PowerRadar™ helps reduce capital expenditures and increases storage capacity at a 40-hectare commercial water port

As the southernmost commercial deep-water port in New Zealand, South Port NZ worked with Total Utilities to implement Centrica Business Solutions' Panoramic Power™ technology – avoiding costly upgrade projects and increasing available storage capacity.

Increasing capacity of available on-site storage

South Port NZ is a deep-water port on a 40-hectare Island located in Bluff, New Zealand, from where it provides a full range of marine services, cargo and container shipping, and on-site warehousing for domestic and international customers.

In 2019, South Port NZ partnered with Total Utilities to better understand the actual power demand of the site, identify opportunities to increase existing storage capacity and deliver customised solutions to meet the needs of customers on the island. An initial supervisory control and data acquisition (SCADA) solution was proposed by a 3rd party vendor to address the needs, which came with a price tag of NZD$800,000.

As a partner of Centrica Business Solutions, Total Utilities supplied and DECOM Electrical installed Panoramic Power wireless, device-level, energy monitoring sensors at the port. After a month of capturing the data and analysing it using Centrica Business Solutions' complimentary energy management software, PowerRadar, South Port NZ deployed an additional 229 Panoramic Power sensors and over 30 communication bridges across the port with minimal interruption to operations. Within days, the on-site infrastructure team gained real-time, granular visibility into the energy consumption and operation of their critical assets across the site. The easy-to-install energy insights solution now transmits data securely via cellular connectivity – monitoring more assets than the initial proposed SCADA solution, at a fraction of the cost.
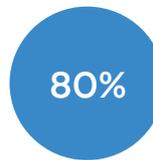
80%
increase in container storage days compared to previous year

10 MINUTES
to collect data from 51 revenue meters across site

$600k
savings from avoided capital project expenses (USD)

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PowerRadar provides real-time data on demand versus capacity which allows us to maximise our electrical infrastructure while minimising risk. Being a small team looking after the engineering infrastructure of a 40-hectare island, takes a lot of our time. Having something like this that provides us with real-time, easy data, provides efficiencies saving us a lot of time."

Jason Paul, Project Engineer, South Port NZ

Prior to installing Panoramic Power, the infrastructure team had been unable to determine the maximum number of refrigeration storage units that could be brought online safely at any given time. As such, only eighty electrical plugs were available at any time – one per refrigeration storage unit – within two substations dedicated to handling refrigeration reefers for port customers. With real-time visibility of the measured load across the electrical substations in PowerRadar, the infrastructure team realised that the electrical capacity for these substations was being underutilised – adding more plugs to these substations doubled the reefer capacity to 160 without any major or costly upgrades.

Streamlining resources for managing assets

One of the hurdles of the day-to-day operations at the port was the amount of time spent in collecting data from submeters to invoice port customers. Typically, it would take one of the port's personnel three days every six months to capture the readings from all 51 revenue meters around the port, regardless of the weather conditions. Using PowerRadar, it now takes them only 10 minutes to collect the meter information before it is passed to their finance team for invoicing customers.

With the monitoring of the sewer pump stations at the port using PowerRadar, the infrastructure team now receives real-time alerts on the status of the motors operated at those stations. This has enabled the reallocation of limited resources to other critical assets at the port. One of the benefits of such reallocation was the detection of surface water ingress at the pump stations by the infrastructure team, having compared the measured power draw of the pumps to available rain data. It is now possible for the infrastructure team to track the amount of surface water ingress at each station on days with rainfall and implement any corrective measures.

Effective planning for infrastructure projects

When trying to identify which assets at the port should be prioritised for capital upgrade projects, the infrastructure team relied on the energy consumption data in PowerRadar. This enabled the team, particularly in the design phase, to plan future expansions as well as ongoing maintenance of the existing electrical infrastructure at the port.

An energy audit was completed for one of the large electrical substations being monitored at the port. The findings resulted in the approval of a large capital project for implementing changes to the substation, and switch board running the Cold Stores and an expected payback within one year.

To ensure the reliability of the substations to handle loads within the port's electrical network, especially during periods of storing a large number of refrigerator containers, the infrastructure team uses the real-time energy dashboard within PowerRadar to track the maximum power demand from the combined substations. If the power draw approaches 1 MW, the team can begin to consider bringing backup generators online or other ways of taking some load off the power grid at the port.

By choosing to implement Panoramic Power across the site, South Port NZ reduced their capital expenditure by US$600,000 and achieved an increase of 80% in container storage days compared to the previous year. In addition, South Port NZ is now able to report on their carbon footprint annually, provide automatic reports on monthly energy use to port users and streamline efforts in identifying areas of high energy usage for investigating ways to lower the peak demand at the port.