SMARTCOOL™

ECO³™ FAQ's

1. How does the ECO³™ make an air conditioning, heat pump or refrigeration system more efficient?

The ECO³™ improves the way that the compressor runs within the existing system. The unit is wired between the primary controller (such as the thermostat), and the compressor, allowing it to intercept signals from one to the other. When a call for temperature adjustment comes from the primary controller, the ECO³™ determines when the compressor actually begins to run, how long it runs for, and when it stops.

By strategically turning compressors or stages off for certain periods of time, the ECO³™ makes the system run at a more efficient suction pressure/temperature more often than the conventional control does. By running in this more efficient state, the total run time of the compressors is reduced, thereby reducing the electrical consumption of the compressors or stages. On larger systems, this same thing is accomplished by strategically reducing the system capacity for the certain periods of time which also improves the efficiency of those systems.

2. Will the ECO³™ have an effect on the existing system?

The ECO³™ will always fail to safe, and can also be manually bypassed if necessary; this feature ensures that there is no impact on manufacturers' warranties and no negative impact on existing equipment. The ECO³™ will not cause overcycling of the compressors. In fact, indepedent third party testing of Smartcool technology has often demonstrated an improvement in compressor cycle rates.

3. Where can the ECO³™ be used?

The ECO³™ is compatible with any brand of the following types of equipment, provided they have on/off control:

- Air conditioning units with one or two stages of control
- Compressor driven heat pumps with one or two stages of control
- Refrigeration units with one stage of control

The technology is NOT compatible with blast chillers. The types of facilities where this equipment is found, and where the ECO³™ is most frequently applied include, but are not limited to:

- Convenience stores: reach-in coolers, freezers, refrigeration display cases, small packaged a/c or heat pump units, etc.
- Supermarkets: reach-in coolers, freezers, refrigeration display cases, small packaged a/c or heat pump units, etc.
- Telecom sub-stations: small packaged air conditioning.
- Offices: small packaged a/c or heat pump units.
- Schools: cafeteria coolers or freezers, small packaged a/c or heat pump units.
- Restaurants**:** walk-in coolers, line coolers, reach-in coolers, small packaged air conditioning or heat pump units, etc.
- Homes: small packaged a/c or heat pump units. Note that in most climates and for most homes, these units are very small and do not run frequently enough to achieve Smartcool's usual < 36 month ROI. Energy savings can still be achieved but the ROI is often extended closer to 60 months.

SMARTCOOL SYSTEMS INC.
SUITE 1280 – 333 SEYMOUR ST. VANCOUVER, B.C. V6B 5A6
TELEPHONE – 604.669.1388 FACSIMILE – 604.602.0674
WWW.SMARTCOOL.NET

4. How is the ECO^{3}™ installed?

This retrofit technology is very easily installed in virtually any location. With an IP64 rating the enclosure protects the units in most environments, even outdoors, so no additional protective equipment is necessary. The ECO^{3}™ wires directly between the primary controller and the compressor. Installation should ideally be completed by an HVAC technician with Smartcool training. However, any experienced HVAC technician or electrician should be able to complete installation within 2 hours with the help of the installation manual available from Smartcool. This manual includes full wiring diagrams to help with installation. Additional support is also available weekdays by calling Smartcool's technical team at 604-669-1388 (toll free in the US or Canada is 1-888-669-1388).

5. How can I tell that the ECO^{3}™ is saving energy?

The prominent digital display screen on the unit offers a simple way of reading information on the operation of the ECO^{3}™. The display screen will read ON as long as the unit has power, and the status of the unit is indicated by the LED lights below the screen. By pressing the 'ENTER' button, the screen will cycle through the run, save, bypass and override hours of the unit.

- The run hours refer to the total number of hours the ECO^{3}™ has allowed the compressor to run, beginning from the time of installation or the last reset.
- The save hours refer to the total number of hours where the primary controller was calling for the compressor to run, but the ECO^{3}™ prevented this from happening.
- Bypass hours are the cumulative hours that the ECO^{3}™ was OFF (in bypass), and the compressor was allowed to run.
- Override hours show the total hours that the ECO^{3}™ has removed itself from the circuit to allow the compressor to meet temperature requirements.

With this information, a simple calculation can be performed to determine how many hours of compressor run time were saved by the ECO^{3}™:

Save Hours ÷ (Run hours + Save Hours + Override Hours)

6. What level of savings will the ECO^{3}™ generate?

The ECO^{3}™ can save an average of 15% kWh of the compressors electricity usage. Base demand savings in the range of 10% KW can also be achieved with the ECO^{3}™. Significant independent third party testing by Oak Ridge National Laboratory, the University of Miami on behalf of Florida Power & Light, and Los Angeles Department of Water and Power, have all confirmed savings levels in this range. These energy efficiency gains generally give Smartcool customers a return on investment under 36 months.

Smartcool is available to answer any questions on the ECO^{3}™, and more information is also available online:

info@smartcool.net
604-669-1388

www.smartcool.net