multi-partner silicon solar cells industrial affiliation program that aims at increasing the efficiency well above 20% and decreasing the cost of silicon solar cells beyond the current state-of-the-art.

Key aspects of the newly developed small-area (2x2 cm2) IBC Si solar cells are the n-type base float-zone (FZ) silicon substrates, a random pyramid texture, a boron diffused emitter, phosphorous diffused front- and back surface fields, a thermally grown silicon dioxide for surface passivation, a SiN single layer anti-reflective coating, lithography based patterning and Aluminum metallization. The realized IBC cells achieve a designated area conversion efficiency of 23.3% (Jsc = 41.6 mA, Voc=696 mV, FF=80.4%), certified by ISE-Callabs.

www2.imec.be

Soitec acquires Altatech Semiconductors

Soitec announced having entered into a letter of intent which for the acquisition by Soitec, before the end of January 2012, of all of the outstanding shares composing the capital of Altatech Semiconductor, a French company (Altatech).

Altatech is a company that specializes in the development of highly efficient technologies and equipment.

Its integration within Soitec shall entitle the latter to accelerate its development roadmap in the electroluminescent diodes area, as well as in the concentrating photovoltaic systems, especially the Plug&Sun™ mini-trackers systems.

For the purposes of this transaction, Altatech's base value was set to 15 million Euros, in line with the independent appraisal carried out at Soitec's request by Oddo Corporate Finance. The acquisition of all of the shares composing the capital of Altatech shall be financed partly in cash and partly using Soitec stock. Selling shareholders shall be bound by certain holding requirements for the portion of the purchase price to be paid in Soitec stock.

www.soitec.com

ADVANCED PACKAGING

LAM Research to acquire Novellus Systems for $3.3 billion

From page 1

The combined company will be well-positioned to lead the industry through critical technology transitions including 3D structures in advanced logic and NAND memory as well as the scaling to 450 mm wafers.

The combined company will also be positioned to grow revenue at a faster rate than either company could achieve individually by:

- Advancing technical benefits from owning adjacent technologies;
- Optimizing and accelerating collective development of next-generation tools; and
- Further developing complementary customer relationships.

Under the terms of the agreement, Novellus stockholders will receive 1.125 shares of Lam Research common stock for each share of Novellus that they own, in a tax-free exchange. Based on the closing price of Lam's stock on December 14, 2011, the transaction values Novellus at a price of $44.42 per common share. Upon closing, Lam and Novellus stockholders will own approximately 59 percent and 41 percent, respectively, of the combined company.

Lam's $1.6 billion stock repurchase program will be funded from the combined company's existing onshore cash and on-shore cash generation. Assuming completion of the stock repurchase program, this will essentially result in a total financial impact on the company as if the deal were structured with approximately 48 percent cash.

Martin Anstice, who, as previously announced, will assume the position of CEO of Lam Research from Steve Newberry effective January 1, 2012, will continue as CEO following the close of the transaction. He is currently Lam's president and chief operating officer. Timothy Archer, chief operating officer of Novellus, will become chief operating officer of the combined company; and Ernest Maddock, chief financial officer of Lam, will remain chief financial officer. The board of directors of Lam will add four new directors jointly nominated by Lam and Novellus.

www.novellus.com

Elpida starts sample shipments of wide IO memory

Elpida Memory announced that it has begun sample shipments of 4-gigabit Wide IO Mobile RAM™ and 4-gigabit DDR3 Mobile RAM (LPDDR3).

Wide IO Mobile RAM is a next-generation mobile memory chip that provides solutions to opposing needs for faster speed and lower power consumption. The rising performance of smartphones and tablet devices in recent years has led to demand for faster DRAMs (DRAMs with greater data transfer rates), but in turn this has generated concerns about increases in system power consumption.

