



Master Distributors for EndoCube in

North America • South America • Central America  
Caribbean and The Pacific Rim

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**20% of the World's Energy is Consumed by Refrigeration**

## What is an EndoCube and How it Works?



**fast.fresh.italian.**

EndoCube fits over the thermostat sensor on commercial refrigeration units which reacts to the product temperature, not the air temperature. EndoCube is the only patented Microcrystalline wax that creates an air barrier around thermostat probe which mimics food and encases the thermostat sensor preventing fluctuating air temperatures from controlling the refrigeration unit. NSF, under protocol 235, has proven EndoCube to mimic food and beverage properties.

EndoCube is the first patented product to change the way we approach refrigeration temperature control. Current practice uses volatile air temperature to trigger refrigeration demand. Product temperature is not as volatile as air, and product has built up thermal inertia stored within. EndoCube mimics product temperature and uses this temperature for the thermostat to signal refrigeration demand. The EndoCube turns the refrigeration unit on and off as the product temperature demands reducing compressor starts. Temperature air no longer causes so many random stop starts. Longer on/off cycles lead to considerable energy savings and longer equipment life.

After extensive testing of the EndoCube, Fazoli's made the decision to install EndoCubes in over 130 company restaurants. The test demonstrated reduced kWh usage in our walk in coolers and freezers with significant compressor starts saving us money and energy. We would recommend the EndoCube to any company that uses refrigeration to store and sell food products.

*Vitto Vascassenno*  
Director of Construction and Equipment Services



**NSF International under Protocol 235**

### Manatee Restaurants: EndoCube Reduces Spoilage while Lowering Energy Costs

The Bradenton Times Published April 1, 2011 by Dennis Maley

In a case study with **Chic-fil-A**, their refrigerators ran 65 percent less cycles, drastically reducing energy costs (McDonald's and Wendy's achieved similar success). Pratt explained that for restaurants, refrigeration is nearly half of their overhead and the single biggest factor that can be improved. With energy demands constantly rising as sources become less plentiful and more expensive, improving efficiency is vital.

Read the article at [www.umpamerica.com](http://www.umpamerica.com)

**Patented Worldwide Patent Numbers WO1994010546A1 US 6976368 EP 124494**

## Inside Business May 27, 2011 By Susan Smigielski Acker

Atlantic Marine Refrigeration in Virginia Beach has contracted with London based Universal Master Products to offer a new energy saving technology. The product, manufactured by UMP, should help small independent restaurants reduce refrigeration costs and become more environmentally friendly.

Known as EndoCube, the thermostat reduces the energy used by walk-in refrigerators because it measures the temperature of the food, rather than the air cooling the food.

Tim Early, of Technology Hampton Roads in Hampton, said, "It makes sense and is well proven in Europe. There is no big surge of energy when hot air enters the refrigerator because that is not what is measured. EndoCube is closer to the temperature of, for example, a chicken in the refrigerator. When you open the door, the temperature of the chicken does not change, but the air does. It is good technology and pretty simple."

Measuring 6 inches wide and 2 inches long, EndoCube is installed over the thermostat bulb in a refrigerated case or freezer. It is mounted to the back or side of the evaporator unit, or it can be mounted to the wall of the unit. It retrofits to any type of commercial refrigeration.

According to UMP Ltd., the EndoCube allows compressors to run 60 percent less often - about four starts per hour, rather than 12 to 20. Each run time is about 10 minutes rather than three minutes, expending 10 percent to 30 percent less energy. This in turn generates less noise. Because the compressor is operating less, it requires less maintenance.

The Canadian franchise Pizza Pizza installed EndoCube in 103 of its franchise locations in 2009 and 2010. According to the franchise's director of construction and maintenance, Steve Poole, following a lengthy testing phase, compressor starts and stops were reduced by 50 percent.

Ivan Rodriguez, owner of Suburban Eats in Long Island, said, "That is what we noticed. The compressors are not working as hard as they used to before we had it installed." For a small business, such as a family-owned restaurant, the cost of refrigeration can be as high as 65 percent of the overall expenses. The product increases the overall lifespan of the refrigeration equipment, he said. He added that food is maintained at a stable temperature, so spoilage is also less likely to occur.

"Refrigeration takes up 20 percent of the world's energy because it is the only utility that never shuts off. For example, we turn off lights. But the refrigerator runs day and night." In addition to cost savings, energy savings means the technology is environmentally friendly.

The environmentally friendly feature impressed Toronto energy company Toronto Hydro so much that it gave a \$2,500 energy rebate to Pizza Pizza because the franchise had an overall 15 percent energy savings since installing EndoCube.



Pizza Pizza purchased and installed the EndoCube control device for 103 of our franchise locations, following a lengthy testing phase which demonstrated energy savings of greater than 15% and a reduction in compressor starts and stops of over 50%. Following the installation, we received an energy rebate from Toronto Hydro of over \$2500 for the installed units. We would recommend that other companies look at this unique technology as a way to reduce costs in commercial refrigeration.

