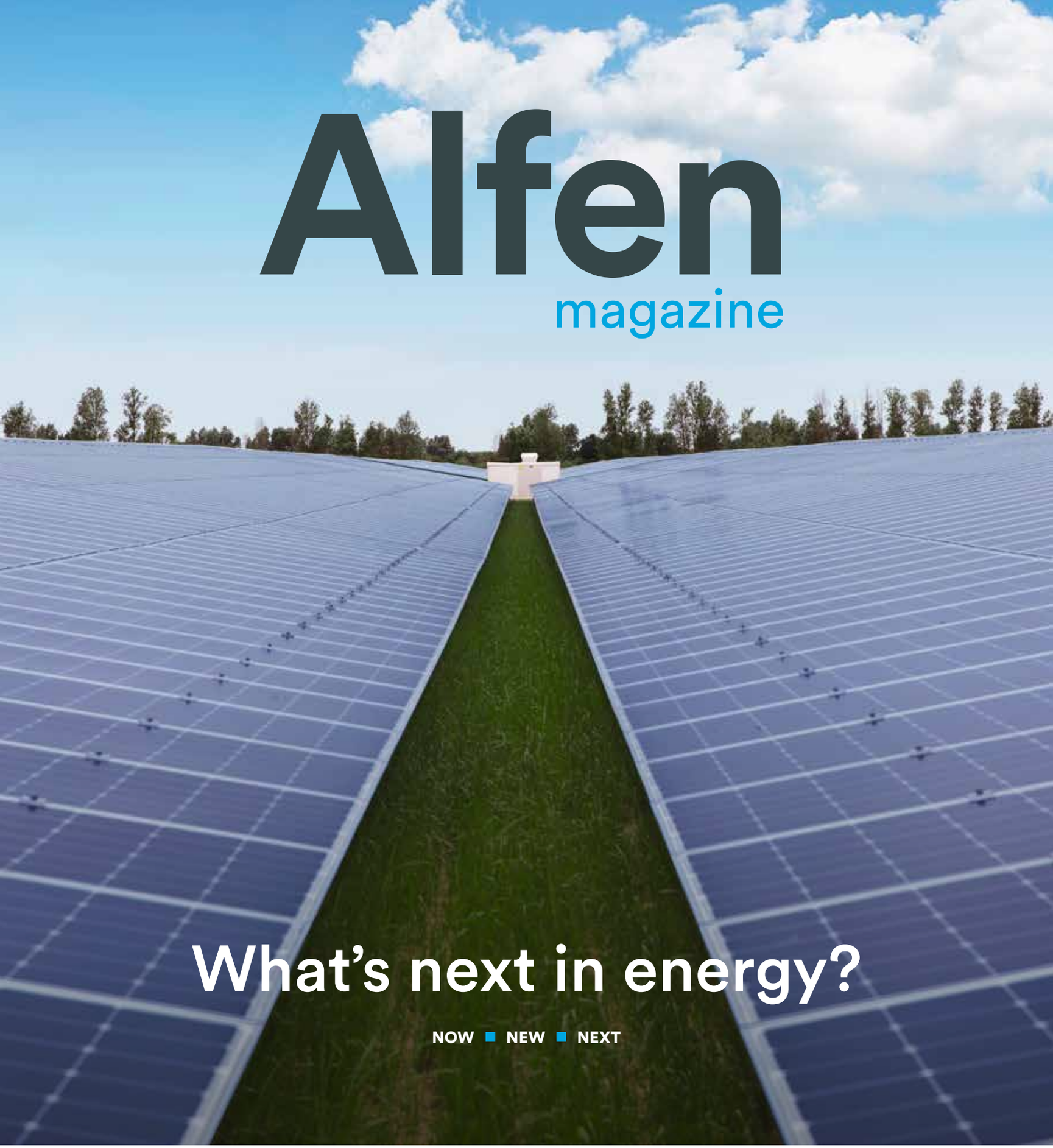
Alfen

magazine



What's next in energy?

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ALFEN

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Dear reader

Welcome to this edition of the Alfen magazine. It has been another busy year but we consider it a privilege to be working with you all at the heart of the energy transition through such exciting times. The last 12 months for Alfen have been about growth. Our business is larger and so is our geographic reach. We now have a presence in France and Norway and have entered the Swedish market, with Alfen Elkamo chosen as the preferred supplier of secondary substations by a group of 19 Swedish grid companies. Unprecedented demand for our EV charging stations has also led to us extending our after-sales and service offering across a further seven countries, with three more in the pipeline, to deliver further opportunities for our resellers to differentiate based on quality of service.

Energy transition is delivering growth opportunities to all of our partners and customers too and these are driving all kinds of new business models and, in some cases, full business transformation. With this in mind, we spoke to a selection of our contacts about what they are experiencing now, what is new and what they are expecting next - and this magazine is sectioned to reflect that.

We include interviews with three grid operators: Savon Voima Verkko Oy and PKS Sähkönsiirto Oy in Finland, and Enexis in the Netherlands. We also spoke to Kenter about its transformation from part of a Dutch DSO, to an independent energy services company.

Talking about growth ambitions and what constitutes the new ‘large’ in the solar industry are European developers, Ecorus and Pfalzsolar.

Norwegian utility, TrønderEnergi, talks about introducing large battery storage to complement renewables and, by contrast, Belgian music festival, Tomorrowland, presents two mobile battery use cases as part of delivering large sustainable events.

Presenting a range of EV perspectives are Belgian car importer and distributor, D’leteren, international car rental company, Europcar, and EV charging platform provider, Virta. E.ON and, UK-based, Elmtronics provide us with charge point operator’s views and Dutch social workplace, Caparis, delivers an integrated end-customer perspective.

We hope you enjoy reading the magazine and look forward to continuing to work with you in the future.

Warm regards,

Marco Roeleveld
CEO Alfen

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Now

Ecorus – how a solar car instigated a solar project lifecycle company

An interview with Raphael Janssens, Founder and Managing Partner of Ecorus

Ecorus is a solar developer serving companies, housing associations and landowners. With branches in both the Netherlands and Belgium, it manages the solar project lifecycle, from development, financing and construction to ongoing operations and maintenance. Ecorus has delivered 192 ground and roof-based projects to date which, collectively, produce 75MW of electricity per year. The company was established in 2010, through a partnership between Groep Coenen and two former solar car engineers, Philippe Vanhoef and Raphael Janssens.

We spoke to Raphael Janssens about what inspired him to set up Ecorus and what he sees for the future of the company and the industry as a whole.

Can you elaborate on Ecorus' activities?
I founded Ecorus in 2010 after getting hooked on solar and its potential while working on a fully solar powered car. I believe that all cars will be powered by solar in the future although, unlike the one I worked on, they will be powered indirectly, with solar generated externally and used to charge car batteries. Either way, this was what instigated my solar journey and I was passionate about continuing it.

Ecorus believes in renewables. Our mission is to contribute to a climate neutral world and, for us, that means solar because it is one of the most efficient energy resources available to man - inexhaustible, comparatively low maintenance and cheap.

In Benelux, we install solar panels on residential and business properties, as well as deliver larger roof and ground-mounted projects. This year, we will install solar panels on 9,000 residential households and more than 150,000 panels on green fields, as well as commercial and industrial rooftops. We consider that installing solar panels will be just the first step. Over time, we see the opportunity to offer complementary products and services such as EV charging stations and energy storage. These things together are what will make a sustainable world in terms of environment, climate and economics. Our role in that is to project manage everything, to deliver solutions using products like Alfen's.

What are the latest developments in solar PV?
There is a huge amount happening in the solar PV industry at the moment. From a technology perspective, solar PV panels are getting more powerful. We are able to use higher voltages within solar PV parks to enhance efficiency while using less materials. At the same time, the cost of solar panels continues to decrease.

> “ While subsidies can certainly stimulate a market, it needs to become commercially self-sustaining to be viable in the long term ”

Raphael Janssens co-founded Ecorus and has been a Managing Partner since 2010. He is an electro-mechanical engineer with two Master’s degrees, one in Photovoltaics and Renewable Energy, and the other in Engineering Science. Prior to founding Ecorus, he worked as a Project Leader and Project Development Engineer.

From a project perspective, the scale of projects keeps increasing. Examples of our latest projects include a 10MW solar park in Belgium and 10MW and 17MW projects in the Netherlands. We are actually co-investing in some of these projects to help remove barriers and make them happen, As a result, we now act as developer, EPC (engineering, procurement and construction), financer and O&M (operations and maintenance). The latter makes us less sensitive to subsidies as it gives us recurring revenues which provide more stability for us as a business.

Additionally, the market is becoming more professional and increasingly focused on quality. In line with this, our own internal quality standards are becoming ever more stringent; for example, we test the performance of all our procured components before sending them to project locations.

What kind of solar PV ecosystem is needed to ensure optimal usage of solar for businesses and homes?
We need an energy system that can cope with the upscaling of renewables generation, the resulting bi-directional transportation of distributed energy and that supports smart trading. These things would optimise energy efficiency and costs across the whole system and remove the reliance on subsidies. While subsidies can certainly stimulate a market, it needs to become commercially self-sustaining to be viable in the long term.

To improve transportation, we need the DSOs (Distribution System Operators) to build and maintain a futureproof energy network – the wires in the ground. For trading, I believe we need a smart short-term energy market - spot market - which promotes use of the grid to optimally serve the end consumer. This would create the market dynamics to reduce load in the grid. At Ecorus, we are currently developing a proprietary trading platform that will allow peer-to-peer virtual energy trading to enable customers to make optimal use of self-generated solar energy.

What are the current key challenges in the industry?
In addition to those mentioned in the previous question, we also need to strive for policies that promote sustainability in new build houses. Inclusion of solar panels wherever possible should be an essential requirement for all new housing development projects.

