

# Storage – the way to independence



Dirk Kaisers, key account manager at Energy Storage Systems EMEA, speaks to PES about the uses of energy storage systems for onsite energy management, storage and the move away from dependence on fossil fuels.....

**PES: Welcome to PES Solar/PV magazine. Thanks for talking with us. Would you like to begin by explaining a little about the background of your organisation and how you currently serve the solar industry?**

**Dirk Kaisers:** Thanks for having us. GNB Industrial Power is part of Exide Technologies, the global provider of stored electrical energy solutions for transportation and industrial markets, with 127 years of experience and operations in more than 80 countries around the world. We have approaching 10,000 employees and some of the most advanced battery technologies in the industry.

Exide serves the Industrial Power markets with its GNB-branded efficient energy storage systems for both Motive Power and Network Power customers. Motive Power applications include forklifts, automatic guided vehicles, cleaning machines and

other commercial electric vehicles. Network Power installations include standby power for electric utilities, telecommunications systems, alarm and security systems, renewable energy systems, railway systems and uninterruptible power supply (UPS).

Through our Network Power business, GNB is an increasingly powerful player in renewables, across solar, hydro and wind power. We have developed innovative and cost-effective energy storage systems to optimise renewable sources and stabilise electric grids. Effective storage could make renewables a much larger part of the global energy mix, and we have the technology and expertise to make that possible.

**PES: You are active in a number of industry sectors. How important is the solar business to Exide?**

**DK:** At Exide, we see solar as an unprecedented opportunity. It is forming an ever-greater share of the global energy mix, helping us move away from dependence on fossil fuels. The biggest challenge is its volatility: sometimes excess power is generated, and other times very little power is generated for days at a time. We address this volatility by designing ways to store excess energy and release it when it is needed.



More companies are seeing the advantages of investing in onsite energy management and storage, allowing energy to be captured and released onto the grid at the most profitable time. Storage capacity can even be leveraged to provide UPS, allowing shared infrastructure to reduce CAPEX expenditures. With European countries moving away from nuclear, and more countries paying for the provision of reserve power and capacity, there is a clear economic case for investing in energy storage systems.

Energy storage solutions are also increasingly popular for off-grid and micro-grid solar applications. A great example is rural areas in emerging markets, where diesel generators are used at night or when it is cloudy. Often it is far more cost-effective to rely on energy storage, given the cost of transporting diesel to remote locations. Exide has worked on major deployments of this nature, where batteries are either used alone or as part of a hybrid solution.

GNB's Sonnenschein PowerCycle is often the preferred solution for this type of remote deployment. It can operate in extreme climates, and its advanced grid

design gives longer lifespan at high temperatures. The battery is also maintenance free, requiring no topping up of water, and has deep discharge protection. It uses GNB's advanced dryfit® gel technology.

**PES: Is solar/PV a growing business area for you? How are you capitalising on this growth?**

**DK:** We are seeing strong growth in the photovoltaic industry and have led some of the most ambitious projects to date. Global photovoltaic installations are expected to reach 69 GW this year – a 17% increase over 2015. Much of this growth is coming from the US, China and India, with Germany, Japan and Italy continuing to provide a significant share of the overall demand.

GNB is participating in the M5BAT project funded by the German Federal Ministry for Economic Affairs and Energy. This is a

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unique hybrid battery storage system, built to improve the integration of renewable energy into the energy market and to provide frequency control services.

We also had a role in the €100m Alt Daber solar power plant in Germany, which generates 71 GWh/year. GNB's TENSOR Solar technology was selected for the plant's ground breaking Energy Buffer Unit, used for participating in the frequency control market. The battery offers best-in-class cycle life and energy throughput, outperforming a typical traction battery by over 100%. It is ideal for large-scale solar power plants, being specially optimised for demanding cyclic storage applications. An optional low-maintenance version with watering system is also available.

In a very different project, we were proud to help Tokelau, an island territory of New Zealand, to become the first nation in the world powered entirely by solar energy. This was made possible by combining solar

panels with a huge bank of GNB Classic OPzS cells. Before solar was introduced, Tokelau was powered by diesel shipped from Samoa, at a crippling cost to the small economy.

**PES:** Could you tell us about your containerised energy storage systems?

**DK:** The Restore 500 series is a containerised storage solution. It is effortlessly transported, just like any container and can be plugged in and used immediately. The system comes with batteries, climate control, ventilation, a connection unit and a monitoring and control unit – everything you need to get started right away. The integrated battery management system continuously evaluates the relevant data to operate the batteries in partial state of charge, significantly reducing total cost of ownership.

