FALKONAIR

Distributor

Projects Fields

Case Study

Smart Compressor Control on Roof Top Packaged Unit

Details of Project

This project was installed by Projects Fields on Farm Supermarket as a trial. A Smart Compressor Control was installed in-line with a Schneider Electric VFD on 5 scroll compressors. The first compressor of each of the (5 RTU's)-25 Ton Roof Top Packaged Units. The systems involved were monitored and studied with detailed pre and post-consumption readings along with ambient temperatures.

Analysis of Meter Readings

The data supports a 44% energy savings during the peak summer season despite the temperature rising by an average of 7°C (12°F) afterthe installation. The unit still overachieved and surpassed energy-saving expectations of 25%.

Pre-Installation Energy Audit

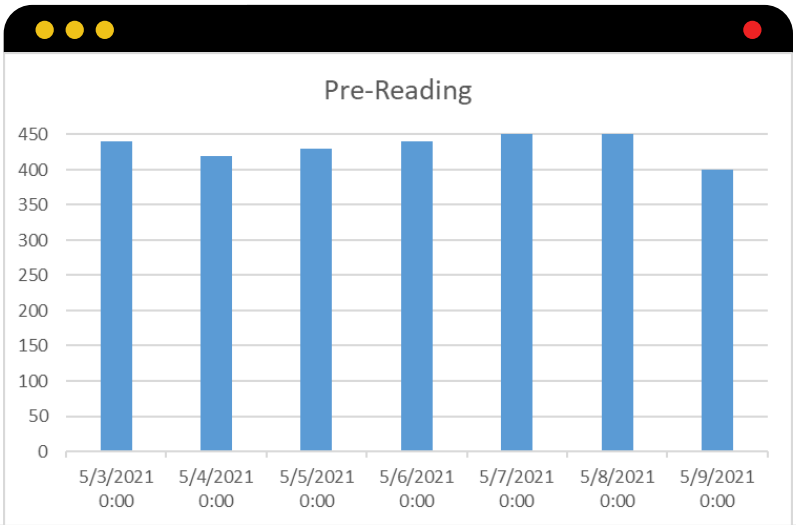
During the pre-installation energy audit phase, the energy usage of the individual Roof Top Packaged Unit system was assessed to prepare the financial feasibility study required for the supermarket chain to invest. The consumption of the system was measured over an eight day period and the collective daily consumption profile is shown below. During this period, the average consumption of this individual unit was 430 kWh/day.

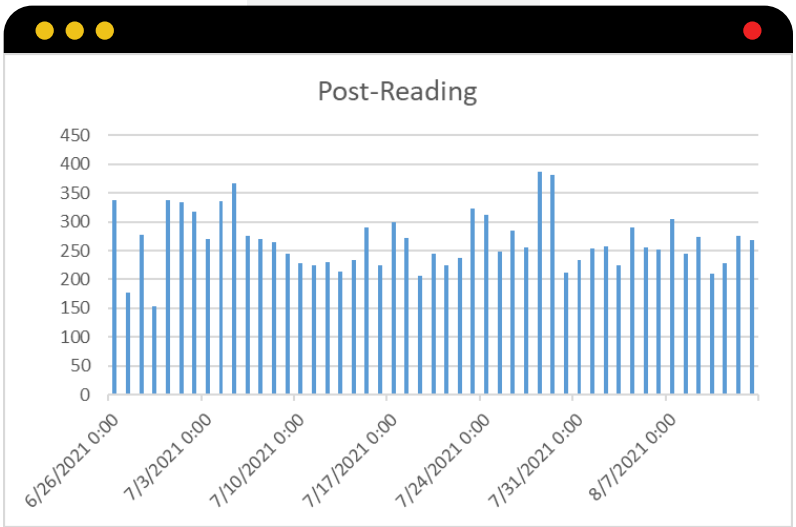
Post-Installation Energy Audit

During the post-installation audit phase, the energy usage of the individual Roof Top Packaged Unit system was assessed to prepare this case study for the customer. With a maximum of 44% energy savings during the summer peak season, it is estimated a seasonally adjusted annual energy savings of 33% would be achieved.

