GREEN HYDROGEN FOR COMPANY FLEETS

In October, Austrian inverter manufacturer Fronius took the next step in sector coupling and long-term solar energy storage. At its research and development site in Thalheim, it opened the first hydrogen generation and refueling station of its own, known as SolH2UB. The hub comprises a photovoltaic system with a capacity of six kilowatts peak and bifacial modules in the shape of a carport roof as well as an electrolyzer, a storage installation and the refueling station itself.

Using solar power during the day and green power from the grid at night, the small electrolyzer produces four kilograms of hydrogen daily – the amount needed to drive 400 to 500 kilometers, depending on the vehicle. Fronius used Hyundai's recently introduced Nexo to showcase the fueling of a standard production vehicle at the public launch of the system. It took about seven minutes for Fronius's refueling station to fill up the car completely.

Fronius aims to complete the first of these customer projects by the second half of 2019. According to Martin Hackl, Global Director of the Solar Energy Business Unit at Fronius International, use of the hub will initially pay off for self-consumption. One strength of the concept is its decentralized nature, he says. Entrepreneurs, municipalities and energy communities alike can afford a SolH2UB and avoid depending on deliveries from external hydrogen producers.

SECTOR COUPLING AT THE SMARTER E EUROPE – THE LARGEST ENERGY INDUSTRY PLATFORM IN EUROPE

Don't miss out!

- Expert presentations on all three days of the exhibition, The smarter E Forum, hall B3
- The smarter E AWARD Ceremony, May 15, 5:00pm, The smarter E Forum, hall B3
- Energy Transition Award Ceremony, May 16, 2:00pm, The smarter E Forum, hall B3
- Start-ups@TheSmarterE: Meet the market leaders of tomorrow! Hall C4
- PV & e-mobility, Power2Drive Forum, hall C3
- Guided exhibition tours, free of charge
- Smart Renewable Systems Conference, ICM Munich, May 14–15

The smarter E Europe: Four energy exhibitions under one roof!
→ www.TheSmarterE.de

POWER2DRIVE EUROPE NEWSPAPER 2019

POWER 2 DRIVE | EUROPE

International Exhibition for Charging Infrastructure and E-Mobility
MESSE MÜNCHEN, GERMANY

MAY 15–17 2019
www.PowerToDrive.de

E-MOBILITY IS SPEEDING UP – GET ON BOARD NOW!

Part of THE smarter | EUROPE

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 they 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.

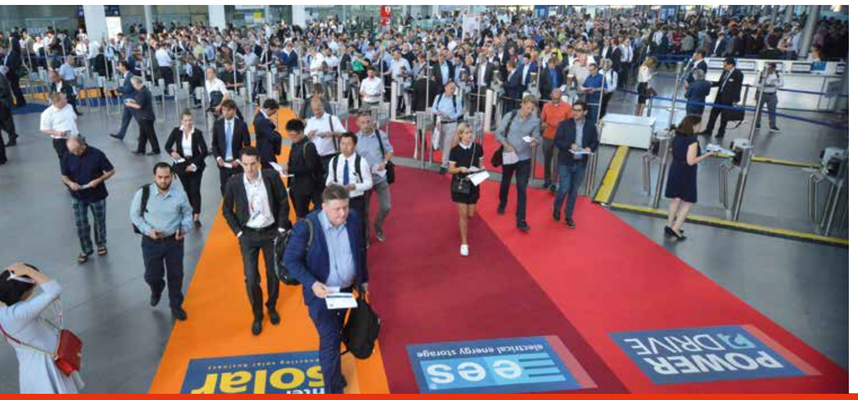
Together, these four exhibitions cover the entire bandwidth of the modern energy industry and offer their visitors a comprehensive overview of trends and developments in the energy industry.

Renewable energy, digitalization und 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

THE smarter | EUROPE



CALL FOR A SUCCESSFUL TRANSPORTATION TRANSITION USING RENEWABLE ENERGIES

The recent special report published by the Intergovernmental Panel on Climate Change (IPCC) paints a bleak picture of what we can expect if global warming reaches 1.5° Celsius above pre-industrial levels. The good news is that the technological solutions needed to effectively and affordably counteract climate change, particularly in the transportation sector, are already available. However, what the industry requires is reliable political parameters for the increased application of these technologies. As a result, the organizers behind Power2Drive Europe have formed a strong alliance and have written a manifesto committed to the idea of a successful transportation transition to renewable sources of energy and a sustainable future. Some of the manifesto's first signatories include the German Federal Association for eMobility (BEM), the German Association of Energy Market Innovators (bne), the German Association for Solar Mobility (BSM), the German Solar Association (BSW-Solar), the German Wind Energy Association (BWE), the German Solar Energy Society (DGS) and the International Battery & Energy Storage Alliance (IBESA). In its joint manifesto, the alliance has formulated seven recommendations to demonstrate why a close connection between e-mobility and renewable sources of energy is not only sensible, but absolutely essential. Help us lead the industry in the right direction!

