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CO2 transcritical FTE System

New highly innovative CO2 transcritical solution that combines low costs, energy saving and reliability.

The role of industry

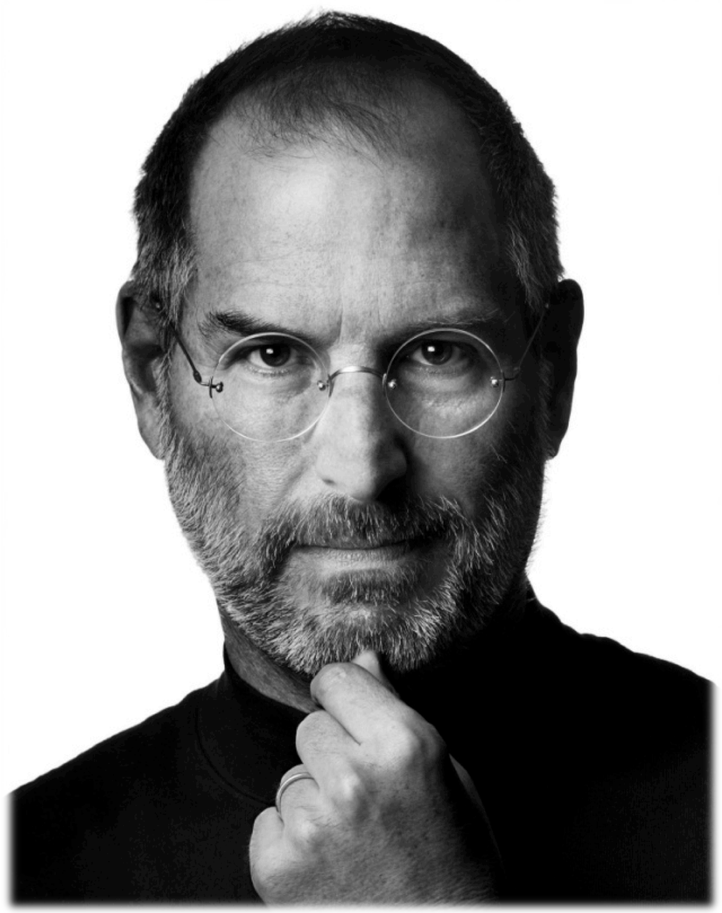
I INVENTED NOTHING NEW

I SIMPLY ASSEMBLED THE DISCOVERIES
OF OTHER MEN BEHIND WHOM WERE
CENTURIES OF WORK…

PROGRESS HAPPENS WHEN ALL THE FACTORS
THAT MAKE FOR IT ARE READY AND THEN
IT IS INEVITABLE

HENRY FORD

The role of industry



SIMPLE CAN BE HARDER THAN COMPLEX

YOU HAVE TO WORK HARD TO GET YOUR

THINKING CLEAN TO MAKE IT SIMPLE

BUT IT'S WORTH IT IN THE END

BECASUE ONCE YOU GET THERE,

YOU CAN MOVE MOUNTAINS

STEVE JOBS

The role of industry … for EPTA

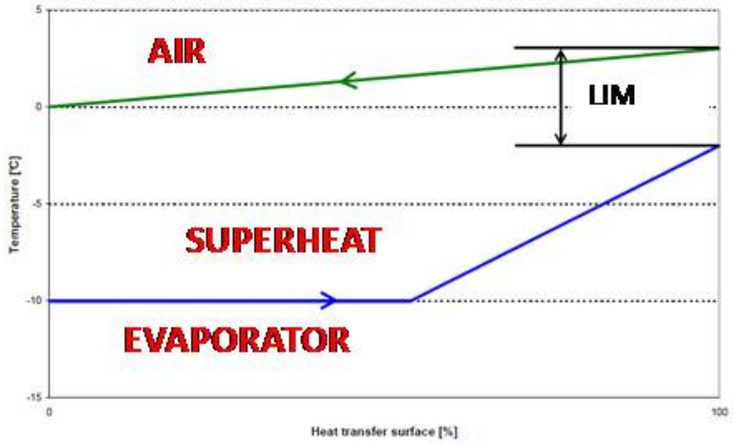
TO MAKE NEW TECHNOLOGIES AVAILABLE
AND TO BREAK DOWN BARRIERS

