



electrical energy storage

Europe's Largest Exhibition for Batteries and Energy Storage Systems
MESSE MÜNCHEN, GERMANY

MAY
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EES EUROPE NEWSPAPER 2019

INNOVATING ENERGY STORAGE!

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BETTER AND CHEAPER: THE RAPID DEVELOPMENT OF ENERGY STORAGE

Germany is the largest sales market for battery storage systems worldwide, boasting over 100,000 already installed systems. According to analytics from Delta-EE, in Europe behind the meter storage systems were the dominant force behind the growth of around 50 percent. In September 2018, the U.S. Energy Storage Monitor noted that the prevalence of private storage systems had increased by 61% in the USA since the first quarter of 2017. Grid power storage systems

are also experiencing a boom. You can find out more about the global deployment of large-scale PV power plants combined with storage systems in the latest issue of the ees Europe newsletter, and also read up on Pricewaterhouse Cooper's prediction that by 2021, the combination of PV and storage storage systems will be the most lucrative energy option for both private homes and industrial storage. BloombergNEF is predicting global investments in stationary storage

systems amounting to 620 billion US dollars by 2040. And the race is already well underway. Parallel to the rapid worldwide surge in the use of renewable energies, the quickly falling costs of storage systems are driving a wealth of new opportunities for growth and innovative business models – which are already paying off today.

It's full steam ahead for the energy storage industry!





Photo: Greencells

ENERGY STORAGE AND RENEWABLE ENERGIES IN THE SYSTEM: THE ENERGY FUTURE AS A BUSINESS MODEL

Across the world, large energy storage installations are increasingly being coupled with systems for using renewable energies. Sinking prices of solar and wind energy create more scope for investing in supplementary storage solutions.

Photovoltaics (PV) and wind power became the most cost-efficient energy sources in all of the world's leading economies except Japan at the end of 2018 (Study on Levelized Cost of Electricity/LCOE Update by Bloomberg NEF).

This development is accompanied by sinking prices and a growing market for energy storage systems. Many successful projects are testament to this, such as the installation of a 4.4 MW high-voltage Tesvolt storage system at the solar farm Westhampnett, the first municipal battery storage system in the UK, as well as the latest project of Chinese manufacturer BYD in Poland. Their 2.52 MW lithium-ion system is coupled with a 1 MW PV power plant.

620 billion US dollars will be invested in battery storage systems worldwide by 2040, according to Bloomberg NEF's annual forecast.

The combination of energy generators and storage systems provides important services for supply security and grid stability while offering substantial financial incentives such as arbitrage or frequency services.

INCREASINGLY PROFITABLE? PV SYSTEMS WITH ENERGY STORAGE!

The feed-in tariff for solar power is continuously falling, prompting many operators of PV systems to explore how best to make use of their self-generated power in the future. This mostly applies to smaller systems such as those you would find on your own home or on top of businesses. As well as the noted feed-in tariff, often the idea of self-consumption quickly becomes a focus. Increasing electricity prices and discontinuing the incentives of Germany's Renewable Energy Sources Act (EEG), from which companies also benefitted, mean that owners of commercial installations want to operate them with increased self-sufficiency.

Many operators may soon be able to discover the most lucrative solution. Indeed, anyone whose systems will no longer benefit from the EEG incentives should be able to find out soon. According to the current analysis by PricewaterhouseCoopers (PwC) „Energy facts: Old Photovoltaics systems – the end of incentives in sight“, from 2021 on, proprietors of average-sized roof systems on detached houses can gain returns of just 163 euros per year by selling electricity on the energy exchange. In contrast, they could save 533 euros per year by using the electricity themselves.

The savings could turn out to be even greater if the PV system is combined with a storage system. In subsequent years, this option will become increasingly enticing as the price of storage systems is set to fall with greater momentum. Discover current and future markets, technologies and business models at ees Europe 2019.

