



How Smart Energy Management Helped A Smart Motorway Upgrade

Find out how we helped Costain leverage smart energy management technologies to power their M62 motorway upgrade, and saved over 320 tons of CO² emissions.



320 Tons of CO² Saved Across 19 Months*

120,000

Over 120,000 Litres of Fuel Saved Across 19 Months*

24/7

24/7 Power



Peak Power Demand Reduced



9 Litres Fuel Saved Per Hour*

*When compared with traditional diesel generator only solution.

How Smart Energy Management Helped Build Smart Motorway

Highways England selected Costain as one of their build partners for the £4.5bn Smart Motorway Programme Alliance (SMP Alliance).

The SMP Alliance will work to add capacity and deliver safety improvement works across the strategic road network in England. Under the ten-year framework, the partners will focus on using technology to efficiently deliver a key element of the government's second Road Investment Strategy. As part of the initiative, Costain plans to leverage new technologies to upgrade the country's road network.

Challenges

This project required additional temporary power for on-site offices, stores, 24/7 CCTV and lighting. After a site survey it was apparent the available grid connection could not support the demand from the site, so a temporary power solution was required. This would normally be provided by fuel powered generators, burning hundreds of litres of fuel per day. However, Costain reached out to Sunbelt Rentals UK to explore solutions that would reduce their carbon footprint.

Solution

The team at Sunbelt conducted a site survey and identified that the peak load could be suppressed by utilising energy management technologies, which would immediately reduce power requirements and associated costs, CO² and fuel consumption. An Energy Management System (EMS) is essentially a smart distribution board, it will identify non-essential loads and turn devices off when not in use, suppressing the peak load. This typically means your power source, in this case a generator, can be down sized, meaning less fuel consumption, lower fuel costs and less CO² emissions. All whilst still providing a robust power solution. On this particular site without the intervention of an EMS a 300kVA generator would be needed to support power requirements, running 24/7. But there was a much smarter way...

Our equipment and services supplied at a glance

- 1x Energy Management System EMS (Eco Lync)
- 2000L Fuel Tank
- 2x 150kVA Generators
- Powering 5x Temp Modular Office Buildings With Stores, Supporting 60+ Teammates
- EMS & Generators on site from Feb 2022 - Sept 2023 (19-month period)

Result

The team identified an EMS could reduce the peak load, enabling this site to downsize from a 300kVA to 150kVA synchronised generator set. With 2x 150 generators provided, one for primary power, and the other as back up only (given the critical nature of the 24/7 CCTV requirement). This immediately reduced fuel consumption from an average 29 litres per hour to an average of 20 litres per hour (based on a 50% load). When you apply the fuel savings to the 19-month period the generators are needed for, the numbers are significant.

A 9-litre fuel saving per hour over a 30 day period this equates to 6,480 litres of fuel saved per month and a reduction of 16,800 kg's (16 Tons) of CO² saved (based on 1 litre of diesel producing 2.6kg of CO²). Apply this to a 19-month period and the savings are even more impressive.

By utilising an EMS system and downsizing the generator this site saved 123k litres of fuel and 320 Tons of CO² over 19 months, whilst still providing a robust 24/7 power solution.

