

R448A - a viable solution beyond R404A/R507



HFO blend R448A is gaining traction, given the impressive energy efficiency and energy savings being experienced, when compared to R404A/R507.

In a recent R448A refrigerant retrofit trial carried out in a Victorian commercial refrigeration application, the new HFO blend delivered positive results paving the way for a viable solution in the ongoing management of the business's R404A/R507 refrigeration plant.

The traditional refrigeration system being trialled incorporated three central plant refrigeration systems all containing refrigerant R404A/R507. The plant equipment at 8 years of age was still well within its anticipated life expectancy.

The goal of the retrofit for the customer was to provide a real world business case to aid long term business

strategy for the management of their mid-term R404A/R507 refrigeration plant.

“The customer acting on the phasedown of HFC refrigerants was eager to minimize their carbon footprint and dependence on high GWP refrigerants such as R404A/R507.”

Retrofit Process

The retrofit was completed within two of the sites commercial refrigeration systems by partnering contractors through a 3-step process that followed the guidelines of the Honeywell® Refrigerant Replacement Program.

At a glance...

The Business Need:

To commence a program leading to reduced dependence on high GWP refrigerants such as R404A/R507.

The Solution:

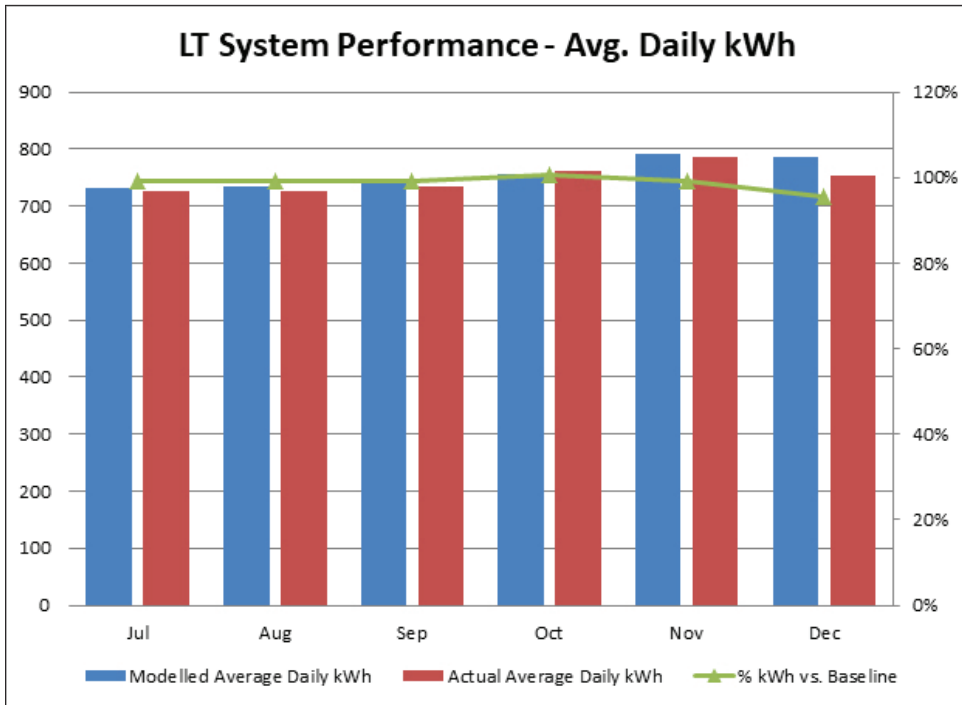
The retrofit was completed by a contractor under partnership with the customer through a simple 3 step process. The retrofit followed the guidelines of the Honeywell® Refrigerant Replacement Program.

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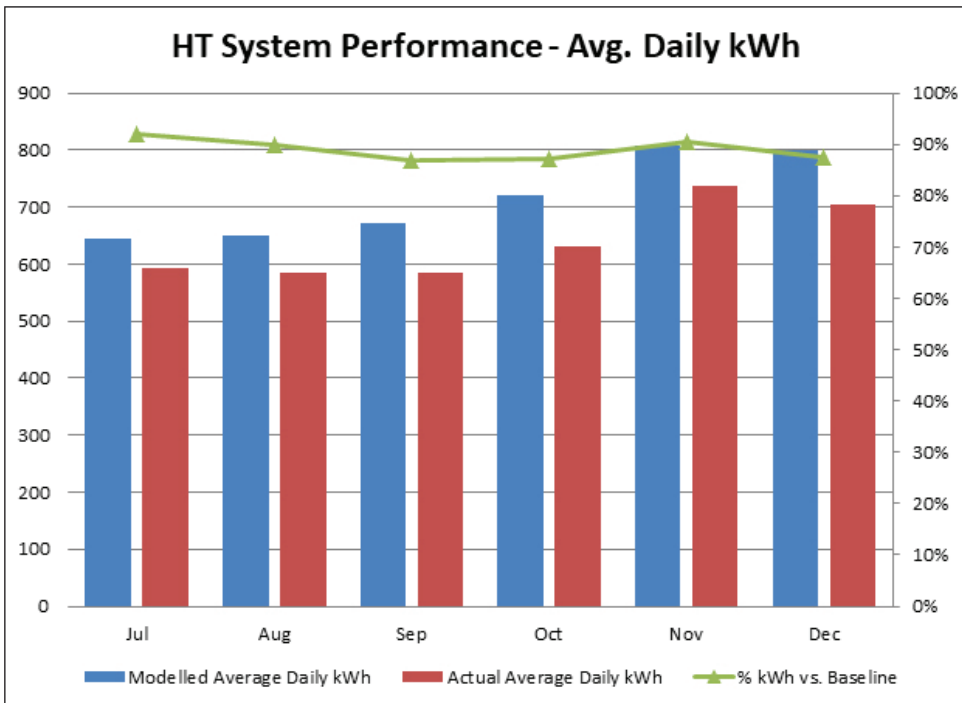
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Key steps included;

- Pre-retrofit benchmarking and system checks with energy monitoring period of 12 months to provide an accurate baseline.
- Conversion of plant equipment to the alternate refrigerant and necessary system performance checks, superheat and controller adjustments.
- Post retrofit monitoring and adjustments with data logging continuing after the change alongside predictive energy consumption algorithms using baseline data correlated to ambient conditions.
- Most importantly there was no need for any capital investment to complete the changeover - a key learning to support the customer's business case.



The low temperature system performance was held at a level that was consistent with historical and modelled performance for the ambient conditions.



The high temperature system performance improved by way of reduced kWh / day normalised for the ambient conditions, saving approx 10%.

Systems information:

LT Parallel Rack (R507):
 3 x Compressors, Vintage: 8 years
 Capacity: 33kW, Design
 Conditions: -30°C SST / 43°C SCT

HT Parallel Rack (R507):
 3 x Compressors, Vintage: 8 years
 Capacity: 138kW, Design
 Conditions: -7°C SST / 43°C SCT

The post conversion performance was monitored through the customer's state of the art energy monitoring facility. The energy consumption post retrofit has been compared with both historical and modelled baseline data reflecting comparable ambient conditions and thus confirming energy savings.

Results

The retrofit program results were within expectations.

- The high temperature system performance improved by way of reduced kWh / day normalised for the ambient conditions, saving approximately 10%.
- The low temperature system performance was held at a level that was consistent with historical and modelled performance for the ambient conditions.
- The total CO₂ equivalence associated with the refrigerant charge in the two systems was reduced by 65%.

For more information on this retrofit trial, contact your Kirby Account Manager on 13 23 50.