



Meeting the electricity demands of the future

With big change comes unpredictability. At a time when the world is increasingly relying on green energy including solar, this uncertainty has the potential to cause problems. PES sat down with Travis Snyder, Product Manager at Solis Europe, to find out how it is reacting to an increased need for solutions that insulate electrical users and generators from the current stresses, and to avoid energy outages.



PES: A warm welcome back to PES Travis. Solis needs little in the way of introduction to our readers, but could you recap with a brief overview for those who may be reading about the brand for the first time?

Travis Snyder: Solis is the primary brand for Ginlong Technologies, which is one of the largest and most experienced producers of PV inverters in the world. Since it was established in 2005, the company has used innovative inverter technology to deliver first-class reliability, that has been validated under the most stringent international certifications.

Through our global supply chain, itself underpinned by world-class R&D and manufacturing capabilities, we optimise our inverters for each regional market, providing servicing and support for our customers through teams of local experts.

With a range of products from 600W right up to 255kW, Solis has an inverter to fit every situation, from a single, small, new build residential property up to utility-scale solar projects.

PES: Energy prices hiking globally for various reasons must have had a huge impact on your business since the last time we spoke. Are you seeing an increased demand now?

TS: The challenges we've seen around the world have had a massive impact on every business involved in energy markets. Demand for solar and storage is strong, and we are seeing a major increase in utility, commercial and residential installations. This trend shows no sign of slowing down. Given the long-term goals set by the EU to reach 760GWdc by 2030, it seems that high growth will continue for the next seven years at least.



Travis Snyder

At the same time, the cost of batteries for energy storage could continue its three-decade downward trend, despite recent upward spikes. The potential drop in price would make battery storage more attractive in regions that don't have a developed PV and storage base at present. Markets that currently use lead-acid batteries will mature as they switch to lithium batteries. We will see regions that weren't big enough to attract investment become increasingly attractive and this, in turn, could drive component costs down.

PES: What challenges does this demand present, to the solar industry as a whole? And to Solis and your services in particular?

TS: Transformation brings about all sorts of challenges. We're certainly seeing that at Solis. Supply chain constraints and the availability of materials are always challenges





in growing markets, but one of the primary challenges involves people. At Solis, we put a lot of value on the quality of service we deliver to our distributors, installers and end customers. This adds to the pressure to keep pace with demand and continue to deliver high service levels.

We had to quadruple our staff within six months to maintain product standards and availability. Finding the right candidates with the right skills and, in Europe, the right languages has certainly been a challenge. We have also added innovation into our products to help. For example, our latest sixth generation energy storage inverter reduces installation time by 20%, making it easier for installers to keep up with increased demand.

PES: Is the unpredictability of grids and markets leading to an increased need for solutions that insulate electrical users and generators from the current stresses, and to avoid energy outages?

TS: As national grids transition from consistent fossil fuel sources to Variable Renewable Energy (VRE) inputs from wind and solar, they inevitably become more exposed to the challenges of intermittency. The transition has to be a phased process to

keep grids balanced as the proportion of VRE in the energy mix increases.

Where VRE becomes a major percentage on the grid, system operators have to adopt more strategic methods to predict and balance energy shortfalls or potential overload without risking outages. Typically, this involves additional responses such as curtailment, demand response and energy storage.

Our market-leading research capability has enabled us to develop a portfolio of technologies that help isolate electricity users and generators, whether domestic, commercial or utility-scale, from growing uncertainties. This includes fast charging, battery-agnostic energy storage solutions, and intelligent, cloud-based PV system monitoring that allows you to set remotely your battery charge time in case of an emergency or weather event.

PES: What solutions does Solis offer to make life easier in the face of that unpredictability?

TS: Solis solutions can probably be categorised under three main types of customer use cases. The most popular would

be our single or three phase hybrid inverters with battery storage. Solis inverter customers are not tied into a particular battery manufacturer, so there is added flexibility. Customers can connect their critical loads to the backup port. When the battery has power or there is solar generation, the backup port will power the critical loads during an outage. We see this in about 20% of our installations.

A further example involves using our single phase or three phase hybrid inverters in backup mode. The backup mode is a special setting that prevents the inverter from using the battery when it is at or under a specific state of charge (SOC) percentage. For Solis products, the default is 80%. So, when there is a grid outage, the user will have 80% or more of their battery to use during that specific outage.

The third type of customer is the off-grid customer. We have a specific off-grid inverter and also, we have hybrid inverters that can be used like an off-grid inverter. For a full-time off-grid customer we always recommend using the off-grid inverter because it can parallel up to 10 units and can also connect to the grid, but it is physically impossible for it to inject into the grid so no

grid connection certificates are required. Like all of our hybrid inverters it is compatible with all top tier batteries.

PES: What solutions are available or are you working on for domestic and commercial rooftops?

