

# SMARTCOOL™

IMPROVE YOUR BUSINESS BY E<sup>3</sup>

ENERGY EFFICIENCY - ECONOMIC BENEFITS - ENVIRONMENTAL SUSTAINABILITY

Smartcool's ECO<sup>3</sup>™ is a unique retrofit technology that saves energy on the compressors in air conditioning and refrigeration systems. Working in conjunction with existing equipment and controls, the ECO<sup>3</sup>™ maintains pre-set temperatures without causing over-cycling and reducing compressor run time. The ability to save energy on the heating and cooling cycles of compressor driven heat pumps, along with its quick installation, make the ECO<sup>3</sup>™ a highly economical solution.

Smartcool clients confirm electricity demand and consumption savings averaging 15%, giving them a rapid return on investment and reducing their carbon footprint. Here is just one example of the savings that can be achieved with Smartcool:



CASE STUDY: PRIVATE RESIDENCE  
ADELAIDE, AUSTRALIA      INSTALLED 2009

\*Smartcool is presenting these results on behalf of an anonymous client.

## ENERGY EFFICIENCY

**2,612 KWH**

Annual energy savings achieved  
by installing the ECO<sup>3</sup>™

## ECONOMIC BENEFITS

**\$339**

Annual financial savings (USD)

**27 MONTHS**

Return on investment

## ENVIRONMENTAL SUSTAINABILITY

**1,598 KG**

= 3,523 LBS

Annual GHG emissions reduction

**2 ACRES**

Trees required to sequester the  
same amount of GHG emissions

EQUIPMENT  
ONE DAIKEN HEAT PUMP

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Savings achieved by the ECO<sup>3</sup>™ are easily quantifiable. The unit can be switched between ON and OFF modes, allowing for a comparison of energy usage by the air conditioning or refrigeration compressors with and without the ECO<sup>3</sup>™. Alternatively, energy savings can be tracked by taking regular readouts off the screen on the unit.

Smartcool also provides a standard monitoring and verification package to interested clients, which includes recording the energy usage and temperature performance of their existing equipment both with and without the ECO<sup>3</sup>™ in the circuit. Smartcool will install energy data loggers to measure and record the KW, kWh and amperage used by the cooling system during a set evaluation period when the ECO<sup>3</sup>™ alternated between ON and OFF. These data loggers take a measure every 8 seconds and are set to provide a date stamped printout every 6 minutes. Temperature loggers are also used to measure and record the controlled space temperature is maintained.

### EVALUATION DETAILS

The Smartcool installation took place in a single family detached home in Adelaide, Australia. An ECO<sup>3</sup>™ Single was installed on the Daiken split-ducted heat pump. This unit is responsible for cooling and heating the home when ambient conditions are above 0°C. Auxiliary heating would be responsible for heating the home at temperatures below 0°C.



The ECO<sup>3</sup>™ Single was installed in April 2009 to optimize the compressor in the home's heat pump. Over a two week period, the ECO<sup>3</sup>™ units were switched between ON and OFF to gain comparative energy usage data. The clear display screen on the ECO<sup>3</sup>™ provided readouts on the run, save, bypass and override hours of the unit, demonstrating energy savings of 32% kWh across the two week period. For a small heat pump, these savings are very substantial.

#### ANNUAL ESTIMATED RESULTS

Annual Energy Savings = 2,612 kWh  
Return on Investment = 27 months  
GHG Emissions Reduction = 1,598 kg  
or 3,523 lbs

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