In many situations, it is already more cost-effective to construct a roof using solar technologies than using traditional methods.

There is an additional challenge related to the supply of solar panels. Unlike other technologies, solar panels are standard the world over and so don’t require adjustment for different countries and regions. They are also predominantly produced in Asia. These two factors together make the supply chain susceptible to politics; for example, a US decision to raise import tax on solar panels, and a Chinese decision to increase the subsidy on them, both created a rapid local spike in demand which left European countries almost empty-handed.

What is your ambition going forward?
By 2025, we want to have an installed solar PV capacity equivalent to a 500MW coal power plant. We strive to have real impact in helping to create a more sustainable world and removing the need for an entire coal plant certainly does that!

We want to continue to increase the amount of solar energy we supply to the grid as a whole, by annually doubling our installation capacity. We have been very successful in this respect so far and we have some stand out projects; for example, we installed a solar park on the island of Saba, in the Caribbean, which powers the whole island and replaces the old diesel generator solution.

Besides the above, our indirect ambition is to encourage anyone we can to join our quest for a climate neutral world. To us, it is not about winning each and every project but about ensuring more renewables get online as fast as possible, whether they are delivered by us or others.

Can you reflect on your relationship with Alfen?
As the number and size of solar projects grow, so does the need for microgrid innovation and Alfen offers that innovation. What I especially like is Alfen’s adaptability - they think along with us, quickly understand the issues and believe in progress; for example, substations for solar PV parks are different than those used for the grid and so Alfen developed a substation specifically to suit our needs. They worked in partnership with us to get this right and delivered what was the right result for everyone, from both an energy optimisation and economical perspective. ■

Europcar, on the trade-offs when scaling up e-mobility in car rental

With over 220,000 cars, in 3,000 locations, across 130 countries, Europcar International is Europe's largest car rental company. In the Netherlands, it operates from 36 branches spread across all major cities and airports. We talked to Europcar's Commercial Director, Marc Beers, and Operations Manager, Michiel Pelle, about the opportunities and challenges related to introducing electric vehicles to a rental fleet.

An interview with Marc Beers, Commercial Director, & Michiel Pelle, Operations Manager

Can you provide some background on Europcar's current electric vehicle position?

Beers: We have been using hybrid cars in our fleet for some time but only began to adopt full electric vehicles in 2018 so we are still in the early stages. Our business success is obviously very dependent on fleet utilisation rates and so our vehicles must be appealing to customers. Affordable rental prices and strong range capability are the key components of this appeal and improvements in both areas in recent years have helped to drive EV adoption. We currently have 80 EVs in our fleet but expect to see steady growth to a much larger electric fleet in the near future. Ultimately, this is likely to correspond with future advancements in range capability and reduced vehicle purchase costs.

Why are you introducing electric vehicles to your fleet?

Beers: The Dutch government aims for 100% of new cars sales to be electric in 2030 so, to some extent, we are responding to government incentives. At the same time, many cities are introducing stricter regulations on car emissions and are incentivising electric vehicles; for example, by offering free parking, and so the financials increasingly make sense. Perhaps more significantly, our customer base, which consists largely of corporate users, is increasingly requesting electric. This shift in desirability, whether driven by novelty, environmental awareness, company and tax incentives, or a combination of these, makes our own electric vehicle adoption necessary to meet customer demand.

Marc Beers (right) is Commercial Director at Europcar, responsible for the commercial activities in the Netherlands. Marc has an automotive background working in sales management positions at the importers of Hyundai, Mazda and Jaguar LandRover. Before he joined Europcar he worked for Midtronics, the global leader in battery management, managing the EMEA region.

Michiel Pelle (left) is Manager Operations at Europcar, responsible for the Europcar branches in the Netherlands. Michiel started with Europcar as a student in 2005. After graduation (MSc Marketing Management at Tilburg University) he held the position of Station Manager in Breda and in the Rotterdam region (4 branches).

> “ As operational excellence and optimum utilisation rates are key for us, it is crucial that any charging equipment is highly reliable and capable of rapid scale-up in the future ”

What challenges are you encountering when introducing electric vehicles to your fleet?
Beers: In many cases, renting an EV is a first-time experience for our customers. They have all sorts of questions about how the car functions, its behaviour on the road and charging considerations. This requires us to spend more time explaining before we can leave the car with a customer.

Pelle: From an operational perspective, this has a big impact because our business model is fully centred on utilisation rate. Turnaround time, from vehicle return to next rental period, can be as short as five to ten minutes for a traditional car. Customers usually return them fully fuelled and so they only need a quick, but thorough, check and wash before being rented out again. Fast turnaround has become increasingly important for our business success in recent years. Ten years ago, car rental was booked a week or more in advance which made planning and understanding vehicle utilisation easy. Today, bookings are often made the day before or on the same day, so optimal utilisation is heavily reliant on turnaround speed and relocation of our vehicles. As well as requiring more explaining, our electric vehicles need charging when they are returned and this can obviously extend turnaround time significantly.

How do you keep utilisation rates high?
Pelle: As turnaround times are especially important for short-term rentals, we have so far focused on longer rental periods for our current EV fleet. As our electric fleet grows though, we will need to adjust our models for short-term rental. The summer has provided us with great opportunities to test short-term scenarios. Many corporate EV drivers either return their cars for the summer or exchange them for a traditional vehicle to drive to holiday destinations. As a result, we have to introduce EVs into our shorter term rental business to optimise utilisation. One result of this summer ‘test period’ has been an increased rollout of charging infrastructure across our branches.

What’s next for e-mobility in the rental business?
Beers: Norway, Sweden and the Netherlands are frontrunners in EV rental but today’s volumes are only the beginning. There is no doubt that e-mobility will be a huge part of our future business; the only question is about timing. While we obviously need to continuously adjust to respond to societal trends, we must do it without compromising the operational excellence which underpins our business and is essential to our corporate client base. We replace our entire fleet every six to nine months which allows us to be very flexible in our response to new vehicle trends and preferences.

Pelle: I agree. We are definitely flexible enough to adapt to changing market preferences although the shift towards e-mobility is not as simple as just replacing our fleet with EVs. Getting it right requires knowledge and infrastructure. As a result, we have partnered with Eneco so we can benefit from their e-mobility experience and rollout Alfen’s charge points across our branches.

Can you comment on the collaboration with Alfen?
Beers: As operational excellence and optimum utilisation rates are key for us, it is crucial that any charging equipment is highly reliable and capable of rapid scale-up in the future. Alfen is one of the few players with a mature product and proven track-record of delivering high volumes of chargers. This means we can be confident about its product reliability and that the underlying technical platform is advanced and ready for the inevitable scale-up in our business. Our car fleet can be adjusted and replaced fairly quickly but our network of chargers needs to be futureproof, offering excellence both now, and as part of a future larger solution. Other important elements for us were smart charging, to facilitate the billing process of the kWh charged, and a user-friendly interface, to make things easy for first-time or less experienced EV drivers. We believe that with Eneco and Alfen, we have found the right partners to help us successfully transition towards e-mobility. ■

Greenchoice, on its ambition to supply green energy at any time of the day

Greenchoice was the first, and is now the largest, purely sustainable energy supplier in the Netherlands. It delivers renewable energy to 570,000 customers and, for its entire consumer client base, this is generated within the Netherlands.

The company has won regular awards and was Gaslicht.com's 'Best Energy Supplier' for the 7th consecutive year in 2019.

Alfen supplied and connected a 10MW battery to Greenchoice's Hartel wind farm in Rotterdam and we spoke to CEO, Evert den Boer, about the role of storage in the company's ambitions.

An interview with Evert den Boer, CEO at Greenchoice

In October 2015, Evert den Boer was appointed CEO of the green energy supplier Greenchoice. In April 2017 he joined the board of Energie-Nederland, the Dutch trade association for energy companies. Evert has extensive experience in the energy sector. Before Greenchoice, he lived with his family in Copenhagen where he was responsible for Dong Energy's sales activities in Northwest Europe. He has also held commercial positions at Vattenfall, Nuon, Shell, Gasterra and The Boston Consulting Group.

Can you provide some background on Greenchoice in the Dutch energy landscape?
We started in 2001 as the first 'pure play' green energy supplier and now serve 570,000 customers across the Netherlands. As well as serving domestic customers, we also deliver energy to corporate and government customers, most of whom have clearly defined sustainability ambitions and targets. Examples include the Dutch State, some 30% of Dutch municipalities and De Nederlandsche Bank (Dutch National Bank).

All of our energy is generated from renewable resources, from projects spread over 500 sites across the country. This means that our energy is always generated close to centres of demand so it doesn't need to be transported over large distances which incurs energy loss. While we need to achieve scale to make a significant impact on the transition to a sustainable energy system, it is the transition, rather than being the biggest, that is our key driver.

What are Greenchoice's ambitions in relation to its 'always green' mission?
At the present time, we are able to match our customers' annual demand for renewable energy from locally generated supply. Our ambition is to be able to also achieve this on a weekly, daily and hourly basis. This will be a necessity as we continue to shift towards a 100% renewables-based society. It is from this aim that we derived our 'always green' motto i.e. to be able to provide green energy 365 days a year, 24 hours a day.

There are three levers we can apply to address the mismatch between supply and demand of renewable energy. Firstly, by optimising our supply mix we can benefit from different load profiles; for example, those offered from wind and solar. Secondly, we seek to create flexibility in consumption patterns on the demand side – from our customers. Smart charging of electric vehicles is an example, with charging patterns adjusting based on the available energy. Finally, energy storage can serve as a buffer between fluctuating supply and demand, by storing any excess energy until it is required. We are preparing ourselves across all these three levers for our 'always green' future.