The solution is that Wide IO Mobile RAM expands the I/O width by using x512-bit, a data width that is more than 10 times larger than the width for existing DRAMs, which enables a data transfer rate of 12.8 gigabytes per second (GB/s) per chip while operating at a low speed of 200MHz. The reduced DRAM speed results in approximately 50% less power consumption compared with DDR2 Mobile RAM (LPDDR2), currently the leading DRAM choice for mobile devices, configured at the same transfer rate.

LPDDR3 is another of Elpida's new next-generation mobile memory. A single LPDDR3 has a data transfer rate of 6.4 GB/s or 12.8GB/s based on a two-chip configuration for high-end mobile devices. When compared with LPDDR2 on an identical speed basis, LPDDR3 consumes roughly 25% less power, enabling it to extend the operating time of smartphones and tablet devices.

Now that 4-gigabit Wide IO Mobile RAM and 4-gigabit DDR3 Mobile RAM (LPDDR3) sample shipments have started. Elpida plans to begin volume production in 2012. Also, both chips will be used to develop two-layer 8-gigabit and four-layer 16-gigabit high-density packages for addition to the company's product line-up.

www.elpida.com

Rambus and ITRI collaborate to develop interconnect and advanced 3D packaging technologies

Rambus announced it is engaging with the Industrial Technology Research Institute (ITRI) in Taiwan on the development of interconnect and 3D packaging technologies.

In addition, Rambus has joined the Advanced Stacked-System Technology and Application Consortium (Ad-STAC), a multinational research association led by ITRI. Rambus and ITRI will work together as members of Ad-STAC on the development of system integration using silicon interposer technology. The collaboration combines ITRI's strength in manufacturing and advanced process technologies as well as the strong system, package and signaling design experience of Rambus.

Initially, the two companies will work together on the development of system integration using silicon interposer technology.

"Collaborating with leading research institutions, such as ITRI, is an effective way for us to advance 3D packaging technology for the broader manufacturing community," said John Kent, vice president of Technology Development at Rambus. "Combining Rambus experience in high-performance system design and ITRI package research experience can enable new breakthroughs in 3D IC system integration and design."

"This collaboration brings together Rambus' advanced high-bandwidth and low-power device designs and ITRI's know-how in fabrication with our 12-inch equipment," said Dr. Ian Chan, VP and general director of the Electronics and Optoelectronics Research Laboratories at ITRI. "We expect to achieve some compelling and useful results through our joint efforts."

www.rambus.com

PTI purchased NEXX plating tools for advanced packaging applications

NEXX Systems (NEXX) sold a 300mm Stratus electrochemical deposition system to Powertech Technology (PTI).

The Stratus will be used for copper pillar bumps and re-distribution layers in advanced packaging applications that enable portable intelligent devices, such as smart phones and tablet PCs. The Stratus platform is also being evaluated as part of PTI's aggressive TSV commercialization program. Recently, PTI has partnered with major semiconductor companies around the world to develop and bring to market faster, more efficient devices. PTI is renowned for the assembly of memory devices. Commenting on their partnership with NEXX, PTI's Senior General Manager, Scott Jewler noted, "NEXX Systems' Stratus will enable PTI to provide premiere technology solutions, such as copper pillar bumps passing the benefits of a flexible system with exceptional costs of ownership onto our customers as cost savings."

NEXX's CEO Tom Walsh noted, "I believe PTI is leading the industry in making thinner, lighter and more efficient electronic devices by implementing advanced packaging solutions in high volume production. NEXX is proud to be part of the exceptional quality standards at PTI's world class manufacturing facilities."

www.nexxsystems.com

UCLA researchers demonstrate fully printed carbon nanotube transistor circuits for displays

Since the invention of liquid crystal displays in the mid-1960s, display electronics have undergone rapid transformation.

Researchers from Aneeve Nanotechnologies, a startup company at UCLA's on-campus technology incubator at the California NanoSystems Institute (CNSI), have used low-cost ink-jet printing to fabricate the first circuits composed of fully printed back-gated and top-gated carbon nanotube–based electronics for use with OLED displays.

