Managing extreme power fluctuation

Perfection Fresh Greenhouse in Two Wells, South Australia

Project notes

Site owner:
Perfection Fresh

Comission date:
2016

System components:
3 x Capstone C1000 Microturbine containers, black start, containerised with separate cooled battery house

Cogeneration capacity:
3MW

Fuel source:
Natural Gas

System aplication:
Remote power site with large load step capability

Key outcomes

- 3MW onsite power generation
- Power security and performance during fluctuations in power demand
- Lower fuel costs and emissions

Innovation

Customised separate battery system for greater performance during fluctuations in power demand

Perfection Fresh (formerly D'Vine Ripe) is an Australian fruit and vegetable wholesaler and producer of glasshouse-grown tomatoes.

Optimal was engaged by Perfection Fresh to power their facility at Two Wells in South Australia – the largest glasshouse in Australia. At the time, the company was working on a large-scale expansion of the glasshouse, adding another 8.2 hectares to the existing 27-hectare complex.

The glasshouse was using reciprocating engine generators to produce their own power 24/7 onsite. Power demand at the greenhouse was extremely dynamic, and could fluctuate rapidly depending on weather factors such as cloud cover, wind, and rain. Their generators were struggling to keep up to the sudden increases, and Perfection Fresh were trying to manage the problem by using a mix of different engine types and sizes, including some diesel generators.

This power generation model just wasn't delivering, and as part of the expansion, Perfection Fresh looked for a solution that would reduce their greenhouse gas emissions and create a more reliable power supply.

Optimal was able to offer a solution that would meet Perfection Fresh's expanded power needs and provide a more flexible source of power. We installed three C1000 Capstone Microturbines to deliver 3MW of power generation. The project included providing a separate battery system, which was housed in forty-foot sea containers with on-board cooling. The system was custom designed for the site to deliver greater performance and redundancy (backup) to the battery system in times of power fluctuations.

It has allowed Perfection Fresh to reduce their reliance on diesel, reduce their power costs, and reduce their CO_2 emissions.