Alfen

magazine

The future of energy

INTEGRATE ■ INNOVATE ■ INSPIRE ■ IMAGINE

ALFEN

Dear reader

Fully integrated storage and EV charging hub for BMW in Spijkenisse, the Netherlands

Welcome to this edition of the Alfen magazine. Since last year's edition, our company has achieved some exciting milestones: we successfully listed our company at Euronext Amsterdam, we were awarded a prize for best in-house education programme in the Netherlands and we expanded to the Nordics through the acquisition of Elkamo. But most importantly, we have been able to work with our partners and customers on the realisation of the energy transition.

As the journey towards renewable energy accelerates, being able to offer integrated solutions is becoming increasingly important. The first section of this magazine, titled 'Integrate', is dedicated to this trend. This section features a story on an integrated EV charging, storage and smart grid project at The Hague football stadium, as well as interviews with Dutch distribution grid operator Stedin and Finnish distribution grid operator Herrfors.

The second section, titled 'Innovate', focuses on new innovations in our markets. We demonstrate the value of energy storage to provide clean energy at festivals in interviews with Greener, BMW, Drift dance festival and ZAP Concepts. In addition, we cover interviews with UK-based ChargePoint Services and SWARCO Traffic Systems.

In the third section, titled 'Inspire', we present insights about how the future energy landscape may look like. We talked to Goldbeck Solar on its role in the 'Energiewende', supermarket chain Lidl and Dutch distribution grid operator Alliander.

The fourth section, titled 'Imagine', is dedicated to the people behind the energy transition and how their inspiration makes a difference. As Iwein Goigne, CEO of Eneco Solar and Storage Belgium, points out, the energy transition isn't only about the technology; it is about people and the choices they make using that technology. This section also covers interviews with Belgian retail grocery chain Colruyt and Jaguar Land Rover.

We hope you will enjoy reading this magazine and look forward to continuing working together on the energy grid of the future.

Warm regards,

Marco Roeleveld
CEO Alfen

Alfen magazine

Integrate

Innovate

Inspire

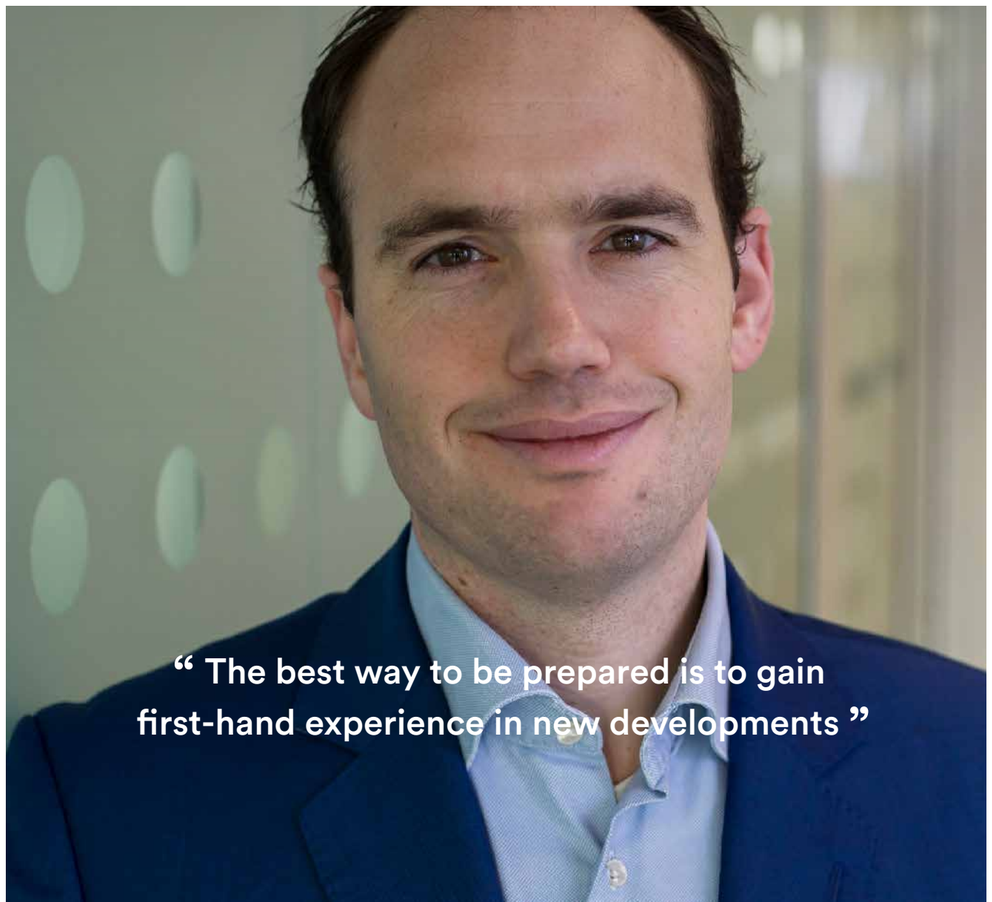
Imagine

Integrate

Stedin on managing new actors and assets on the changing grid

Stedin operates the distribution grid in a large part of the Netherland's Randstad, a conglomeration of dense urban areas, large harbours and complex infrastructure. These areas are highly dependent on a reliable energy supply. As Chief Transition Officer at Stedin, David Peters is dealing with the impact of the energy transition. In this interview, we talk to him about Stedin's views on the future energy grid and the measures it is taking to prepare for this future.

An interview with David Peters, Chief Transition Officer at Stedin



“ The best way to be prepared is to gain first-hand experience in new developments ”

David Peters was appointed Chief Transition Officer within the Executive Board as of 1 January 2018. He has held the position of Strategy Director at Stedin since May 2015 and was responsible for strategy, innovation, regulation and public affairs within Stedin. Prior to joining Stedin, he worked for Boston Consulting Group (BCG) for eight years, in both the Netherlands and abroad on strategy and organization transformations in particular in the energy sector. He was a member of the Dutch National Think Tank. David studied Applied Physics at Eindhoven University of Technology and Applied Ethics at the University of Leuven.

Can you describe what your role as CTO at Stedin involves?
I am responsible for preparing our company for the energy transition. Rapid changes in the energy landscape and the changing role of society in relation to energy require us to continuously rethink our business activities. We are coping with new energy sources on the grid, with energy users turning into energy producers, and the electrification of overall energy demand. It is my role, together with my collegues, to make sure that we have capabilities in house that fit with the changing requirements. My day-to-day responsibilities include our long-term investments, innovations, data, and change.

How is the energy transition impacting your business?
The energy transition has an enormous impact on our operations. Many new actors are entering the marketplace, including traditional energy consumers who are turning into prosumers, producing their own renewable energy. In addition, many new assets are being introduced to the grid: solar farms, electric vehicles that need to be charged, energy storage systems, heat pumps, etcetera. It is our responsibility as grid operator to facilitate all these new actors and assets on the grid, enabling the energy transition. We want to be prepared for this and the best way to be prepared is to gain first-hand experience in new developments.

Can you give some examples?
We are involved in several energy storage projects. In 2016, we experimented with energy storage at an EV fast charging station on a highway between Amsterdam and Utrecht. It was equipped with rooftop solar panels. The energy storage system not only allowed for more localised consumption of the generated solar power, but also avoided costly investments in an upgrade of the grid connection that would otherwise have been necessary at this location. A similar rationale was the basis for our involvement in a storage project at Cars Jeans Stadion in The Hague. Our early involvement in the planning phases of these projects characterises the new role we have to play in the changing energy landscape.