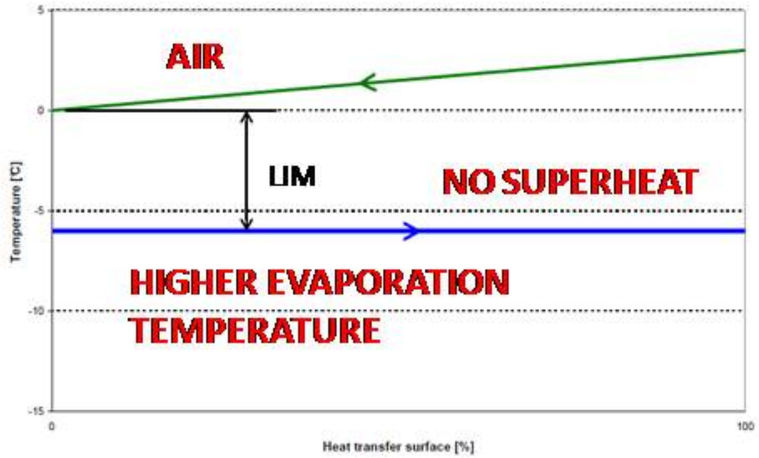
SIMPLIFY

INDUSTRIALIZE

GLOBALIZE

Overfeeding of the evaporators





- **What is the superheat?** The amount of heat added to the refrigerant after its complete evaporation.

  The superheat is necessary to have only vapor at the evaporator outlet, but it also introduces a significant energy waste and higher compression work.

- **Superheat and Evaporating Temperature** The maximum evaporating temperature is limited by the temperature approach between the air inlet temperature and the refrigerant temperature at evaporator outlet.

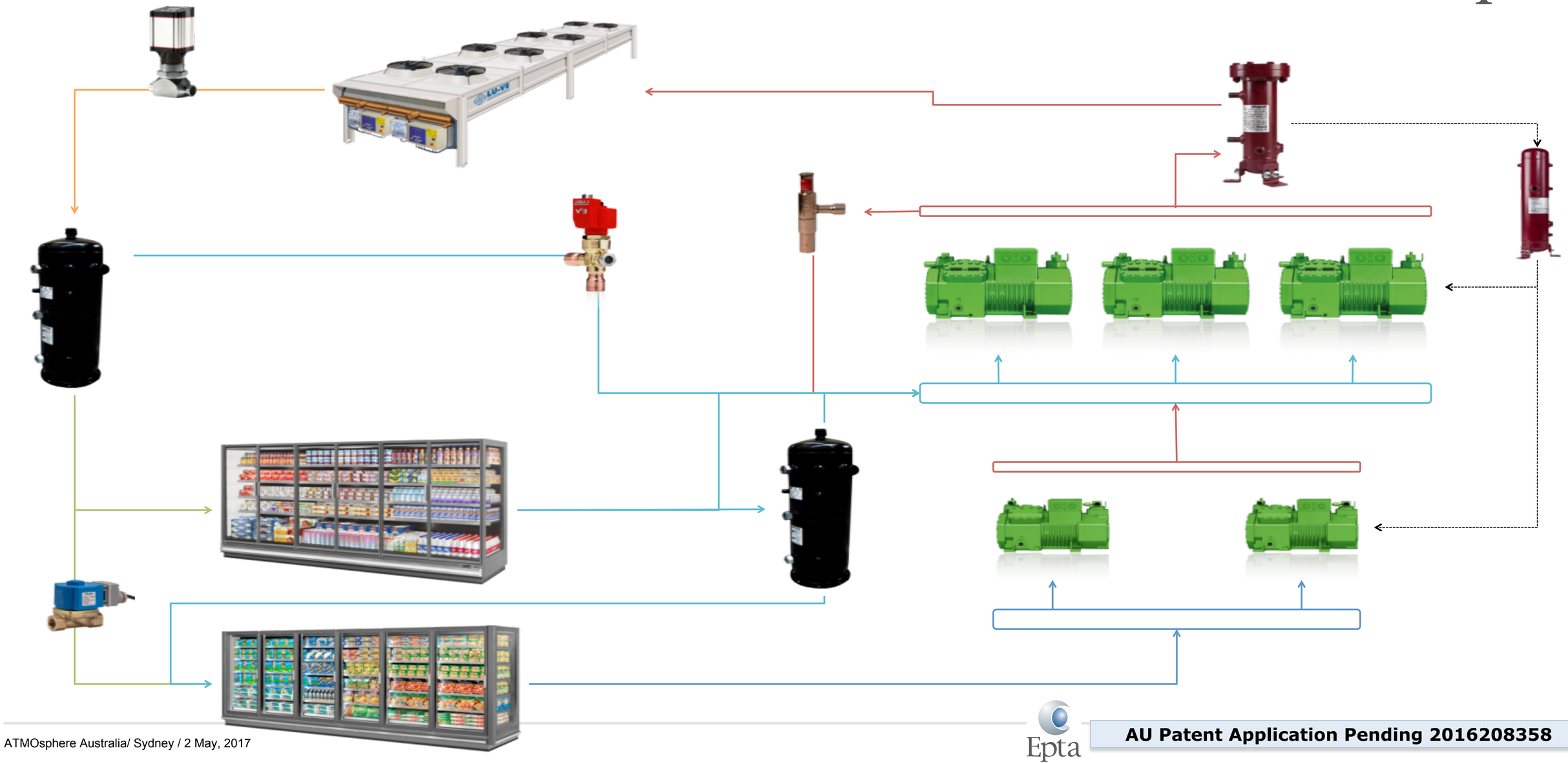
  Superheat causes lower evaporation temperature and hence higher energy consumption.

