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Press Release

electronica 2022

Smart energy: the world of energy is changing

- **Smart grids as a central component of the energy transition**
- **Smart meters control on the consumer side**
- **SiC power electronics with high efficiency**

The energy transition presents great challenges to our electricity networks. In future, smart grids need to coordinate the generation, distribution and storage of decentrally generated electricity from renewable sources.

Because of this, all signs point toward transformation for the entire energy infrastructure. electronica 2022 will show the vital role electronics technology has to play in this transformation from November 15 to 18, 2022 on the Munich trade fair grounds.

On the path to an alternative energy system, the “smart energy” concept makes a significant contribution. The term refers to intelligent technologies and solutions aimed at achieving the efficient production, distribution, use and storage of energy, covering the entire value chain of the energy industry. According to a current study by the IMARC Group, the global market for smart energy is expected to increase at a compound annual growth rate (CAGR) of 9.82 percent from USD 138.8 billion in 2021 to USD 247.8 billion by 2027. The analysts identified the growing demand for intelligent electricity grids – “smart grids” – as a main driver of this growth.

Smart grids

While the electricity network currently distributes electricity generated centrally by large-scale power plants to consumers, smart grids also bring together all the data streams for the energy supply. This makes it possible, for example, to

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Press Release | May 17, 2022 | 2/4

balance the huge fluctuations in savings from solar and wind power plants in the existing electricity networks efficiently and control them in a targeted way. The quantities of energy produced and consumed need to be continuously measured and analyzed by IoT-capable sensors and devices.

Smart meters

On the consumer side, this is addressed with smart meters. They also control the supply of solar energy if the consumers also become producers (prosumers) with a solar system on their roof. The installation of the necessary intelligent measurement systems (iMSys) is only mandatory for an annual electricity consumption of over 6,000 kWh – or if the consumers themselves feed electricity into the network. In that case, a smart meter gateway (SMGW) with an integrated security module receives the measurement data and processes it for external market players, internal, controllable energy consumers and energy producers (intelligent household appliances, photovoltaic systems). By 2032 all electricity consumers in Germany will need to have at least a digital meter without a gateway.

Semiconductors for the energy transition

Measuring, regulating, transforming and communicating – when it comes to the energy transition, power electronics are of particular importance. For example, while photovoltaic systems or batteries supply direct current, wind power plants supply alternating current at a frequency that cannot be used directly. Meanwhile electrical consumers have their own individual needs when it comes to electricity and voltage. Power electronics act as a connector, a potential efficiency of up to 99 percent. The energy saving potential is immense, as, statistically speaking, even today electricity passes through at least one power converter on its way from producers to consumers. According to a study by the European Center for Power Electronics (ECPE), more than a quarter of electrical energy could be saved through the use of modern power electronics.

And in some areas, silicon is no longer the first choice. Semiconductors with a wide bandgap, such as the increasingly used silicon carbide (SiC) and gallium

Press Release | May 17, 2022 | 3/4

nitride (GaN), benefit from a higher switching capacity with the same low losses. However, according to analysts from Yole Développement, the technology is still in the early stages of development. They expect a revenue of USD 6.3 billion for SiC components in 2027. Meanwhile silicon components continue to surprise with significant increases in performance and will continue to be a source of revenue for the industry in the decades to come. In general, heat management, robustness, reliability and ultimately packaging are still pivotal topics in the field of semiconductors.

Embedded Systems

Semiconductors are also the building blocks of embedded systems in a digital, networked and automated energy world. For example, they supply data on the status of the network, the temperature, the flow of electricity and the angle of the cables. The data is processed in the cloud or directly on site (edge) with AI algorithms. Embedded systems also convert traditional building automation into a form of prediction-based management, with significant potential for energy savings. And in future buildings using intelligent consumer meters (iMSys) – connected to a smart grid – will not only be able to optimize their own consumption, but also to take on the role of electricity producers themselves by feeding surplus energy into the network.

Smart energy at electronica 2022

Whether it's at the trade fair stands, in the forums and conferences – visitors will encounter smart energy everywhere at electronica 2022, as electronics also has a key role to play in the energy transition. This will be the focus of the Power Electronics Forum which will cover the whole spectrum of power electronics, while experts will discuss the current trends and developments from this area at the electronica Embedded Platforms Conference. The exhibition area for the topic of electricity supply in Hall A4 will comprise the complete portfolio of transformers, electricity supplies, supply units and batteries. In the other exhibition halls, too, many exhibitors will be presenting their products and solutions relating to smart energy, such as semiconductors in Halls B4, C2, C3, C4 or embedded systems in Hall B4.

Press Release | May 17, 2022 | 4/4

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About electronica

electronica is the most important international meeting place for the electronics industry. The world's leading trade fair covers the entire electronics spectrum from components to systems, applications and services. The extensive supporting program highlights the automotive, embedded, semiconductors and wireless – and networks startups with the industry. In 2018, over 81,000 visitors and more than 3,100 exhibitors attended electronica, and 8,253 people took part in electronica virtual in November 2020. The next electronica will be held from November 15 to 18, 2022 at the Messe München Exhibition Center.

electronica worldwide

In addition to electronica, Messe München organizes electronica China, electronica South China, electronica India, the SmartCards Expo and electronicAsia. The network of electronics trade fairs also includes productronica in Munich, productronica China, productronica South China, productronica India and LOPEC.

Messe München

Messe München is one of the leading exhibition organizers worldwide with more than 50 of its own trade shows for capital goods, consumer goods and new technologies. Every year, a total of over 50,000 exhibitors and around three million visitors take part in more than 200 events at the exhibition center in Munich, at the ICM – Internationales Congress Center München, the Conference Center Nord and the MOC Veranstaltungszentrum München as well as abroad. Together with its subsidiary companies, Messe München organizes trade shows in China, India, Brazil, South Africa and Turkey. With a network of associated companies in Europe, Asia, Africa and South America as well as around 70 representations abroad for over 100 countries, Messe München has a global presence.