

# The increased importance of energy resilience

**Dr Alex Mardapittas, CEO of leading smart energy solutions provider Powerstar, discusses how energy resilience is taking on greater importance as the energy transition progresses**

**A**s Industry 4.0, digitalisation of industry, gathers pace through ever-advancing technologies, energy consumption is dramatically increasing due to organisations digitalising their offerings in order to meet evolving customer needs. As this impacts the balance of supply and demand, which could cause greater instances of energy-related failures such as blackouts and brownouts, fears surrounding the stability and reliability of electricity continue to grow.

## Closing the energy gap

Where demand for electricity exceeds supply, many companies are feeling the financial pressure associated with being susceptible to the energy-related failures caused by a potential energy gap. It has been reported that energy-related failures can total as much as 17 per cent of a company's annual revenue. It should also be noted that the figure of 17 per cent is a present-day figure and does not take into account the likelihood that this will grow as the digitalisation of industry continues and more processes become automated or heavily reliant on digital technology. Furthermore, the Value of Lost Load, which represents the value that electricity users attribute to security of supply, is estimated at £16,940/MWh. This highlights how financially valuable a reliable electricity supply is and how financially damaging an unreliable supply can be.

In response to the changing energy landscape, technologies exist that enable companies to minimise the threat of a potential energy gap and heighten the energy resilience of sites. For example, VIRTUE, Powerstar's energy storage solution, has integrated next generation full Uninterruptible Power Supply (UPS) capabilities. Such solutions combine the traditional abilities of energy storage assets to store energy for use at a time most beneficial, such as in the event of an energy failure, with advanced UPS capabilities that ensure zero downtime is experienced by any of the systems or processes on-site.

The next generation elements of the UPS allows for a seamless response to the load, which is defined as less than a millisecond. This means that an energy-related failure, which may have otherwise



caused a site or at the very least systems to shutdown, will pass by unnoticed due to the speed of response, providing enhanced energy resilience to any organisation with seamless UPS capabilities.

Additionally, next-generation UPS offers a site-wide solution as opposed to the system specific solution of traditional UPS systems. This enables all of the operations of the site to stay online rather than solely specific departments such as IT. Furthermore, Powerstar's next generation UPS capabilities operate as an online in-line solution. This means that, in contrast to traditional systems that require an inverter to be engaged upon an event being detected, next generation UPS remains on standby and constantly runs through an inverter that allows it to ramp up seamlessly in anticipation of a grid failure. As a result, this solution also has efficiency advantages over traditional systems as they use software built into the online in-line solution to monitor the grid, resulting in only 20 watts being used for this activity. In contrast, traditional UPS systems use hardware to do this and utilise approximately 10 per cent of the system's capacity at all times to monitor the grid for energy-related failures.

Powerstar VIRTUE can also be remotely monitored and this ability enables users

to view the condition and performance of their system from anywhere with a secure internet connection, whilst also facilitating interaction between numerous smart energy solutions. This means that other energy saving and energy management technologies, such as voltage optimisation and smart distribution transformers, can be connected to energy storage and analysed to form a complete picture of a business' energy profile and where further optimisations can be made. Such a holistic energy strategy can be implemented using different technologies to highlight further optimisations that achieve different results based on the company's needs, such as increased energy resilience, reduced energy consumption, reduced energy costs, and minimised CO2 emissions.

It is clear that as energy consumption increases, the need for energy resilience increases proportionally and the costs of not achieving such resilience follow the same trajectory. The ability of leading energy storage solutions to provide this enhanced resilience alongside other benefits such as remote monitoring and connection between multiple smart energy solutions ensures the place of energy storage as a leading technology of the energy transition that provides solutions to the problems that the transition presents.