

The International Exhibition for Energy Management and Integrated Energy Solutions
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DIGITALIZATION IS OPENING UP NEW OPPORTUNITIES

Last year, Germany lost a record amount of almost 6.5 billion kWh of electricity that could have been generated from renewable sources of energy by plants whose activities had to be capped to avoid overloading the power grid. The total cost for the grid and system safety precautions amounted to 1.2 billion euros. The share of volatile electricity continues to grow due to the new deployment of photovoltaic installations and wind power sites. How renewable energies can be better integrated into our distribution grids is therefore one of the most important questions of the energy transition.

Many solutions are based on intelligently connecting the energy infrastructure. Smart grids enable communication between decentralized energy sources, storage systems and prosumers. By balancing out the supply and demand, they help to utilize power grids to their full

capacity. Digitalization of the energy supply is therefore a major growth market. According to figures from the International Energy Agency, the global investments in smart meters alone – the centerpiece of a smart grid – have almost doubled, increasing from 11 billion US dollars in 2014 to 21 billion US dollars last year.

Alongside the urgent need to make a success of the energy transition, digitalization also brings new prospects and areas of business for the energy industry. In the Stadtwerkstudie 2020, a study of municipal utilities, over 79% of the surveyed municipal utilities named digitalization as the main factor driving the maximization of their potential for efficiency and growth. According to the study published by the German Association of Energy and Water Industries (BDEW) together with Ernst & Young, the utility companies

ranked smart metering (81%) and cybersecurity (75%) as particularly relevant digital technologies.

As the international exhibition for energy management and integrated energy solutions, EM-Power Europe plays an important role in this dynamic market and now boasts an expanded portfolio. Smart grids and the integration of renewable energies, grid infrastructure and system services are now also part of the picture. Decentralized and renewable energy supply, smart building automation, energy management systems within microgrids, districts and buildings as well as commercial and industrial energy services remain an important part of the exhibition. As part of The Smarter E, EM-Power Europe has established itself as the interface between a sustainable energy supply and the efficient distribution and use of electricity and heat.



THE IDEAL SMART GRID DOESN'T EXIST

Interview on the current situation surrounding smart grids in Germany and the rest of Europe with Arno Ritzenthaler.

What would you say makes the ideal smart grid?

The ideal smart grid doesn't exist. Intelligent power grids have many different fields of application and design requirements. That's why we always talk about smart grids in the plural. Different target groups have different expectations. As a general rule, we can say that the principal task of smart grids is to intelligently integrate everything that the connected generation and consumption units do across all grid levels in order to use the available resources as efficiently as possible and guarantee a sustainable, economical and efficient power supply.

By using modern information and communications technology across the board, from power plants to the grid endpoints, we can reliably orchestrate consumer flexibility and the ever-increasing load peaks based on the many decentralized and volatile inflows of renewable energy. Overhauling power grids with smart technology is one of the crucial steps we must take in order to significantly reduce the pressing need for grid expansion.

What is still needed to enable the implementation of intelligent power grids?

One of the most important steps in implementing intelligent grids is the digitalization of grid endpoints. This means the blanket use of smart meters and widespread user acceptance of the new technology.

Without this systemic infrastructure, paired with new load-dependent pricing models and other necessary added-value services – primarily to offer consumers features for easier use – it will be difficult to convey how pressing the need for greater intelligence in the utility grid system really is.

Vast amounts of data must be exchanged between every person and element within a smart grid. What data security precautions are currently being taken?

Everyone responsible knows that cybersecurity and privacy have a key role to play in ensuring that grids are properly converted, thus enabling a successful energy transition. In Germany, the Federal Office for Information Security (BSI) has established a security standard that many experts say is among the most stringent in the world.

Do you view smart grids more as local supply systems, or can they cover areas as large as existing systems?