Another example is our participation in the innovative Rennovates project, which focuses on developing smart energy-based communities, creating energy-neutral homes by reducing energy consumption and maximising the use of renewable energy. In this project, we connected a community battery storage system, that formed the central part of the congestion management pool, to align local energy production and consumption with our grid’s available capacity.

Are you also taking internal sustainability measures?
Our sustainability strategy is based on OnePlanet Thinking, where we focus on the areas where we have the most impact: climate change, the use of resources, clean air and an inclusive society. I think this is best illustrated with some examples. By far the largest contributor to our CO2 emissions is energy loss on our grids, which occur when electricity is being transported over large distances. As grid operator, we have to repurchase the electricity that we lose on our grids. We buy this energy from local wind sources and, as such, avoid some 500 kilotons of CO2 emissions. Another example concerns our car fleet. With 1,280 delivery vans, 600 passenger cars and 220 private lease cars, we have one of the largest company fleets in the Randstad area. We introduced a mobility vision focusing on increased use of public transport, car sharing schemes and the full electrification of our personal lease fleet around the year 2020.

Can you comment on your experience working with Alfen?
We have been working with Alfen for decades on medium voltage grid solutions. We also worked together on energy storage projects along the A2 highway at Haarrijn, Cars Jeans Stadion and a community battery in a renovated residential area in Woerden. Recently, we also chose Alfen to provide the EV charging equipment to electrify our car fleet. I believe what makes Alfen truly unique is that it has invested in innovations, and as a consequence developed a portfolio of solutions that cover a large part of what is needed to facilitate the energy transition. ■

Fully integrated energy system at The Hague football stadium

A unique combination of charging infrastructure for electric vehicles and energy storage allows visitors to the Cars Jeans football stadium in The Hague to charge their electric vehicles with renewable energy. Alfen delivered this fully integrated project for energy trader Scholt Energy Control, supported by grid operator Stedin and the municipality of The Hague. We talked to Sander Drissen, Innovation Director at Scholt Energy, Henk Fidder, strategy advisor EV and Storage at Stedin and Willem Knol of the municipality of The Hague about the project.

An interview with Sander Drissen (Scholt Energy), Henk Fidder (Stedin) & Willem Knol (Municipality of The Hague)

“ This combination of use cases makes this project truly unique ”

Mr. Fidder, can you talk about how this project was initiated?
During the daytime, the ADO Den Haag football stadium generates its own energy from solar panels on its roof. However, this energy is mostly needed in the evening, to light the stadium but also to charge the increasing number of electric vehicles that visitors use. The charging of these electric vehicles, which typically arrive all at the same time, just before the start of a football match, was putting increasing pressure on the electricity grid connection. This is where, together with Alfen, we started thinking about introducing storage in this energy system.

Mr. Drissen, can you talk about how the storage system is being used?
Introducing storage into this energy system provides benefits to all parties involved in this project. We use Alfen’s ‘TheBattery’ to store the excess renewable energy generated during the day. This energy can then be used in the evenings when it is most needed. In this way we make optimal use of the generated renewable energy for the ADO Den Haag stadium. We also smooth out the grid impact of a large number of electric vehicles that plug in at the same location at the same time and as such, helping grid operator Stedin avoid the extra costs of investing in grid upgrades that would otherwise be needed. And finally, when the stadium is not being used, we can use the storage system for energy trading to further improve our business case. This combination of use cases makes this project truly unique.

Mr. Knol, what has been the involvement of the municipality of The Hague?
We are investing in the roll-out of EV charging equipment throughout the city. We focus on public locations that also include venues with parking facilities such as the football stadium. Through this initiative, renewable energy can be used locally for the electric vehicle charging hub. We hope this will further stimulate the use of electric vehicles and consequently improve the air quality in our city.

Mr. Fidder, can you comment on your relationship with Alfen?
Stedin has been working with Alfen for decades in the field of medium voltage grid solutions. In addition, we worked together on energy storage projects along the A2 motorway at Haarrijn and a community battery in a renovated residential area in Woerden. Recently we also selected Alfen to supply its EV chargers and Smart Charging Network for the electrification of our own car fleet. I think Alfen is truly unique in its broad offering across all relevant areas of the energy transition. This is enabling them to really make a difference on complex integrated projects such as here at The Hague football stadium, where expertise on smart grids, energy storage and EV charging needs to come together.

Mr. Drissen, can you talk about possibilities for this integrated energy concept in the future?
This project at ADO Den Haag is the result of innovation power combined with business sense. There is no cookie-cutter recipe for these kind of complex integrated challenges. They really require a deep understanding of the complex system, the ability to bring all involved parties together, jointly develop business cases and to deliver the right technological solution. What I really like about this project is that it can now easily be replicated at locations with similar characteristics: own renewable energy production, high power demands in concentrated time frames and large periods of very limited power use. So basically many sport venues and concert halls around the world. I expect many more of these systems in the future. ■

Herrfors on energy challenges in the Nordic countries

Herrfors, part of the Katterno Group, is a utility company with activities in Finland and Sweden. It owns hydro, wind, and conventional power plants. It also operates part of the distribution grids in Finland through its daughter company Herrfors Nät Verkko Oy. Herrfors has been a client of Elkamo, which was acquired by Alfen on 1 July 2018, for many years. We spoke with Kristian Finell, CEO of Herrfors Nät Verkko Oy, on the grid challenges in the Nordic countries and Alfen Elkamo's role in addressing these challenges.

Kristian Finell is CEO of Herrfors Nät-Verkko Oy Ab, where he is leading the development of the future power grid. Kristian Finell joined the energy sector and Herrfors back in 2010 to head the roll-out of smart meters. He has since held several positions within Herrfors. After graduating with a Bachelor's degree in electrical engineering Kristian Finell worked for 10 years in various management roles within telecommunications.

What key trends can you describe in the Finish energy landscape?
As in other parts of Europe, we are facing the rise of renewables. Although the Nordics has traditionally benefitted from having hydropower to provide a large portion of their energy, the increase of wind and solar power is creating new challenges for us. In addition, unlike hydropower, wind and solar energy provide only intermittent energy and are rolled out in a much more decentralised fashion. Adding the rise of electric vehicles means that we are entering a completely new era in terms of the energy landscape.

> “ I believe that the energy grid in a decade will have very little resemblance to the current grid ”

What do you see as the greatest challenges for the energy grid?
The focus for the grid is very much on reliability. A large part of the distribution grid in Finland and Sweden currently consists of overhead power lines. Given that these overhead lines span long distances, snowfall and storms can result in power outages. Investment programmes are in place to rebuild large parts of the electricity distribution grids, switching from overhead lines to underground cables, in order to improve the reliability of the electricity supply. In Finland, a total investment of over €8 billion will be spent on the grid between 2013 and the end of the 2020s. Sweden's grid renewal programme is following that of Finland.

In addition to the challenge of overhead lines, the introduction of renewables and EVs is changing traditional energy flows and peak power and, as such, is creating additional challenges for us.

What is your strategy to deal with these challenges?
We focus on investment and innovation. As I mentioned before, there are large investment plans in place to switch overhead lines to underground cables. In addition, we are looking at the experiences of other countries that are ahead of us in terms of renewables and EVs. We are looking at smart EV charging, smart grids with digitisation and energy storage. The experience Elkamo is now bringing to the table with Alfen seems very interesting for these areas.