The manifesto can be downloaded for free at:
→ www.PowerToDrive.de → News & Presse

MORE CHARGING STATIONS ON EUROPE'S ROADS

The key to the transportation transition is charging infrastructure on European roads. If e-mobility is to go mainstream, it needs to be accessible everywhere. Because people will only be encouraged to make greater use of it if they know they can rely on being able to charge their car quickly wherever they go.

A close linkage of e-mobility and renewable sources of energy is absolutely essential. This is the only way to ensure a positive impact on the climate.

Yet many European countries still need to catch up in this regard. The disparity between countries within the European Union is apparent. According to the European Automobile Manufacturers' Association (ACEA), there were around 100,000 charging stations for electric vehicles in the EU as of June 2018. However, 76 percent of them are located in only four European countries – in the Netherlands, France, Germany and the UK.

A number of companies have since announced their intentions to enter the market. In November 2018, Spanish energy producer Endesa declared its plans to install over 108,000 charging stations within the next five years. In Italy, innogy is planning to install 300 new AC charging points in parking garages this year. Germany is also seeing further investments, with Telekom planning to install 12,000 public charging stations for electric cars. Additionally, the German Federal Ministry of Transport and Digital Infrastructure has called for funding to support the expansion of publicly accessible charging infrastructure. Chargemap offers a worldwide overview of already installed charging stations here:
→ https://de.chargemap.com/map

Public EV Charging Points[1] – Top 10 Countries in Europe

POWER DRIVE | EUROPE

Netherlands	36,962
Germany	26,162
France	24,770
United Kingdom	18,158
Norway	11,535
Sweden	5,833
Spain	5,111
Switzerland	4,897
Austria	4,795
Italy	3,436

1 normal (<22 kW) and fast (> 22 kW) charging points

© Solar Promotion GmbH
Source: European Alternative Fuels Observatory EAFO
As of: November 2018

100 PERCENT RENEWABLE AND ELECTRIC TRANSPORTATION: PORTO SANTO BECOMES A TRAILBLAZER

"Smart Fossil Free Island" is the name of the ambitious project being headed by Empresa de Electricidade da Madeira (EEM) along with the Renault Group and The Mobility House on the Portuguese island of Porto Santo. The aim is to become even more independent from fossil fuels and help usher in the energy future. In addition to the deployment of renewable sources of energy, this new electric ecosystem is based on electric vehicles, stationary energy storage systems, intelligent vehicle charging and discharging, and vehicle-to-grid (V2G) applications. A photovoltaic installation with a two megawatt capacity, wind power sites with a 1.1 megawatt capacity, a stationary storage system with 121 kilowatt hours of capacity, and 40 charging points for electric vehicles were all built in the first phase. By 2022, a total of 200 unidirectional and 450 bidirectional charging points are set to be installed on the island. The initiators assume that by then, around 1,000 electric vehicles will be on the roads of Porto Santo. The electric vehicles and energy storage systems will be integrated into utility company EEM's local power grid. If more energy is produced on the island than is used, the excess will be temporarily stored in electric vehicles and retrieved in times of higher energy demand to stabilize the power grid. A positive side effect of the project is that the cost of generating power will likely fall to between four and six euro cents per kilowatt hour by 2021 thanks to photovoltaics, wind power and storage systems. With the diesel generators typically used thus far, the cost was between 50 and 60 euro cents per kilowatt hour.

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POWER2DRIVE EUROPE CONFERENCE 2019

The market trend is clear – e-mobility is experiencing major growth worldwide. The e-mobility boom is having a significant impact on the energy industry and stands for a comprehensive transition to an environmentally conscious transportation ecosystem. The Power2Drive Europe Conference 2019 focuses in detail on select markets, identifies the regions displaying particular potential and shines a light on the most important factors influencing this transition. What impact do the newest technological developments in charging infrastructure have? How can private and commercial electric vehicles best be integrated into power grids? What measures are being taken to guarantee that power grids can meet demand? Outstanding solutions and business models from all over the world will be presented at sessions such as "Charging Networks: Putting Infrastructure in Place", "EV Fleet Integration: Intelligent Solutions for the Power Grids", and "Digital Transformation: Bringing Ecology and Efficiency to Billing Processes". The Power2Drive Europe Conference familiarizes visitors with new market players and offers first-hand experience and expert analysis of best practice examples, as well as lessons learned.

The conferences will take place at the Internationales Congress Center München (ICM) in Munich, Germany, from May 14–15, 2019.
→ www.PowerToDrive.de

EU-WIDE COOPERATION FOR THE RAPID EXPANSION OF HPC LOCATIONS

According to the industry news provider electrive.net, Europe's high-speed charging network is becoming increasingly developed. Italian mineral oil company Eni has signed a global agreement with IONITY for the installation of 30 HPC charging stations for electric cars at its fuel stations. This is already the second time an Italian company has joined forces with IONITY – the high-power charging joint venture between the automobile manufacturers BMW, Daimler, Ford, and Volkswagen with its subsidiaries Audi and Porsche – with the goal of establishing charging parks in Italy.