In this innovative study, the team made carbon nanotube thin-film transistors with high mobility and a high on–off ratio, completely based on ink-jet printing. They demonstrated the first fully printed single-pixel OLED control circuits, and their fully printed thin-film circuits showed significant performance advantages over traditional organic-based printed electronics.

This distinct process utilizes an ink-jet printing method that eliminates the need for expensive vacuum equipment and lends itself to scalable manufacturing and roll-to-roll printing. The team solved many material integration problems, developed new cleaning processes and created new methods for negotiating nano-based ink solutions.

For active-matrix OLED applications, the printed carbon nanotube transistors will be fully integrated with OLED arrays, the researchers said. The encapsulation technology developed for OLEDs will also keep the carbon nanotube transistors well protected, as the organics in OLEDs are very sensitive to oxygen and moisture.

The technology incubator at the CNSI was established two years ago to nurture early-stage research and to help speed the commercial translation of technologies developed at UCLA. Aneeve Nanotechnologies LLC has been conducting proof-of-concept work at the tech incubator with the mission of developing superior, low-cost, high-performance electronics using nanotechnology solutions that bridge the gap between emerging and traditional platforms.

Ink-jet-printed circuit. (Courtesy of UCLA)

newsroom.ucla.edu

Vorbeck Materials closes series 3 round of financing

Vorbeck Materials announced that it has completed a fully subscribed series 3 financing, which closed December 9, 2011, with a total value of $10 million. Black Powder and Fairbridge Venture Partners led the round, which included 15 additional investors.

Vorbeck uses a new materials technology, graphene, to enable transformational innovations in industries ranging from consumer goods to aerospace. Vorbeck is the first company in the world with graphene-based products in the market. Vorbeck is only company to receive EPA approval for the commercial production and sale of graphene-based products.

Vorbeck will use the financing to expand sales of Vor-ink™, Vorbeck's graphene-based conductive ink for printed electronics. Vor-ink™, the world's first commercial product using graphene, is enabling new mass-market applications in highly conductive and flexible electronics for security, medical diagnostics, building infrastructure and aerospace.

Vorbeck and MeadWestvaco, the global packaging company, recently won the IDTechEx Product Development Award for the best new product in printed electronics for their work developing the Siren™, anti-theft packaging incorporating Vor-ink™ circuitry. Packages using the Siren™ device are on the shelves of major retailers today.

www.vorbeck.com

Graphene mixer can speed up future electronics

Researchers at Chalmers have for the first time demonstrated a novel subharmonic graphene FET mixer at microwave frequencies.

The mixer provides new opportunities in future electronics, as it enables compact circuit technology, potential to reach high frequencies and integration with silicon technology.

A mixer is a key building block in all electronic systems – a device that combines two or more electronic signals into one or two composite output signals. Future applications at THz frequencies such as radar systems for security and safety, radio astronomy, process monitoring and environmental monitoring will require large arrays of mixers for high-resolution imaging and high-speed data acquisition. Such mixer arrays or multi-pixel receivers need new type of devices that are not only sensitive but also power-efficient and compact.

The ability in graphene to switch between hole or electron carrier transport via the field effect enables a unique niche for graphene for RF IC applications. Thanks to this symmetrical electrical characteristic, the researchers at Chalmers have managed to build the G-FET subharmonic resistive mixer using only one transistor. Hence, no extra feeding circuits are required, which makes the mixer circuit more compact as opposed to conventional mixers. As a consequence, the new type of mixer requires less wafer area when constructed and can open up for advanced sensor arrays, for example for imaging at millimetre waves and even sub millimetre waves as G-FET technology progress.

In addition to enabling compact circuits, the G-FET provides potential to reach high frequencies thanks to the high velocity in graphene, and the fact that a subharmonic mixer only requires half the local oscillator (LO) frequency compared to a fundamental mixer. This property is attractive especially at high frequencies (THz) where there is a lack of sources providing sufficient LO-power.