"Our 'always green' mission is to provide green energy 365 days a year, 24 hours a day"

Can you tell us about your recent storage project with Alfen?
Hartel is our largest windfarm in the Netherlands. It delivers, on average, 68GWh of green energy per year - enough for about 18,000 households. The 10MW energy storage system delivered by Alfen is used to smooth the fluctuating energy output from the wind farm and therefore limit the impact on the local grid. This becomes increasingly important as the volume of renewables increases and so we are, in effect, planning for the future.

We want to be a frontrunner in renewable energy and this requires that we invest in, and gain experience of, new technologies. At present, the business cases around energy storage are positive and so the decision was easily made.

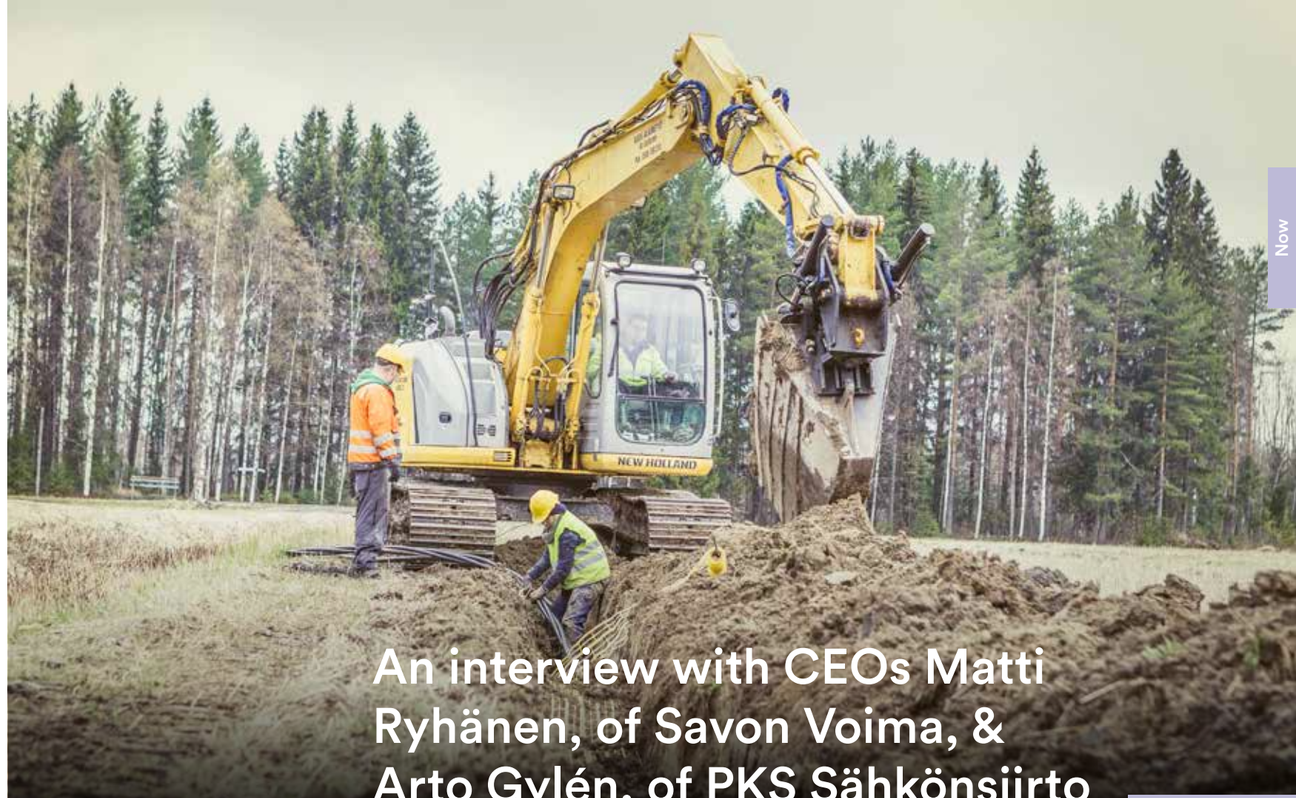
Greenchoice's strength and background in commerciality and Alfen's deep technical knowledge have proved very complementary and have benefitted both sides. We chose Alfen for its agility, local presence and full service model, in addition to its extensive experience with the power grid, energy storage systems and modular plug & play design. As this was such an innovative project, I consider it a great achievement that we were able to work together to deliver it both on time and within budget.

What are your views about centralised and decentralised storage?
Our view is that going off-grid is not efficient. From an economical perspective it makes sense for the whole system to benefit from the different energy consumption patterns of different households. Exploiting the flexibility of all households connected to the energy system will optimise sustainability at minimum cost. Much of the mismatch between supply and demand can be resolved across a portfolio of customers, with any remaining inbalance addressed by energy storage. This can either be at large scale, such as our Hartel wind farm, or local scale, connected to a local solar farm or in a residential area. When not needed to smooth local energy peaks and troughs, the economics of these storage systems can be further optimised by energy trading.

What could be next in energy'?
Government ambitions are clear. The Netherlands is preparing itself for 75% renewable energy by 2030. At present, even on a very sunny and windy day, only about one third of our electricity is generated by renewables so there is a long way to go. Although technology will play an important role in getting us there, I believe the big 'next' lies more in organising and motivating society and key actors.

The energy sector is used to making its decisions centrally and internally. To make the energy transition happen, local support and involvement are becoming increasingly important. For example, we are partnering with many local energy cooperatives. We provide our experience with energy administration and offer our software platforms for e.g. crowdfunding, allowing the energy cooperatives to focus on what they do best - realising local projects with local support. When combined with new technologies, such as energy storage, I believe that these types of initiatives will be an essential part of achieving our 'always green' ambition.

Two Finnish grid operators discuss their dual reliability challenge



An interview with CEOs Matti Ryhänen, of Savon Voima, & Arto Gylén, of PKS Sähkönsiirto

Eastern Finland is largely rural, with a stunning patchwork of rolling hills and lakes. While this makes it appealing as a holiday destination, it provides unique electricity grid challenges. The network has to cover a much larger area to deliver to a comparatively low volume of customers, many of whom operate rural businesses such as farms. We spoke to two Finnish grid companies about their respective networks, how they think energy transition will play out in Finland, and what impact this will have on the distribution grid.

Matti Ryhänen is CEO at Savon Voima Verkko Oy, which serves 120,000 customers and operates 27,000 km of grid (12,000 km MV and 15,000 km LV), and Arto Gylén is CEO at PKS Sähkönsiirto Oy, which serves 88,000 customers and operates 22,000 km of grid infrastructure (10,000 km MV and 12,000 km LV).

What do you think the future Finnish energy landscape will look like?
Gylén: Electricity will play a larger role, with more solar and wind generation, and demand-side management will become more prevalent - shifting or reducing consumption in time to better match supply and reduce stress on the grid. Energy storage will also be important and be provided using multiple solutions including batteries, heat storage and power-to-gas - which converts surplus (renewable) electricity into a gas fuel such as methane or hydrogen.

Ryhänen: Urbanisation is happening quite rapidly here, at a rate of between 1% and 4% per year and so energy consumption will increasingly be concentrated in population centres. Micro-generation will continue to increase and the EV charging market is beginning to take off. Together, these will create new challenges.

What do you consider to be the greatest challenges for the energy grid?
Gylén: Electric vehicles, micro production, heat pumps and demand-side management will change the world of electricity. The future grid has to be well structured, controllable and reliable, while offering the flexibility required to accommodate all these new technologies and solutions.

Ryhänen: At the same time, rural demand is changing; for example, more than 1,000 smaller dairy farms will cease to operate in the next 5 years. The result will be fewer rural businesses but they will be much larger, with higher demand. While this will increase reliability of supply, it will also push up prices and this could have a political impact.

Arto Gylén has been the CEO of PKS Sähkönsiirto Oy since 2000. He holds a Master of Science in Technology.

Matti Ryhänen is an electrical engineer with 40 years' experience, 30 of which he has spent at Savon Voima. He was in charge of grid operations from 2004 until they were hived off to a subsidiary, when he was appointed CEO. At present, he is also Acting Chairman of the Finnish Energy Grid Committee.

What measures are you taking to prepare your distribution grids for the future?
Ryhänen: Finnish electricity market law from 2013 requires companies to improve grid reliability. There are large projects underway to move medium and low voltage cabling underground and introduce more smart grid automation to substations. At the same time, capacity is being increased to create a solid future grid platform. Our goal at Savon Voima is to have 30 - 40% of MV cables underground by 2036 and we are already committed to keeping investment consistent until 2036.

Gylén: At the moment we are renewing our distribution grid to improve weather-proofing and make it capable of meeting future demands. Half of the grid will run underground and the other half will be formed using overhead lines along roads. The size of these investments will remain at a high level until 2036.

> "The future grid has to be well structured, controllable and reliable, while offering flexibility"

Can you tell us about your involvement in any recent innovation (pilot) projects?
Ryhänen: Our ICT systems are being updated to improve mapping and customer management. Savon Voima Oyj has founded a subsidiary company, Väre, for EV charging projects. We are also involved in a project to create a datahub in Finland for market processes, which will aid the exchange of information between all market players.

Gylén: We are one of four grid companies that have participated in a Lappeenrannan University research project which began in 2017. Its purpose was to study the change in customer demand for electricity and understand the challenges it presents for the grid. The outcome is that we are informed, from an engineering perspective, about how best to adapt and renew our grid.

What sustainability measures are you taking internally?
Gylén: We aim to recycle materials wherever we can; for example, all our poles are recycled using a system shared with other forward-thinking companies. We also map all environmental matters during the planning phase of our work; for example, we thoroughly map all ground water areas and, where necessary, use substations equipped with additional oil protection.

Ryhänen: Within Savon Voima Oy, the biggest sustainability initiative has been in power plants which have switched to local biofuels. Oil is not used at all now, except occasionally for diesel generators when there is no other option. Savon Voima Verkko is very practiced at waste recycling across the entire organisation.