Many of the required smart grid components are already used in large parts of the utility grid system today. But the path to across-the-board intelligent grids with all the bells and whistles is – as in every other area of the energy transition – a long one which must continually be adapted to new developments. For instance, we initiated our project SINTEG, which is funded by the German Federal Ministry for Economic Affairs and Energy, by establishing stable local power supply systems via autonomous grid cells. They are operated according



Arno Ritzenthaler
CEO of Smart Grids-Plattform Baden-Württemberg, Germany

to the motto "think globally, act locally" and are now being gradually interconnected so that they can provide each other with support, thus creating stable, resilient grid units which can be rolled out all across Germany in the foreseeable future.

What will be the greatest hurdles in turning our existing energy system into an intelligent one?

In my opinion, one of the most critical points will be laying down binding design criteria for grid and metering point operators. The cost distribution formula imposed by the current regulations only aims to meet the status quo in terms of task fulfillment and quality. But with the knowledge that various new requirements will come into play in the future, such as system services for integrating virtual power plants, a great deal of innovative power remains unexploited since an incalculably high risk prevents smaller market participants in particular from investing. Once regulations have eliminated the final hurdles so that hardware and software developers, energy generators and consumers alike can act in concert, Germany and the rest of Europe will emerge from the testing and demonstration phase and finally be able to scale up. Then we will be able to talk about a single smart grid that links together the many smaller ones.

EM-POWER FORUM: PRACTICAL KNOWLEDGE TO GO

Look around, take a seat and quench your thirst for knowledge – it couldn't be easier at the EM-Power Forum. Parallel to the exhibition, experts from companies and institutions present practical solutions and best practice projects for a smart energy supply to buildings and plants. The presentations are split into thematically grouped sessions. One area of focus is the journey towards carbon neutrality and carbon-neutral companies, all the way from the methodology to the implementation. Digitalization and smart metering also share the spotlight. Using practical examples, visitors can also discover how renewable energies can be integrated into smart grids, microgrids and districts. In addition, they can find out how to use services in the areas of energy efficiency and energy management as well as contracting to successfully meet the challenges of the energy transition.

The EM-Power Forum is geared toward energy managers, planners and consultants, professional energy customers and prosumers working in the commercial, industrial and real estate sectors, as well as toward municipalities and public and private utility companies. The forum will take place on all three exhibition days. Entry to the forum is included in the exhibition ticket. For even more best practice examples, news on the latest trends and interviews with start-ups, sign up for our free EM-Power newsletter, which is released once a month.

→ www.EM-Power.eu → News & Press
→ News → Newsletter

EM-POWER EUROPE CONFERENCE: SIMPLY SMART



EM-Power Europe is more than just an exhibition. Accompanying its expansion to include smart grids and the integration of renewable energies, grid infrastructure and system services, EM-Power Europe will now feature its own conference for the very first time. On Tuesday, June 8, and Wednesday, June 9, 2021, renowned experts will shed light on the latest developments in these dynamic markets. The first conference day is centered around the power grids of the future: smart grids. The first session covers PV power plants and yield forecasts in conjunction with smart grids, followed by a second session on the function of utility-scale storage systems. The third session looks at the interaction between e-mobility, charging infrastructure and vehicle-to-grid with the power grid of the future. The second conference day focuses on sector coupling and energy management in microgrids and districts, as well as virtual power plants. Other central topics include demand side management and marketing flexibility options over energy trading platforms to improve the integration of renewable energies in the existing power grids.

A single ticket gives you access to a whole wealth of expert knowledge at the other The smarter E Europe Conferences: Intersolar Europe Conference, ees Europe Conference and Power2Drive Europe Conference.

Venue: ICM – Internationales Congress Center München
Date: June 8–9, 2021

DEVELOPING NEW STRATEGIES FOR THE REGIONAL POWER DISTRIBUTION GRID OF THE FUTURE

Sometimes it is possible to have too much of a good thing: when the sun shines and the wind gusts, so much electric power is produced that nobody knows what to do with it. As a result, the price on the short-term wholesale electricity market falls into the negative. In 2019, this was the case in Germany for a record total of 211 hours.

