4NG
Next Generation
Industrial IoT

SMARTset: Refrigeration Monitoring

Refrigeration performs a vital and often unseen role in many businesses, both chilled and frozen and from retail and catering to laboratory and medical.

Background

Commercial and industrial refrigeration has come a long way since 1806 when Frederic Tudor started the trade exporting ice from his father's farm in New England to the West Indies.

The global cold storage market is forecast to grow at over 12% per annum to >$200 billion by 2025 (Granview research).

For many businesses, reliable refrigeration is critical to their success. Without it, they wouldn't have a business.

Whilst refrigeration is traditionally associated with use in the food retail sector, it is also has a vital part to play in other sectors such as scientific research and pharmaceuticals.

Problem

Usage of refrigeration brings its own set of risks for customers such as our example in the catering sector who have multiple refrigeration units across their estate. They were aware of the risk to their stock posed by a compressor failing completely, as well as less visible risks such as compressor short cycling.

They also had a legal requirement to keep a running log of temperatures which had to be done manually, giving both a time cost as well as the potential for human error when both reading and recording the temperature.
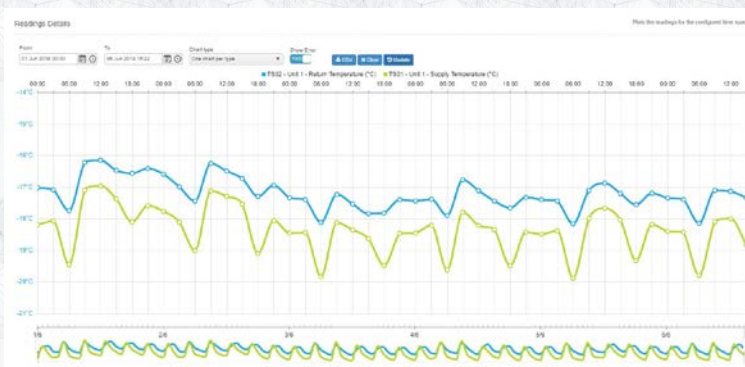
From experience they knew that poor temperature control was also giving them high levels of waste but replacing all of their existing equipment with brand new "intelligent" refrigeration across their estate to give them real time visibility wouldn't give a demonstrable return on investment.

As well as equipment reliability, they also had concerns around their energy spend, which was one of their

largest overheads. As they didn't have real time visibility of their consumption, they weren't able to judge whether they were being correctly billed by their electricity supplier and challenge them if appropriate. Furthermore, without being able to identify the ongoing energy cost per refrigerator, they couldn't accurately judge their return on their existing investment, nor assess whether they would achieve a return by introducing some newer, more efficient but expensive replacement refrigeration.
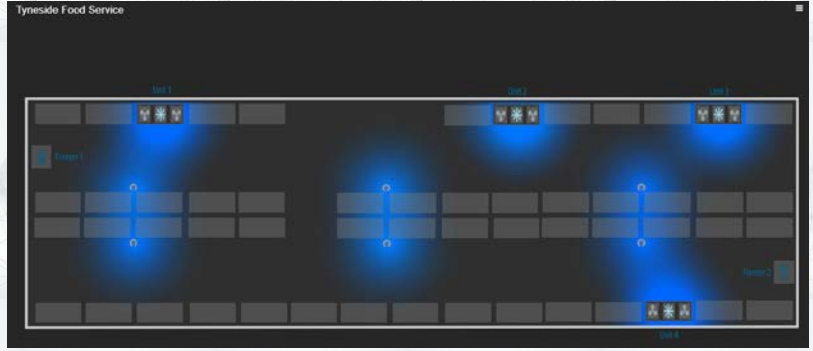
Solution

The client decided to implement a SMARTset based solution to give them real time second by second visibility of temperature and energy usage across their refrigeration estate.

Wireless temperature sensors and Socomec power meters were provided for this customer, but SMARTset can work with existing equipment that communicates using standard industrial protocols such as Modbus, SNMP and BACnet.

SMARTset provides them with real time alerting of temperature variations for user defined high/low temperatures via text message, email, email link and virtual file system.

SMARTset's dashboards were used to give a bespoke overview of the entire estate using some of the range of built in "widgets" such as gauges and graphs.

SMARTset's layout planner was used to create a visual temperature map of each cold storage room which is used to identify variances in temperature and equipment failures.

Customers can also elect to use the SMARTset reporting module which can be used to provide standard or bespoke reports with historical data covering 2 years or more.

KEY POINTS

- **Prevention**
  Alarms give temperature threshold breeches by text message, email and virtual file system to allow swift maintenance

- **Agnostic**
  New and existing equipment can be worked with

- **Energy**
  Visibility of usage allows assessment of business case for retaining/replacing legacy equipment
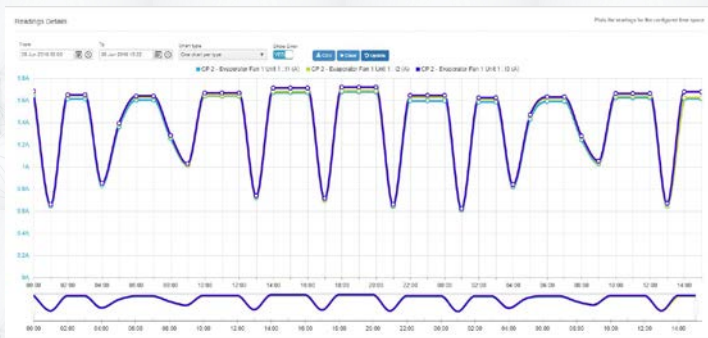
Further Reading

To understand more about the capabilities of SMARTset and its modules such as alarms and controls please go to https://4ng.co.uk/smartset/modules/

To see example case studies of SMARTset in use in different environments, please go to https://4ng.co.uk/home/case-studies/