Can you comment on your experience of working with Alfen Elkamo?
Ryhänen: Alfen Elkamo is one of our preferred substation providers. A great deal of effort has been made to design and improve the procurement/ distribution process and, as a result, the procurement chain is very effective.

Gylén: Our experience with Alfen Elkamo has been excellent. It has been one of our most important suppliers for many years and the products delivered and developed over that period have proven to be very reliable and safe. We have also been allowed to request customisation of products to suit our needs so we feel like we have a supplier that really listens to us which is important. ■

Second-life battery storage for E-Gopang EV charging plaza on South Korean island

Jeju is a volcanic island in South Korea. It is a World Heritage Site and home to half of all of South Korea's EVs. The island's power grid is connected to the mainland via HVDC but Jeju also generates its own power, 50% of which is renewables, and aims to become carbon-free by 2030.

Alfen and BMW worked with KCS Global to provide wind powered energy storage based on second-life BMW car batteries for the E-Gopang EV charging plaza. Like all of Alfen's battery storage solutions, these are housed in a container with monitoring and operations made possible, largely remotely, via Alfen Connect software. This is especially important for second-life batteries, to understand the state and performance of individual cells, in order to optimise the system.


New

Building an inclusive and sustainable workplace of the future with Caparis

Social workplace, Caparis, helps people to make a positive contribution to society by providing work opportunities to those who are not able to find work in their own right through normal channels.

Caparis' CEO, Alex Bonnema, has previously led a social housing company and worked for a Dutch energy company. We spoke to him about the role of Caparis, his views on sustainability and his vision for combining these in the workplace of the future.

An interview with Alex Bonnema, CEO at Caparis

Alex Bonnema is CEO of Caparis. He is a passionate executive and motivated to contribute to society, which is underpinned by his management work for Circulair Friesland and his supervisory board positions at various care organisations.

Can you tell us about Caparis’ activities?
Caparis is a social workplace and employs people that are distanced from the everyday labour market; for example, for intellectual or physical reasons. We focus on guiding people towards regular employment and growing their self-confidence. We believe that everybody has something to contribute to society and, as a talent company, we take a ‘glass half full’ approach to our people, by identifying what individuals already can, and could, achieve, rather than what they can’t do.

For many of our employees, working with Caparis provides the stepping stone to independence and a regular job. Others will always have need for an organisation like Caparis because, while they are very capable of doing good work, their limitations make an independent role more difficult; for example, because they can’t deliver work at the pace required.

We are a not-for-profit organisation. Our philosophy is to be self-sustaining so able to bear costs and salaries from our turnover, rather than be dependent on money from our shareholders, which are local municipalities. This means that we become a positive space, connecting the regular labour market with those who are naturally distanced from it, without incurring additional government costs.

What is your sustainability agenda? What initiatives do you have?
At Caparis we maintain a long-term horizon and take our responsibility for a fully sustainable world. As such, we have several sustainability goals for the next few years. Firstly, we want to become CO2 neutral by 2023. This year, we aim to install 8,000 solar panels, reducing our demand for external energy by 25%. Additionally, we aim for a full electric fleet, which currently consists of 80-100 vehicles. We would also like to achieve the same with delivery trucks, whether these are our own or those of our suppliers.

Second, we believe strongly in a circular economy and are exploring how to become plastic-free. We consider that this will be achieved partially by reducing our need for plastics and partly by switching to biowaste and recyclable plastics. We will do this in conjunction with our clients to extend the ethos across the value chain.

Finally, and perhaps most importantly, our whole focus as an organisation is on facilitating people to play an active positive and contributory role in society and being sustainable is part of that. We educate our employees on sustainability and give them real examples of how they can contribute; for example, by eating less meat to reduce greenhouse gas emissions from the meat industry.

Can you tell more about the project that Alfen is doing for you?
We have 3 main locations in the Netherlands and Alfen will make our energy system considerably more sustainable at two of them, by maximising our use of self-generated solar; for example, for use in the factory and to charge electric vehicles.

Alfen’s smart energy solution will complement solar panels which are being installed wherever possible at two of our locations, Heerenveen and Drachten. At each site, a new smart microgrid including three substations and a grid connection will be installed and connected. A total of ninety two Alfen electric vehicle charge points will also be installed within new car port infrastructure at our sites. We will also use Alfen Connect as an energy management system so that our energy management requirements are monitored and, effectively, the energy we generate ends up in the right place.

While all of this requires initial investment, we know that the solar panels and EV chargers are not only green but also cost-effective in the longer term. Additionally, the opportunity to include our employees in our sustainability journey, for example, by constructing the steel frames for solar panel mounting, are added benefits for Caparis.

A connection will be made to include future energy storage. How do you expect that to contribute?
I have high expectations for storage. It will be an essential component of our own smart energy solution in future and the perfect complement for our self-generation of solar. The energy management system is a crucial part of this solution as it will help to decide what happens with our energy at any given moment; for example, whether it is stored, used on site or sold back to the grid because it makes financial sense to do so. At this point, Caparis will have optimised sustainable energy and energy costs and so making the connection for storage is us anticipating the future.

Can you reflect on the relationship with Alfen?
For us, Alfen was the only one-stop-shop with the breadth and depth of products and services to help us deliver this project. All communications with Alfen have been positive and Alfen constantly strives for partnership, working together to make the project a success. In my opinion, this is the new and right way of doing business.

It is a very complementary and respectful relationship. Alfen brings its talent to the project and we bring ours. We make each other feel valued and the appreciation is mutual. Additionally, we have a joint belief in a society where everyone can participate and I’m proud that we contribute to that together. ■

D’leteren Auto evolves from car distributor to mobility innovator

With a market share of approximately 21%, 1.2 million vehicles on the road and a national network of corporate locations and independent dealerships, D’leteren Auto is Belgium’s primary vehicle distributor. Part of the D’leteren Group, it distributes vehicles, parts and accessories for Volkswagen Group brands and also provides after-sales services.

The company proactively seeks to be more sustainable. While this will be aided by Volkswagen Group’s own ongoing switch to electric vehicle manufacture, D’leteren also has targets for self-generation of solar energy, energy consumption reduction and increasing biodiversity at its sites.

We spoke to An de Pauw, Electric & Low Emission Manager at D’leteren Auto, about strategy, her view of the EV market and D’leteren’s future ambitions.

An interview with An de Pauw, Electric & Low Emission Manager at D’leteren

An De Pauw is Electric and Low Emission Manager at D'leteren, with responsibility for the development of its electric and low emission strategy for all the brands of the Volkswagen Group in Belgium. D'leteren acquired her services in 2017 to strengthen its EV position, based on her 3-year experience at Tesla, where she was Country Manager for Belgium and Luxembourg. Prior to this, she also spent several successful years at Fiat Chrysler Automobiles.

What are the main activities of D'leteren?
D'leteren has been operating since 1805 and is still a family business. The Group serves three different industries, each with a long-term strategy for growth. D'leteren Auto is one of these. Based on our 70-year relationship with the Volkswagen Group, we distribute vehicles, parts and accessories for every one of its vehicle brands and provide after-sales services from our corporate-owned locations. Within this division, I am responsible for the Electric & Low Emission strategy.

We believe that electric cars, smart cars, self-driving cars and car-sharing will revolutionise mobility and that, rather than being the central element, cars will become a component within a much broader overall mobility offering.

> "We believe that electric cars, smart cars, self-driving cars and car-sharing will revolutionise mobility"

Earlier this year, we launched Electric D'leteren Solutions (EDI), an extensive ecosystem of intelligent and integrated charging and energy solutions. EDI is set to leverage the culturally-rich history of the D'leteren Auto organisation to power the future of mobility. The offer is for private and professional customers and includes charge points, service and energy solutions and access to the largest electric vehicle charging network, across 25 countries in Europe. It also includes a split billing solution for fleet users wanting to separate the cost of electric vehicle charging from their regular electricity usage.

> "EDI is set to power the future of mobility by offering an intelligent and integrated ecosystem of electric vehicle charging and energy solutions, leveraging the culturally rich history of the D'leteren Auto organisation"

Could you tell us more about your Electric & Low Emission strategy?
We launched EDI at the Autosalon, a key Belgian car event, in January 2019. Our aim is to offer clients a complete set of EV services that are far more extensive than the fuel cards offered for petrol or diesel cars. The services are provided as a single, bundled eco-package to best suit a client's needs; for example, a bundle could include charging cards, smart phone apps, EV charging stations and installation. For fleet managers, we can also add charger management follow-up systems. We also offer a smart charging network capability solution; this spreads the available electrical capacity across all vehicles that are charging at any one time so that you optimise the grid connection and often also avoid the need to upgrade it.

Which developments in the EV market are key at the moment?
We continuously monitor market trends and innovations. In Belgium, sales of EVs and plug-in hybrid vehicles are still limited and amount to just 6.7% of all new cars purchased this year. Interest is rising though and we expect strong growth in the fleet markets now. We envisage that 50% of new sales will be EV or plug-in by 2030. This upward trend will be largely driven by the arrival of cheaper EVs with longer ranges.

What are the biggest charging challenges for D'leteren?
70% of all charging activity will take place at home and so our goal is to make this as easy as possible. The biggest challenge is that homes often do not have the right facilities for EV charging or sufficient capacity available at their grid connection.

To manage this, we offer our clients professional, safe and reliable charging stations, like those from Alfen, and always advise them to invest in futureproof, smart home chargers, which optimise the grid and offer other benefits, such as billing for lease drivers.

20% of charging activity will take place at work. Companies usually have fewer problems with available capacity and facilities. Our main challenge here lies in persuading companies to install enough charge points to make charging easy for their fleet, staff and customers.

I think there is a great opportunity to pioneer new approaches like this in Belgium with our EV charging solutions.