To better integrate the increasing share of power from renewable sources into the grids, a wide range of pilot projects have been launched across Europe. One such pilot project in Abbenhausen, a district of Twistingen located south of Bremen in Germany, is set to be initiated with a field test at the end of 2020. Through the project, the utility company and grid operator Avacon aims to investigate the interaction of local

energy communities with the regional distribution grid and to test a range of grid management strategies for their integration. The Twistingen energy platform brings together households with photovoltaic installations, heat pumps or battery storage systems to form a local energy system. Equipped with a centralized intelligent control solution combined with a large-scale storage system, the community will be able to supply itself with locally-generated power. The strategies which Avacon wants to test in the field include an off-grid system, the provision of power for the upstream grid and package-based energy supply. Avacon Netz GmbH is an exhibitor at EM-Power Europe 2021, where it will present its technical grid services for the electricity, gas, water, mobility and lighting sectors together with other grid operators from the E.ON Group.



IN-DEPTH LOAD PEAK FORECASTING

Interview with Patrick Olma, CEO and co-founder of the start-up Olmatic.

Mr. Olma, your most recent development is Olmatic Power Tracking – what exactly is that?

Olmatic Power Tracking – or OPT – is an energy management system (EMS) that is specially designed for industry and which uses artificial intelligence to automatically recognize power supply load peaks and balances them out by intelligently drawing energy from regenerative sources and storage systems.

How exactly does your intelligent load peak recognition work?

The system uses the integrated sensors to continuously collect data from each energy consumer in real time, digitalizes it and saves it in a central storage location. This data pool builds the necessary foundation for the use of the system's artificial intelligence. Our specially developed algorithms continuously analyze this data pool in order to recognize patterns which provide information and help establish inferences

about when and why a given consumer has caused a load peak. Recognizing these specific patterns make detailed load peak forecasting possible.

What happens in the event of a load peak?

Once the software predicts or recognizes a load peak, regenerative energy sources and storage units can automatically be activated. Alternatively, the system can counteract a recognized load peak by shutting down or regulating defined consumers.

Olmatic was already present as a start-up at The smarter E in 2019. What makes the exhibition attractive for you?

As a start-up you usually have limited resources for sales and marketing. It was important for us to be able to present our product portfolio to a wide range of potential target customers without having to visit several exhibitions a year. The smarter E offers the ideal infrastructure for this. We were able to generate a large number of potential leads at the exhibition, which then led to direct projects.



Brothers Patrick, Christian and Tobias Olma founded Olmatic together in 2016.

ENERGY TRANSITION AWARD



Utilities of the energy transition

As part of the energy transition, utility companies are faced with the immense challenge of transforming from classic energy businesses to sustainable solution providers. Until now, only very few utilities have succeeded in fully integrating this new energy world into their product and service portfolio.

That is why it is so important to present these pioneering companies who have already managed to enshrine energy transition technologies in their business models. In lieu of an official award ceremony at The smarter E in Munich, this year's award ceremony was held online for the first time. In addition to keynote presentations from Prof. Dr. Claudia Kemfert, Dr. Simone Peter and Katja Diehl, selected winners presented their solutions.

START-UPS@THE SMARTER E EUROPE 2021



Traveling light

A few flyers or brochures, business cards, perhaps a roll-up banner and a small exhibit piece – start-ups can travel light to The smarter E Europe. And yet they can explore the new energy world in just three days, because at Europe's largest platform for the energy industry they will meet the industry's key decision makers.

The smarter E Europe offers attractive and affordable packages for start-ups and new businesses, comprising a small presentation area or booth space including furniture and a marketing package. Exhibitors can benefit from extensive free networking opportunities and establish valuable new business contacts. All start-ups can also apply for a 10-minute speaking slot in the Start-up Arena where they will have the opportunity to present their business ideas in front of an audience of energy experts from Germany and abroad. These young exhibitors are also invited to submit their businesses for the coveted The smarter E AWARD free of charge.