Just plug it in and you have your very own storage system, without the costs and complexities of designing a bespoke solution. Restore 500 is the ideal choice for applications such as grid and power quality, hybrid and green deployments, renewable

energy management and back-up power (UPS).

**PES:** What are the advantages, both in technological terms and for the end user?

**DK:** Restore 500 is designed around the 'plug and store' concept, an entire ready-to-go system in a box. It is connected to the customer's local grid using standard 3-phase plugs and a single communications connection, saving time and resources that would otherwise be spent on deployment. Containers can be daisy-chained to meet your storage needs.

The Sonnenschein dryfit® gel version of the



Restore 500 is fully assembled and ready to go. This is the most cost-effective solution, with no labour required for on-site assembly. You also get a full choice of other battery technologies, including lithium and varieties of lead-acid – it is an effortless, affordable solution with best-in-class design.

**PES:** How important is battery storage for the integration of renewable energy into the electrical grid?

**DK:** Wind and solar are excellent sources of energy, but they lack the predictability that grid operators need. There can be long periods when very little energy is generated, and times when much more energy is generated than is being consumed.

Battery storage is the best way to address this problem, by smoothing out generation and consumption. With solutions like the Restore 500 series, excess energy can be captured and then released when it is needed most. This way, renewables can form a greater share of the energy mix. Our energy storage solutions offer many other powerful advantages and uses.

**PES:** In which application?

**DK:** Our products help to stabilise the grid, allow for diesel generators to be optimised or replaced, provide ramp-rate control and back-up power (UPS), and give customers the ability to provide primary control energy, where the trading price is particularly lucrative. Energy storage also provides opportunities for intraday arbitrage, with stored energy released when



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demand is high and prices reach attractive levels.

Our energy storage systems are also used for peak shaving. This is where you rely on stored energy during peak times when on-grid energy is most expensive. For businesses with intensive energy use, like data centres and heavy manufacturing, this can mean big savings.

Different applications can also be combined with each other, according to the needs of the business.

**PES: Geographically speaking, where are the key markets for Exide and do you have any plans for expansion into other areas?**

**DK:** Exide is a global business, with operations in more than 80 countries around the world. Our solutions deliver real value for a wide range of applications, from off-grid island deployments in the Pacific to infrastructure projects in Africa and Asia and large-scale solar parks in Europe and the Americas. Energy storage is increasingly important to every type of renewable energy project and we want to be involved wherever our expertise can help.

We believe energy storage systems will have a transformational effect on ‘decarbonising’ the world economy. With the increasing efficiency of renewable

sources, volatility is the biggest obstacle we face: creating equilibrium between power generation and consumption. Energy storage is the only way this can be addressed, and Exide has the experience and technologies to make that possible.

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 [www.exide.com](http://www.exide.com)

#### About Exide Technologies

Exide Technologies is a global provider of stored electrical energy solutions—batteries and associated equipment and services for transportation and industrial markets. With 127 years of industry experience and operating in more than 80 countries, Exide produces and recycles a broad range of products that keep customers and their businesses powering forward. Leading car, truck and lift truck manufacturers trust Exide as an original equipment supplier. Exide also serves the transportation and industrial aftermarket through a comprehensive portfolio of products and services. The company’s extensive sales, distribution and service network provides flexibility and quality for an exceptional customer experience.

The Exide Transportation business manufactures and markets starting, deep-cycle, and micro-hybrid batteries for automotive, light and heavy-duty truck, agricultural, marine, military, power sport and other specialty applications. Exide serves the global transportation marketplace with successful and well-known product offerings and brands, along with battery diagnostic equipment and charging systems.

Exide serves the Industrial Power markets with its GNB®-branded efficient energy storage systems for both Motive Power and Network Power customers. Motive Power applications include materials handling (power for lift trucks, airside assistance vehicles, and automatic guided vehicles); cleaning machines; railroads; military and mining vehicles; and other commercial electric vehicles. Network Power installations include standby power for electric utilities; telecommunications systems; alarm/security systems; renewable energy systems; railway systems; uninterruptible power supply (UPS); and defence industry equipment.

Exide’s innovative technologies and advanced /premium products include Absorbed Glass Mat (AGM) and Enhanced Flooded Batteries (EFB) for start-stop and energy recuperation in automotive applications, along with flooded and VRLA (AGM and GEL) products, market leading motive power tubular products and smart charging systems for industrial applications.

At Exide Technologies, It All Starts Now. History and scale, combined with a start-up mentality, make Exide the faster, more nimble, more innovative, more digital, and more responsive alternative for customers who want more than simply a battery supplier. Exide is “the 127 Year Old Start-Up”, and the company is powering the world forward—bringing the energy of the “new Exide” to customers around the world.

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