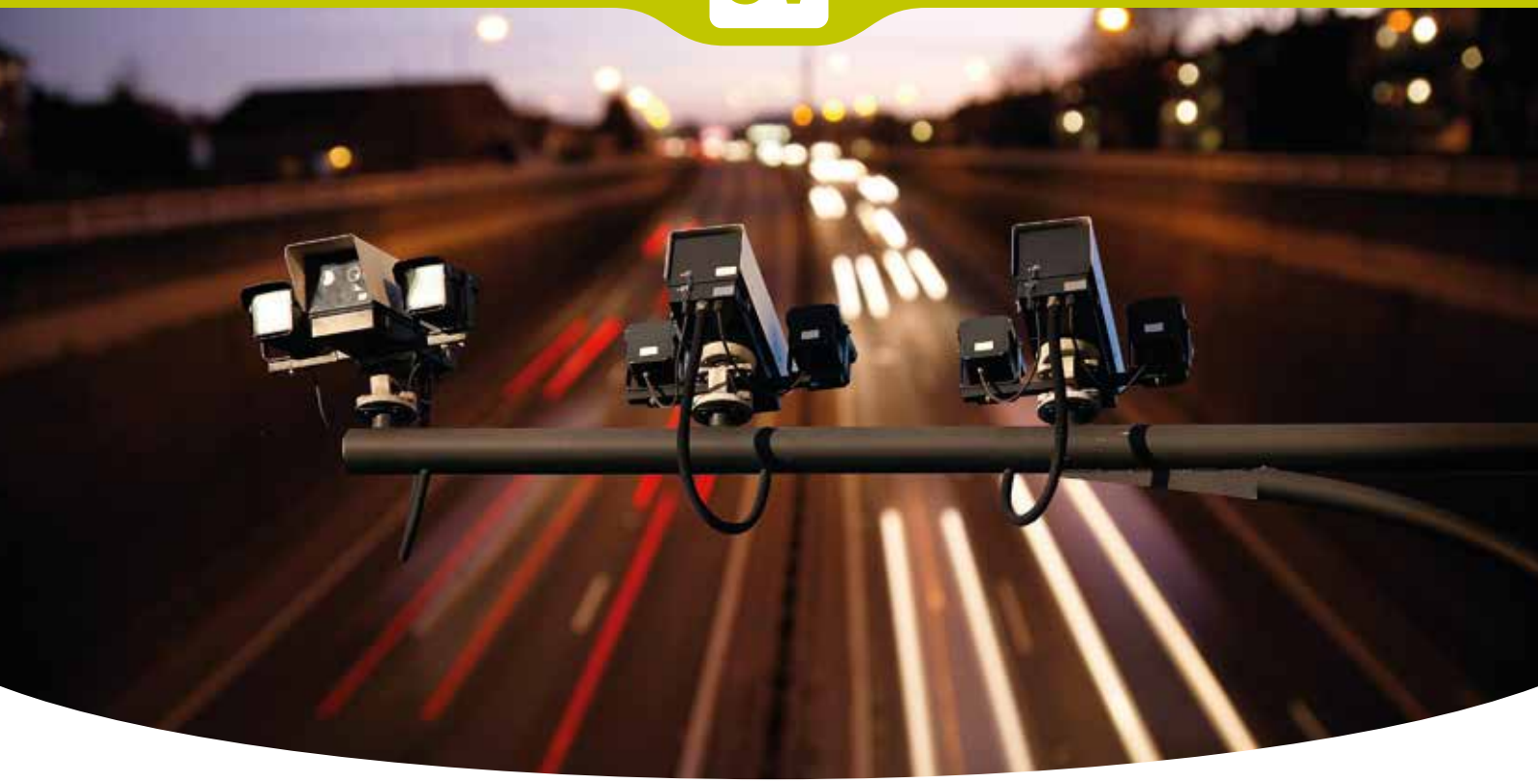


Powering CCTV in Problem Areas

The necessity for surveillance on our highways may not be recognised by the average commuter or anyone outside of the industry. So, monitoring the likes of traffic flow, accidents and speeding violations all contributes towards a more effective operation of our highways. The cameras not only work to enforce laws and aid commuters, but also encourage safer driving just by their presence.

The number of police CCTV cameras has increased exponentially over recent years, giving police forces and the intelligence agencies access to millions of images a day. These images combined with intelligent video analytics such as Automated Number Plate Recognition (ANPR) are key in preventing crime and delivering a secure highways network.

The Current Problem

Jenoptik Traffic Solutions are world leaders in innovative and industry leading solutions for the Intelligent Transportation Systems market. Jenoptik identified blind spots in the highways camera network which were usually caused by areas with limited power sources. This meant that some installations did not go ahead due to cost, or equipment was prone to failure due to intermittent power. In some cases the equipment had to be positioned near to a power source instead of the optimum location.

