

electronica 2018: connecting everything – smart, safe, and secure

electronica is continuing to grow and, for the first time, will take up 17 halls at the Munich exhibition grounds. Smart, reliable, and secure networking at all levels is the focus for this year's electronica which will be held on November 13 – 16, 2018.



electronica 2018 will be larger than the previous event, with more than 180,000 square meters of space spread across four halls. Over 3000 companies from more than 50 countries will be present at the exhibition. Visitors to the trade fair will benefit from four additional halls, which means there will now be a new hall layout. Five entrances, color-coding in the halls, expressways, and the visitor shuttle together with indoor navigation via the electronica app will aid navigation. This time electronica will be going beyond the presentation of relevant components, systems, applications, and solutions. In addition to 17 halls, 13 forums, and four conferences, there will be a wide range of innovations on show.

There will also be even more opportunities for networking, inspiration, and experience thanks to the new formats, electronica Experience and IMPACT – Design for a Cause. The new hall C6 will give visitors the opportunity to get to grips with electronics, as well as showcasing career opportunities within the electronics branch. electronica Experience will feature live demos, applications, and presentations, as well as a job market, to facilitate networking between exhibitors, students, and school pupils. IMPACT – Design for a Cause will also be taking place as part of electronica Experience. The event, which will feature engineering associations Hackster and Element14 among others, will look at the future influence of electronics on communication, the environment and medicine in pitches, presentations, and discussion panels.

Embedded – Key Technology for a Smart World

The motto of electronica 2018 “Connecting Everything – smart, safe & secure” applies especially to the trade fair focal point “Embedded Systems”. As one of the most important interdisciplinary technologies in the 21st century, they are represented in almost all areas of electronica. You can find them concentrated in the Embedded exhibition area in Hall B5, the Embedded Forum and at the electronica Embedded Platforms Conference.

Embedded systems are the most widespread “computers” worldwide. Without them, the Internet of Things, autonomous vehicles and smart city would all not be possible. They are product-molding components in the strongest sectors of automobile manufac-

turing and automation technology as well as machine and plant construction. A recent study by HNY Research sees the global market for embedded systems increasing from \$86.85 billion in 2017 to \$110.28 billion by 2023. In this context, billions of dollars are spent for IoT in all key industries. For example, analysts have noted that the market for embedded systems in the automotive sector has experienced an increase of 27.69 billion US dollars to 38.77 billion in the same period with an average annual growth rate (CAGR) of 6.87 percent. Other growth guarantors are applications in the healthcare and wearable sectors and the increasing use of multicore processor technologies.

The electronica Embedded Platforms Conference (eEPC) is a communication platform for suppliers of components, tools, software and solutions. In addition to embedded platforms and ecosystems, it also addresses the latest trends to futuristic solutions with high-profile talks at the International Congress Center Munich (ICM) on November 14 – 15, 2018, parallel to the trade fair.



Talks and panel discussions will take place on all four exhibition days at the electronica Embedded Forum. Design engineers, specialists and technical management can obtain information in the middle of exhibition Hall B5 about all important trends and discuss current market and technology topics with experts and colleagues. A visit to all electronica forums is included in the ticket price.

Power Electronics and Smart Energy

The energy system in Europe is undergoing a historic transition. The switch to sustainable generation is bringing about increasing decentralization with huge ramifications for the entire value chain. Smart energy is the umbrella term for a wide range of technologies in this area relating to energy storage, consumption control, and energy conversion.

Power supply from a small number of large, centrally connected power plants will soon be a thing of the past. More and more customers are becoming “prosumers”, i.e. consuming and producing electricity at the same time. Many small power plants are also obtaining energy from renewable resources. This increasingly fragmented, bidirectional, and volatile supply structure urgently requires an intelligent load and generation management system – in other words, a smart grid.

Some individual components of this, such as smart meters, are already in use today; these can be used by points of consumption to communicate with the smart grid. Energy suppliers and municipal utilities also see an opportunity here to open up new areas of business. Since 2017, German law has also required the installation of intelligent measurement systems for end users whose consumption exceeds 6000 kWh per year and for operators of co-generation plants and renewables-based plants with over seven kilowatts per year. Analysts from Grand View Research expect there to be 285 million smart meters in households, offices, and factories around the world by 2025. This will generate turnover of 50 billion US dollars, with coverage somewhere in excess of 50 percent according to Navigant Research.

But electricity meters are just one component of the smart energy concept. Smart-home and smart-city technologies also cover a whole range of sub-areas. That’s why you will find the topic of “intelligent energy” covered in many segments at electronica 2018. These includes wireless and embedded as well as the Internet of Things and autonomous systems. Even electric vehicles have a role to play as flexible storage systems and grid stabilizers.