How is D'leteren contributing to sustainability?
We have several sustainability initiatives. We have invested across our locations in green energy including solar panels and EV charging stations. This allows us to power our cars with self-generated sustainable energy and we would like to offer the same solutions to our clients in the future.

Could you reflect on your relation with Alfen?
We really like Alfen's charge points. In our own technical lab, we tested the charging speeds, software, technical performance and safety of charge points from several European manufacturers. Alfen's products proved to be the highest quality, very safe, and were very reasonably priced. Moreover, for us, Alfen is a respected business partner. We have a positive working relationship and I believe that we can work well together to help build the EV charging future. ■

Kenter, on its metamorphosis from part of a DSO, to an energy solutions provider

Kenter has been offering energy services since May 2016. Carved out of Dutch grid operator, Liander, it initially specialised in delivering independent energy measurement services to larger energy users. In 2017, it also took on additional infrastructure services from Liander.

Currently serving over 28,000 customers, Kenter is focused on helping organisations to better understand and optimise their energy use and adopt innovative solutions to aid the process.

Kenter's General Manager, Henk Kluytmans, joined the company to help shape and drive the service carve out from Liander. We spoke to him about his experience so far and his views and ambitions related to the transition to a future energy grid.

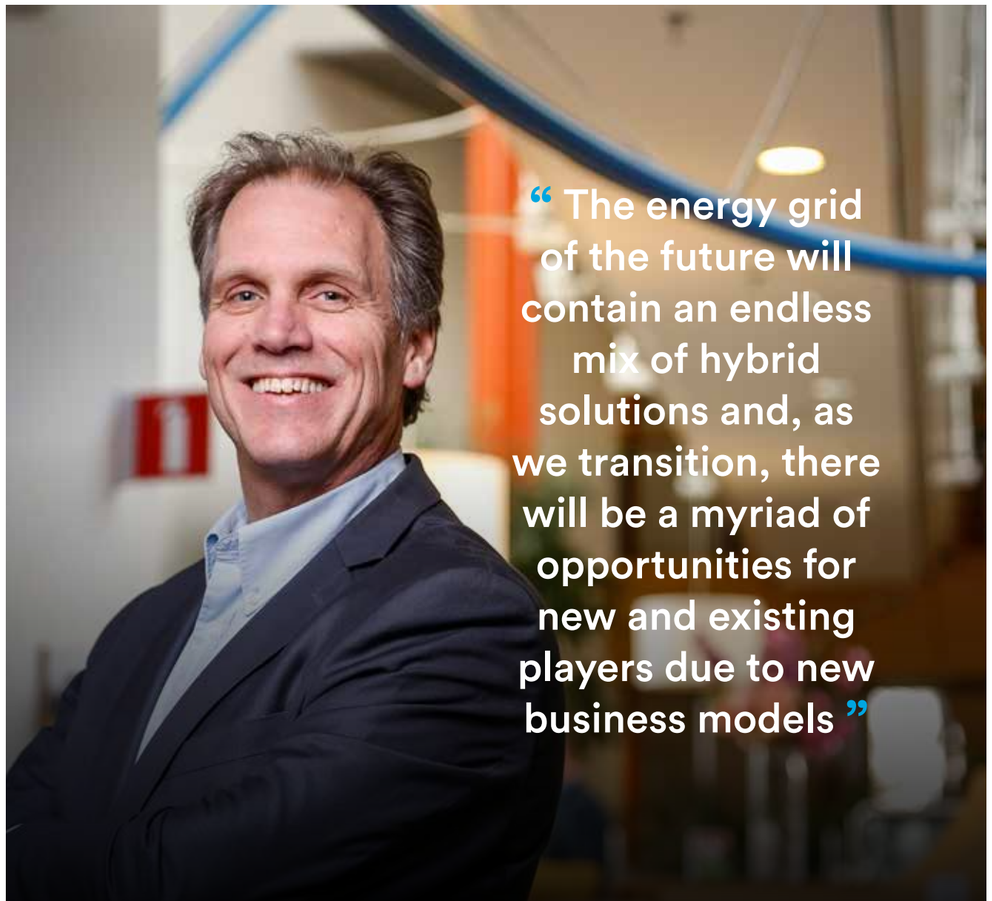
An interview with Henk Kluytmans, General Manager at Kenter

Kenter celebrated its 3rd anniversary this year. Can you tell us about the journey so far?
We began by taking over Liander's energy measurement services in May 2016 and, a year later, also added in infrastructure services including delivering transformer substations for customers. This was driven by a Dutch energy law ('wet VET') that came into effect in 2018, effectively opening up part of the grid connections business to the free market.

We currently have 290 experts, across five locations, close to our clients. They deliver products and services to help clients better understand and optimise their energy use, sustainability and cost-effectiveness. Our data and local network power quality insights help customers improve performance, and protect and maximise their assets.

A significant challenge has been to change our internal mindset and DNA. Changing from being a large, state-owned grid operator, focused on grid infrastructure and reliability, to a private, customer-focused solutions provider, operating on the open market, is a huge cultural leap. The latter requires agility, responsiveness and operational excellence.

We implemented, and are still running, an internal cultural change program to support our shift to becoming a leading customer-centric organisation. A key element of this is about authenticity - empowering and developing staff to develop a 'Kenter way of working' so that they feel valued, and so add value, as ambassadors of our business. Even our brand name supports this. Kenter comes from the Dutch word, 'kentering', meaning 'change'.



Henk Kluytmans has been General Manager of Kenter since October 2015. He started working in the energy sector in 1986, as an Infrastructure Supervisor, and has held several management functions since then. He is a qualified engineer and business manager.

How do you envisage the energy grid of the future?
The energy grid of the future will contain an endless mix of hybrid solutions and, as we transition, there will be a myriad of opportunities for new and existing players due to new business models. More individuals and organisations will go off-grid, where they can produce and store enough energy to self-balance. The unprecedented rise in local generation, using renewables, will continue and, with it, the line between who is a producer and who is a consumer of energy will increasingly blur.

While the whole system is becoming more decentralised and this will continue, there will still be some need for a central function and infrastructure, as these are essential to keep the grid stable at its current 50Hz frequency. Power electronics require further development before they are able to fully replace this central grid function.

The trend towards new and innovative clean generation technologies will continue; for example, solar, wind, hydrogen and geothermal. Hydrogen is particularly interesting because it offers an opportunity to move away from hydrocarbon gas, filling a gap that can't be entirely filled by producing more electricity. If you consider that replacing 1m^3 of gas requires the generation and transportation of 10kWh of electricity, you start to understand the scale of the challenge.

What role does Kenter want to play; what is your ambition?
We want to be prevalent in the energy solutions space, helping clients wherever we can. This requires us to act as a partner, in order to fully understand and provide the best possible solution for their energy needs. We also aim to extend our business offering in the mid-voltage space by providing electric vehicle chargers and energy storage systems, like those supplied by Alfen. Obviously, we also want to grow our client base, offering services to customers throughout the Netherlands, and be recognised for delivering operational excellence centred on our clients.

How is Kenter contributing to sustainability?
We own a lot of assets that we lease or sell to our customers and then maintain afterwards. This provides us with opportunities for circularity which we consider important for sustainability. For instance, we take old substations out of the field and revamp them, either ourselves or through a supplier such as Alfen.

In addition, we place great value on both high quality products, and solutions that have a positive impact on our products, by extending their lifespan without requiring lots of replacement parts and maintenance. Our supplier selection process supports this by ensuring we only select suppliers who share our focus on sustainable products and, like us, are certified for doing so.

We also have internal sustainability initiatives such as installing solar panels where we can and using a car fleet without diesels – either fully electric or plug-in hybrids. We also aim to be socially responsible; for example, by providing opportunities to people who have been out of work for some time, allowing them to positively integrate into society.

Can you comment on your experience of working with Alfen?
Alfen is one of our key suppliers and an essential part of our value chain. We use Alfen products as part of our services business because Alfen offers the quality and approach to partnership that are important to us.

In a way, we are growing up together. Like us, and much of the energy industry, Alfen is in a transition, experiencing huge growth and so understands the situation and what is required. As a result, we work well together and have already achieved a great deal as partners. I look forward to continuing this in the future. ■

New

TrønderEnergi Kraft, on its introduction of energy storage and industry trends

Norwegian TrønderEnergi Kraft (TEK) is a power company that develops, owns and operates renewable energy projects. Its activities include hydro, wind and solar power and its services range from operations, maintenance and production planning, to sales and optimisation of portfolios on power exchanges.

We spoke to Head of Development, Bernhard Kvaal, and Business Developer, Auke Borgen, about what is next in energy, the introduction of energy storage and the impact of the increase in renewables and electric vehicles.

Photo: TrønderEnergi

Photo: TrønderEnergi

Bernhard Kvaal (right) is Head of Development at TrønderEnergi Kraft. His primary role is to project manage the many projects the company is engaged in, including its EU consortium projects. He has worked for the company for more than 30 years on the development and construction of hydro and wind projects and market operations. He holds Master's degrees in civil engineering and management, as well as a degree in economics.

Anniken Auke Borgen (left) is a Business Developer at TrønderEnergi Kraft and works on its many development projects, including microgrids and PV-projects. She has a combined Master's degree in electrical power and economics.

Could you give a short background of your company and business activities?
TrønderEnergi Kraft is a regional power company owned by municipalities in Mid-Norway. It develops, owns and operates renewable energy projects, produces a total of 2.1TWh of electricity annually and acts as an operator for an additional 1.2TWh. With over 100 years' of hydro and 30 years of wind experience, the company wholly or partly owns 18 hydropower plants and 4 wind farms, with an additional 4 wind farms under construction. It is also active in the solar market. TrønderEnergi's services range from operations and maintenance, and production planning with plant management, to sales/optimisation of portfolios on power exchanges. It is also actively involved in several ongoing national and EU energy system innovation projects and has developed its own internal AI department.