The lamppost powering the cameras is on a timed lighting circuit. The timed circuit was introduced to contribute towards reducing CO2 emissions. By shutting the lighting off between midnight and 5am, when the motorways are quiet, energy efficiency is significantly increased. Consequently, there is only a 5-hour window for Jenoptik to capture electricity to power the cameras until the power source is available the following day. The current installation uses an Uninterruptable Power Supply (UPS) but soon after, the grid connection is lost alongside all autonomy when the UPS batteries discharge. The only other option would be to implement a permanent AC powered camera. However, at this specific location, the cost would be approximately £58,000 due to the closest electricity source being 550 metres away from the installation position. Furthermore, excavation of the distance would take place across a main road and private land which would have required way leave; as well as ground works, Distribution Network Operator (DNO) works, cabling and other civil works.

Jenoptik heard of a possible solution that had been recently used in the rail industry. Upon finding the innovator of this solution, they invited Quality Essential Distribution Ltd (QED) to demonstrate their Energy Vault (EV).

Solution

QED are the forward-thinking company from Preston, Lancashire who are the innovators of the Energy Vault, also known as EV: a continuous off-grid electricity supply. The device offers continuity of business through its ability to charge through the Grid or renewable energy sources, store the energy and then distribute it accordingly for approximately 10 days. The 5-hour recharging time allows you to take advantage of either the best electricity tariffs within the 12am-7am off-peak time slot, or when the electricity is available to be taken. Then, the EV is ready to distribute all of that stored energy to your devices throughout the day. All whilst requiring 60% less rack space and no maintenance requirements for 10 years.

The battery storage system has already been tested by Merseyrail, who said the device 'exceeded expectations'. Their 1.2kW system only required 500w for 1.5hours of charging each evening due to low load demand. Similarly, the enforcement cameras are a low demand on the EV and therefore, the device was able to provide at least 10 days autonomy for the two cameras. So even in the case of Grid outages or power loss, the system is capable of covering any down-time with redundancy in place.

Additional benefits that the Energy Vault provides are carbon efficiency and the capability to distribute electricity off-grid throughout the day, eliminating the need for a UPS back-up system. The EV's ability to reduce CO2 emissions stems from the efficient elimination of AC-DC conversion. Due to the device's unique infrastructure, it can plug directly into renewable energy sources without losing energy.

Installation

The EV was installed into a roadside cabinet which included both the 16 channel controller and the 4.8kw Battery Banks. The system mounted onto the 19" rack mount which was engineered into the enclosure. Once the cables had been connected, the system was already supplying the cameras. Due to time constraints on the day of installation, the charging unit was not connected to the EV. However, the unit still ran for 5 days due to being delivered at 50% charge. A problem was quickly identified that the inbuilt monitoring service (that is free of charge), could not be actioned due to the well-insulated cabinet.

The Global System for Mobile (GSM) data transmissions were a concern for an aerial inside the robust, metal cabinet. However, the installation team overcame this through using a surface mounted puck aerial which performed perfectly with an excellent signal quality. The GSM was transmitting the EV performance data through remote monitoring of the unit to the web portal. So, the data will be reliably transferred, and alerts can be sent when there is a potential problem. Therefore, any potential problems can be proactively identified before they actually occur.

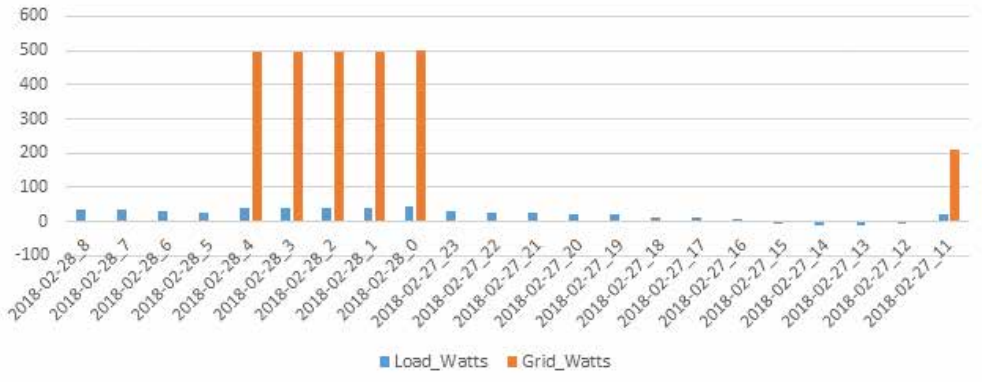
The graph below shows the camera being operated off-grid all day and night. The Energy Vault took 2.5kWh of energy from the grid between 12am-5am. This provided enough power for the device to run for the next 5 days. After this, QED expected a further 2.5kWh charge and then the EV could drop to 500W per day thereafter.

Future Roll Out

Knowing that the EV can plug directly into renewable energy sources ensures that even the remotest of areas can have continuous electricity for enforcement cameras. As mentioned previously, there is a lack of constant power to cameras in problematic or remote areas. This is where the EV comes in.

When asked about Quality Essential Distribution's Energy Vault, Dave Joy, Project Manager at Jenoptik, stated: "We are very confident that the system you have supplied us with is more than fit for our purpose."

People are beginning to hear about QED's unique Energy Vault system which has another three installations pending at two different sites. Have you considered that this reliable source of continuous electricity could simplify future installations for you?



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