- **ZERO superheat : overfeeding of evaporators** Superheat is completely eliminated, liquid refrigerant is mostly used at the evaporator, liquid and vapor are present at the MT evaporator outlet

- **Advantages of evaporators overfeeding** Higher evaporation temperature (up to 6 K), liquid refrigerant ensures excellent heat transfer

CO_2 TRANSCRITICAL FTE SYSTEM

Simply effective everywhere



AU Patent Application Pending 2016208358

CO_2 TRANSCRITICAL FTE SYSTEM
Simply effective everywhere

Energy saving independent of the external temperature

MT compressor discharge temperature decreased

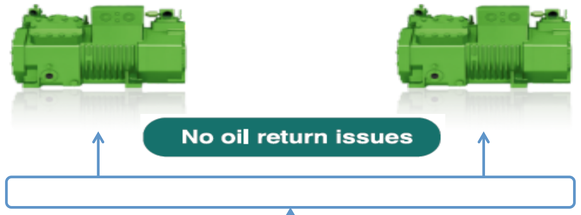
No oil return issues

OVERFEEDING OF EVAPORATORS

SH ↓

Evaporating temperature increased 365 days/year and better heat transfer rate

CLOS



No oil return issues

LT loads supplied with cooler liquid

AU Patent Application Pending 2016208358

FTE Advantages

1. **Evaporating temperature increased 365day/year**

   The efficiency of the CO2 FTE SYSTEM is given by the MT cabinets operating with flooded (overfeeding) evaporators without superheat

   Evaporation temperature is increased up to 6K (2.5-3% energy saving per K)

2. **Energy saving is independent of the external temperature**

   Unlike ejector technology, the FTE system works in energy saving mode with flooded evaporators all year long

3. **Optimal performance at EVERY temperature**

   The absence of superheat decreases the discharge temperature of the compressors considerably, making it the ideal system for every climate.

