



CASE STUDY

Wal-Mart Bakersfield



Wal-Mart installs Climate Wizard at Bakersfield, California

WAL-MART IS ONE OF AMERICA'S LARGEST RETAIL OUTLETS WITH OVER 6,000 STORES ACROSS THE COUNTRY. WITH THIS SIZE OF CORPORATION, THEY ARE ACUTELY AWARE OF THE COSTS OF AIR CONDITIONING THEIR STORES TO PROVIDE COMFORT FOR THEIR CUSTOMERS ALL YEAR ROUND.

With this in mind, Wal-Mart has established a dedicated team to pursue energy efficient ways to manage their business and, as HVAC is one of the largest consumers of energy, the team explores many ways to reduce their dependency on it.

The Bakersfield Super Store sits in an agricultural area in central California and is subject to long hot summers that make air conditioning essential. Here Wal-Mart chose to retro-fit Climate Wizard to save energy, by using the unique characteristics of Climate Wizard to pre-cool the outside air that is introduced to the store, therefore unloading the refrigerated systems that were already installed.

The installation of three Climate Wizard model CW-H15, directly coupled to existing Roof Top Units (RTUs) proved to be a simple and quick installation. In order to properly evaluate the performance of Climate Wizard, the assembly of RTU and Climate Wizard is being independently monitored with daily information being recorded for analysis.

The graph (overleaf) shows that on a hot day, when it reached 103°F (39.4°C) on the roof, Climate Wizard was delivering cool air at 65°F (18.4°C). This means that Climate Wizard was operating at an incredible EER of 54 (COP = 15.8). Compared to a commercial refrigerated system, that is over five times more efficient.

Independent testing by the University of South Australia* established that as the outside ambient temperature rises from 35°C to 44°C the cooling capacity of a refrigerated system falls on average by 17%, while the total cooling capacity of Climate Wizard in this configuration, increases by 40%.

The retrofitting of Climate Wizard to a refrigerated RTU is therefore a powerful combination that will work to maintain cooling capacity in even the hottest weather.

In the Wal-Mart installation, the super efficiency of the Climate Wizard in providing cool air, even on the hottest days, reduces the requirement for the costly operation of the refrigerated compressors.

*On-Site Testing of Climate Wizard at Roxby Downs, University of South Australia.



Above: In order to fully integrate the economiser (outside air cooling by Climate Wizard with the normal RTU function) a PLC was employed with dictated system response to climatic conditions and the indoor heat load.

This allows flexibility in use and maximisation of the energy savings.

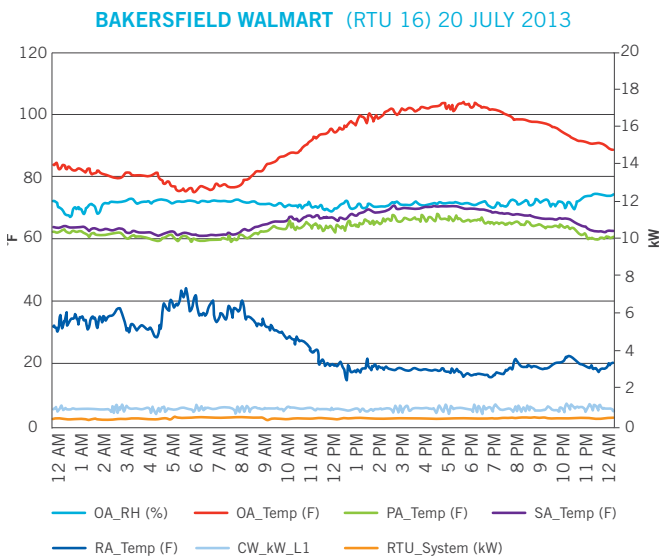
Project information

Installation	Original	New
System	70kW PAC	CW-H15 + 70kW PAC
Cooling Capacity	70kW	28 + 70 = 98kW
Input Power at 70kW	25kW	16.2kW
COP (EER)*	2.8 (9.6)	4.3 (14.7)
Power Saving*	-	35%

*At design conditions

Benefits

- ✓ EXCEPTIONALLY LOW COST OF OPERATION, WITH AN EER OF 54 (COP 15.8)
- ✓ LOW MAINTENANCE COSTS AND LONG LIFE EQUIPMENT
- ✓ RETRO-FIT INSTALLATION, SUITABLE FOR ALL RTUs
- ✓ ENHANCED COMMITMENT TO THE ENVIRONMENT



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