The first ever Power Electronics Forum will specifically cater to the subject of smart energy. The forum will cover the whole spectrum of power supply units, power stores and power electronics, the last of which is among the key technologies for climate-friendly, resource-saving, yet competitive energy supply. This is because innovative power electronics technology minimizes losses through the conversion, distribution, and consumption of electrical energy. For many applications, silicon is no longer the first choice here. Wide-bandgap semiconductors such as silicon carbide (SiC) and gallium nitride (GaN) deliver higher switching capacity and breakdown voltages in a high temperature range. Passive components such as heat sinks, capacitors, and coils can therefore be smaller in size, which has a positive impact on the form factor of the overall system.



This makes them important components for the smart grids of the future. In these intelligent power grids, decentralized distributed intelligence controls the generation, storage, and consumption of energy. As such, the performance fluctuations caused by fluctuating renewable energies must be compensated for. However, smart grids not only transport energy but also data from smart meters, sensors, and other devices. This is another industry segment where the Internet of Things can be found – in fact, electrical grids are even set to become the largest IoT installations of all. This process involves the networking of various components using modern information and communication technology. The topic is dealt with in detail in electronica’s Wireless Congress.

The Power Supplies exhibition area in halls A5 and A6 covers the full spectrum of transformers, power supplies, power supply units, and batteries. But that’s not the only place where you will find smart energy components.

Automotive - a dramatic transformation

The automotive industry is undergoing a dramatic transformation. By 2025, it is reckoned that a quarter of all cars worldwide will be electrically powered. On top of that, manufacturers and suppliers are currently responding to increasing demands for “next-generation” technologies including autonomous and connected vehicles, as well as developing completely new data-generated business models.

Electronics and software already account for over ninety percent of all “automotive” innovations. And these developments are not only being driven by autonomous and connected driving alone, but also the electrification of roads for example. In addition, the growing demand for driving performance, safety, comfort and environmental compatibility can only be achieved using the latest electronically-managed vehicle functions.

As a result, the value of semiconductor devices is also on the increase, as demonstrated by the latest microelectronic trend analysis carried

out by the ZVEI. Last year’s worldwide average of USD 477bn is set to increase to USD 535bn by 2022. Car production will simultaneously rise from 99 million units to 110 million units over the same time period. Both increases mean that the worldwide sales of automotive semiconductors will go up from USD 45.5bn in 2017 to USD 53.4bn by 2022, with an average year-on-year growth of 5.5 percent.

electronica 2018 will give visitors and delegates an impressive three ways to get the latest thinking and information on electronics technology within the automotive sector. These are trade fair itself, the Automotive Forum and the electronica Automotive Conference (eAC).

On Monday November 12, 2018 – the day before the fair opens, prominent speakers at the electronica Automotive Conference (eAC) will address both managers and technicians. Alongside their presentations, they will also be discussing current technology trends and strategies for the worldwide automotive industry. As well as emission-free and autonomous driving up to level 5, a focal point for the conference will be the interesting topic of so-called last-mile vehicles as part of the overall mobility mix.

At the Automotive Forum, presentations from expert speakers and panel discussions will be taking place across all four days of the trade fair. Sales engineers, electronics developers, system designers, project leaders, supply chain managers and anyone that works on automotive development projects should make their way to exhibition hall B4 where they can find out more about important trends and speak to experts and colleagues about the latest market and technology news.

Medicine in a digital world

The health industry is going through a period of dramatic change. We are seeing more and more digital solutions throughout the patient journey – at every stage from prevention and diagnosis to treatment. Medicine 4.0 can only work on the basis of

collaborative efforts at the point where the medical and engineering disciplines overlap. Electronics are at the very heart of innovations within the medical technology sector. There are already plenty of examples of vital developments from the past, such as X-ray machines and pacemakers. And now, as health care becomes increasingly digitized with networking, smart data analysis, and telemedicine, electronics have come to be an integral element. The result of this is further market growth, which is boosted by aging and booming global populations as well as by a greater focus on individualization within medicine.

On that basis, Global Market Insights is anticipating that the international medical electronics market will generate sales of USD 148 billion by 2024, with a compound annual growth rate (CAGR) of 12 percent. According to marketsandmarkets, the turnover for medical IoT devices is expected to be just under USD 64 billion by 2023, with a CAGR of 25 percent. The same analysts are also forecasting a little over USD 132 billion for the global e-health market by 2023.