**Steve Poole**  
Director Construction and  
Maintenance



'...When we saw the advert for the EndoCube we were just beginning our environmental project. Trials were set up and showed the savings made it an invaluable product to use. We have asked all our 150 kitchens to have them fitted and our client response has been extremely positive. Everyone from EndoCube has been extremely helpful, I have no hesitation to recommend them to others.'

*Caroline Fry, Joint Managing  
Director, Charlton House  
Catering Services Ltd*



'...The units have been installed on all the reach in and walk in refrigeration. Since installation, the amount of cycling on and off the units has fallen by 30%, which will no doubt improve the longevity of the condenser units. Energy savings have been measured at around 18-20%, depending on the individual units, and this has resulted in savings of over a thousand pounds a year in total. I would not hesitate to recommend installation of these units to refrigerators and freezers in order to save electricity and wear on the equipment.'

**Andy Bunce, Holiday Inn Group Engineer**



'...During the trial we fitted one unit to a walk-in cold room and one unit to an upright fridge; we monitored the kWh consumption for one week with the unit fitted and one week without, we found that we were showing a 9% reduction in electrical consumption week on week. Following the trial I have had 84 EndoCube devices fitted to various refrigeration units at both the above properties. Year on Year savings on electrical consumption have been 18%. I would have no hesitation in recommending this product to any hotel as a cost effective way to reduce electrical consumption and also prolong the working life of their equipment.'

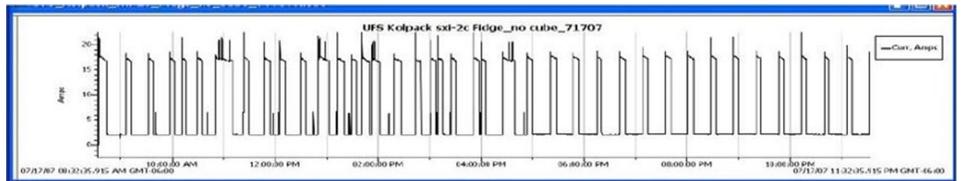
**Simon Pearson, Radisson SAS, Chief Engineer**

## How Refrigeration Systems Waste Energy:

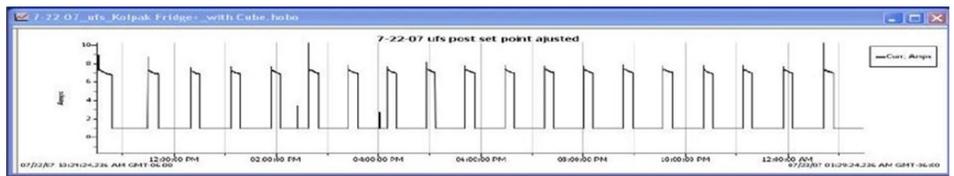
Refrigeration systems work in a series of on/off cycles measuring the air in and around the products they cool. All systems will start and stop to maintain a pre-set storage temperature. Refrigeration thermostats usually monitor circulating air temperature in order to decide when to switch on and off. Circulating air temperature tends to rise quicker than food temperature when refrigerator doors are opened and closed. Heat runs to cold when the refrigerator door is opened. Warmer air migrates into the cold storage space, triggering thermostat to switch compressor on. As a result, refrigeration systems work harder than necessary to maintain products at the temperature prescribed by the thermostat. Product temperatures do not rise as quickly as air because of their stored thermal energy. The refrigeration system is treating air temperature and not reacting to food temperatures, which uses more energy than necessary with frequent starts and stops.

Refrigeration systems typically produce a minimum of 12 on/off cycles per hour, and in some open display cases, 20 cycles per hour. This leads to excessive kWh consumption and undue wear and tear on the equipment. The results are higher energy bills and shorter equipment life spans. Both conditions leave an exaggerated impact on the environment through higher kWh consumption and the disposition implication of refrigeration systems with shorter life spans.

Prior to an EndoCube being fitted, a refrigeration unit is controlled by fluctuating air temperatures which cause regular and random on/off cycles.



After fitting an EndoCube, the on/off cycles become longer and more even which reduces compressor starts by about 75%.



### Extract from Bristol University Report Oct. 8, 2008

**Fitting the EndoCube to the cabinet had minimal effects on temperatures of test packs. In the tests the temperature of test packs rose by up to 0.3° C when the EndoCube was fitted but the cabinet still operated within M1 specification.**

**The major influence of fitting the EndoCube was in reducing the energy consumed by the cabinet by 13% in both the door closed and openings test regime the EndoCube would save 180 kWh/yr.**

**The number of compressor starts per hour was also reduced from 8.9/h with the door closed and 8.5/h with the door opened without the EndoCube to 3.1/h with the EndoCube fitted. (Read report [www.umpamerica.com](http://www.umpamerica.com)).**

# 30 percent! Like to save that on your energy and fuel consumption?

Monday, 01 December 2014 12:55 Jaco de Klerk

The transport industry certainly isn't a stranger to the "green" movement ... But, due to some external factors, South African companies are lagging behind those abroad. Bon Consumer Products, local distributor of the EndoCube is planning to change this.