Can you comment on your experience in working with Elkamo?
We have a long history of working with Elkamo. What we appreciate is the close dialogue with regards to product development and innovation. Elkamo has proved that they're able to react and adapt quickly to changing market dynamics and have therefore remained a strong and innovative partner for us. Especially in these times of rapid and massive changes, this is of enormous importance. I believe that the energy grid in a decade will have very little resemblance to the current grid. I believe Alfen Elkamo can play a central role in transitioning to this new situation with its integrated offering of smart substations, charging equipment and energy storage. ■

Innovate

SWARCO, speaking the language of cities

SWARCO Traffic Systems is one of the leading suppliers of intelligent traffic systems in Germany. Building on many decades of experience, it offers a wide range of innovative solutions for urban and interurban traffic management, including parking and e-mobility. We spoke with Marcus Anders, managing director at SWARCO Traffic Systems, about his company's role in the roll-out of EV charging solutions and their connection with Alfen.

An interview with Marcus Anders, Managing Director at SWARCO Traffic Systems

Marcus Anders is Managing Director of SWARCO TRAFFIC SYSTEMS GmbH. Prior to SWARCO he worked at Bosch as Head of Business Unit Project Business, Bosch Building Technology Frankfurt. He has a Master in International Business and enjoys travelling, good food and beverages and football (soccer).

Could you give an overview of SWARCO’s key activities?
SWARCO Traffic Systems is a one-stop-shop for all traffic-related hardware, software and services. Manfred Swarovski founded SWARCO in 1969. The group has grown steadily since, and now comprises 70 companies and serves customers in 70 countries. SWARCO offers not only traffic lights, but also adaptive traffic management for urban and interurban solutions, conventional and digital on- and off-street parking solutions and is a significant charge point operator in the e-mobility sector in several European countries. This portfolio is offered not only as product components but rather as entire turnkey solutions including installation and lifecycle service. A further major business field is our roadmarking portfolio where we offer innovative reflective roadway markings.

What is your EV charging strategy?
SWARCO is the ideal partner for municipalities, car parks, businesses and energy suppliers – everyone who is managing fleets of electric vehicles or charging infrastructure. Therefore, we focus on the multiplier and less on the individual customer. We provide intelligent systems for both cities and drivers, such as navigation to available charging infrastructure and payment. This clearly shows that we need to provide drivers with comfortable, smart solutions bringing navigation, parking, charging and payment together. Cities can benefit from this through a reduction in search traffic for parking and charging spaces, energy companies can easily improve the grid quality, and EV-drivers save time and have less stress in finding their way – a win-win-situation for all. Our vision for the future is that EV chargers will be easy to use and seamlessly integrated into the infrastructure of smart cities. The overall user experience for someone travelling will be great, not only due to the clean air in cities, but also due to the assistance we provide for them.

You have a long history in traffic systems. Do you see this as strategic advantage in the roll-out of EV charging equipment?
Yes, we think this is an advantage. We speak the language of cities and can provide the necessary planning, installation and technical services. It is not enough to install infrastructure: you also have to keep it up and running for a long time.

Can you give some examples of your initiatives related to EV charging?
We provide cities with a free app that uses information from our parking and guiding system (PGS). This app will soon be enhanced with EV related information. We supply some very huge companies with charging infrastructure. For example, an international discount grocery store that will rollout charging infrastructure in several European countries.

> “ We need to provide drivers with comfortable, smart solutions bringing navigation, parking, charging and payment together ”

How do you see the role of solar PV and energy storage in relation to the increasing penetration of EVs?
Photovoltaic and other renewable energy sources are a necessity to save our planet from global warming – nothing more, nothing less. We all know that the sun is not always shining, and therefore intelligent charging schedules and electrical energy storage can provide the flexibility that is necessary to integrate EVs into the power grid. Prices of wind energy, photovoltaic and battery storage declined massively over the last 25 years; therefore, renewables are environmentally sound and economical.

Can you comment on your relationship with Alfen?
Alfen provides excellent products that fit our portfolio of increasingly smarter solutions for cities and businesses. We expect that the EV market in Germany will grow rapidly in the next decades and that both our companies will continue their partnership and benefit from this market growth. ■

European Green Capital Nijmegen powers Drift festival with 100% green energy

Dance and house festival Drift in Nijmegen, the Green Capital of Europe, was fully powered by solar energy enabled by Alfen's energy storage system.

" We are happy to be able to host the first festival where visitors can dance on 100% solar energy in Nijmegen, the European Green Capital of 2018. "

" Festivals are increasingly focusing on sustainability, such as using hard cups that are recycled instead of single-time-use soft cups. Another trend is the use of local resources that benefit the local economy. "

" In fact, to really make a step-change in terms of sustainability, we should consider moving away from 2 or 3 day events and consider longer duration festivals which would enable a whole new set of sustainability initiatives. "

Diede van Overbeek,
Drift om te Dansen

Anastacia concert in Germany on clean battery power from BMW batteries

BMW and Alfen powered the BR-Radltour in Munich with sustainable energy. The peaks in power demand for the main stage, where Anastacia performed, were delivered from Alfen's energy storage system, which is based on BMW i3 high-voltage batteries. The storage container was charged with the first sustainable energy produced from the newly opened CHP headquarters of BMW Group Werks Landshut.

" BMW batteries are particularly suited for these kinds of events, as our batteries are approved to be transported and as such can facilitate mobile applications of energy storage. Great to see that good rock music is now powered by BMW i stationary batteries directly! "

" Alfen has demonstrated that it's able to quickly develop a truly differentiating solution which I believe has great potential for the future. "

" Through our BMW sales channels we are already working on deploying this mobile festival solution around the world, including the US and China. "

Soeren Mohr,
Global Head of Development for
Stationary Storage Systems at BMW

Optimal power supply for live events with ZAP Concepts

ZAP Concepts offers consultancy in energy and sustainability, focusing on the design of optimal power supply for live events. Clients include Manchester Pride, Volvo Ocean Race, DGTL, Vestival, Defqon.1, Drift Festival and Milkshake.

“ There is a lot of attention toward energy, waste and food. Circularity is the new keyword for sustainable events. ”

“ Great results are only possible if everyone works together towards sustainability. ”

“ The latest trend is about grid connections for festivals. In order to balance capital investments in large connections and high annual costs, smaller grid connections with a combination of battery storage offers a green and affordable alternative for the use of diesel generators. ”

Paul Schurink,
ZAP Concepts

Greener scales up to power the festival season with clean energy

Greener, a sustainable energy provider for events and off-grid situations, recently ordered 9 mobile battery storage systems from Alfen to power festivals in the upcoming seasons, including Awakenings, Milkshake, Welcome to the Village and MadNes.

