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Answering Europe's Alternative Energy Challenge

IN EUROPE, Japan's major nuclear crisis at the Fukushima Plant has heightened the debate over the place nuclear energy should play in the future energy mix, fueling the argument against it and forcing others to call for a reassessment. Global climate change and the need to reduce energy consumption are also adding to the call for smart megawatts power generation. Combined, these issues are spearheading the push into the development of safer, alternative energy solutions.

To gain a clearer picture of new technological developments shaping the future of alternative energy, we turned to Mouser Electronics, a leading global semiconductor and electronic components distributor that works with design engineers and buyers. Known for its rapid introduction of the latest products and most advanced technologies used for prototype development, the company is positioned as a foremost supplier inspiring a new generation of alternative energy solutions.

Mark Burr-Lonnon,
Mouser Electronics Vice President of EMEA Business

Solar: A Sunny Outlook

For an endless amount of clean energy, Europe and the rest of the world only need to look to the sun. The photovoltaic market appears to be very sunny, as innovation and lower technology costs continue to help light the way. It's driven by strong improvements in panel efficiency, guaranteed feed-in tariffs (FiTs) in more and more countries, and the attraction of no noise or pollution during usage. Compared to other renewable energies, it has significant advantages. Solar energy is available almost everywhere; the installations are scalable; no supplies are required to keep it operating; plus there are no moving parts that significantly impact reliability.

Mark Burr-Lonnon, Mouser Vice President of EMEA Business, further added, "Uncertain times in Europe are causing governments to rethink the future of their energy mix. All of which is creating new opportunities for a competitive, safe and reliable electricity source such as photovoltaics."

One recent game-changing development seen at Mouser is the new solar micro inverter. Key players in advancing this technology have been companies like NXP Semiconductors and Fairchild Semiconductor whose products and solutions are well positioned in the photovoltaic (PV) world. PV is the method of converting solar light photons into direct current electricity. Instead of having one large inverter that handles all of the current conversion from the DC to AC, these new solar panels have a solar micro inverter that takes the DC current generated by the solar panel and converts it directly to AC current before leaving the panel. This has led to a complete solution contained within the solar panel, resulting in greater conversion efficiency since power isn't lost in having to travel over long wires. Additionally, this solution provides even greater, easier scalability. Expanding your solar power system is as simple as adding another solar panel.

Seeds for Energy Harvesting Are Planted

In the quest to find alternative energy sources, much of today's conversation on renewable energy centers on energy harvesting. Simply stated, it's the process by which ambient energy is captured and converted into electricity for small autonomous devices, such as nodes in sensor networks, making them self-sufficient.

Solar cells followed by electrodynamos are two of the most relatively mature energy harvesting technologies. However, many new technologies are now taking some market share. This includes thermoelectrics — the ability to generate power from

heat. For example, BMW is working to turn heat waste from engines and exhaust into power for vehicles' electrical systems. One of Mouser's suppliers, Micropelt, is also in the process of converting waste heat into a sustainable, maintenance-free power supply for wireless sensor devices. A built-in chip thermogenerator takes a few degrees of temperature differential and harvests thermal energy to operate the wireless sensor node.

Another emerging area of development: Piezoelectric energy harvesters are generating attention due to their small form factor and high efficiency. The simplicity associated with piezoelectric micro-generators makes it very attractive for MEMS applications, including automotive, smart mobile devices, medical and other next-gen applications where engineers are designing a hands-off solution that last the lifetime of the application. In response, a number of Mouser's key suppliers – Texas Instruments, Omron, Honeywell Sensing & Control, Freescale Semiconductor and Avago Technologies, to name a few – are smartly positioning themselves within this growing competitive landscape.

Kevin Hess, Mouser Electronics Vice President of Technical Marketing

Making a Case Where Less is More

An energy stance that has been made for some time is to simply use less – conserve resources. However, today's energy demands for higher performance with increased capabilities and functionality are rising. You don't have to look far to discover the myriad of benefits for improving energy efficiency: lower electric usage, reduced load on utilities, decreased cost of ownership for electronics products, not to mention fewer spent batteries filling up landfills.
In response, the electronics industry in Europe has seen a movement towards components with lower power consumption. In particular, ultra-low power (ULP) continues to dominate engineering discussions. Important design characteristics at work are low power, real-time responsiveness/processing power, low thermal dissipation, small physical form factor/footprint, memory, low radiation/emission, ruggedness in design and other factors. As a result, manufacturers of microcontrollers (MCUs) are in a literal race when it comes to providing high performance at decreasing power consumption.

"Semiconductor companies are engineering single, integrated chips comprising multiple cores," shared Kevin Hess, Mouser Vice President of Technical Marketing. "Extensive clock-gating in the chip design is being incorporated to reduce power requirements, combined with smart use of power modes and well thought-out system design."

From a systems architecture perspective, power efficiency is at the core. Manufacturers are engineering MCUs that draw nanoamperes of current in sleep mode. In fact, the newest microcontrollers can consume one quarter of the energy of previous 8-, 16- and 32-bit. MCUs. Prime examples found at Mouser: Microchip's XLP families, NXP Semiconductors' LPC1100L, Texas Instruments' MSP430 and Atmel's PicoPower MCUs are among the stingiest available.
In addition, relative newcomers including Energy Micro's ARM Cortex M3-based Gecko MCUs continue to push the envelope in delivering ultra-low power.

More on Mouser Electronics

Mouser is a company that believes technology should transcend all boundaries. In keeping with this philosophy, Mouser has

19 locations globally with plans to expand even further. Mouser has offices strategically located across Europe, including Germany, the Czech Republic, France, U.K., Spain, Italy, the Netherlands and Sweden. This is in direct response to servicing the large European design community by providing personalized, local support.

The engine driving much of Mouser's growth is www.mouser.com. It houses more than 2 million parts online from over 450 leading suppliers. The site is updated with new products every day and clearly identifies components Not Recommended For New Design (NRND) and End Of Life (EOL) components. The site also provides an industry-first interactive catalogue, data sheets, supplier-specific reference designs, application notes and countless other useful tools.

Last year the company experienced revenue gains in Europe close to 200%. In 2011, Mouser has seen Q2 sales growth of 71% in Europe overall. In times of increasing financial pressures, Mouser and its parent company, TTI, Inc., remain strong behind the backing of Warren Buffett and his Berkshire Hathaway investment empire. All of which points to a greater level of confidence and reassurance for a growing number of European buyers and design engineers in quest of the newest products and technologies – proving that helping answer Europe's alternative energy challenge is one of the things Mouser does best. ■