Moreover, the G-FET can be integrated with silicon technology.

www.chalmers.se

ABB to acquire Newave to broaden offering in UPS

ABB and Newave agreed in a full cash deal. Through this acquisition, ABB targets a stronger position in the UPS market.

ABB and Newave Energy have agreed that ABB will acquire Newave in an all-cash transaction valued at approximately CHF 170 Million (USD 183 Million). The deal will strengthen ABB's position in the power control and quality market and provide Newave with significant growth opportunities outside its traditional markets in Europe. Newave, headquartered in Quartino, Switzerland, generated a net income of CHF 8.1 Million (USD 8.73 Million) on sales of CHF 80.6 Million (USD 87 Million) in 2010. Newave has established a strong market position in Europe as an innovative and successful manufacturer of UPS systems with a focus on the development and production of power protection technology, as well as on technical consultancy, maintenance and service packages. ABB plans to integrate Newave in its Discrete Automation and Motion division and develop Quartino to become a main location for ABB's UPS systems. ABB will provide a fast, global exposure for Newave's UPS systems and will ensure that Newave can increase the high innovation rate of its current product range.

The global UPS market offers interesting growth opportunities, mainly in the areas of datacenters, industry and infrastructure. ABB will expand into a $6 billion to $7 billion market and close a white spot in core datacenter electrification and industrial power quality. Newave is active in the medium- and high-power UPS range, which is the most attractive segment since it represents 50 percent of the overall UPS market with a yearly growth rate of 6 to 10 percent. ABB has a strong presence in industrial markets and already offers industrial UPS products. Combining ABB's and Newave's market presence and technological expertise will allow ABB to offer a complete range of UPS solutions to industrial, commercial and datacenter clients with a comprehensive alternating current (AC) and direct current (DC) solutions portfolio, reinforcing its strategic differentiation.

www.abb.com

Eltek restructures under single brand name

Eltek concludes the earlier announced reorganization, with the merger of Eltek Valere into the corporate Eltek brand creating a single operational organization. The subsidiary Eltek Valere changes name to Eltek.

The reorganization was announced in September, when it was also announced that Colin Howe took over the responsibilities as CEO of Eltek ASA. For all practical purposes the operations in the Eltek ASA and the subsidiary Eltek AS has now been gathered in one unit.

The operations and product lines that became part of the company through the acquisition of Valere Power in 2007 remain important parts of Eltek, in particular in the North-American markets.

Now we are all gathered under one, strong, global brand, something which strengthens our sales- and marketing efforts in the international market. The reorganization has not comprised Nera Telecommunications Ltd, which is 50.1 percent owned by Eltek and separately listed on the Singapore Stock Exchange.

www.eltek.com

Satcon announces restructuring initiative as part of long-term strategic plan

Satcon Technology announced a set of cost reduction initiatives as part of the company's strategic plan.

Satcon close its Canadian manufacturing facility, and is currently working to partner with a contract manufacturer to maintain Ontario production capacity for Satcon solutions to continue to satisfy Ontario's feed-in tariff requirements. In addition, Satcon has restructured its office and warehouse infrastructure in Europe, China and the United States in order to better align with market conditions and further reduce costs.

As part of the organizational restructuring, the company will reduce its workforce by 140 employees worldwide, or approximately 35%. This reduction, combined with the closure of the Canadian facility, will result in charges of approximately $2.8 million to $3.0 million. The majority of the charges are expected to occur in the fourth quarter of 2011, with the remainder taking place in the first quarter of 2012. The company expects ongoing savings of approximately $15 million to $17 million annually once all actions are implemented by the second quarter of 2012.