“ Although most festivals are advertising their sustainable ambitions, energy has been one of the most challenging topics so far. ”

“ Festivals require vast amounts of electrical energy in a short period of time. Our mobile storage systems can import renewable energy to site, or store renewable energy that is produced on site to optimize energy supply and demand, delivering the high sudden power peaks required for light and sound systems at festivals. ”

“ Battery power eliminates the need for diesel generators, thereby reducing greenhouse gas emissions, noise, and stench at festivals. ”

“ Alfen provides a high level of technical expertise in batteries and is able to quickly implement improvements based on reported experience from the field in their solutions. Many festival organizers are keen on the fact that manufacturer (Alfen) and technology integrator and service provider (Greener) are separate companies. ”

Dieter Castelein,
Greener

ChargePoint Services on its vision for EV charging in the UK

An interview with Alex Bamberg, Founder and Managing Director at ChargePoint Services

ChargePoint Services provide integrated electric vehicle charging solutions, bringing together best of breed hardware and its own proprietary software systems. The company won the contract for the 2012 London Olympics, managed Ecotricity's Electric Highway, and has since taken on many more projects in the UK. ChargePoint Services' own cloud-based back office management software platform, GeniePoint, provides end-to-end technology for public, workplace and private sector EV charging. In an interview with Alex Bamberg, founder and Managing Director of ChargePoint Services, we talk about its EV charging activities and its relationship with Alfen.

Alex Bamberg is founder and Managing Director of ChargePoint Services Ltd. With over 15 years experience in the sustainable transport and energy market, Alex is one of the most experienced, technically aware and sales-driven “clean tech” senior directors in Europe. Alex is highly successful in placing cutting edge products with early adopters in the Business to Business and retail sectors and producing a consolidation of manufacturer, fuel supplier, distributor and end user to establish the infrastructure for a nationwide dealer network of alternative fuel technology outlets within the UK.

Can you comment on the UK market in terms of the roll-out of EVs?
The EV landscape in the UK is littered with a multitude of early charging solutions that are not capable of meeting today’s EV market requirements. We see the need to replace and expand these legacy solutions and view it as a massive opportunity for someone to deliver a 21st century, fit-for-purpose turnkey product. The combination of Alfen’s modern, highly functional, compact AC chargers and our GeniePoint Platform for control and management makes us perfectly placed to take full advantage of that opportunity.

How do you position yourself in the market for EV charging?
There are two sides to ChargePoint Services’ business. Our public charging business – the GeniePoint Network, is controlled by our own GeniePoint Platform back office solution combined with our GeniePoint mobile web site (www.geniepoint.co.uk), for PAYG national public charging provision. The other side of our business offers workplace charging to our B2B clients. We supply them with the latest EV charging hardware, relevant to their specific requirements, totally operated and run by our GeniePoint Platform which provides them with comprehensive reporting, billing and management functionality. The Alfen product is particularly relevant given its modular design and easy screen-driven user operation.

Can you give some examples of projects you have been involved in?
ChargePoint Services has been working with Peel Energy to provide EV charging across their estate portfolio. In the project’s first phase, we provided EV charging facilities at MediaCityUK in Manchester - home to the BBC, ITV, Kelloggs, Ericsson and the University of Salford, as well as over 250 smaller businesses. With over 7,500 people living and working in MediaCityUK, fast, easy-to-use EV charging offers vital support to their work, home and leisure activities. Five Alfen Eve dual chargers were installed, operated and run by ChargePoint Services’ GeniePoint Network. The project’s second phase saw us provide a further 5 dual socket Alfen Eve chargers to Peel Energy’s Venus building, also situated in Manchester, and subsequent phases are currently under planning.

We have partnered with MFG, the UK’s second largest independent forecourt operator, to roll out rapid EV charging across the UK. Our aim is to provide convenient, local charging to all EV drivers, making refuelling fast, simple and cost efficient. With over 80 new rapid chargers added to our GeniePoint Network since the beginning of the year, we are the fastest growing and most reliable forecourt rapid charging network provider in the UK.

> “ We see a massive opportunity for someone to deliver a 21st century, fit-for-purpose turnkey product ”

What is your vision on the future with regards to EV charging?
I see a future in which electric vehicle charging is a fully user-friendly experience driven by seamless integration of functionality between house, car, workplace and public charging. To prepare for the future we have partnered with Innovate UK for B2B trials to incorporate storage in combination with our EV chargers at strategic locations.

Can you comment on your relationship with Alfen?
Being hardware independent, we are constantly evaluating charging hardware to pair with our own GeniePoint Platform. We find Alfen hardware to be innovative, compact, easy-to-use and generally unique, particularly as it offers flexibility for the user of preferred screen image. We believe that this relationship is a good basis for our future growth. ■

Inspire

Goldbeck Solar on its role in the “Energiewende”

Active in over 12 countries with more than 700 MWp installed solar PV capacity, the German company Goldbeck Solar is rapidly expanding its solar PV activities. Thanks to its innovatory approach, Goldbeck Solar has already won the Intersolar Award twice. Recently, the company expanded to the Netherlands, where Alfen has been supporting its various solar farms with its high voltage expertise and grid connections. In an interview with Joachim Goldbeck, founder of Goldbeck Solar and President of the German Solar Association, we discuss the trends in the solar PV market and his company’s role in the ‘Energiewende’.

An interview with Joachim Goldbeck, founder of Goldbeck Solar and President of the German Solar Association

> “ We are confident that solar power will continue to grow and become the key pillar of the global energy supply ”

Joachim Goldbeck is a business leader, who is dedicated to the innovation and development of sustainable energy solutions. Since its foundation in 2001 he presides over Goldbeck Solar, a pioneer and leader in the renewable energy industry. Joachim Goldbeck is also shareholder and Member of the Management Board of the Ortwin Goldbeck Holding SE which owns the Goldbeck GmbH – Germany’s leading industrial construction group. In addition he was re-elected to serve as President of the German Solar Association (BSW) for a second term in 2016. Joachim Goldbeck holds a degree in Mechanical Engineering from the University of Karlsruhe and an MBA from the Collège des Ingénieurs (CDI).

Can you give a brief history of Goldbeck Solar?
I established Goldbeck Solar in 2001 as a subsidiary of our family-owned construction company Goldbeck. Being a subsidiary of a construction company, the initial strategy was to build commercial rooftop solar PV systems in Germany. Soon our company went international and erected the first PV plants in other European countries. Beside rooftop PV plants, Goldbeck Solar expanded its product range and also became an expert in solar installations for open-land, parking garages, façades and landfills. Today we are active in more than 12 countries across Europe, Latin America and Asia with over 700 MWp installed solar PV capacity.

Can you talk about a milestone project for Goldbeck Solar?
A nice example of an innovative project is our solar farm at the site of Hellsiek in Detmold, Germany. Here we combined a 9.8 MWp solar farm with the mandatory covering of a waste landfill. We used the solar panels to prevent clean rainwater from seeping into the landfill and being contaminated. The dual-use concept for waste disposal and energy generation makes this hybrid solution both resource-conserving and cheaper than conventional installations. This is a unique concept that was also awarded with the Intersolar Award in 2017.

Is your strategy purely focused on solar PV?
Since the Goldbeck Group is fully convinced of the effectiveness and necessity of renewable energies as well as the ‘Energiewende’, we started the solar business while also focusing on other areas such as on energy saving and future-oriented energy concepts. Energy complementary technology, such as CHPs or battery storage, was also added to our portfolio. With regards to storage, the price per kWh stored drops year-by-year and the interest of the customers is increasing. Energy storage is indispensable and will be a vital part of our future energy system related to power generation, consumption, local distribution and grid service solutions.

Can you reflect on your expansion to the Netherlands?
When entering a new market we apply an extensive risk management methodology. Besides potential market volume we also look at the legal framework, accessibility and cultural fit of a market. In the case of

the Netherlands, all aspects were very positive. Usually after a pilot phase we establish a subsidiary and employ local people to ramp up the business. This is happening in the Netherlands right now and we are scaling-up rapidly. For the running year we anticipate some 100 MWp of new rooftop solar and solar farm projects in the Netherlands.

