

Press information

News Release by the Project Partners of the "NEULAND" German Research Project:
AIXTRON, AZZURRO Semiconductors, MicroGaN, Infineon Technologies, SiCrystal, SMA Solar
Technology

Halving Energy Losses with New Semiconductor Materials for the Benefit of Renewables, Telecommunications and Lighting Systems

Given the rising global energy demand, more efficient use of energy is an important lever for reducing CO2 emissions and safeguarding the availability of affordable energy.

Six partners from the semiconductor and solar industries are joining forces in the NEULAND project funded by the Federal Ministry of Education and Research (BMBF) to explore new avenues for the efficient use of electricity from renewable sources. NEULAND stands for innovative power devices with high energy efficiency and cost effectiveness based on wide bandgap compound semiconductors. The project aims to reduce the losses in feeding electricity into the grid, e.g. in photovoltaic inverters, by as much as 50 percent - without significantly increasing system costs. This is to be achieved using innovative semiconductor devices based on silicon carbide (SiC) and gallium nitride on silicon (GaN-on-Si).

The new semiconductor devices are also to be used in future in switched-mode power supplies for desktop and laptop PCs, for flat-screen TVs, servers and telecommunication systems with a view to likewise reducing energy losses in these applications by about half.

The NEULAND project will run until mid-2013 and is headed by Infineon. The project will receive funding at 52.6 percent to the tune of approximately Euro 4.7 million from the BMBF under the Federal Government's High-Tech Strategy ("Information and Communications Technology 2020", ICT 2020 program) as part of the call for proposals on "Power Electronics for Energy Efficiency Enhancement".

Background

Today SiC material is already used in Schottky diodes. On the market for about ten years now, SiC Schottky diodes secure significantly reduced losses in current and voltage conversion in switched-mode power supplies. They are used primarily in switched-mode power supplies for PCs or TVs, in solar inverters and motor drives. At present GaN material is used mainly in white light emitting diodes. Studies into the suitability of this material for power applications began in 2006. The NEULAND research will reveal the applications for which GaN devices live up to or outperform present SiC devices in terms of reliability, ease of use and cost. This will pave the way for introducing the energy efficiency benefits of reduced losses throughout the consumer electronics spectrum.

The project consortium brings together outstanding expertise in SiC and GaN across a very wide area of the value chain. AIXTRON is represented as a provider of equipment for the semiconductor industry, and the SiCrystal and AZZURRO companies as wafer manufacturers. The semiconductor device know-how will be supplied by MicroGaN and Infineon, and the experience in systems engineering for photovoltaic applications will come from SMA Solar Technology.

About AIXTRON

The [AIXTRON AG](#) is a leading provider of deposition equipment to the semiconductor industry. The Company's technology solutions are used by a diverse range of customers worldwide to build advanced components for electronic and opto-electronic applications based on compound, silicon, or organic semiconductor materials and more recently carbon nanostructures. Such components are used in display technology, signal and lighting technology, fiber communication networks, wireless and cell telephony applications, optical and electronic data storage, computer technology as well as a wide range of other high-tech applications. AIXTRON AG's securities are listed on the Frankfurt Stock Exchange and, in form of American Depositary Shares (ADS), on the Global Market of the NASDAQ Stock Market. Founded in 1983, the Company is headquartered in Herzogenrath, Germany.

About AZZURRO

The [AZZURRO Semiconductors AG](#) is a strongly growing semiconductor company. Having pioneered the growth of gallium nitride on silicon substrates using metalorganic vapour phase epitaxy (MOVPE) AZZURRO is providing its customers worldwide with epiwafers for LED and high-voltage applications. AZZURRO's unique capability to grow very thick highest-quality gallium nitride on large area silicon substrates (currently 150 mm) enables cost breakthroughs for high-brightness LEDs and other GaN-based devices. For additional product and company information please refer to the company's website: www.azzurro-semiconductors.com

About Infineon

The [Infineon Technologies AG](#), Neubiberg, Germany, offers semiconductor and system solutions addressing three central challenges to modern society: energy efficiency, mobility, and security. In the 2010 fiscal year (ending September 30), the company reported sales of Euro 3.295 billion with approximately 26,650 employees worldwide. With a global presence, Infineon operates through its subsidiaries in the U.S. from Milpitas, CA, in the Asia-Pacific region from Singapore, and in Japan from Tokyo. Infineon is listed on the Frankfurt Stock Exchange (ticker symbol: IFX) and in the USA on the over-the-counter market OTCQX International Premier (ticker symbol: IFNNY).

About MicroGaN

The [MicroGaN GmbH](#) is developing ultra fast power semiconductor devices as key for energy efficient circuits. These devices are applicable to general purpose power supplies as well as solar/wind energy production systems to enhance performance and reduce cost. Since its formation in 2002 as a Start-Up of Ulm University the company pioneered the adequate design and processing of high power semiconductor devices based on the novel material system Gallium Nitride (GaN). MicroGaN developed first 600V class devices fulfilling specifications close to competing state-of-the-art technologies but with significant advantage in terms of power efficiency. MicroGaN processes 4 inch and 6 inch GaN-on-Silicon wafers applying a proprietary extreme wafer-area efficient 3D-GaN technology. The resulting advantage for manufacturing is the fact that large wafer size including a progressive fabrication technology allows a market launch at competitive cost.

About SiCrystal

The [SiCrystals AG](#), founded in 1996, is a stock-company located in Erlangen in the northern part of Bavaria, Germany. SiCrystal produces and supplies high-quality single crystalline silicon carbide (SiC) wafers for customers worldwide. Because of its outstanding material properties SiC-based electronics and devices can work in very hostile environment, where operation of conventional silicon-based electronics is not possible anymore. Typical areas that already take or will take profit from SiC-devices are Electronics and Optoelectronics, Sensor Technology, High-Power Applications and High-Frequency Applications. SiCrystals expertise includes the whole process of manufacturing SiC-wafers such as numerical simulation, crystal growth, wafering, characterization and quality control.

About SMA Solar Technology

The [SMA Group](#) generated sales of EUR 934 million in 2009 and is the worldwide market leader for photovoltaic inverters, a key component of all solar power plants. It is headquartered in Niestetal, near Kassel, Germany, and is represented on four continents by 15 foreign subsidiaries. The Group employs a staff of over 5,500 (incl. temporary workers). SMA's product portfolio includes the most comprehensive range of inverters on the market, offering a compatible inverter for every type of photovoltaic module and for all plant sizes. The product range covers both inverters for photovoltaic plants connected to the grid as well as inverters for off-grid systems. Since 2008, the Group's parent company SMA Solar Technology AG has been listed on the Prime Standard of the Frankfurt Stock Exchange (S92) and also in the

TecDAX index. In recent years, SMA has received numerous awards for its excellence as an employer.

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