

Electricity grid infrastructure upgrade



Issue

- Insufficient electricity grid infrastructure for electric freight vehicle charging
- Requirement to make considerable investment in third party infrastructure

Solution

- Upgrade the grid capacity and relevant infrastructure to allow for a maximum of 68 electric vehicles to be charged simultaneously
- Close cooperation with local electricity distribution network operator (UKPN) and landlords

Results & benefits

- All electric vehicles in the UPS fleet can be charged simultaneously even at peak electricity demand
- UPS's long-term approach means that the upgraded grid infrastructure provides sufficient electricity to charge the maximum number of electric vehicles that UPS might deploy

UPS is a global leader in logistics, offering a broad range of solutions including the transportation of packages and freight. UPS operate almost 100,000 vehicles worldwide of which approximately 7,000 are alternative technology and alternative fuel vehicles.

Guided by Peter Harris, Director of Sustainability at UPS EMEA, UPS joined the EU funded Freight Electric Vehicles in Urban Europe (FREvUE) project in order to make further progress towards an alternative fuel freight model. As part of the project, UPS retrofitted P80E type electric freight vehicles with a gross weight of 7.5 tonnes, including 16 in London and four in Rotterdam.

UPS then discovered that at their depot in London it was not possible to charge all their electric freight vehicles simultaneously. The vehicles need to be charged in the late evening when returning from their routes, a time when the depot's sorting machines also run and electricity consumption is at its peak.

UPS evaluated various options and decided to take a long-term approach and to provide potential charging capacity for up to 68 electric vehicles. To achieve this, UPS worked with UK Power Networks (UKPN), the electricity distribution network operator and substation owner, as well as their landlords.



A three-tier system of landlords which meant different lengths in lease agreements posed further problems. The entire upgrade process took around a year and a half to two years and cost over £600,000.

The key issue in the process was that UPS were required to make major investments in a UKPN asset without having any control over its operation – a scenario which would be similar for operators across Europe.

This issue will need to be addressed as for many organisations the investment would be prohibitively expensive, hindering the wider uptake of electric freight vehicles.

Lessons Learnt

- Develop good understanding of infrastructure requirements of electric freight vehicles
- before purchase
- Develop good understanding of local grid infrastructure situation especially in relation to ownership structures and lease agreements
- Infrastructure upgrades tend to be non-incremental in nature: E.g. an upgrade in two steps rather than one can be significantly more expensive
- Not many stakeholders will be in a position to invest in third party infrastructure the way that UPS did. This is a policy issue that will need to be addressed if larger electric freight vehicle fleets are to be encouraged

Further Information

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