What lessons can be drawn from the development of the German PV market, being one of the most mature markets in terms of solar PV?
Perhaps the most important lesson learnt from the German situation and other frontrunners in solar energy, is about consistency in political incentive schemes. If policy changes are too abrupt or too slow in adapting to changing market dynamics, companies disappear instead of being able to improve their processes and prosper. For a healthy, well-differentiated renewables sector, political rules should adapt automatically and quickly while focusing on well-defined goals, such as the percentage of renewable electricity production.

How do you see the market for solar PV developing?
PV power is the cheapest energy generation source worldwide. Therefore, we are confident that solar power will continue to grow and become the key pillar of the global energy supply. The end of the import duties on solar panels, so-called ‘Minimum Import Prices’, will unlock breaks and accelerate the construction of PV power plants throughout Europe. A challenge could be – as in the past – that the basic framework conditions set by government organisations will be changed with short notice. But in the meantime, the industry is reacting in an increasingly agile way when such things happen.

Could you comment on your relationship with Alfen?
Alfen for many years has been known as a competent and strong company. Entering the PV-market in the Netherlands, we were happy to have this strong partner on our side – supporting our projects and creating as much locally added value as possible. Alfen provides a strong network, secures local jobs and is a partner who exactly understands the regional rules and regulations. When it comes to high voltage equipment, this is even more important, as safety and reliability are very crucial. Alfen has proven not only to be a very experienced and reliable supplier, but has become a partner who provides innovative solutions that satisfy highest standards and demands. ■

Lidl, the most sustainable supermarket chain in the Netherlands

In 1996, Lidl initiated the construction of a distribution centre in Heerenveen, marking the start of the discounter's activities in the Netherlands. Employing just 20 people, this distribution centre was to become the birthplace of Lidl's success in its eighth country. Today, Lidl Netherlands operates over 415 stores, and is known for offering its customers high quality products at low prices. In an interview with Arnold Baas, manager of energy at Lidl Netherlands, we talk about Lidl's initiatives with regards to sustainability and its recent energy storage project with Alfen.

> “ Our customers can charge their cars free of charge from our rooftop solar panels while they shop at Lidl ”

Arnold Baas in manager energy at Lidl Netherlands. He is responsible for Lidl's energy strategy, energy purchasing, energy savings and all Lidl Netherlands energy contracts. In addition he has initiated new projects related to renewable energy generation and energy storage. Arnold Baas has a bachelor in Human Technologies from Hanzehogeschool Groningen.

Can you explain Lidl's philosophy on sustainability?
Lidl is the most sustainable supermarket in the Netherlands. We apply our motto 'highest quality for the lowest price' throughout all our departments and this sets us apart from competition. We want to reduce the negative impact of our business operations on the world and make a positive contribution to the energy transition. As a cost-conscious organisation, we express this by being conscious with energy and raw materials, producing as little waste as possible, and investing in sustainable buildings.

Examples are plentiful. We apply energy label A++++ for all new buildings and labels of at least A for our renovations. We have firm objectives to reduce the use of plastic and we monitor waste. In our stores we offer Fairtrade and Better Life products. We also started to better inform our customers with more detailed product information and advice on, for example, the best temperature setting for their fridge at home.

Can you talk about specific programmes you have relating to energy?
In 2012, we installed the first solar panel at our branch in Huizen. In the meantime, more than 20,000 solar panels have been installed in the Netherlands across over 35 branches, 4 distribution centres and our head office. We add about 1MW of solar panels per year, spread across more than 10 stores. In addition to sustainable buildings, we also strive for sustainable use of energy. We were the first retailer in the Netherlands to train all our branch employees, all the way back in 2013, to work in an energy-conscious manner in accordance with the ISO 50001 guidelines. In 2018 we will reach our goal of eliminating all natural gas usage across our stores and we aim to have rolled out 100% LED lighting by 2020.

What about transport?
Fresh supplies are brought to our stores every day from various distribution centres all over the country. We realise immediate energy savings by focussing on reducing distances, maximising load factors, and ensuring efficiency. We also optimise the waste streams from the stores to our distribution centres in the same logistical flow.

In addition, half of our delivery trucks run on LNG, and we currently pilot a full electric distribution truck

Lidl distribution centre in Oosterhout, the Netherlands

in Amsterdam. For our customers we have installed charging points for electric cars at various stores. This way our customers can charge their cars free of charge from our rooftop solar panels while they shop at Lidl!

Can you explain your energy storage strategy?
Our motto “highest quality for the lowest price” is also applied to our energy choice where we choose the greenest energy of the best quality, which is ultimately cheaper than fossil energy. Deploying energy storage fits with our cost savings strategy. Being able to match our energy demand with power we generate ourselves results in the optimum use of our investments in solar panels. In addition, the storage system helps us to make the most accurate energy consumption forecasts, which allows us to lower our overall electricity costs. Together with Alfen, we recently completed our first energy storage project at our distribution centre in Oosterhout. At this location, the storage system also helps to mitigate grid congestion for the local grid operator, as an increasing amount of renewable energy is resulting in higher peak loads on the grid.

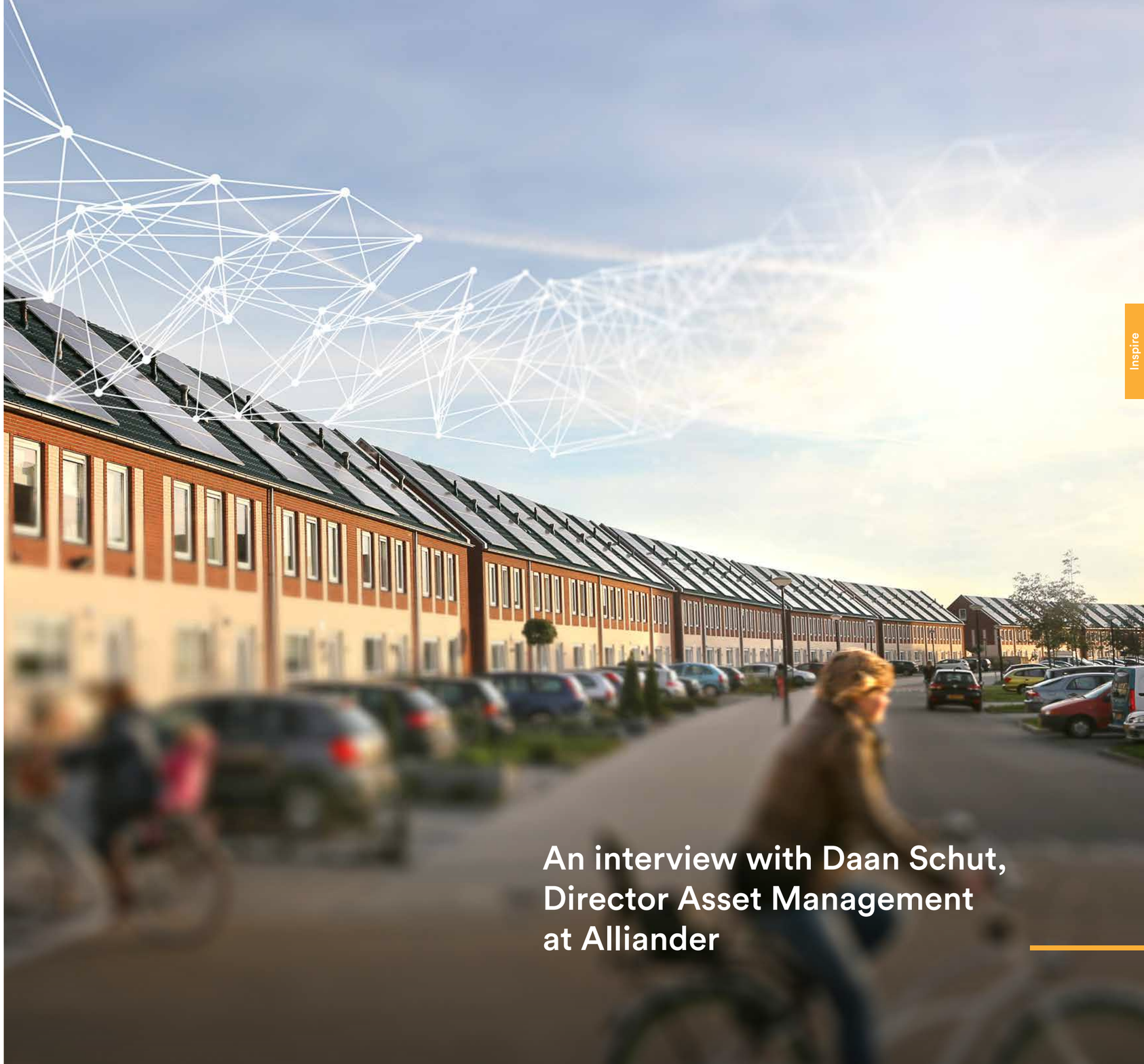
Any similar examples in other countries?
In Germany we are a partner in the WINDNODE project, a network of flexible energy consumers who can align their consumption of electricity with the intermittent energy offered by wind and solar power stations. The objective is to allow the system to integrate large volumes of renewable energy while also keeping the power grids stable.