All of this opportunity is, however, offset by a whole host of risks that are not to be underestimated. For instance, the market concentration is set to continue to rise alongside the competition from emerging markets. Not to mention that huge IT companies from outside of the industry (the likes of Google and Apple) are on the verge of advancing into the first health market given that many innovations in future are going to be based on data and software. Plus, regulatory requirements surrounding market and product approval, such as the amended EU Medical Device Regulation, slow down the rate of growth and bring about considerable costs. And then there are the serious security risks associated with online networking (IoT).

In 2018, the spotlight will be shining on medical electronics for the very first time when the field has its own dedicated conference (November 15, ICM). The event will see doctors and electronics engineers entering into discussions about the future of the medical sector. The issues covered will include smart medical devices, cloud computing, data security and sovereignty, blockchain technology, collaborative robots, smart contracts, usability, artificial intelligence, telemedicine, and Medicine 4.0.

The focus of the Medical Electronics Forum (Hall C3, Stand 534 in the morning on November 16) is on wearables. After all, they are set to have a major impact on the health care sector and medical treatment. Once they are connected to the Internet, they enable doctors



to monitor their patients' health remotely and give constant care to chronically sick people. Older people will also be able to live independent lives in familiar surroundings for longer thanks to wearables. Plus, smart analysis of the data will allow for the health care system to be optimized even further.

Sensors – turning things into a source of data

The digital world depends on data. That data increasingly comes from networked, intelligent sensor technology. As one of the key technologies for the future developments in IoT, autonomous driving, Industry 4.0, smart healthcare, and smart cities – you will find it in many of the sectors and events electronica.

With the advent of the “Internet of things”, the Internet is continuing to force its way deeper into all areas of private and professional life. Sensors play a key role in this development, as they turn every “thing” into a source of data. In so doing, they build bridges between the analogue and digital worlds in vehicles, smart cities, smart factories, smart homes, and in medicine. The sheer variety of applications is naturally leading to explosive growth in the number of different types of sensors available, all of them based on around a dozen basic measurement principles.

The development of smart sensors plays a particularly important role in this context. In addition to acquisition, sensors now also combine preparation and processing in a single component. With the help of microprocessors, sensors become interfaces with higher-level systems without the need for an external computer.

The VDE – a German electronics industry association – believes that the sensor market has enormous potential for growth. It predicts the number of sensors on the market will rise from ten billion currently to one hundred trillion by 2030. According to a survey by Germany's Association for Sensors and Measurement (AMA), the German sensor industry, which is overwhelmingly made up of SMEs, is particularly eager to embark on new research and

investment programs. Analysts from Zion Market Research believe that profits from IoT sensors will grow to USD 27.38 billion by 2022, at a compound annual growth rate (CAGR) of over 24 percent. High sale figures will come courtesy of Industry 4.0 and the automotive sector, as well as from medical electronics. That's why sensors play a leading role in many areas of the electronica 2018 exhibition, as well as in the conferences taking place around the event.

The exhibition areas Sensor Technology, Micro and Nanosystems (Hall B3), Measurement and Checking (Hall A3), Embedded (Hall B5), and Automotive (Hall B4) cover the full spectrum of sensor technology from hardware and software right through to complex systems and services.

New hall layout at electronica

In the past there were only two entrances – West and East. As a result, the flow of visitors moved from west to east or vice versa. This had a considerable influence on the positioning of the segments, which were arranged according to the direction visitors were walking in. By integrating halls C2 and C3, as well as the newly built halls C5 and C6, electronica now also has North, North West and North East entrances, which allows access to the exhibition grounds from all sides. At the same time, a north-south arrangement of the segments in the future will ensure an even spread of visitors across the entire grounds.

With the new layout, semiconductors will be in halls A4, B4, C4 and the adjacent halls B5, C5 and C3. As a co-located event, SEMICON Europa will take up part of hall A4. The automotive and embedded systems segments and, directly adjacent to them, displays and sensors will also move closer to the center. Electromechanics/system periphery, relays and casing technology are another segment that take up more than two halls, which is why we have chosen a north to south arrangement on the grounds for this as well. In 2018, exhibitors from these areas will be in halls A2, B2 and C2 at electronica. Circuit carriers and EMS will move to halls A1 and B1, and passive components to A6 and B6. As a result, the remaining areas will move too.

To provide additional guidance for visitors, the segments are color-coded, both on the hall plan and on the grounds, e.g. with appropriately colored carpets. When positioning the segments on the grounds, it was also important to us to not only get visitors to their desired area as quickly as possible, but to also inspire them. electronica therefore positioned the segments in such a way that neighboring topics are next to each other wherever possible. ■