Collaboration with the energy group Enel was announced at the end of May and should result in 20 locations by the end of 2020. All stations planned in Italy will be a part of IONITY's network, which should ultimately grow to 400 HPC locations across Europe. In addition to its new Italian partners, the joint venture has pulled more supporters on board in the past months. For instance, IONITY is also working in cooperation with crude oil company Cepsa (Compañía Española de Petróleos) to install up to 100 of its HPC charging stations at Cepsa fuel stations in Spain and Portugal by 2020. HPC locations are also to be added to 80 Shell fuel stations in Europe. And in Germany, 80 Tank & Rast rest stop locations will be equipped with IONITY charging stations within the foreseeable future.

DRIVE 14,000 KM PER YEAR EMISSION FREE WITH ONLY 20 SQUARE METERS OF PHOTOVOLTAICS

PV systems can be used to power electric vehicles and feed charging stations. Ideally, electric vehicles are charged with solar power directly from the owner's roof. Electric vehicles are notably more efficient than conventional fuel-burning vehicles. For example, a PV system with a capacity of 3 kilowatts peak in a single-family home in Germany can provide enough power annually for an electric vehicle owner to drive around 14,000 kilometers emission free (see graphic). This is particularly profitable for PV systems with a capacity of up to ten kilowatts, as these are now exempt from the EEG levy on self-consumption in Germany.

New business models
It will be particularly interesting to see what new business cases are developed for all those PV system owners who will lose their eligibility for EEG subsidies in 2021 or later, once their installations are more than 20 years old. Brand new business models are emerging for these system operators, who can profit from solar filling stations, for instance. Companies such as Parkstrom have already developed the necessary software. Installers, too, are expanding their business activities and making the transition to automobile sales. For example, solar technology suppliers are cooperating with manufacturers to offer electric vehicles for sale or lease.

POWER ON: EXPANDING CHARGING INFRASTRUCTURE TO DRIVE E-MOBILITY FORWARD

By 2040, up to 29 million electric cars will be driving on German roads. To ensure that electric vehicles can be charged anywhere, an intelligent charging infrastructure supported by a combination of private households and publicly accessible charging stations based on renewable energy is needed.

So, Power2Drive Europe has asked companies about their strategies for expanding charging infrastructure. The companies' statements below offer exciting insights into a highly dynamic market. For charging infrastructure, the time has come to power on.

Marc Burgstahler, Director of E-Mobility at EnBW
"As a leading energy company and full service provider in the e-mobility sector, we are mainly concerned with continuing the development of comprehensive charging infrastructure. Our many years of experience as experts in infrastructure and grid expansion give us an important leading edge in the industry. We use this expertise to supply charging power where it is needed and where vehicle charging is being integrated into daily life as a standard practice. By the end of 2020, we would like to have made high-speed charging stations available at 1,000 locations across Germany – and we are well on our way. We are already focusing on providing different charging powers of up to 300 kW depending on what's needed at individual locations, so that they'll be prepared for future electric vehicle types, too."

Marcus Fendt, Managing Director at The Mobility House
"E-mobility has achieved considerable market potential. More and more companies, customers and employees already have electric cars and want to be able to charge them in different places. Most of our customers have moved beyond just investing in charging infrastructure and are now looking into intelligent charging and energy management. How can we operate as many charging points as possible without the need for grid expansion or higher annual service charges? How should charging work at times when the price of electricity is low and the photovoltaic infeed high? That's where our customers need more information and where investments are required."

Job Karstens, PR and Event Manager at EVBox
"Charging infrastructure expansion is in our blood. Within the past few years, we have already installed more than 60,000 charging stations in over 45 countries. We believe in introducing positive changes to the transportation sector, since 23% of all CO_2 emissions are produced by traffic. A more widespread deployment of electric vehicles would drastically reduce emissions, so cities should invest in their charging infrastructure. For example, Amsterdam and Rotterdam – cities we equip with charging stations – have an international reputation as being leaders in e-mobility investments."

Susanna Zapreva, CEO of enercity AG
"There is a lot of dynamism in the market for charging infrastructure. Take Hanover, for example. As the concession-holder for the charging infrastructure network in Hanover, we will construct 480 charging points by the end of 2020. We have set the goal of providing our customers with one of the densest charging networks in Germany operated solely with green power, within just two years. And the charging infrastructure is only one part of our e-mobility initiative. We're fully on track to break down many e-mobility barriers."

Elke Temme, COO of innogy eMobility Solutions GmbH
"We at innogy are continuously driving the expansion of e-mobility forward. The need for user-friendly package solutions and services will rise significantly in the future, particularly with commercial customers. And we provide the technology that's needed here, for every field of application – from public charging solutions to wall boxes for home use to fleet charging and high-speed charging. We are investing in further developing charging technology – primarily in IT systems for simple, smart charging. That is the key to e-mobility's success."