> “ Deploying energy storage fits with our cost savings strategy ”

How do you feel about the collaboration with Alfen?
Alfen brings much-needed expertise on battery energy storage into our business operations. In order to optimally deploy such innovative storage solutions, and ensure a smooth integration into our wider energy system, we need to integrate our own solar PV systems, EV charging stations, and connections to the central grid. Alfen can offer all of these, which is exactly why we need them as a partner. ■

Alliander, making the energy transition possible

Alliander is an energy network company that secures affordable, reliable and accessible energy distribution for over three million customers in the Netherlands. The energy transported over the grid is increasingly coming from renewable energy sources, and a growing number of consumers and businesses are feeding self-generated energy into the energy networks. These new dynamics are transforming the role that grid operators have to play. In an interview with Daan Schut, Director Asset Management at Alliander and responsible for network investment, network operations, smart grid and smart meter, we discuss the impact of the energy transition on the distribution grid and where Alliander fits into this changing landscape.



An interview with Daan Schut, Director Asset Management at Alliander

Daan Schut is Director of Asset Management and a member of the executive team at Alliander. In addition he is Chairman of the board at KSANDR (developing and sharing knowledge on electricity grids) and member of the board at Next Generation Infrastructures. Prior to Alliander, he worked as a management consultant at KPMG between 2001 and 2009. Daan Schut holds a masters degree in IT-auditing from Erasmus University Rotterdam.

How do you see the energy market developing in the coming years?
The energy transition means that the energy landscape is changing drastically. Fossil fuels are giving way to renewable generation, heating networks, biogas, hydrogen, electric transport and more widespread use of electricity. All these developments have consequences for energy infrastructure, as natural gas is being replaced by alternative forms of energy for cooking and heating, and peak loads on the electricity network are increasing. Energy is also increasingly being generated in a decentralised way, with an increasing number of cities and municipalities and citizens and companies themselves working on plans around energy self-sufficiency. To give an idea of the potential impact those shifts can have on the energy grid, I like to make the parallel with our road-networks: if we shift to decentralised energy production, we divert major load traffic from highways to secondary roads, this will no doubt result in traffic jams. This is exactly the challenge we are facing on the grid level.

What is Alliander's strategy to accommodate these trends?
Our role is to ensure that everybody has reliable access to energy in an affordable way. The rapid increase of renewable energy means that we have to cope with erratic peak loads on the grid: a fossil-fuel fired power plant generates base load energy, solar and wind don't. Our existing networks are not equipped to cope with the effects of this energy transition. To minimise the need for costly network upgrades, we are developing new initiatives and innovative solutions aimed at softening the impact of the energy transition on existing networks. We're working on smart grids, which are digital networks that can, among other things, enable us to benefit from users that are willing to scale down their energy consumption at times of peak demand, or else make their energy storage capacity available to us. This, accompanied with the transition to a system with a more diverse availability of local energy sources, also means that we have to prepare ourselves for a new role as a system coordinator, in which we aim to co-design, regionally and locally, the best possible local energy system, making the most appropriate choices for society.

> "The shift to decentralised energy production will divert major traffic loads from highways to secondary roads, this will no doubt result in traffic jams"

Can you give some examples that illustrate this strategy?
The introduction of flexibility markets is a nice example. This concept has been developed and piloted over the past years and is now being deployed at various locations in practice. The objective of a flexibility market is to better match the supply and demand of electricity to each other. Flexibility arises when users of energy shift their supply and demand to a different time — for example, through the use of energy storage or demand management of lighting or cooling. As a result, the grid operator can prevent peak loads and (temporary) upgrades of the electricity grid. In return, the energy user receives a compensation for making their flexibility available to the market. Last year, we realized a flexibility market for the first time, in an area in Nijmegen where both electricity demand and the supply of renewable energy sources developed faster than expected. In order to meet the capacity demand in this area, a large new substation will have to be built, which will probably be ready in 2022. In the intervening period, a flexibility market is mitigating the capacity constraints, which helps us avoid investing in a temporary cable. A similar programme is currently being rolled out in the Zuidplaspolder, where a large number of requests for grid connections from the greenhouse horticulture sector, businesses, and homes has led to capacity constraints in the electricity system.

Another example involves the redundancy of the grid. Currently, the entire grid is built with double cables, to ensure power outages are being reduced to a minimum. This is of course crucial for households and industries that are dependent on the reliable supply of electricity. But for connecting a solar farm, we could consider a grid connection with a single cable and accept that, in case of an outage, this solar farm will, temporarily, not deliver its energy to the system. This will imply missed income for the solar operator, but may be a more cost-efficient solution for society as a whole, as outages are relatively rare in The Netherlands and you could argue the amount of cases that an outage would be at the same moment that the sun is shining. As the energy transition evolves, we will increasingly face these kind of trade-offs in order to minimise total cost for the system.

And what about the impact of EVs?
We are only at the very beginning in terms of the roll out of electric vehicles in The Netherlands. All car manufacturers are working on new EVs. The charging of these vehicles will have an enormous impact on the grid, especially in situations where a large number of EVs is being charged simultaneously in a contained area. To mitigate the impact on the grid, so-called 'smart charging' is essential, which means adjusting the cars' charging programmes to meet local grid capacity. In addition, for high power fast charging stations, we increasingly participate in the planning phase for the roll out of new charging hubs or fast charging stations, by advising on the most suitable locations from a grid perspective.