In addition to the restructuring charges, the company is currently analyzing its inventory and certain non-cancellable supplier-held inventory, and will write down the value or take a charge to reflect current market conditions. This will result in expected charges during the fourth quarter of 2011 of approximately $20 million to $26 million, with the majority of the charges comprised of non-cash items. These charges were not anticipated when the company provided its fourth quarter 2011 guidance

investor.satcon.com

Quantum and SB Electronics form technology partnership in hybrid electric drive systems

Quantum Fuel Systems Technologies Worldwide and SBE announced a technology partnership between the two companies. As part of this partnership, SBE is providing a novel integrated capacitor/bus structure design solution for Quantum power electronics for automotive applications.

The SBE integrated module is an innovative approach which offers many benefits such as higher performance, weight reduction, smaller packaging and total system cost savings.

"Quantum continues to optimize and improve the efficiencies of our advanced electric drive-train products. We expect the SBE integrated capacitor/bus structure to enable substantial packaging and performance advantages in our next generation electric and hybrid-electric drive systems," said Alan Niedzwiecki, CEO Quantum Technologies.

"SBE is pleased that Quantum Technologies is one of the first implementers of our advanced integrated capacitor/bus designs. We are proud to be partnering with a leading technology drivetrain provider like Quantum," said Ed Sawyer, President and CEO for SBE. Jon Bereisa, Senior Technical Advisor for SBE, Inc. added: "The electrification of the automobile has successfully reached the technical feasibility stage today. Cost improvements are needed to reach the commercial viability stage for mass market acceptance. Cost must be attacked everywhere. The SBE power ring capacitor technology is a major enabler for power electronics design simplification, up-integration, and higher temperature operation to significantly drive down the cost while improving performance."

www.qtww.com

American Superconductor Corporation (AMSC) provides update on its litigation against Sinovel

Commercial arbitration between AMSC and Sinovel Wind Group will began on Monday, January 9.

Dejan Karabasevic, a former AMSC employee, has already been imprisoned in Austria for intellectual property theft. Karabasevic has admitted to colluding with Sinovel to steal important intellectual property related to AMSC's wind turbine control systems.

In addition to the contractual and civil cases described above, AMSC also has provided Beijing law enforcement with substantial evidence proving the criminal conduct of Sinovel employees and has requested that police take criminal action. This hearing with the Beijing Arbitration Commission is the first in a series of cases, which includes the biggest intellectual property claim ever made in Chinese courts. AMSC has filed civil lawsuits and an arbitration case in the Chinese courts valued at more than US$1.2 billion. These cases stem from Sinovel's contractual breaches in March 2011 and AMSC's discovery of intellectual property theft in June 2011.

Sinovel's international business has been significantly affected by this ongoing dispute. In late November, it was reported that Mainstream Renewable Power of Ireland had halted its 1 gigawatt (roughly US$1 billion) wind turbine framework agreement with Sinovel as a direct result of the intellectual property theft.

www.amsc.com

Conergy about to sell inverter subsidiary, voltwerk electronics, to Bosch

Conergy is about to sell its inverter subsidiary voltwerk electronics to the Bosch Group, which has its headquarters in Stuttgart. The relevant contract has been signed by the two parties, with the purchase price being kept confidential by mutual agreement.

With a workforce of around 100, voltwerk electronics achieved sales of 68 million euros in 2010. Its product portfolio includes string and central inverters for photovoltaic plants as well as monitoring systems and storage solutions.

Conergy's Chief Operating Officer Alexander Gorski says: "Over the last few years, a small, but very competent team at voltwerk electronics has developed a portfolio of innovative, efficient and high-quality products. We are very pleased to have found a highly respected and strong investor and partner in Bosch, who will develop the business of voltwerk further and drive it forward on this basis."

For Bosch, the planned acquisition is important in terms of expanding its involvement in the areas of e-mobility and renewable energies. "With voltwerk electronics Bosch is entering the inverter market, offering a broad product spectrum ranging from 3 kW string inverters to 1,400 kW central inverters," says Dr Volkmar Denner, Member of the Bosch Board of Management with responsibility for research and advance development.