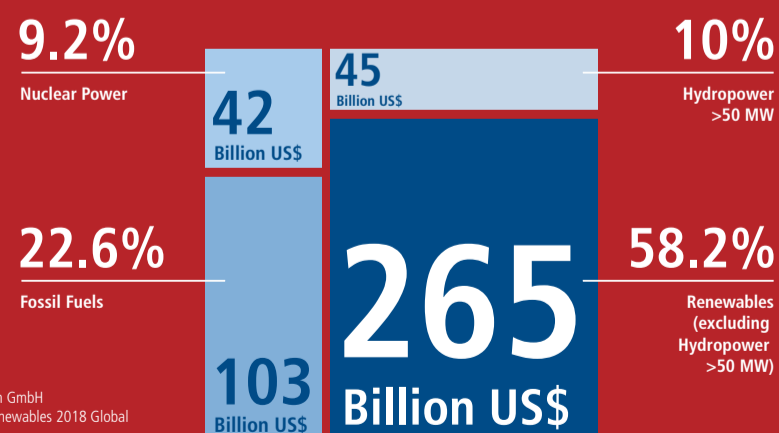
READY TO INVEST IN THE ENERGY FUTURE

EnBW wants to finance investments in photovoltaics, wind energy and electric mobility with green bonds, which they launched on the capital market in Luxembourg in October. The issue size of the bonds, with a term to maturity of 15 years and a 1.875% coupon, was 500 million euros and was oversubscribed within hours, according to a press release.

EnBW continued their statement by noting that this was the company's first green bond. Unlike conventional company bonds, the proceeds from the green bonds must be used exclusively to fund climate-friendly projects. According to EnBW's Chief Financial Officer, Thomas Kusterer, the transformation of EnBW towards renewable energies and smart infrastructure solutions is a core element of the company's strategy. "The fact that the bond was several times oversubscribed shows that issuing it as a green bond supports our strategy. That has also been rewarded by the capital market."

The rating agency ISS-oekom confirms the bond's good sustainability quality, according to EnBW. EnBW also stated that the green bond is certified to the high standards of the Climate Bonds Initiative (CBI). More and more institutional investors now prefer to invest in sustainable financial investments.

Global Investment in New Power Capacity 2017



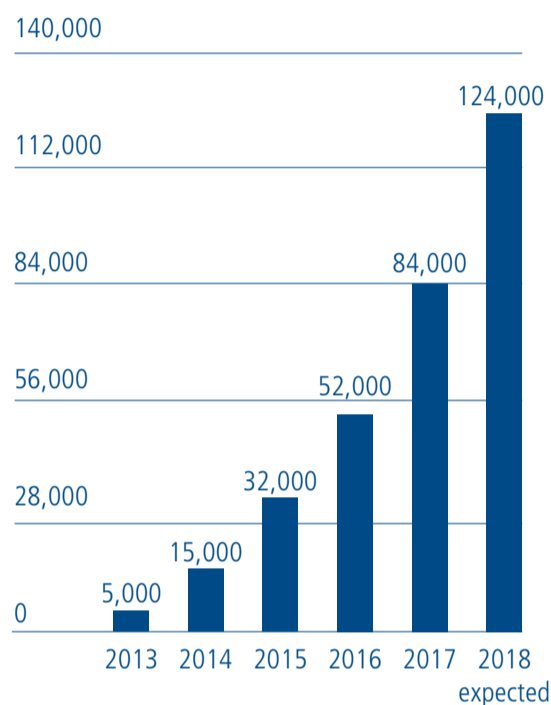
© Solar Promotion GmbH
Source: REN21 Renewables 2018 Global Status Report

THE STORAGE SYSTEM MARKET IS BOOMING: DOMESTIC AND COMMERCIAL STORAGE SYSTEMS ARE THE KEY DRIVING FORCES

The worldwide market for energy storage systems is booming – in the private, commercial and industrial (C&I) sectors. Globally, ‘behind-the-meter’ systems

(BTM, as opposed to front-of-meter systems) created to optimize self-consumption are the most important driving factor behind this boom.

Development of solar-plus-storage systems in Germany Total systems installed 2013–2018



Source: BSW-German Solar Association | As of 03/2018
Graphic: Solar Promotion GmbH

Wood Mackenzie, a British energy research and consulting firm predicts that the US market will reach more than 500 million USD in sales in 2018. The number of private storage systems has increased by 61 percent per quarter, making the domestic storage system market the leading sector for both installed storage performance and storage capacity.

There are also signs of growth in Europe: Compared with 2016, the entire European market for energy storage systems grew by 49 percent to almost 600 MWh in 2017. This is the central finding of the semi-annual ‘European Market Monitor on Energy Storage’ (EMMES), which is published by Delta-ee in cooperation with the European Association for Storage of Energy (EASE). According to the report, the two most important forms of BTM energy storage – private and C&I systems – are expected to grow by a further 45 percent in 2018.

Germany is the largest national market for domestic storage systems both in Europe and around the world. It was Italy, however, which boasted the most dynamic growth, and was also one of the most well-represented countries at ees Europe, where representatives from the most important markets meet manufacturers and developers from all over the world.