Could you comment on your relationship with Alfen?
Alliander and Alfen have a relationship that dates back for more than 20 years. In addition to Alfen's role in the supply of transformer substations, we also jointly participate in pilot projects, such as the Cellular Smart Grid Platform about self-healing power grids. What I appreciate about Alfen is that they have always invested in innovation. And what really distinguishes Alfen is their flexible and cooperative approach. We are facing an era of rapid change across many aspects of our business, and it is nice to realise that, together with partners like Alfen, we are not facing these challenges alone. ■

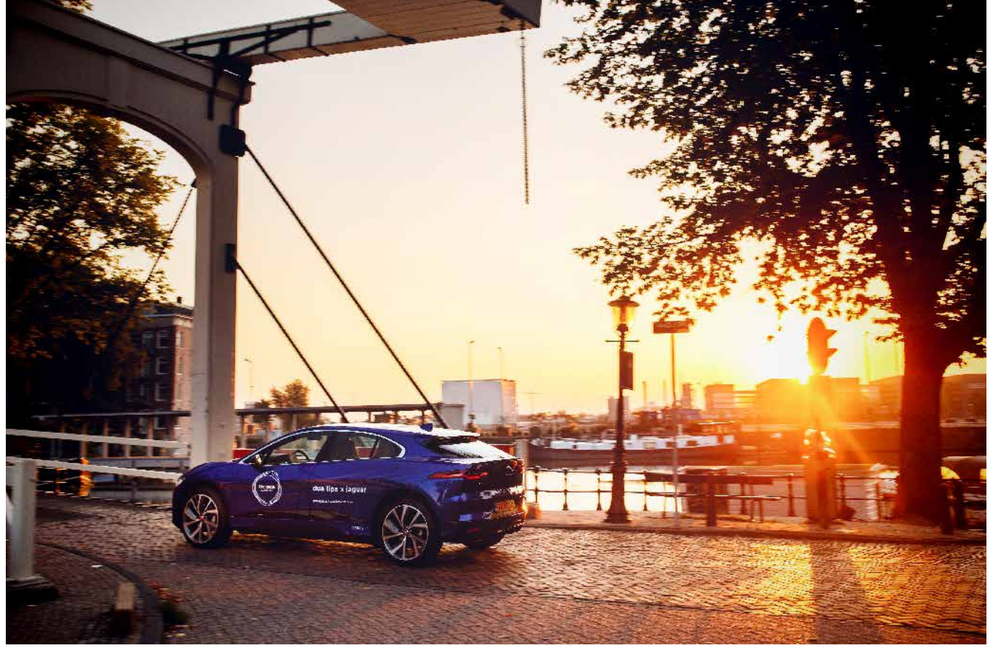

Imagine

Alfen supplies EV charging for Jaguar Land Rover

Alfen was recently selected by Jaguar Land Rover to supply its EV charging equipment, covering the Netherlands, Belgium, Luxembourg, Switzerland, Portugal and Spain. We spoke with Mick Cameron, Head of e-Mobility at Jaguar Land Rover, about the company's strategy towards EVs and its role in the roll-out of EV chargers.

An interview with Mick Cameron, Head of e-Mobility at Jaguar Land Rover

Mick Cameron is Head of e-Mobility at Jaguar Land Rover. He is a mechanical engineer by training and has over 33 years of experience at Jaguar Land Rover. Mick Cameron worked for 15 years in Chassis Engineering, followed by 14 years as Vehicle Engineering Manager, delivering multiple Range Rover and Range Rover Sports programmes, including the introduction of the all aluminium range of current vehicles. Following the success of Range Rover, he moved to be Project Leader for the Jaguar I-PACE, leading the project for one year. In his current role, Mick Cameron is responsible for the electrification infrastructure to the Jaguar Land Rover businesses around the world, covering all sites including Retailer, Workplace, Manufacturing and Test locations, along-side Home and Public charging solutions for Jaguar Land Rover's customers. He is also leading Jaguar Land Rover's Energy Service Projects on second life battery solutions including recycling, re-use and storage, to explore new business opportunities in these areas.



Can you tell us about your strategy with regards to EVs?
In just two years, all new Jaguar Land Rover vehicles will be electrified. We will offer our customers a full choice of electrified options, including PHEVs, mild hybrids and battery electric vehicles. There is a golden opportunity to encourage mass take-up of electric vehicles — but we cannot be complacent and think it will happen naturally. We need to deliver the products that excite the customers in this new era for the automotive industry. We are extremely proud of our first premium electric performance SUV, the Jaguar I-PACE, and are delighted with the response from customers, retailers and the media to date. Our goal was to create the best electric car, with no compromises. Our strategy is to deliver technologies that are relevant, accessible and affordable, in a Jaguar Land Rover way, because the desire to drive a fun, sporty, capable car won't diminish in the years to come.

Is this only about EVs or more?
Our commitments as a responsible business doesn't end with developing and building electrified cars — we are ensuring that the materials that make them can be used again. I am actively involved in programmes on second life battery solutions, including recycling, re-use and storage, to explore new business opportunities in these areas. In addition, we use Jaguar's Formula E programme to create tangible R&D benefits for the electrification of future Jaguar Land Rover road cars. This programme is designed around the team's founding principle, 'Race to Innovate'.

In what ways are you involved with the charging of EVs?
Our e-Mobility team looks after all the offboard electrification needs of our customers, retailers, employees and all Jaguar Land Rover site infrastructure. That means I am looking at how the retailer will provide our customers with both the right charging solution and the right advice to our vehicle customers, to make sure our sites have the necessary charging infrastructure and future charging strategies in place to test our products, now and into the future. Alfen have supported us during our wall box compatibility assessment programme in Europe and are supplying several markets as our retailer and home charging solution partners. The combination of their Europe-wide coverage and range of state-of-the-art home, business and public chargers fits well with our strategy.

> "There is a golden opportunity to encourage mass take up of electric vehicles"

How is your company changing as EVs become a more important part of your business?
Electrification touches every part of Jaguar Land Rover. Following three years of intensive education and transformation, we are now in a position where the e-Mobility team is fully embedded within the day-to-day activities of the business. Our remit includes looking into the energy services side of the ecosystem and determining the best customer packages and propositions going forward.

How do you see the future of EVs and EV charging evolving?
Whether it's relevant to the customer or required, speed of charging is the EV hot topic. Speed and power to charge always get an emotional response over a logical considered user requirement. In a traditional internal combustion engine vehicle, the equivalent would be top speed — fast is good, right? Speed of charging is a huge focus for us, and that means ensuring that the customer is able to access the right networks and stations that suit their needs and requirements. A lot of that focus is on the public charging network, but we would predict that some customers in the future will want to have the ability to access higher-powered home solutions beyond the current 7 / 11kW offering, where integrated energy systems and smart charging will play an integral part.

Colruyt Group offering green energy to its customers

Colruyt Group is a large family-owned retail group in Belgium with over 500 grocery stores and activities throughout three countries. Through its fully-owned subsidiary Eoly, it produces and supplies sustainable energy, with 13 of its own wind turbines and 54 of its own solar PV installations. Colruyt is rapidly rolling-out its EV charging operations under the label DATS24, offering charging infrastructure at grocery stores and DATS24 fuel stations. We spoke with Théo van der Vaeren, Operations and Maintenance Engineer at Eoly, on its EV charging-related activities.