The theme of this year's magazine is 'What's next in energy?'. Could you share your views on the key trends impacting the energy landscape in the coming decade?
We think that new EU regulations will result in multiple new business models and that these will offer new opportunities to existing energy industry players and also entice new players to the industry. The trend towards local energy production from decentralised renewables will continue, with the role of batteries and hydrogen increasingly becoming important. The ongoing digitisation of the sector is, of course, key to energy transition and necessary to successfully underpin all these changes.

What impact is the increase in renewables and electric vehicles having on your business?
Norway already produces 100% of its electricity from renewables but the story does not end there. We recognize that we still need to introduce more capacity from renewables to accommodate future demand, and particularly to cover the growing needs as a result of the electrification of the transport sector, and so we are still developing new renewables projects.

In Norway, there are already more electric cars sold than petrol vehicles and the upsurge in EV adoption, and the associated increase in electricity demand, is effectively determining the ongoing development of the grid in Norway. We already have an established electric vehicle charging company and the, comparatively, early adoption of EVs here has already provided us with significant experience.

> "We think that new EU regulations will result in multiple new business models and that these will offer new opportunities"

You have recently worked on an energy storage project with Alfen. Can you tell us about the project drivers and the relationship?
We consider ourselves one of the frontrunners in the energy market in Norway and, when it comes to energy transition, there is no question for us that battery energy storage and the associated services have a crucial role to play.

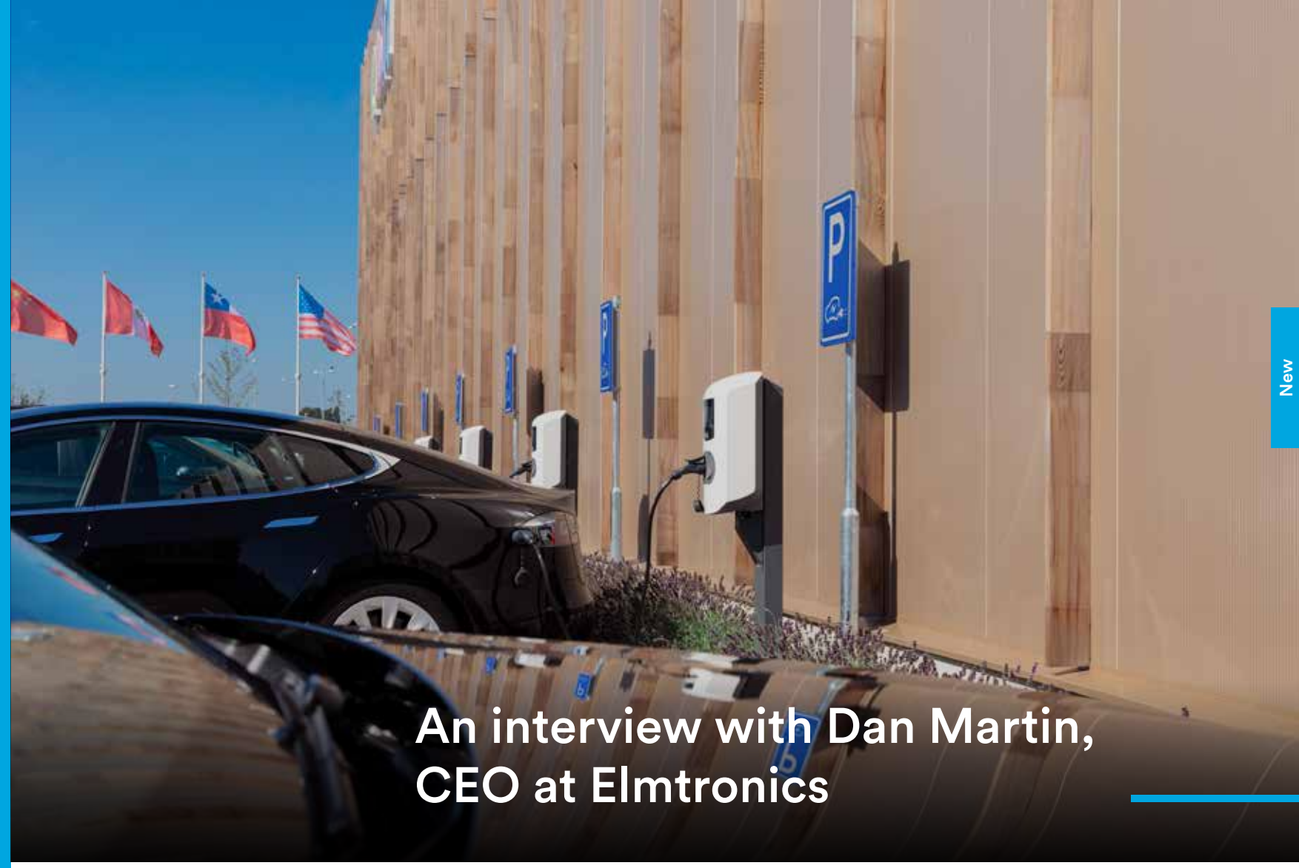
The key driver for our initial purchase from Alfen was to support off-grid microgrids or microgrids in 'island mode.' The first battery we bought has a capacity of 548kWh and is located at an agricultural business, to complement an existing wind turbine and solar panels, by providing peak shaving and off-grid services. The growth in solar PV generally is driving more demand for local storage.

As this was our first acquisition of a battery storage system, it was essential that, as well as offering a proven technology, our chosen partner was experienced and could provide us with the necessary knowledge. Alfen offered all of this. As well as a local presence in the Nordics, we found them very easy to communicate with and they had a strong understanding of our needs from the outset. ■

Charge point operator, Elmtronics, on its shared UK journey with Alfen

Independent UK charge point operator (CPO), Elmtronics, has been supplying and supporting electric vehicle charging infrastructure for homes, businesses and public spaces since 2014. It has delivered solutions to some of the UK's largest councils, National Health Service Trusts and private companies nationwide. All of these are connected to its proprietary back office system, Hubsta, one of the fastest growing networks in the UK.

We spoke to Elmtronics' CEO, Dan Martin, about his experience of the charging market so far, what the company is doing to stay ahead of the curve in the UK, and what he thinks the future may hold.



An interview with Dan Martin, CEO at Elmtronics

Can you introduce Elmtronics?
We design, install, operate and maintain EV charging infrastructure for the public, private and domestic sectors. Non-domestic work is all delivered via our in-house engineers, using our own fleet vehicles. We also have a team of approximately 90 sub-contracted engineers to support the home charging market. We operate from five locations, including England, Scotland, Wales and Northern Ireland, and support clients throughout the UK.

From the outset, our focus was on providing high quality smart charging which is one of the reasons why we work with Alfen products. This philosophy has delivered the opportunity for us to work with some big clients including utilities such as EDF, E.ON and National Grid. We also work with London Ambulance service which has an electric support vehicle fleet.

What key trends do you see in the EV charging market right now?
Most organisations are still 'finding their feet' when it comes to EV and are experimenting with vehicles and chargers, with the majority of uptake predominantly related to smaller fleets. While we are still in the relatively early stages compared to some other European countries, we are starting to see more market stimulation; for example, from the introduction of the Ultra Low Emission Zone in central London which looks set to be adopted in other large cities such as Bristol and Manchester.

We are also seeing EV supply challenges in the market at the moment. While Brexit uncertainty doesn't help, at this stage it is more the growth in demand that is causing this, resulting in 6-12 months lead times.

Dan Martin is the CEO and Co-Founder of Elmtronics and the visionary behind its product and platform strategy. He launched the company in North East England in 2014, as an independent supplier and installer of electric vehicle charging equipment. The introduction of its proprietary 'Hubsta' back office system in 2018 has seen it elevated to a charge point operator, delivering charging solutions to clients across the whole of the UK, including some of the largest councils, NHS Trusts and private companies.

A dynamic and charismatic leader, Dan is concentrated on the strategic future of the business and building a strong, positive company culture which empowers his growing team of experts to deliver world-class customer service.

“ Logistics companies are investing in charging infrastructure to prepare for the market arrival of larger commercial electric vehicles ”

EVs are getting popular very quickly now, with companies starting to seriously plan investment in electric fleets and charging so they are ready to electrify; for example, logistics companies are investing in charging infrastructure to prepare for the market arrival of larger commercial electric vehicles.

We are also beginning to see mass rollout of concession contracts for fast charging, with many more >50kW chargers being installed in petrol station forecourts, shopping centres and supermarkets. While it is becoming increasingly evident that most charging will be done at home or the office, and this will limit the need for public infrastructure, in the short-term, it is a necessity to help alleviate range anxiety.

How is Elmtronics responding to those trends? What is your strategy?
We are focused on providing end-to-end solutions which can deliver organisations with any combination of products and services for fleet and home charging.

Importantly, we understand the challenges of scaling infrastructure in fleet organisations, not least the challenge related to maximising the available grid capacity. In this respect, advanced smart charging with smart charging network capability is essential for any scalable solution, which is why we have chosen to sell the products we do, and these are supported by our back office system, Hubsta, which is also focused on quality. Together, these help us deliver robust, scalable solutions and exemplary customer service through data insights, servicing and maintenance.

How is Alfen supporting you in executing your strategy?
Alfen supplies great quality products that are easy to use. The feedback we get from our customers is excellent and, fundamentally, the products are also reliable.

Based on this experience, we genuinely believe that Alfen is leading the market and that we have the right partner.

Alfen doesn't just provide us with smart chargers though, they also work with us from a market perspective; for example, if we have a key client or prospect to impress, they work with us through the process.

Our relationship began in 2015, when we were a relatively new company and Alfen was relatively new to the UK, and so, as you would expect, it hasn't all been smooth sailing. By continuing to work together through the high and low points though, we have now reached a point where we have installed several hundred Alfen charge points and are experiencing significant growth - and that benefits both our organisations.

