



## Energy Savings in Commercial Refrigeration



### How Refrigeration Units Work

Refrigeration units work in a series of cycles when the unit starts and stops to maintain the required storage temperature. Air cycles (on/off) typically produce a minimum of 4 cycles per hour and, in some open display cases, 20 cycles per hour.

Refrigeration units usually monitor circulating air temperature in order to decide when to switch on and off. Circulating air temperature, however, tends to rise far more quickly than food temperature and, as a result, the refrigeration unit works harder than necessary to maintain stored products at the right temperature. This, in turn, leads to excessive consumption of electricity and undue wear and tear on the equipment.

### How eCube Works

eCube consists of a food simulant contained in a double-skinned enclosure that mimics food temperature at approximately 15mm beneath the surface. With eCube, the thermostat regulates the refrigeration temperature based upon food temperature rather than air temperature, thereby maintaining food at the proper temperature.

When fitted to the thermostat sensor, which controls the compressor, eCube significantly reduces the frequency of the refrigeration cycles which are now based on food temperature rather than fluctuating air temperature. By using eCube as a cycle control mechanism, refrigeration cycles last longer but can be reduced by as much as 85%.

For example, a Dairy Case cycles 3 minutes on, 2 minutes off = 12 cycles per hour. With eCube, the cycles change to 8 minutes on, 7 minutes off = 4 cycles per hour; a 66.7% reduction in starts.

As the start-up of a refrigerator compressor uses 3 times more power (i.e. start-up 12 amps, run 4 amps) considerable energy savings are achieved. In addition, the more efficient refrigeration cycle leads to a more efficient unit, which then leads to a colder storage area. Consequently, by re-adjusting the thermostat to its normal temperature settings, there are further substantial energy savings, without compromising food safety and quality.

Here are just some of the reasons to retrofit your refrigeration system with eCube:

- ✓ Significant energy savings (reduced electricity bills)
- ✓ Reduced wear and tear on equipment, leading to extended life
- ✓ Fewer breakdowns
- ✓ Considerable noise reduction
- ✓ Fewer sensor failures (sensors are protected inside eCube)
- ✓ Safer food and less product spoilage
- ✓ Reduced environmental pollution (reduced CO<sup>2</sup> emissions)
- ✓ One-time retrofit requiring no further attention or maintenance
- ✓ Lower temperatures without heat induced defrost cycles

## 20% Average Savings



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