

INDUSTRY CASE STUDY

CHILLER COMPRESSORS

Chiller compressors can benefit from Powerboss in a number of ways; The Softstart function will reduce both the mechanical strain and current drawn by the compressor. The reduction in starting current will not only reduce the possibility of peak demand penalties but also increase the motor's life.

The optimisation function will reduce the running cost of the compressor as well as reduce the heat generated by the motor. This heat reduction is significant in that the motor will have less of a heating effect on the refrigerators coolant hence the compressor will run for a shorter period of time.

POWERBOSS IN ACTION

INTERNATIONAL HOTEL CHAIN'S CHILLER SERVICES

Powerboss was recently piloted on the Chiller Compressors at one of the Australian locations of an international hotel chain. This project was carried out on a 220kW Trane Chiller with four 55kW compressors. Trane engineers themselves disengaged two compressors and re-set the remaining two to run concurrently. A Powerboss unit and a three phase energy analyser were installed on one of the remaining 55kW compressors and a three phase energy analyser only to the other; thus enabling the capturing of the running characteristics of two identical compressors under the same load conditions on a "With" and "Without" Powerboss scenario.

It was noted that the Chiller compressor "without Powerboss" was regularly under full load between 12noon and 1pm every day. It would generally be assumed that this high loading was caused by usage of the Chiller unit in chilling goods. This would imply that the compressor is working efficiently and hence limited potential for energy savings.

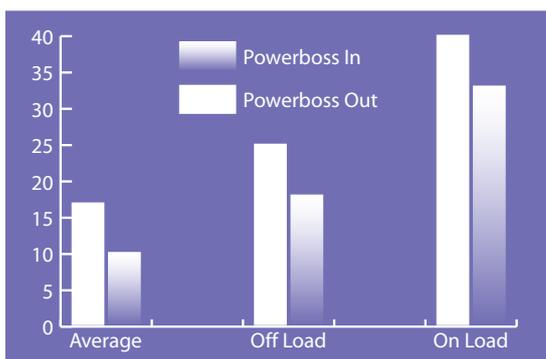
Surprisingly however, the Chiller compressor "with Powerboss" demonstrated greatly reduced loading at these same times. The testing data demonstrated that prior to Powerboss' installation much of the cooling, which was happening during these high load periods, was to remove latent heat from the system generated

by the motor windings themselves and not to chill the food being stored; delivering a 16% reduction in reactive load (kvar). "With Powerboss" the refrigeration circuit was running more efficiently with less latent heat being generated by the compressor's windings. In addition to a dramatic increase in the efficiency of the system, a saving of 10% was made in kW. It was commented that this saving allowed the hotel to effectively run the Chiller unit for one month each year for free!

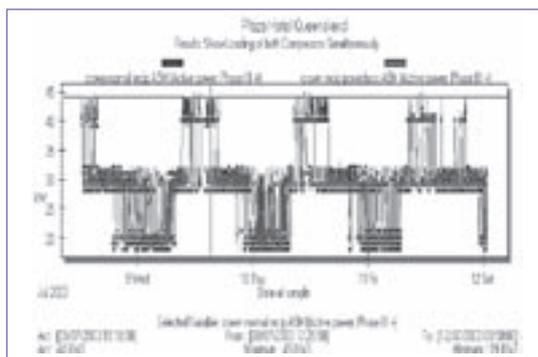
- Soft Starter
- Peak Demand Savings
- Energy Saving Optimisation
- Reduced Maintenance Costs
- Reduced Downtime
- Quieter Machinery
- No-Load Timed Shut-Off

Case Study Savings (Per PB unit)

kWh Savings	10%
kVar Savings	16%
Annual Savings	\$2,200.00
Cost of Powerboss	\$3,600.00
Return on Investment	1.7 Years



A simple illustration based on actual measurements of the effect of Powerboss in operation on a chiller compressor.



Graph taken from a Circuitor AR5 handheld unit.



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