And finally, how do you envisage the EV charging ecosystem changing in the longer term?
There is a great deal of talk in the UK around vehicle-to-grid technologies (V2G). Exploring how we can use EVs more efficiently and utilise their batteries to help balance energy grids makes sense and so, if the technological and business barriers can be overcome, V2G could have a role to play.

While there is a place for rapid chargers, especially with ultrafast to add some juice, home charging is going to be key and it makes life a lot easier by avoiding fuel station visits. Not everybody has the option to charge at home though and so, particularly in cities, there will likely be less vehicle ownership and more vehicle sharing, particularly amongst younger generations, who are more comfortable with multi-ownership and sharing models.

We are, effectively, right at the start of a journey which could revolutionise transport and energy and it is going to be very interesting to see exactly how it develops. ■

Providing green power at Tomorrowland Festival

Tomorrowland is a large annual music festival, held in a beautiful natural setting in Belgium. With 17 stages, 1000+ artists, 15,000+ crew and 400,000 visitors over two weekends each year, it is one of the most notable festivals in the world.

Alfen and Greener supplied Tomorrowland with two of Alfen's large mobile battery solutions as part of the festival's 'Love Tomorrow' initiative to deliver and inspire sustainability. One battery included integrated Alfen chargers and was used to power electric vehicles on site. The other was used to reduce the ecological footprint at the festival camp.

Next

Virta, on the role of a solid platform as energy and mobility converge

Finland-based electric vehicle charging platform provider, Virta, was founded in 2013. Its white label digital platform connects energy and mobility services and enables smart charging networks. The platform currently serves over 200 professional charging networks, across 25 countries, and the company's success has resulted in partnerships and investments from multiple international energy companies such as E.ON.

We spoke to Elias Pöyry, Co-Founder, Chief Business Officer and Deputy CEO at Virta, about the convergence of energy and e-mobility and his vision and ambition for the future.

An interview with Elias Pöyry, Co-Founder, Chief Business Officer and Deputy CEO at Virta

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Elias Pöyry is the Chief Business Officer and Co-Founder of the electric vehicle charging platform provider, Virta. He has an extensive track record of building new business models for the energy and transportation sectors and is a widely-connected business ambassador for disruptive business models and the electrification of transport. He is also the Chairman of the 'Electromobility of the Union' working group for, Eurelectric, an industry association representing over 2,500 Utilities, from across 32 countries, at pan-European level.

Could you introduce Virta to the readers?
We are a 5-year old EV charging platform company, active in the digital layer of charging infrastructure. While there are thousands of different charge points connected to our platform, we don't actually own any of them. EV charging, by its very nature, is a platform business. Mass adoption of electric vehicles requires that car drivers are able to access charging stations everywhere, charge their vehicles, settle their charging bills, have the latest information on a smart phone app, etc. Only a solid back-end system can make this possible. By integrating chargers with a back-office, you can create a charging network and provide all the data a charge point operator needs to manage their network in real-time. In a nutshell, this is what we offer.

From our offices in Helsinki, Stockholm, Berlin and Paris, we currently serve over 200 professional charging networks in 25 countries. European markets are obviously important to us but we are a global player with operations in, for example, the Caribbean, South America and South East Asia. We feel that this considerable experience really does set us apart.

How is Virta making a difference in the current EV landscape?
We have some key competencies that we feel differentiate us from other providers. Perhaps most importantly, we excel at offering end-to-end white label services which include elements such as the back-end system, apps, settlements and roaming structures. We are also proud of our ability to provide a unified service to the end-user, whether they are charging at home, at the office, or in public. Additionally, we have a proven track record of integrating our platform in multiple countries.

With the above competencies we are able to support industry growth by providing a solution to anyone who wants to start their own charging business, regardless of the size, complexity or maturity of their business. No matter who they are and where they are, our proven platform with strong capabilities can provide them with an optimal end-to-end solution. Importantly, we are technology agnostic; for example, we are currently compatible with 140 different charger models.

Encouraging a mass to switch to electric vehicles requires that we address range anxiety, by providing access to charging everywhere and making sure that it is accessible and working. For this reason, we recommend good quality chargers, like Alfen's, to complement our platform.

Can you tell us about your current challenges and future ambitions for Virta?
Whilst end-users demand ease of access and use from charging infrastructure, delivering it on an ever-growing scale means that what goes on behind the scenes is becoming more complicated. The technology must become more complex to manage volume, new features and new standards, without ever compromising quality or security.

We are currently one of the top 3 independent platforms in Europe and we would obviously like to retain this position whilst entering new countries, with a view to becoming more global over the next 10 years.

What is your view on the convergence of the EV and energy industries?
Mobility will only be clean when energy is clean and there is significant governmental commitment to achieving 100% renewable energy. We believe that this could be achieved as early as 2035 because renewables are becoming increasingly cheap. 75% of all investment in energy production during 2018 was in renewables.

We think that this drive for a cleaner and more sustainable world will result in two major industry disruptions and that these will reinforce each other – one in the transportation sector and the other in the energy sector. In the transportation sector, mobility will become more service orientated and electric. In the energy sector, the energy system will continue becoming more distributed, as a result of renewables, and integrated. Energy integration is about much more than just connecting things. It is about optimising energy production, transportation, storage and use across the entire energy system as this is the only way to make the system both sustainable and affordable, and electric vehicles have a considerable role to play in this.

While mass adoption of electric vehicles increases the overall demand for electricity, it also offers great scope for introducing flexibility to the system to help balance supply and demand; for example, by charging electric vehicles in periods of surplus renewables generation, or by choosing not to charge, or to reduce charging speeds, during periods of peak demand.

How is Alfen supporting your journey? Can you reflect on the relationship?
Virta is a platform provider and hardware agnostic because we believe that this is the best approach for the company and the industry. As a result, we have experience of hardware from lots of different manufacturers and so we know that there are many differences in terms of capability, efficiency and quality. Our focus is on partnering with vendors who, like us, care about quality – that the equipment works and provides the best end-user experience – and Alfen does. Its products offer some key features that others don't; for example: they are sim unlocked, pre-configured according to customer needs, and offer a branding opportunity via logo upload to their screens. As a result, they are a good fit for our end-to-end service offering and we have thoroughly enjoyed working with Alfen so far and look forward to continuing to do so in the future. ■

Next

E.ON, on removing e-mobility barriers to build one of Europe’s largest charging networks

With 42,000 colleagues in 13 countries, E.ON works daily towards the improvement of technical innovations and user-friendly customer solutions for the new energy world. It is the first large energy company to focus more heavily upon the energy of the future through the areas of energy networks, renewable energies and customer solutions.

Its e-mobility business, E.ON Drive, designs, delivers and operates charging infrastructure solutions for home, business and public spaces and is currently operational in 10 countries across Europe. We spoke to the Head of E.ON Drive, Mathias Wiecher, about the organisation’s experience to date and plans for the future.

An interview with Mathias Wiecher, Head of E.ON Drive

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Could you elaborate on E.ON Drive, its mission and activities?
The E.ON Drive vision is ‘Electrifying people`s journeys’. We provide smart and integrated charging and mobility solutions across 10 European countries to make charging simple in cities, at hotels, on motorways, while shopping, at home and especially at work. With our partners, we aim to build one of the largest charging networks across Europe - from Trondheim to Rome.

Our goal is to become the partner of choice for sustainable energy and mobility solutions. To achieve this, we strive to remove all the barriers to electric mobility for businesses and municipalities, as well as empower private customers so that they are proud to use an electric vehicle.

How do people charge their cars today and how will this change in the future?
There is great demand for secure and convenient charging at private homes and work places. To deliver this for homeowners, we provide all-in-one bundles including the home charger, installation and 100% renewable energy. We are also seeing a growing demand for the ability to charge electric vehicles with self-produced solar energy and so we have worked with E.ON’s solar experts to develop SolarCloud Drive.

For workplace charging, we have teamed up with Europe`s leading leasing companies to provide an all-in-one solution for companies’ electric vehicle fleets; this includes the leasing agreement and charging stations for work and at home, as well as data management and renewable energy.

> “ Our goal is to become the partner of choice for sustainable energy and mobility solutions ”

Mathias Wiecher, Head of E.ON Drive, is responsible for all e-mobility activities across the E.ON group. He also led the development of E.ON´s ultra-fast charging network across Europe and has held leadership positions at E.ON Inhouse Consulting and A.T. Kearney in Germany and the US, where he focused on energy and mergers and acquisitions.

Ultra-fast charging (150-350 kW) is also becoming increasingly important as new long-range electric vehicles enter the market and so we are working with partners to build one of Europe`s largest ultra-fast charging networks, with 180 sites, as part of a flagship EU project.

What are the challenges in realising the ultra-fast charging network of today?
Our learning so far, from providing ultra-fast charging at our locations, is that there are three major challenges: station availability, vehicle availability and partner ecosystems.

Making sure charging stations are present and working is key for the further adoption of long-distance electric mobility. We have invested heavily in our network to raise our stations availability (up time) to 98%+. We are all on a constant learning curve in this respect and we share this knowledge with our partners including hardware manufacturers and maintenance and service providers.

A high quality, successful ultra-fast charging business also relies heavily on the availability and uptake of electric vehicles capable of high-power charging. As an e-mobility solution provider in 10 European countries, we know that there is uneven distribution of EVs capable of high-power charging and this can delay local market plans.

Ultra-fast charging is new for everyone involved and requires a joint effort across sectors and an ecosystem of partners: site owners, OEMs, governments, hardware suppliers, energy solution providers etc. There are multiple challenges to be addressed, for example, speeding up the planning and construction approval process, and ensuring hardware is reliable, futureproof and compliant with local policy.

