

# How Careys reduced emissions and fuel use for tower cranes

Sunbelt Rentals partnered with Greener Power Solutions to deliver a hybrid energy system for specialist engineering contractor Careys. By integrating a high capacity Battery Energy Storage System (BESS) with a smaller diesel generator, we cut fuel use, reduced CO<sub>2</sub> and NO<sub>x</sub> emissions, and improved operational efficiency, all while maintaining the demanding power requirements of tower cranes.



Up to 400 amps  
rapid battery  
recharge



Zero generator  
idling during low-  
demand periods



Significant cut  
in CO<sub>2</sub> and NO<sub>x</sub>  
emissions



Optimised energy  
use for high  
inrush current  
loads



Thousands of  
litres of diesel  
saved

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## Tower cranes have high energy demands, particularly during heavy lifts.

Traditionally large diesel generators are used to meet these high inrush current loads, but then often run underloaded for long periods, wasting fuel and increasing emissions. Sunbelt Rentals proposed a hybrid alternative with Greener Power Solutions that balanced peak performance with lower fuel use and quieter operation.

## Challenges

Careys needed dependable power for a tower crane that would ensure smooth delivery of transient loads throughout the day.

We set out to significantly reduce CO<sub>2</sub> and NO<sub>x</sub> emissions and eliminate fuel waste, while preventing generator underloading—a known cause of extra servicing, breakdowns, and blocked diesel particulate filters (DPFs), especially on Stage V generators.

Given the site's urban location, the system also had to operate as quietly as possible.

## Our equipment and services supplied at a glance

- 318kVA / 422 kWh Battery Energy Storage System (BESS)
- 300kVA diesel generator
- Energy Management System (EMS) integration
- Load profile optimisation for transient energy needs
- Hybrid power for tower cranes

“ Battery storage has become an important tool for our site power requirements, especially when paired with crane operations. By integrating smaller generators with battery systems to handle peak loads, we've significantly reduced fuel consumption and carbon emissions. This approach has also helped us reduce noise and air quality impacts on surrounding communities—all without compromising operational performance. ”

### Daniel Evans

Head of Sustainability - Careys





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## Solution

Tower cranes have a very transient load profile: short, high peaks during lifts and low demand in between. Batteries are ideal for this because they deliver those peaks instantly through their inverters, whereas generators prefer a steady, even load. Pairing a battery with a generator creates the right mix, instant peak power without forcing the generator to chase every surge.

We proposed a hybrid power setup matched to the crane's actual load profile: a 318kVA / 422kWh Battery Energy Storage System (BESS) paired with a 300kVA generator. This setup was managed by an Energy Management System that monitored real-time power demand and battery levels.

The system runs by using the battery first. During lifts, the battery delivers the short bursts of high power the crane needs, keeping power smooth and responsive. The EMS then starts the generator only when the battery drops to around 35%, recharges it quickly, and switches back to silent running.

This approach maximised fuel efficiency, extended silent running time, and delivered a stable power supply with a total load capacity of up to 800 amps. This was more than enough to handle the crane's peak demands. Its quiet operation also made it well suited to residential and urban construction sites.



At Sunbelt Rentals, we're committed to providing innovative and sustainable solutions for our customers. This collaboration with Greener Power Solutions has proven how hybrid power can improve efficiency while significantly reducing fuel consumption and CO<sub>2</sub> and NO<sub>x</sub> emissions.

By integrating battery storage with a smaller generator, we've not only enhanced the reliability of power for tower cranes but also contributed to a low-carbon, quieter job site. This project is a testament to our ongoing efforts in driving sustainability without compromising on performance.



**Andrew Somerville**

Business Development Manager - Sunbelt Rentals

## Result

Measured against an 800 kVA baseline (Dec 2024-Jul 2025), the hybrid setup delivered:

- Generator running hours saved: 5,052 hours
- Fuel savings: 126,961 litres
- CO<sub>2</sub> savings: 409 tonnes
- NO<sub>x</sub> savings: 1,903 kg

Beyond the numbers, smarter load management reduced underloading, lowering servicing requirements and extending engine life, while quieter operation improved the working environment. By working with Greener Power Solutions and Sunbelt Rentals, Careys showed that hybrid power can meet demanding crane loads and deliver measurable environmental and cost savings.



Batteries don't just help reduce fuel use and emissions. They also provide instant and reliable power, which is ideal for equipment like tower cranes that require high inrush currents for lifting, with very low power demand in between.

This project with Sunbelt Rentals is a great example of how the Greener Power Solutions BESS can deliver peak loads of up to 250 kW instantly. Normally, that would mean using a large generator running all day, mostly idling and wasting fuel while producing unnecessary noise and emissions.

With the Greener set-up, a much smaller generator runs for just a few hours a day at its most efficient, simply to recharge the battery before switching off again. It's a cleaner, quieter and more efficient way to meet peak demand.



**Oliver Barrett**

Account Manager - Greener Power Solutions

