

Hybrid Power System

powered by **Denyo**

Made exclusively for:

BLUE DIAMOND
MACHINERY

by Makinex



Hybrid Power System (HPS45) revolutionizing power solutions for construction sites

The task was to provide site power solution for a 132kV substation & transmission Line. The substation was built to connect the 120MW Gunnedah east solar farm to the network grid.

The challenge

The challenge was providing a reliable and temporary solution to power the site facilities 24/7 and the substation control room during testing and commissioning. UGL was looking for an alternative to running a diesel Generator 24/ 7 generally with minimal load.

Running generators at less than optimal load is costly in terms of fuel usage, and it increases the required maintenance to either prevent or rectify generator glazing.

The Solution

In response to this challenge, we deployed the 45 kVA Hybrid power system (HPS). The latest project is just the most recent example of our longstanding track record of providing innovative solutions that make inefficiencies extinct!

The HPS consists of roof-mounted solar panels that generate electricity in direct sunlight; Excess energy is used to charge the batteries. A battery bank to store energy for use overnight or when the sun isn't shining.

An integrated backup diesel generator that kicks in when energy usage is high and when the batteries are low on charge.

The Outcome

The HPS met the customer's brief of being an alternative to running a diesel generator 24/7.

Throughout four months, the HPS 45 operated 24/7 to power the entire site. The average consumption was 5kW per hour, with a peak consumption during the substation control room testing of 23kW. Because the HPS integrates solar, battery and generator, the HPS was able to power the site with solar and battery 86% of the time. The generator only ran when needed, which equated to 14% of the time.

This run time reduction lead to saving of \$22,365 in fuel costs and \$4,618 in service costs on the top of a significant decrease in greenhouse emissions, reduced traffic on-site, and reduced engine noise, thus improving the overall site safety.

We programmed the HPS to run at optimal load by using all energy that is produced. The generator's primary

function is to provide power for consumption; Excess energy charges the batteries. This programming eliminates the chance of glazing.

Darrell Van Bruchem, Construction Manager from UGL Pty Ltd, says: "The Hybrid Power System worked very well. Overall we saw a reduction in running costs, not only in fuel costs, but the frequency of refueling and over the Christmas break, we were able to leave the basic security and office operational without having to have regular attendance on-site."

Our customers have celebrated the impressive HPS design and implementation. Delivering portable, cleaner, quiet power and mitigating expenses involved with traditional grid or portable generator power, the HPS is everything it set out to be.

Results over 120 days

Generator Run Time

reduced by

86%

Running only when needed
& at optimum load

CO 2 Emissions

reduced by (tonnes)

86%

Total Savings

amounting to

\$26,983

Including service & fuel costs

Visits to site

for fuel & servicing reduced by

93%