4. **LT loads supplied with cooler liquid**

   Liquid to the LT freezers is subcooled after MT cabinets

5. **No oil return issues**

   Perfect lubrication is ensured as the oil circuit is uninterrupted

FTE Key features

FTE combines simplicity with outstanding performance:

» **Energy Saving : 10%**

on an annual basis, independent of the latitude and the climate

» **Installation and maintenance cost savings: UP TO 20%**

as it requires no ejector or parallel compression and is intrinsically very reliable, which also results in an additional important saving in terms of installation and maintenance

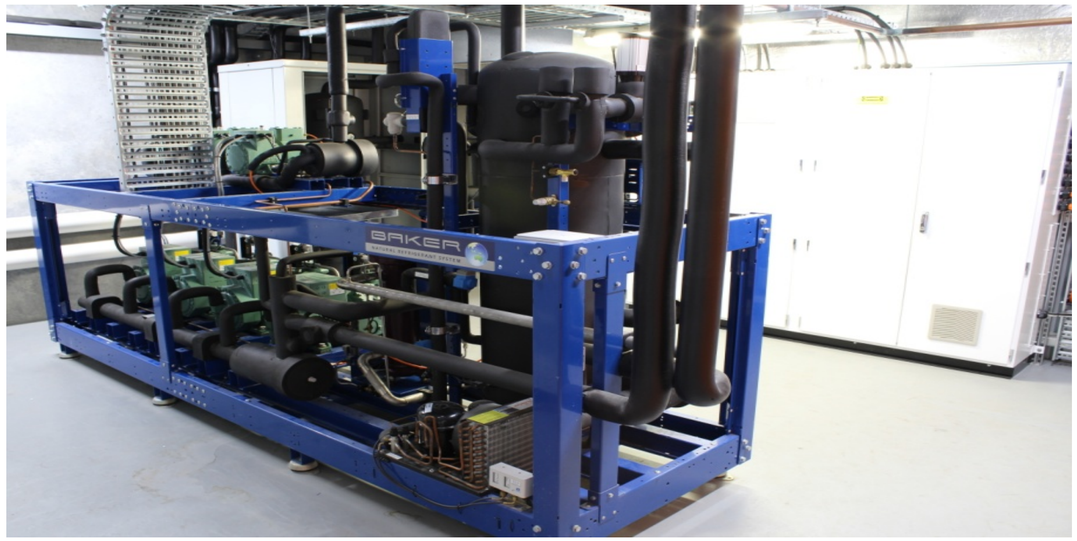
Simply available everywhere…NOW!

FTE Key features

SIMPLE

because it does not need ejectors or sophisticated components, it is as simple as a standard basic CO2 booster system

Mechanically the FTE system operates with the same components as the basic CO2 transcritical system, plus the FTE multilevel liquid receiver.