→ www.TheSmarterE.de → For Exhibitors → Participation → Start-ups

HALL A4 BOOTH A4.530

AWARD Ceremony
Wednesday, June 9, 2021
at 4:30pm

AWARD HUNTERS WANTED

Sold out in just 39 minutes! A phenomenon usually associated with tickets for sporting events, last September it was the turn of the municipal utilities Stadtwerke München (SWM) with the sale of their new M-Solar Sonnenbausteine – or “sun blocks”. By purchasing a solar block, the city residents of Munich essentially issue the municipal utilities an interest-paying loan. SWM then invests the borrowed money in new photovoltaic installations. This smart idea impressed the panel of judges at The smarter E AWARD 2020, who honored SWM’s commitment with the coveted innovation prize.

In preparation for 2021, The smarter E is on the lookout for companies working on innovative solutions for the new energy world. In the categories of Outstanding Projects and Smart Renewable Energy, The smarter E AWARD honors noteworthy projects and products which intelligently interconnect electrical energy, heat and transportation using decentralized and renewable energies. The Intersolar AWARD and the ees AWARD pay tribute to pioneering products for the solar industry and promising solutions in energy storage technology. The prizes will be awarded at The smarter E Europe in Munich.

Start-ups also have the opportunity to enter themselves for The smarter E AWARD free of charge. Registration for each category is open until March 31, 2021. Taking part is certainly worth it for everyone – alongside the major players of the energy industry, many up-and-coming SMEs and start-ups have been counted among the finalists and winners in the last two years. And in any case, those who don’t go home winners need only remember the golden rule of sports – it’s the taking part that counts.

Apply now! → www.TheSmarterE-award.com



WORKING TOGETHER TO ACHIEVE GREAT THINGS: NEXT KRAFTWERKE WINS THE SMARTER E AWARD



What do an ant and an individual renewable energy installation have in common? They are not particularly effective on their own, but in a group, it is not just the tiny creatures that can move mountains. Virtual power plants (VPP) coordinate up to thousands of decentralized units through a shared control system and can therefore perform a similar market role to that of a large-scale power station, also with regard to installed capacity.

Based in Cologne, Next Kraftwerke GmbH operates one of the largest virtual power plants in Europe and has achieved something great with NEMOCS, their software-as-a-service solution: winning The smarter E AWARD in the category Smart Renewable Energy. The software enables utility companies and grid operators to run their own VPP. The system processes data in real time, making it possible, for example, to generate accurate forecasts for electricity generation. Moreover, it can issue commands to a multitude of connected units as necessary in response to pricing or grid signals. NEMOCS thus makes a global contribution to the energy transition. Projects are currently running in Japan, for example, where grid stability plays a decisive role for the continued expansion of renewable energies. Next Kraftwerke will be an exhibitor at EM-Power Europe 2021.

THE SMARTER E EUROPE – THERE FOR YOU 24/7, 365 DAYS A YEAR

The smarter E Europe, the continent’s largest platform for the energy industry, unites four energy exhibitions under one roof. All the important topics concerning the energy transition, including the renewable energies, batteries and energy storage systems, e-mobility and the intelligent use of energy in industry and buildings, are on the agenda of the four exhibitions – Intersolar Europe, ees Europe, Power2Drive Europe and EM-Power Europe – and the accompanying conferences.

The vision is a new energy world, in which electricity and heat are generated from 100 percent renewable sources and supplied safely and reliably around the clock without causing any damage to the environment or climate. The smarter E covers the whole spectrum of the industry, offering visitors a comprehensive overview of trends, technologies and innovative concepts for the new energy world. As a platform for the new energy world, The smarter E concentrates on sharing information on energy industry topics

and providing a networking opportunity for global industry players – now with a number of additional digital formats. The innovative platform The smarter E Europe and its four energy exhibitions are not just an in-person event.

The wide range of The smarter E Europe topics is turning into a (live) digital experience. Gain insights into the latest industry trends, market data, research results and product information from Intersolar, ees, Power2Drive and EM-Power Europe and make valuable contacts.

Regular webinars with industry experts offer a deep understanding of market developments and the latest trends in the new energy world. The smarter E Podcast entertains and informs, giving a voice to the players of the new energy world. You can also participate in our digital conferences, seminars, Innovation Days and many other online events for sharing knowledge, presenting brand new market solutions and forging new contacts using interactive networking tools.

Find out more at: → www.TheSmarterE.com

