



VERDEMAR

Commercial Refrigeration Case



HISTORY – The beginning

- Small supermarket founded in 1993 by 2 young boys





HISTORY

- Competitive prices based in smart purchases
- Good quality in basic and gourmet products
- Build of a different style of commercial operation
- High quality with good prices = client fidelity

20 YEARS IN 2013

- **6 stores** - Imports from 26 countries
- **Sustainable practices became a company philosophy**
- **Small company doing all movements with own resources**



2007

- First supermarket to replace conventional plastic bags with biodegradable bags;

2009

- Launching of fashion reusable shopping bags, widely adopted.





#4 VERDEMAR

Commercial Refrigeration Case

2010

- New 5th store with wide sustainable proposal - **green store**;





FIRST GREEN STORE PROJECT - 2010

- Reuse of kitchen oil to produce **biodiesel**;
- **Treatment** and reuse of kitchens waste water;
- **Led lighting** to reduce energy use and heat generation;
- External painting made with non toxic products and local soil
- **Continuous research of possible sustained practices**
- Refrigeration **contractor researched CO2 technology since 2007**;
- **First CO2 commercial refrigeration system in South America.**



CENTRAL REFRIGERATION SYSTEM

- **CO2 cascade subcritical central system** - R134a (GWP 1300) + CO2;
- **R134a primary circuit** works in secure rack industrially mounted;
- **CO2 secondary circuit in DX** in low temperature applications;
- **Propylene Glycol secondary circuit** in medium temperature showcases
- Small IQ motors and larger Arneg evaporators - no defrosting;
- Frequency controlled compressors fine tuned by Blitzer
- Dual speed ECM motors for chambers and preparation rooms
- Variable speed EC motors at the condensation
- Patented humid adiabatic condensation grids
- Fine-tuned components provided by Danfoss;
- Electronic expansion valves to a precise control of CO2 fluid



ATMO
UN sphere
technology summit
natural solutions

#7

VERDEMAR

Commercial Refrigeration Case

REFRIGERATION RACK



SHOWCASES





SIDE EFFECTS

- **New CO2 system costs 20% to 30% more than conventional R22**
- High level of imported components - more than 80 %
No official support - could be faster and cheaper;
- Need to specific training to install and operate the system;
- **After training, the operation becomes standard** and works fine;
- **Energy savings results in a payback of extra cost < 24 months;**
- **System continues to save energy, lowering costs and energy demand;**
- Several companies in Brazil followed the CO2 move after Verdemar pioneer launch.



2011 - 2014

- 2 more stores were built with CO2 technology;
- All sustainable solutions also applied and developed;
- **Design adopted as a standard in the network;**
- 2 more stores previewed to open in 2013-14.





CONCLUSIONS

- **Progressive approach to adopt the sustainable decision**
 - Larger initial investment to start new technology
- **Invest in Green actions**
 - Marketing strategy of a modern and responsible behaviour
- **Support and stimulation of creative contractors**
 - High level technology is involved
- **Official support for high technology imports**
 - Can accelerate the path to a **Cleaner Atmosphere**



 **ATMO**
sphere
technology summit
natural solutions
3 - 4 June 2013 in Vienna

CARLOS ARRUDA – VERDEMAR (Brazil)

Thank you very much for your attention.