EES EUROPE IN MUNICH – UP CLOSE AND PERSONAL WITH THE MARKET LEADERS AND INNOVATORS OF THE STORAGE INDUSTRY



Last year was a resounding success for ees Europe, the continent’s largest and most visited exhibition for batteries and energy storage systems, which was held for the fourth time in Munich from June 20–22, 2018. The exhibition, which in 2018 joined The smarter E Europe family of exhibitions, focused on the growing importance of efficient energy storage systems at all levels of renewable energy supply and e-mobility. Other hot topics at ees Europe included expanding and increasing the efficiency of battery production whilst reducing costs, securing grid stability through the integration of flexible energy storage systems, and coupling the electricity, heating and mobility sectors. In 2018, 432 companies from all over the world presented their products, services and solutions for energy storage at The smarter E Europe. In total, 1,172 exhibitors and 46,450 visitors from 156 countries were in attendance in Munich. Exhibitors at ees Europe 2018 were impressed by the event’s cosmopolitan nature and the quality of visitors, with 99% of visitors rating ees Europe as good to excellent. Exhibitors and visitors alike emphasize the role that ees Europe plays as a leading exhibition in the battery and energy storage industry.

The next meeting of the international energy storage industry will take place in Munich from May 15–17, 2019. For more information, please visit: → www.ees-europe.com

IN THE RIGHT PLACE AT THE RIGHT TIME!

From constructive conversations to meeting lucrative business partners – things can move quickly at Europe’s largest and most-visited exhibition for batteries and energy storage systems. Aside from sustainable storage solutions, ees Europe, which is taking place as part of the innovation hub, The smarter E Europe offers plenty of room for face-to-face meetings with great commercial potential, stemming from the many players from all around the world in attendance.

This increases your chances of finding new partners, clients and investors. Again and again, ees Europe is the place where international storage projects and collaborations get started. An example of this can be found in the companies Unlimited Energy Australia and TESVOLT, who met at ees Europe 2017. That was the start of a successful collaboration: Soon after the first meeting, the companies joined forces to set up an avocado farm in Australia powered entirely by renewable energies – a project which won them The smarter E AWARD 2018. The prize has underlined the importance of energy independence in remote areas and helped us to promote decentralized energy options in Australia and worldwide,” says George Zsolt Zombori, CEO of Unlimited Energy Australia.

Daniel Hannemann, CEO and founder of TESVOLT, adds: “Our project allowed us to show people around the world what modern technology can do. We’ve shown that it’s possible to have a power supply drawn entirely from renewable sources.” Another success story that began at ees Europe was that of SENE: In September of 2018 alone,

the manufacturer installed over 500 energy storage systems in Germany – a new record. This was a continuation of SENE’s high-flying year, which started with the presentation of a new range of storage systems at ees Europe. “We deliberately used ees Europe to showcase our new products. The

exhibition was the ideal opportunity for us to invite our trade partners and personally meet a lot of our clients,” said Jaron Schächter, managing director at SENE. “We were able to successfully conclude a lot of business on-site, and we still got a lot of customer orders afterwards.”