TS: I would say that hands down, Solis has one of the strongest residential and commercial product portfolios in the solar industry. Our inverter power range starts at 600 Watts and goes to 20kW for residential. For commercial, we start at 3kW and go all the way to 110kW. As far as the future goes, we are working on a large commercial hybrid inverter and tying the whole system into an export manager to monitor, control exported power and remote control the system. This will also work with all the current commercial products in the portfolio and act as one system. We believe this will be a game-changer for the industry.

PES: You're suggesting batteries and EVs as a Virtual Power Plant?

TS: We are not alone in suggesting this. In January 2023 nature.com published a study predicting that electric vehicle batteries alone could satisfy short-term grid storage demand by as early as 2030.

EV batteries can be connected and controlled online to create Electric Vehicle Virtual Power Plants (EVVPPs) that can be aggregated within a self-contained micro-grid or linked to a national grid. EVVPPs can export electricity during periods of peak demand and/or low renewables generation.

EVVPPs can help to reduce grid stresses by prioritising vehicle charging when power demand is low and restricting it when demand is high. Combined with onsite solar electricity generation, EVVPPs can relieve grid stresses,



smooth demand curves and minimise both the financial and environmental cost of electric vehicle ownership.

Inverter technology is crucial to integrating EVs with other storage media, charging platforms, solar energy and the grid, micro or macro. It is an increasingly important 'energy housekeeper' behind any solar system, regardless of its size and complexity.

More specifically, the Solis range of multiple single phase/three phase energy storage inverters can be connected in parallel to form a system with a storage capacity of up to 100kW. This approach would cover all residential and smaller commercial scale

energy storage scenarios.

PES: What about decoupling electricity costs from gas prices? Are there potential solutions that would make this possible?

TS: Governments globally are under pressure to remove the traditional link between gas and electricity prices. After all, coupling is rather outdated in markets where renewables are part of the mix. It's encouraging that decoupling electricity costs from gas prices is a key component of the European Commission's current consultation into proposed electricity market reforms.

There are already ways that domestic, commercial and industrial solar energy producers can decouple from gas-derived market pricing. For example, using home-grown electricity 'behind the meter', or aggregating and trading renewable energy within community micro-grids, or they can store it to export to a national grid to take advantage of market incentivisation.

A modular system is a compelling solution for energy storage applications and micro-grid construction. It promotes technology to expand energy storage systems, which can form a large-capacity energy storage system with smaller capacity hybrid inverters at their heart.

PES: What products and services are emerging that anticipate/respond to the increased need for onsite storage?

TS: We recently launched our new range of 6th generation energy storage inverters. These include key enhancements such as a larger charge and discharge current of 125A for a global equivalent power range; single or three phase functionalities; and millisecond switchover times during supply interruptions.



As the overall trend is geared towards larger batteries and large solar systems, we are designing higher capacity systems to meet the electricity demands of the future.



Our sixth generation '1+N' concept facilitates the integration of modules and functionalities that enable smart matching between user demand and scenarios, while enabling 'super terminal' capability. At the same time, as I mentioned, installation time is reduced by 20% through quick and easy operation and convenient application.

Unlike other providers, Solis does not dictate the choice of battery brand when we specify our storage inverters. This is proving popular with distributors and installers alike who, particularly since COVID induced supply chain constraints, are looking for flexibility in how they mix, match and backup their system components.

PES: What about legislation?

TS: It is encouraging to see initiatives like REPowerEU, the European Commission's plan to rapidly reduce dependence on Russian fossil fuels and fast forward the green transition. When it launched in May

2022 the plan included a dedicated EU Solar Strategy to double solar photovoltaic capacity by 2025, and install 740 GW by 2030, combined with a Solar Rooftop Initiative that phases-in a legal obligation to install solar panels on new residential, public and commercial buildings.

Shorter permitting times for solar and renewable energy assets are also encouraging. Solar projects have been prioritised for a maximum permit processing period of three months. France and parts of Germany have already interpreted REPowerEU by making solar panels mandatory for new car parks.

Unlike Europe, the UK's recent Net Zero Review does not specify a target to make rooftop solar a standard for buildings. Like the rest of the industry, we would urge the Government to consider options for including solar panels installation as part of its retrofit support scheme.

That said, the recommendations include scrapping planning permission for solar panels and reviewing whether they should be mandatory on new building projects. MP Chris Skidmore, author of the review, calls for a 'rooftop revolution' with solar becoming the norm for all new buildings; potentially starting with public and other large-scale buildings.

PES: How do you see these ideas progressing in the short and long term?

TS: As the overall trend is geared towards larger batteries and large solar systems, we are designing higher capacity systems to meet the electricity demands of the future. For example, we are developing an 8-15kW hybrid residential inverter and a 100kW commercial hybrid inverter. We see those being crucial to the development of our energy future as we move past oil and gas.

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