"The EndoCube is essentially a unit for commercial refrigeration, from manufacturing and produce, to refrigerated trucks and supermarkets," Ramakrishna Naag, MD and founder of Bon. Moletech explains – adding the EndoCube reduces power consumption (by 20 to 30 percent) and thus carbon emissions.

Manufactured in the United Kingdom, this unit's power consumption savings come from what it measures ... "It monitors the food temperature and not the freezer temperature," says Naag. "So it switches the compressor on and off based on the food temperature – which means the produce remains at the right temperature and keeps fresher for longer."

Chrystal Erasmus, Bon's executive director adds: "The EndoCube is also perfect for temperature-controlled distribution chains – so the whole supply chain can benefit from this product. Besides the savings on electricity, there are also massive environmental benefits resulting from lowered carbon emissions."

## Contact Us

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**Visit us on the web at**  
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**UMP Americas, LLC.**  
**Is the Master Distributor for**  
**North America**  
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**Pacific Rim**

**sodexo**  
Quality of Daily Life Solutions

The Better Tomorrow Plan  
Case study

August 2011

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**We Do**  
Energy & Emissions

OUR COMMITMENT: We will reduce our carbon footprint in all the countries where we operate and at clients' sites by 2020.



**United Kingdom**

**Endocube**

As part of the Better Tomorrow Plan commitment to reduce the carbon footprint, Sodexo promotes Endocube, an energy-saving device that can economize as much as 30% of the energy consumption of food refrigeration units.

**Creating value for our clients**

- Huge reductions in CO2 emissions
- A significant reduction in electricity bills
- Food monitoring leads to safer food and less product damage
- Reduced wear and tear on equipment leading to extended life of equipment

**General context**

Climate change is known to be the result of human activity with energy use and food production being two of the most significant contributors. Sodexo's business operations directly affect energy use and emissions through the use of equipments, such as refrigeration units, at our clients' sites.

Refrigeration units work by monitoring circulating air temperature in a fridge or freezer. If the air temperature rises then the compressor switches on to cool the air down again. Air temperature rises far quicker than food temperature so, as a result, refrigerators work harder than necessary to maintain stored products at the right temperature. This in turn leads to excessive electricity consumption.

**The Endocube technology**

- The Endocube is not an electrical or mechanical device; it is simply a plastic box containing a product simulation wax which mimics food temperature at around 10mm below the surface and which fits over the thermostat on commercial refrigeration units.
- The installation takes approximately 15 minutes without interruption to the operation of the refrigeration unit. When fitted over the thermostat sensor on the compressor, the Endocube reduces the number of times the compressor is activated because fluctuating air temperatures can no longer switch the unit on as it is the food temperature that is now being monitored. Refrigeration cycles are less frequent and last longer, while food temperature is kept constant.



**Key figures (2008 - 10)**

- 450 Endocubes fitted
- Approximately 570,000 kWh less electricity per year
- Save more than 230 tonnes of CO2 per year

www.sodexo.com  
 BetterTomorrow.group@sodexo.com

**Trial results**

- Weekly energy reduction: 53.10 kWh
- Annual energy saving: 2,761 kWh
- Reduction CO<sub>2</sub> emissions: 1,1 tonnes



**Endocube benefits**

- Energy savings
- Reduced wear and tear on equipment
- Fewer breakdowns
- Safer food as the food temperature is being controlled automatically
- Few maintenance needed

**More information**

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**Implementation process**

A trial of the Endocube was conducted in 2008 at Stoke Mandeville Hospital on two double door refrigeration units. The energy consumption was measured for one week without the Endocube and then repeated with the Endocube.

Refrigeration unit	kWh without Endocube	kWh with Endocube	Difference (kWh)	Energy saving (%)
Unit 1	110.72	88.09	-22.63	20.43
Unit 2	124.92	94.45	-30.47	24.39

A second trial was conducted in 2009 at one of Sodexo's Corporate Services sites to re-confirm that the Endocube resulted in energy savings.

Refrigeration unit	kWh without Endocube	kWh with Endocube	Difference (kWh)	Energy saving (%)
A freezer	139.20	76.85	62.35	44.79
Double door fridge	77.27	63.07	14.20	18.37
Single door fridge	90.12	79.14	10.98	12.18

**Endocube Compatibility**

**The Endocube can be fitted to:**

- Upright fridges and freezers
- Walk in fridges and freezers
- Dairy decks
- Deli bars
- Salad wells

**The Endocube cannot be fitted to:**

- Domestic fridges and freezers
- Blast chillers
- Chest fridges and freezers
- Ice making equipment

**Moving forward**

With over 450 now fitted, Sodexo expects refrigeration units to use approximately 570,000kWh less electricity and save more than 230 tonnes of CO<sub>2</sub> a year.

Today, the Endocube is still being installed in refrigeration equipment across the UK & Ireland by Sodexo.

