

# 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: DATA CENTER

VANCOUVER, CANADA

INSTALLED 2009

peer1

PEER 1 is one of the top five hosting providers in the world with over 10,000 customers and 350 employees. The company has 20,000 servers located in 16 data centers and 21 points-of-presence worldwide. The Vancouver data center is part of the SuperNetwork, PEER 1's large-scale infrastructure providing a reliable network to its customers.

### ENERGY EFFICIENCY

**18,410 KWH**

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

### ECONOMIC BENEFITS

**\$1,420**

Annual financial savings (CDN)

### ENVIRONMENTAL SUSTAINABILITY

**11,262 KG**

= 24,829 LBS

Annual GHG emissions reduction

**14 ACRES**

Trees required to sequester the  
same amount of GHG emissions

**2 HOMES**

Could be powered for a year with  
the energy saved

### EQUIPMENT

TWO LIEBERT UNITS FOR AIR CONDITIONING

[WWW.SMARTCOOL.NET](http://WWW.SMARTCOOL.NET)

[INFO@SMARTCOOL.NET](mailto:INFO@SMARTCOOL.NET)



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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

PEER 1's Vancouver data center is located within a commercial building in the heart of downtown. Two Liebert air conditioning units, each with 2 compressors, provide cooling for different parts of the data center. Smartcool installed two ECO<sup>3</sup>™ Dual units as part of an initial test with PEER 1.



The ECO<sup>3</sup>™ units were installed in May 2009 to optimize the compressors in the air conditioning system. Smartcool's standard monitoring and verification process was initiated to determine the performance of the units. Data was collected as the ECO<sup>3</sup>™ units alternated between OFF and ON modes. Energy savings averaging 50.4 kWh per day were achieved with no discernible impact on temperature.

#### ANNUAL ESTIMATED RESULTS

Annual Energy Savings = 18,407 kWh  
Annual Financial Savings = \$1,420 (CDN)  
GHG Emissions Reduction = 11,262 kg  
or 24,829 lbs

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