For future charging, what innovation needs do you see? How smart do chargers need to become?
Our mission requires us to take a customer experience-centric approach to building new products. Whether for home or ultra-fast charging sites, innovation should always serve concrete customer needs. We see that the home charger will be increasingly integrated into the home energy management ecosystem, allowing the driver to seamlessly monitor and steer the charging process and utilise self-produced solar energy for charging. We are also working in partnership with Nissan on vehicle-to-grid and advanced bi-directional charging technology, to enable customers to optimise their energy use and costs.

How can E.ON support corporates in fleet electrification?
Corporate e-mobility is accelerating, with more e-models becoming available and more financial incentives. Our E.ON Drive ElectricFleet solution aims to make it easier for companies to exploit all the benefits of an electric vehicle fleet. In cooperation with Car Professional Management, the market leader for fleet management in Germany and part of the Société Générale Group, we provide companies with a complete package - from leasing contract to charging station, and data management to green power.

E.ON Drive takes responsibility for the planning and installation of tailored, scalable charging infrastructure and transparent data analysis at company sites and, where required, for employee home charging. Employees choose their preferred electric car from Car Professional Management and can charge on the go at more than 5,800 charge points across Germany, using the E.ON Drive app and charge card.

Could you reflect on your relationship/ collaboration with Alfen?
We have been working together since 2018, with E.ON Drive integrating Alfen’s EV hardware solutions into our home and workplace charging portfolio across Europe. E.ON’s own headquarters in Essen acts as a blueprint and test environment for our e-mobility solutions business and consists of more than 50 Alfen charge points, used by guests, customers, employees and fleet vehicles. ■

Next

Enexis, on the future energy system

Enexis is one of seven distribution system operators in the Netherlands, with responsibility for energy distribution to millions of customers across six provinces. In this interview we talk to Han Slootweg, Director of Asset Management at Enexis, and part-time professor at Eindhoven University of Technology. With more than 20 years of energy experience, we were interested to hear his views on the transition to a future energy system and the role of energy storage.

Next

As both Director of Asset Management at Enexis and a part-time Smart Grids professor at Eindhoven University of Technlogy, Han Slootweg is an expert on energy system innovation and sustainability. He holds an MSc and PHD in Electrical Power Engineering and an MSc in Business Administration. He has authored and co-authored more than 75 research papers and, in 2007, won the Hidde Nijland prize for 'significant contributions to electrical power engineering'.

What do you think the future energy system will look like?
It will be much more sustainable, as well as still being safe, reliable and cost-effective. More decentralised renewables, and a shift to electric for heating and mobility, will mean a higher percentage of electricity in the overall energy mix. Saying improved sustainability requires us to produce and use more electricity may sound like a paradox but, when you consider that electricity makes up just 20% of the current energy mix, it is obvious that reducing consumption of gas and liquid fuels will require us to generate more green electricity.

The system will also have to be much better organised. At the moment, supply is largely generated at huge, centralised power plants according to the level of forecast demand. It is impossible to generate electricity from the sun and wind in the same way, because they vary according to weather patterns and seasons, and therefore cannot always match consumption. Most renewables are also connected to the local distribution grid which is driving a more decentralised approach and increasing stress on the grid which was not designed for this purpose.

While decentralisation will continue to increase, there will still be a need for a central system. In cities, for example, where demand is significant, 75% of all buildings are unable to self-generate to meet their own demand. Even with efficiency measures, they will require topping up from energy generated elsewhere in the grid, and this will apply further as more electric vehicles are introduced. Accommodating this significant and complex shift requires fundamental changes to the way we manage and use energy. It also requires a more intelligent, interconnected system, with data used to make smarter, cleaner energy decisions.

How do you view the role of (short-term and long-term) energy storage?
The ability to store energy for use when it is required is essential for accommodating large volumes of renewables and balancing supply and demand. This will ultimately be achieved using molecular-based technologies to accommodate longer-term storage situations; for example, due to seasons, and electron-based technologies for shorter term storage. Electrons are applied in the form of large batteries such as Alfen's solutions.

Enexis does not apply energy storage at present because legislation does not allow network operators to participate in the energy market. Ideally, network operators and energy suppliers should be allowed to work together to use storage effectively as this would provide the required flexibility and maximise the benefits.

To what extent will our energy system globalise; for example, a solar park in the Sahara that supplies electricity to Europe?
Our energy system is already largely global. Oil and gas has long been transported around the world. Japan is investigating the production of hydrogen in Australia, to be shipped to Japan. What will be more local are solar and wind energy. While there are discussions about large-scale solar energy production in the Sahara for use in Europe, I think it will present too many difficulties. Technically, it would certainly be possible but it presents political challenges, such as the need for complex international agreements. It would also introduce significant risk, such as potential interruption or disruption of supply due to transmission cable failure or sabotage.

> "It may sound like a paradox but ... reducing consumption of gas and liquid fuels will require us to generate more green electricity"

What is the next step in the realisation of the future system?
The big challenge is coordination. Renewables are sited where it is most windy or most sunny and where costs for the required land are low. If the distribution grid in those areas is at, or is close to, capacity, connecting new renewables is often not possible without major grid upgrades. The lead time for new high voltage lines and substations is often years due to permitting requirements etc. There are already capacity problems in some parts of the Netherlands and so the race is on to shore up the system as fast as possible to avoid further problems. This requires continued investment in network capacity.

To some extent, the problem could also be addressed by optimising the use of our existing spare capacity. Think of it as an emergency lane on the highway. If something happens on the highway, we can use the emergency lane to keep moving. We need to create the equivalent for energy consumers, and especially producers, as it is inefficient to waste energy that has already been produced. During energy rush hour (periods of high wind or solar production), we could potentially open up the emergency lane for the additional traffic.

Can you reflect on the relationship with Alfen?
Alfen is a valued supplier to Enexis and they have proven over recent years that they were the right choice. We have a strong partnership, with excellent day-to-day working relationships, made easy by Alfen's flexibility and accessibility which are important to us. Importantly, this is also all backed up by the quality and price of Alfen's products!

Next

Pfalzsolar talks about going large and what comes next in the solar industry

Solar developer, Pfalzsolar, is a wholly-owned subsidiary of South West Germany's largest energy supplier, the Pfalzwerke Aktiengesellschaft. The company designs, builds, finances, and operates solar PV plants. It has installed 230MW in total and currently manages a 250MW service portfolio including 20MW of projects which it owns.

Currently active in Germany, Netherlands and UK, it has imminent plans to enter 3 Southern European markets, is actively watching Eastern Europe, and also has plans to develop a 400MW+ US portfolio with its American entity, Pfalzsolar Inc. We spoke to Pfalzsolar's CEO, Lars Josten, about how the industry has developed and what he thinks will happen next.

An interview with Lars Josten, CEO at Pfalzsolar

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Lars Josten has been Pfalzsolar's CEO since August 2018. He has been in the solar industry since 2009, initially working for REW Solartechnik GmbH, where he advanced the company's development from 2009, as Head of Marketing and Product Management, and from 2011, as Head of Marketing and Sales. He has also held management positions at Aerospace Photovoltaik GmbH, DMEGC Germany GmbH, Solon S.p.A, and Vaisala GmbH where, in June 2016, he was responsible for reorganising the sales function aross Northern Europe and Africa.

“ Perhaps the biggest industry change lies in the definition of what a large project is ”

How has the solar industry changed over the years?
We completed our first largescale solar project 16 years ago, in Neustadt an der Weinstraße in southern Palatinate, Germany. It was two megawatts which, at the time, was considered significant and so it presented us with challenges, as unusually large projects do when you are not used to them. Fast forward to today and we have just completed a 35MW project in Almere, in the Netherlands, for which Alfen is delivering the microgrid and connection. So perhaps the biggest industry change lies in the definition of what a large project is. The technology has also greatly improved over time and, of course, we now have 16 years and 230MW of experience which really makes a difference.

The Zuyderzon Almere solar park is one of the larger ones in NL. Can you tell us about it?
We really love to talk about the Almere project because it is beautiful for many reasons, not least because the last of the 98,560 panels was installed, ahead of schedule, after a very rapid construction period of only 3.5 months. Its size also provides us with an opportunity to share other stunning statistics; for example, nearly 11,000 poles had to be rammed into the ground, with a combined total depth of 31 kilometres - 10 times the height of Zugspitze, Germanys highest mountain - and we have installed a total of 271,000 metres of cabling. We are very proud of the project, not just for its size, but also because of how smoothly it was delivered. We are very happy with all the parties involved in helping us to realise it and, obviously, Alfen is one of those.

Why did you choose Alfen for the project and can you reflect on the relationship?
We had been in contact with Alfen before this project and the site's proximity to Alfen's HQ meant that it made good sense to shortlist Alfen and this was accepted quickly on the investment side. There was no doubt about their capability from a technical perspective and communication during the project development phase was very positive. In fact, I was amused to hear that Alfen's locational advantage resulted in their project manager and our project site manager being able to have brief discussions in a supermarket near the site, where they met by chance.

What do you think is next for solar projects and the industry as a whole? Could we one day power society purely on solar PV?
As long as there are markets with feed-in systems, the majority of solar parks in those markets will look like they do now although an East-West orientation is beginning to emerge, which we have already started to deploy. As the number of power purchase agreement (PPA) markets increases, storage systems will definitely begin to be included too. In markets where there are barriers due to green field site limitations, we are already starting to see special agricultural project designs.

We see a future energy industry being fully powered by renewables, including also wind and hydropower. The industry as a whole needs a complete rethink, to plan how to deliver the future grid. Such transformation requires that it better accommodates decentralised power production and offers the flexibility power producers need; this can be achieved by grid upgrade and energy storage. I am quite convinced that we will get there and, one way or another, we will move towards flat and very affordable rates for energy. ■

Next

Colophon

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