An interview with Théo van der Vaeren, Operations and Maintenance Engineer at Eoly

Théo van der Vaeren is Operations and Maintenance Engineer at Eoly since 2017. He is responsible for the operations and maintenance programmes of Eoly's portfolio of windturbines, solar PV installations and CHP assets. In April 2017, the EV Charging station network was added to Eoly's portfolio of assets.

Alfen magazine

“We want to offer EV charging services so that our customers can leave us with a bit more green energy when they drive home”

Can you tell something about your sustainability initiatives?
Sustainable entrepreneurship is in the DNA of Colruyt Group. We believe that we have to step forward in making our own activities more sustainable and initiate a positive dynamic for society and the environment. Because we collaborate with a lot of parties throughout the entire value chain, we are also in the position to inspire partners and customers. We therefore continually invest and pioneer sustainable solutions and aim to set an example by aiming towards a zero-emission environment.

How does EV charging fit in this programme?
Our goal is to offer EV charging to all our retail clients, with the highest level of service and availability. While doing their grocery shopping, DATS24 wants to offer EV charging services so that our customers can leave us with a bit more green energy to drive back home. We also provide charging stations at our office carpark for employees who drive an electric vehicle. Eoly is also an energy provider, with our own renewable production from sun and wind and, as such, we ensure that all the electricity for our charging stations comes from renewable energy sources.

Can you give some examples of your sustainable mobility initiatives ?
We started in 2015 with our first pilot EV charging project. Today we operate more than 60 Alfen charging stations located on retail store carparks and our headquarters. In 2018 we also installed our first fast charger at one of our DATS24 fuel stations. This station also offers CNG and hydrogen as sustainable mobility solutions.

What is your vision for the future of EV charging?
We actively promote electric driving among citizens and our employees, although we realize that the large-scale roll-out of electric vehicles is yet to start, and is dependent on the wider availability of affordable EVs with a long range. To be fully prepared for a more electric future, we started in Belgium with the development of a network of electric charging stations, for which our fuel stations, under the brand DATS24, offer 100% green electricity. Today, 57 of our grocery stores and one office building have been equipped with EV charging infrastructure.

Can you comment on your relationship with Alfen?
Alfen obviously has a lot of experience with EV charging. It has ‘exported’ its experience of EV charging from the Netherlands to other European countries, and also brought in their experience for the roll-out of our EV charging network. I consider them a solid partner with good technical experience and a flexible approach towards problem solving. Colruyt Group’s mission is: Together, we create sustainable added value through value-driven craftsmanship. I believe our work with Alfen fits nicely into this mission! ■

Eneco’s Belgian storage project combines front-and behind-the-meter business cases

At Peleman Industries, an industrial site in Belgium, Eneco has installed the first large-scale storage system that helps to both balance the central power grid and optimise local consumption of wind energy. This combination of a front-of-the-meter storage service (balancing the grid) and behind-the-meter service (increasing local offtake) creates a unique new concept in the market for industrial clients. In an interview with Iwein Goigne, CEO of Eneco Solar and Storage Belgium, we discuss Eneco’s strategy for energy storage.

An interview with Iwein Goigne, CEO Eneco Solar & Storage Belgium

> “ We enable people to take control over their own energy supply ”

Iwein Goigne, is General Manager of Eneco Solar Belgium. After graduating from the University of Ghent as Civil Engineer and obtaining an MBA degree at the Vlerick Management School, he started his career at Picanol Group. There he gained experience across the globe, in the fields of IT, Project Management and Operations. After that he took on the role of head of operations within solar providing companies, first at Enfinity, and later at Eneco Solar Belgium, which originated from the acquistion of Ecostream by Eneco. With an entrepreneurial spirit in mind he became General Manager of Eneco Solar Belgium, which is now the biggest solar energy producer in Belgium. Mr. Goigne is renowned in Belgium as dedicated board member in the solar sector organization and for his leading expertise in the field of renewable energy.

Can you explain what Eneco Solar Belgium does?
Eneco Solar is the largest solar energy producer in Belgium, and is part of Eneco Group, a sustainable energy player active in several European countries. As Eneco Solar, we deal with solar asset development and realisation, acquisitions of existing solar parks, asset management and related monitoring, maintenance and cleaning services. We handle about 215 industrial sites with more than 260,000 solar panels and a total installed capacity of 63.5 MWp. With our industrial clients we’re increasingly engaging in discussions around innovative storage projects, with the project at Peleman Industries as a very nice showcase.

How will the storage facility at Peleman Industries be used?
In this solution we basically combined two business cases. The storage system will be used for balancing the central power grid, offering Frequency Containment Reserve. This is typically categorised as a front-of-the-meter storage application. In addition, the storage system will be used by Peleman Industries to increase the local energy offtake of the on-site wind turbines. The latter is typically categorised as a behind-the-meter storage application. This combination of combining front- and behind-the-meter storage applications is truly unique in the market!

How did you get in touch with Alfen for the Peleman storage project?
Our Dutch Eneco colleagues already have a long-standing relationship with Alfen related to EV charging equipment and pointed us to their storage capabilities. We quickly realised that Alfen was able to deliver a complete solution: not only the battery storage system itself, but also the transformers and the site engineering that goes with it. Thanks to the strong references of Alfen and their experience in the local field, we could easily tailor our solution to the client’s situation in a fast and effective manner. Their integrated ‘container’ solution helped realizing this project on time, in budget and in scope. Good collaboration between Eneco and Alfen led to short communication lines, a short lead time and a constructive approach for solving issues in an innovative, yet very technical complex system.

What is your general strategy with regards to storage?
Let me first talk about our view on the deployment of storage. As renewable energy sources become more and more dominant in Belgium’s energy production, the challenges related to these new energy sources are also becoming increasingly apparent. We need to keep our energy grid in balance especially when there is no wind and solar production. This is where storage comes in. Firstly, because it offers the necessary flexibility for balancing the grid: it is quick, can generate high output for short durations, and it is easy to install. Secondly, storage can be used to store excess electricity from renewable energy production assets for later use, in order to avoid wasting any excess energy production.

4.6MWp Eneco PV installation at Straatsburgdok in Antwerp, Belgium

As Eneco we see ourselves as an energy facilitator for our clients. Many of our clients are taking care of their own renewable production with local solar or wind energy. Together with our clients we create solutions to optimise their own energy production and consumption. Storage will be essential in this model, as it helps to increase the availability of renewable energy, improves power quality and can offer attractive business cases.

How would you describe the utility of the future?
We are moving from a central energy model towards a model of decentralised sustainable energy much closer to, and together with, the customer. In a locally organised energy system, people and companies decide where and how they generate green energy, and how they use, store and share it. The traditional boundaries between the supplier, the producer and the customer are disappearing. One moment a resident or a company can play the role of customer, and the next moment the role of energy producer. Because of these changing roles, our responsibility now goes much further than producing and supplying green energy. We offer added value by providing people with services and resources that allow them to organise their energy themselves.

We have been leading the way in the energy market since 2007. Now the energy transition is in full swing and our specific task is to innovate. We are maintaining our leading role in the energy market by further accelerating and innovating. However, the energy transition isn’t only about the technology. It is about people and the choices they make using that technology. It starts by putting people first in their day-to-day activities. Because when we know what they really want, what motivates and moves them, we can respond more effectively with innovative energy solutions, products and services. This approach is helping us achieve our objectives. With our mission “Everyone’s sustainable energy”, we enable people to take control over their own energy supply. ■

Colophon

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