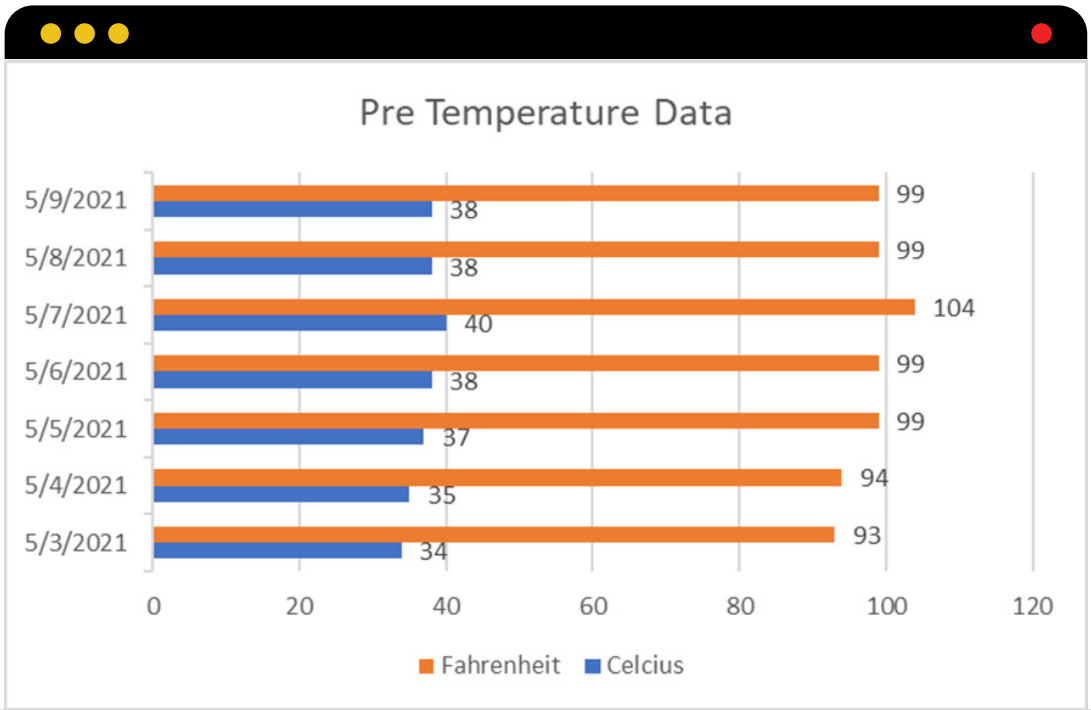
The first unit was installed and readings of savings were approved by the customer's engineering team. Subsequently, the manager gave the go-ahead to proceed with the whole site which included five Roof Top Packaged Units, these were the highest consuming systems on-site from a total of eight units.

The Satisfied Readings: The following graphs show the pre-reading of the consumption considering the weather and ambient temperatures. The post-reading data provides evidence that energy consumption decreased although the weather on average had higher temperatures and was much more volatile than the pre-reading data.

