CASE STUDY

SMART BATTERY SYSTEM FULLY POWERS TOWER CRANE

Termaco TREE 500kW slashes generator run time.

General contracting firm Award Construction, based in Alberta, Canada, was building a 20-acre planned mixed-use community called Riverbank Landing in Edmonton. To power its 8-ton, 70-meter-tall tower crane, the company was running a 300kVA T4 generator 24 hours a day.

Diesel generators produce a significant amount of greenhouse gas emissions. Using a generator to power a tower crane in particular also wastes a significant amount of fuel.

Looking to increase the sustainability of their operations, Award chose to pilot the use of a new smart battery system to fully power the tower crane.

Generator drawbacks

Most contractors rely on diesel generators to provide power on remote jobsites. Tier 4 diesel generators run cleaner than their predecessors, but they still produce a significant amount of carbon dioxide per gallon. In addition, generators used to power tower cranes are typically oversized, so they waste fuel and produce more emissions than necessary.

Tower crane operators commonly spend the bulk of their of their shift sitting in the cab waiting for a request to lift and move materials. A generator is sized to handle the maximum load of those picks. But in between picks, it runs at very light loads to power the crane lights and cab climate control. Running a generator significantly underloaded not only wastes fuel, it also increases the chance of serious generator damage and breakdown.

The Termaco TREE 500kW smart battery system

A new battery energy system for tower cranes developed by Termaco in collaboration with United Rentals allowed Award to sharply reduce its reliance on diesel generators.

Configurable up to 500kW, the Termaco TREE 500kW is one of the largest in the rental market. It pairs with a generator, storing excess energy produced when the generator runs. The unit communicates with the generator and turns it on when the battery needs charging, then turns it off again. Charging and powering are seamless and happen automatically. When charged, the battery can fully power a tower crane.

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"This solution demonstrates United Rentals' commitment to bringing innovative products to market that deliver outstanding value to our customers," said Larry Worthington, Region Vice President, Power and HVAC, United Rentals.

A generator can be programmed to run at 80% load when charging the TREE to maintain an appropriate load for generator efficiency.

Measurable results

Despite a cold Canadian winter and snow accumulation on the unit, the TREE performed flawlessly.

Running the tower crane on battery power during the bulk of each shift allowed Award to significantly downsize the generator while meeting peak power demands. The company went from running a 300kVA T4 generator 24 hours a day to running a 100kW generator just 2.5 hours a day.

Generator run time was reduced by 91%, which resulted in an estimated fuel use and emissions reduction of 77%. Award anticipates an estimated 1,862 gallons of fuel saved in a one-month rental period.

"Sustainable building aligns with our company's core values," said Brian Hennessey, Construction Manager, Award Construction. "We are proud our Riverbank Landing construction site is making history as one of the first in Canada to fully power its site tower crane entirely by battery."

In addition to minimizing fuel consumption and emissions, the TREE also reduced generator-related downtime and noise on the jobsite.

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