THE SMARTER E EUROPE JOINS FORCES WITH EUROGAS AND HYDROGEN EUROPE

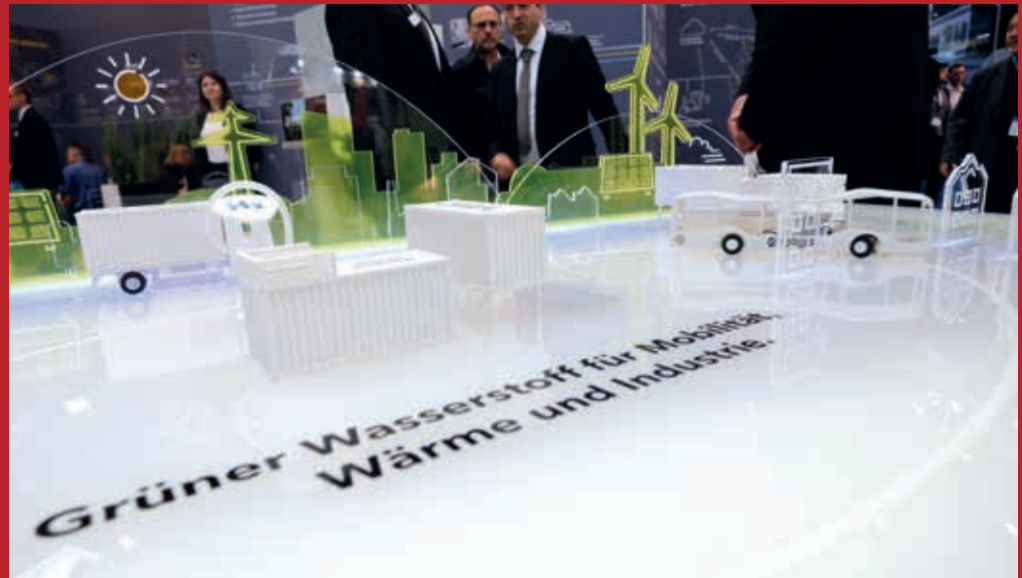


The smarter E Europe, the continent's largest energy industry platform, has signed a cooperation agreement with the associations Eurogas and Hydrogen Europe. Their objective is to join forces in achieving a decarbonised Europe and work together towards a sustainable energy future. Europe's transition to a decarbonised energy world is underway. All 28 EU Member States have signed the COP21 Paris Agreement to keep global warming well below 2° Celsius above pre-industrial levels and to pursue efforts to limit the increase in temperature to 1.5° Celsius. This target will fundamentally change the way in which energy is generated, stored, distributed and consumed in the EU. Attaining this goal will require power generation to become virtually carbon neutral and will also necessitate greater energy efficiency and the widespread decarbonisation of transport systems, buildings and industry.

Strategic partnership explores potential synergies for a new energy world

As part of the new cooperation with Eurogas and Hydrogen Europe, an all-day conference event dedicated to Power-to-X will take place at the ICM – Internationales Congress Center München on Thursday, May 16 in parallel to ees Europe, the continent's largest and most international exhibition for batteries and energy storage systems. The event is aimed at energy supply companies, power plant operators, grid operators, manufacturers and suppliers of equipment and components for Power-to-X systems, investors and politicians. The associations Eurogas and Hydrogen Europe will be presenting their activities alongside some of their member companies in hall C2 at ees Europe.

EES EUROPE CONFERENCE COMBINES WITH SIDE-EVENT POWER-TO-X



Increasing proportions of fluctuating renewables in the electricity grids and the integration of growing electromobility require electricity storage in the grids, both on the generator side as well as in the transmission and the distribution grids.

The ees Europe Conference 2019 sheds light on the breadth of these topics for stationary storage in the international context, from the technical side, about issues of profitability and on to regulations. Best practice examples show what is already possible today.

ees Europe Conference: Tuesday, May 14–Wednesday, May 15, 2019, ICM Munich

The range of storage options is manifold. It ranges from power-to-heat and charging management of electric vehicles to seasonal storage through electrolysis and methanation (power-to-gas). Which method can be used efficiently and inexpensively? Take a look behind the scenes of real business models, new technological developments and first-hand information about practical experience.

Side Event Power-to-X: Thursday, May 16, 2019, ICM Munich

THE SMARTER E EUROPE: EXPERIENCE THE ENERGY FUTURE!

The innovation hub for the energy world of tomorrow

Our electricity has always come from plug sockets, but the way we generate it is changing. In Germany, almost 40% of our electricity now comes from numerous decentralized energy plants, so centralized, large-scale fossil fuel or nuclear energy power plants are no longer the only producers. But it's not just the generation of our energy that's changing. Distribution and saving demands are transforming too. Digitalization opens up new possibilities for an intelligent network and smarter consumption. For a full picture of our changing energy world, head to The smarter E Europe in Munich May, 15 to 17.

More energy than anywhere else

Four energy exhibitions will simultaneously take place at Europe's biggest innovation hub for the new energy world, The Smarter E Europe. Intersolar Europe is the world's leading exhibition for the solar industry. ees Europe has established itself as the continent's largest exhibition with the greatest number of visitors for the battery and energy storage industry. Power2Drive Europe, the international exhibition for charging infrastructure and electric mobility, keeps you up to date with the latest developments in sustainable transportation. EM-Power, the specialist exhibition for intelligent energy use in industry and buildings, is aimed at professional energy customers.

Together, these four exhibitions cover the entire bandwidth of the modern energy industry and offer their visitors a comprehensive overview of trends and developments in the energy industry.

Renewable energy, digitalization and sector coupling are the biggest issues in our new energy world. This is mirrored in the content of The smarter E exhibition. Meet the people shaping the new energy world in Munich. Speakers at The smarter E Forum will highlight the opportunities and challenges of our energy world's transformation on all three exhibition days.

2019 is set to be The smarter E Europe's biggest year yet. The growth of our exhibition area has been fueled by the interest of new companies and start-ups, as well as established companies with expanded business models. You can now discover the whole spectrum of products, services and solutions for the new energy world across over 100,000 square meters. This year's organizers are expecting 1,300 exhibitors and 50,000 visitors, rising from 1,172 exhibitors and around 47,000 visitors last year. Come and experience the new energy future! The visit to Munich is worth it.

→ www.TheSmarterE.de

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