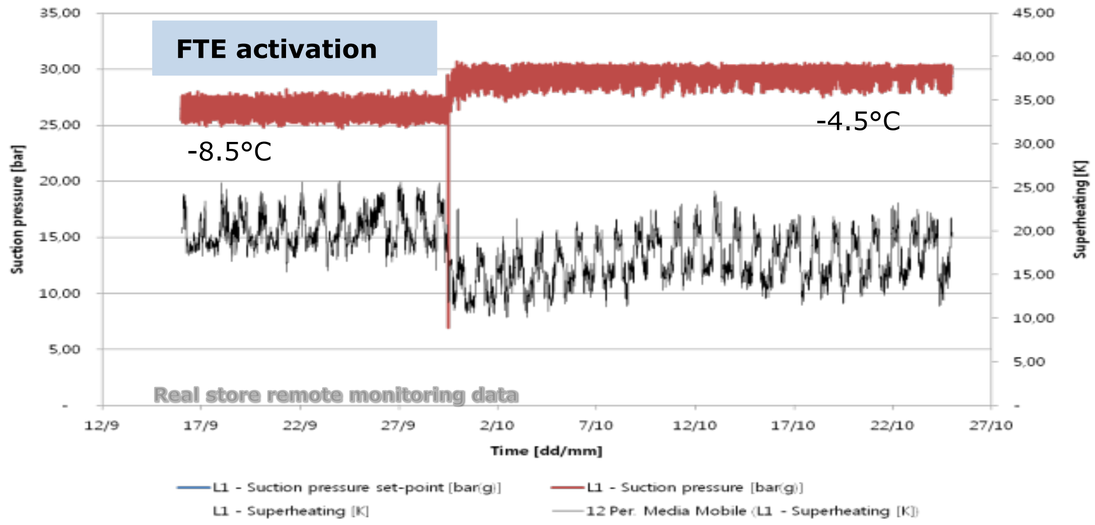
FTE Key features

GLOBAL

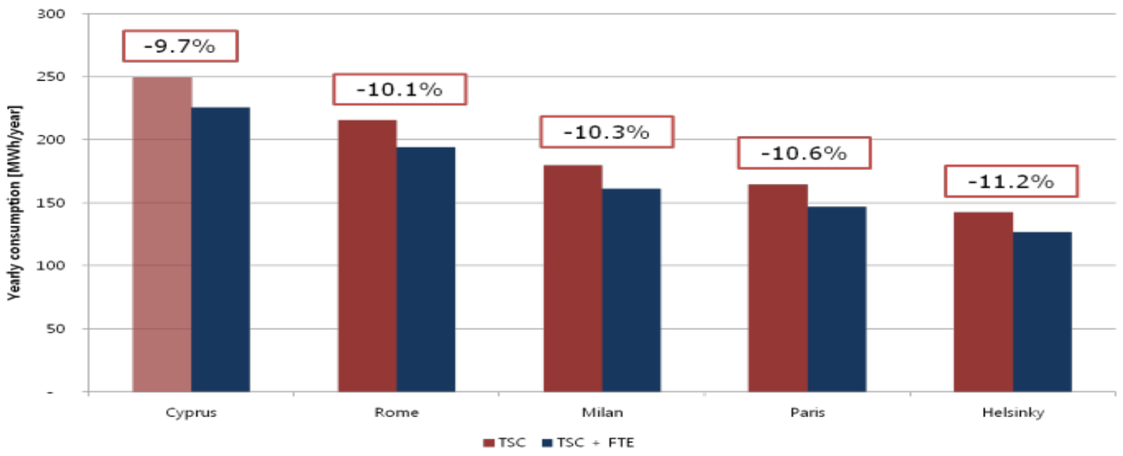
as it works perfectly in hot climates but offers the advantage of a dramatic reduction in consumption all year in any location

One solution for all markets, sustainable and efficient everywhere, and does not require any special expertise.