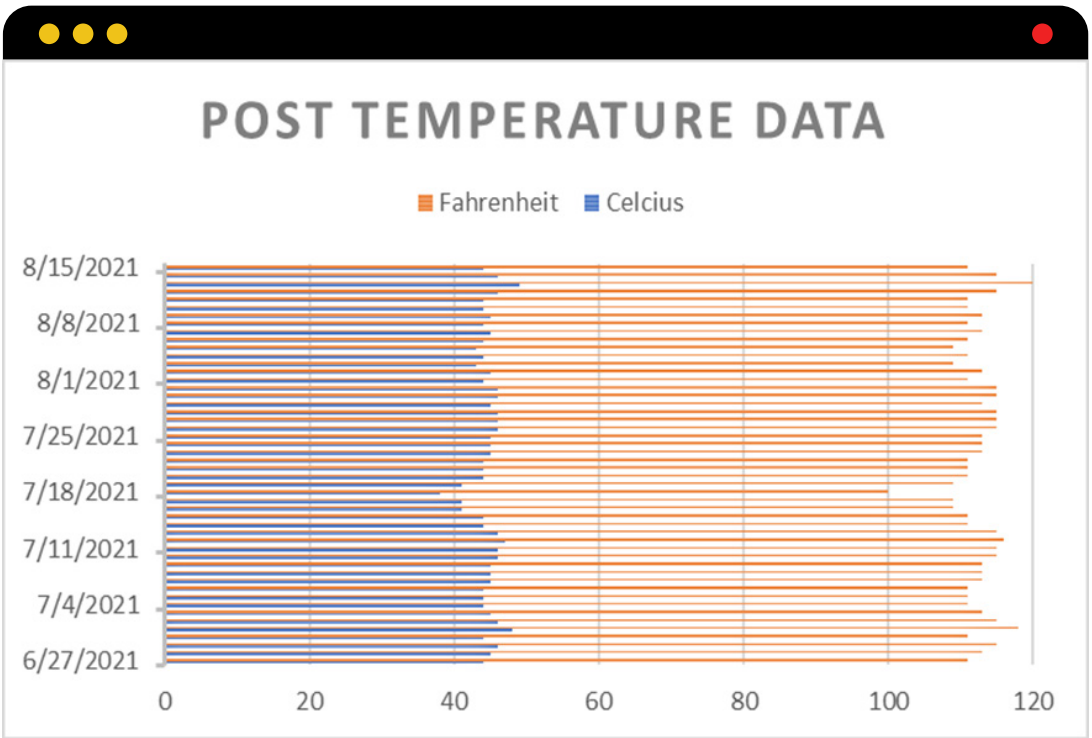




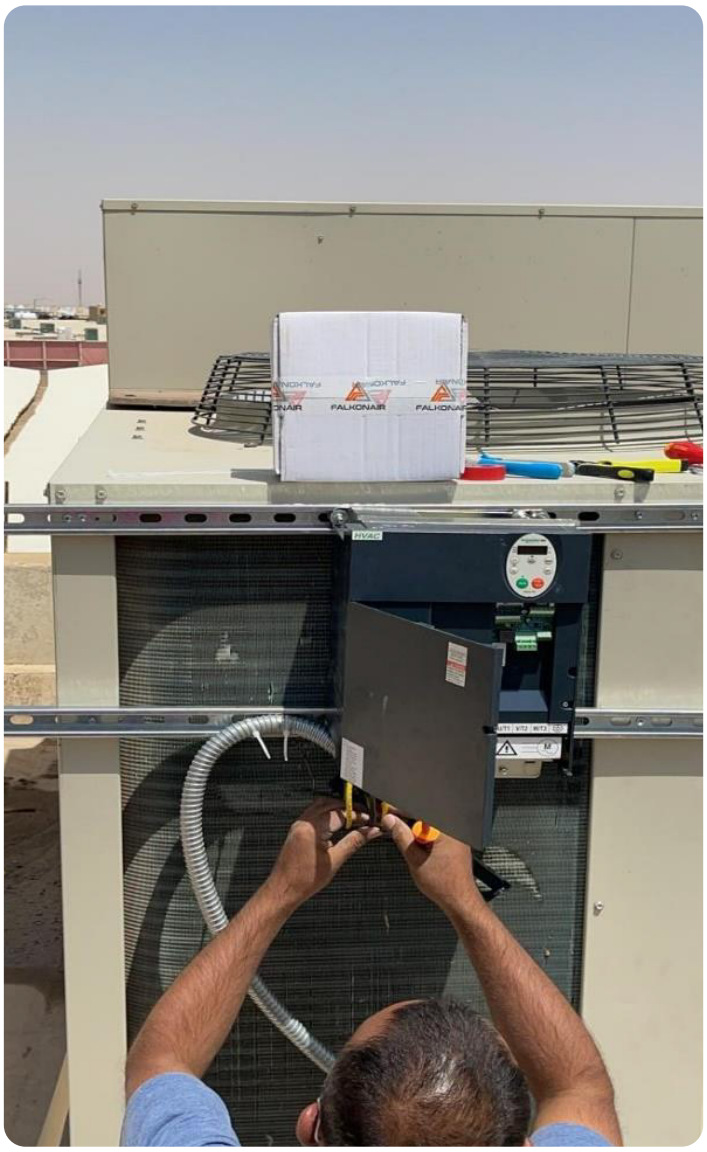
Shown below, the average temperature on pre-reading data was 37°C (98°F)



Shown below, the average temperature on post-reading data was 43°C (110°F)



The full Installation was finalized and completed on July 12th, 2021



Summary

The readings show an estimated average annual savings of 33%. Other noticeable benefits include the compressor working more comfortably with less short cycling and the customer seeing an improved humidity comfort level in the building. Since this installation, Projects Fields has secured other projects with the Smart Compressor Control on other supermarket chains in Saudi Arabia and those case studies will follow.

Pre-installation Consumption

Average daily	2100.24 kWh
Estimated annual consumption (extrapolated)	766,587.60 kWh.
Approx. annual running costs	$76,658.76

Post-installation Consumption

Average daily	1400.36 kWh
Estimated annual consumption (extrapolated)	511,131.42 kWh
Approx. annual running costs	$51,113.14

"We are always looking at installing new technologies to further reduce our utility spend as this is our second biggest cost. We met with the Projects Fields team, and they explained how the system could benefit our existing plant with a conservative projection of 25% from the onset. We were keen to trial. With no hesitation looking at the summer days ahead of us, we gave the go-ahead for the team to start monitoring our systems and project an estimated savings to us. Within two weeks of selecting the appropriate system, Projects Fields installed the first unit back in June. The next day we started seeing savings of 45%, 48%, 35% the lowest was 28% and with this, it was an easy decision for me to give the go-ahead for the full installation.

We have now had these installed for over two months and we are still tracking an average savings of 33% although the ambient temperature has slightly increased."

Mr Tarek Al Aswad

Operations Manager

Overall savings

33 %

Cash savings

$25,545.62

Consumption savings

255,456 kWh

ROI

2.2 years