The intention is for voltwerk electronics to be integrated into Bosch Power Tec GmbH, which was founded last January and which is driving the inverter business forward within the Bosch Group and developing new generations of devices.

By concluding a long-term supply contract, Conergy is ensuring that it will also have access to the premium inverter range in the future. The sale of voltwerk electronics represents an important step in its strategic reorientation for Conergy: "In line with our system supplier strategy, we are systematically reducing our own manufacturing depth and focusing Conergy on its international sales activities and on the servicing business, which will become increasingly important in future. After the restructuring of our own module manufacture initiated at the end of November, a further important step in reshaping the company has now been taken with this deal."

www.conergy-group.com

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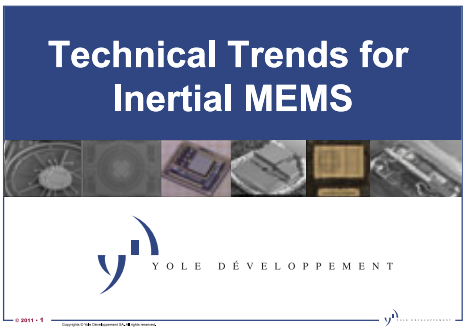

Technical Trends for Inertial MEMS

Two reports are giving clues to understand the market and technical trends for inertial MEMS.

The first report is a reverse engineering & costing analysis with photos & data for each of the 23 analyzed devices: Package view, MEMS & ASIC dimensions, MEMS close-up structure, specific process steps, cost breakdown.The second report is an analysis of the technical data and covers: market drivers for inertial MEMS; trends about packaging and tests strategies; in-depth analysis for 23 MEMS devices in terms of cost, size, package type, performances; comparative analysis in terms of performances, cost, MEMS size, ASIC cost, ASIC size, package size, year for market introduction.

Released in January 2012 - For more information, feel free to contact David Jourdan (jourdan@yole.fr)

Also available…

WLCSP Market & Industrial Trends

Wireless industry drives WLCSP market to an over B1$ worth package platform

The report gives detailed technical and market status and forecasts on WLCSP technologies and applications. Market forecasts and growth rates are provided based on device units and wafers for each market segment over the 2010-2016 timeframe. Market value forecasts in dollars are given over the same period of time. Based on our "bottom-up" analysis of the WLP fabs, the report displays the list and ranking of the WLCSP front-end (RDL, UBM and balling) players as of end of 2010, including the detailed respective wafer production capacities by player and wafer type.

Released in January 2012

Power Electronics for Hybrid & Electric Vehicles

New materials for active components will significantly impact packaging & cooling systems

In 2016, almost 25 million cars manufactured will be electrifi ed, the majority of them being micro-HEV, with a low level of electrifi cation, whereas 5 million will be full HEV, plug-in HEV or EV. This new market analysis provides a 10 year market projection of power electronics demand in HEV/EV. As market & technical challenges are different, the report is structured in two volumes.

Released in November 2011

About Yole Développement

Beginning in 1998 with Yole Développement, we have grown to become a group of companies providing market research, technology analysis, strategy consulting, media in addition to finance services. With a solid focus on emerging applications using silicon and/or micro manufacturing Yole Développement group has expanded to include more than 40 associates worldwide covering MEMS, MedTech, Advanced Packaging, Compound Semiconductors, Power Electronics, LED, Optoelectronics and Photovoltaic. The group supports companies, investors and R&D organizations worldwide to help them understand markets and follow technology trends to develop their business.

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- Collection of market & technology reports
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- Manufacturing cost simulation tools
- Component reverse engineering & costing analysis

More information on www.yole.fr

MEDIA

- Critical news, bi-weekly: Micronews, the magazine
- In-depth analysis & Quarterly Technology Magazines: MEMS Trends– 3D Packaging – iLED – Power Dev'
- Online disruptive technologies website: www.i-micronews.com
- Exclusive Webcasts
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