Evaporating temperature increased



Energy saving independent of the external temperature

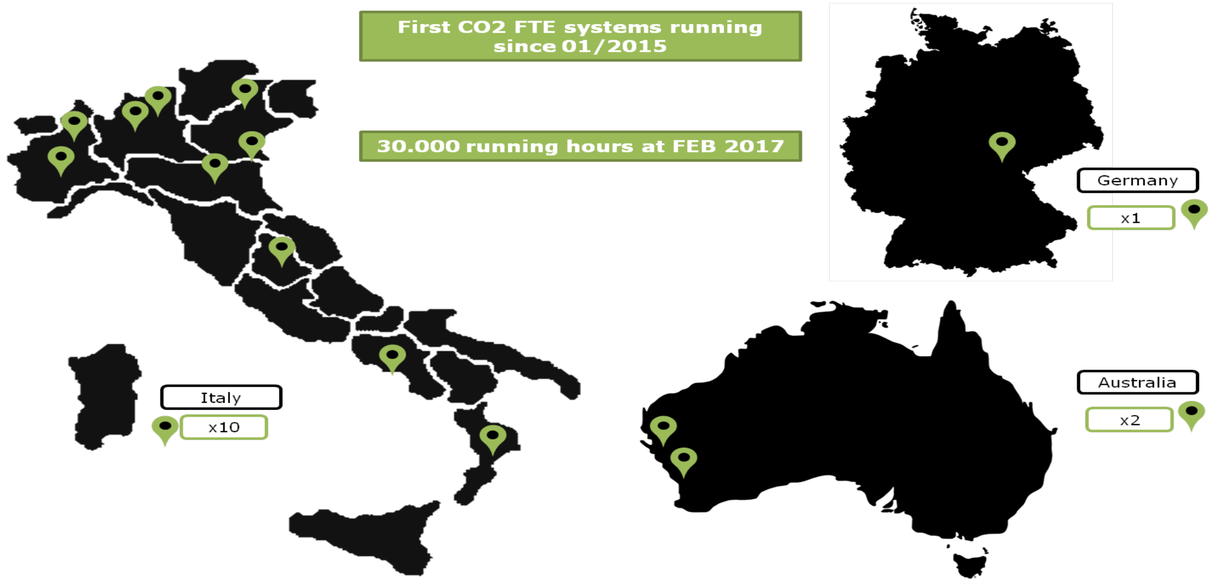


Conditions:
- MT cooling capacity installed: 80 kW
- LT cooling capacity installed: 20 kW

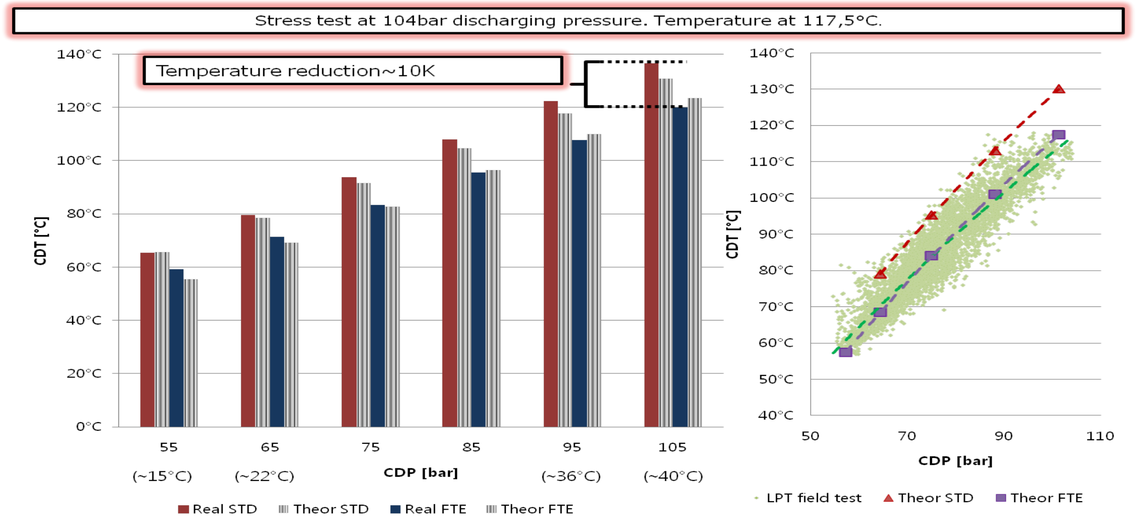
FTE Key features

RELIABLE

as it is a modular solution based on standard components produced on a large scale: the MT and LT systems use standard CO2 cabinets and freezers, the power pack is a standard basic CO2 booster system, whereas the heart of the system is the FTE module, an intelligent standard multi-level liquid receiver.



MT compressor discharge temperature decreased



FTE Key features

RELIABLE

finally a CO2 booster system solution more safe and robust than ever

The FTE system reduces the compressor discharge temperature thus protecting the quality of the oil, and allows perfect oil circulation providing better lubrication to the compressors thus extending their life.

Conclusions

FTE IS A NEW BUSINESS MODEL:

INDUSTRIALIZE RELIABLE EFFICIENCY

The future of natural refrigeration depends on systems that combine **efficiency, energy saving and reliability** in a simple design.

With CO2 FTE SYSTEM the **cost, performance** and reliability gaps can finally be seen to be bridged.

FTE can really give a significant contribution to **break down the barriers** to a natural future in refrigeration.

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Thank you very much!