



UPS increases EV fleet capacity by 200% using SMARTset EMS and Socomec ESS.

UPS® is a global leader in logistics, offering a broad range of solutions including transporting packages and freight, facilitating international trade, and deploying advanced technology to more efficiently manage the world of business.

UPS is committed to operating more sustainably – for customers, the environment and the communities they serve around the world.



Challenge

Freight electric vehicles, like those used by UPS, can use up to ten times as much power as a typical home when charging. This means that charging large numbers of trucks simultaneously puts significant demand on the depot's electricity supply

UPS identified that traditional network reinforcement was not a sustainable model for deploying more electric vehicles from its Kentish Town depot, and appointed a consortium including 4NG to design, deliver and operate a smart-grid solution.

Solution

In partnership with UK Power Networks Services and Off Grid Energy, 4NG delivered an Energy Management System (EMS) to be used in conjunction with a multi-function Battery Energy Storage System (BESS) provided by Socomec UK.

By integrating active network management and battery storage system technologies, this will ensure the depot's electricity demand will not exceed the network's limit, preventing significant investment in network electrical infrastructure.

This smart charging solution will allow UPS to increase the number of 7.5-tonne electric trucks operating from its London site from the current limit of 65 to 170, without the need for the usual expensive upgrade to the power supply connection.

Solution

“Using an EMS to monitor the grid supply and the site demand and intelligently utilising the battery systems installed on site can not only boost the available energy but also reduce the energy expenditure of the site,” said Steve O'Hara, Founder and Managing Director of 4NG. “Removing the need to have a new substation installed significantly expedites UPS’ plans to increase the size of their EV fleet, helping to reduce the level of emissions in the capital.”

The smart charging system dynamically controls the power available to connected vehicles, intelligently limiting the peak load on the network.

Working alongside and interacting with this, the BESS monitors depot load through remote measurement at the low voltage substation and makes stored energy available to the depot to cover any unavoidable deficit in capacity.

The SMARTset EMS also ensures the BESS is able to provide Demand Side Response services including Firm Frequency Response, Demand Shift, Voltage regulation, Real and Reactive power import/export and Photo Voltaic self-consumption.



Figure 1 - Simulated SMARTset data

Result

Peter Harris, Director of Sustainability, UPS Europe, said: “UPS thinks this is a world first, right in the heart of a mega-city. We are using new technology to work around some big obstacles to electric vehicle deployment, heralding a new generation of sustainable urban delivery services both here in London and in other major cities around the world.

"Electric vehicles are an integral component within UPS’s alternative fuel and advanced technology fleet. Our collaboration with UK Power Networks and Cross River Partnership marks a major turning point in the cost-effective deployment of electric vehicles which in turn will play a key role in ensuring the global trend toward urbanisation is sustainable. We are applying new technology to make the charging process smarter and our delivery service cleaner.

Steve O'Hara added "SMARTset EMS is an exceptional way of bringing opportunities to generate revenue by supporting the National Grid for any site and they don't need to be purchased specifically! Incumbent ESS', generators or renewable sources can all be utilised by SMARTset".



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