Hall 7A





TURBOALGOR

THE ULTIMATE SOLUTION FOR EFFICIENCY IMPROVEMENT OF TRANSCRITICAL R744 REFRIGERATION SYSTEMS



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COMPANY PROFILE

снициента

Turboalgor is an innovative SME owned by the <u>Angelantoni Group</u>, synonymous with knowledge and expertise in the construction and optimisation of refrigeration systems.



Turboalgor, with the Turboalgor CO₂ project, wins the European LIFE tender and FREEEX brand is created for the development and distribution of the technological solution designed to make R744 transcritical refrigeration systems more efficient.



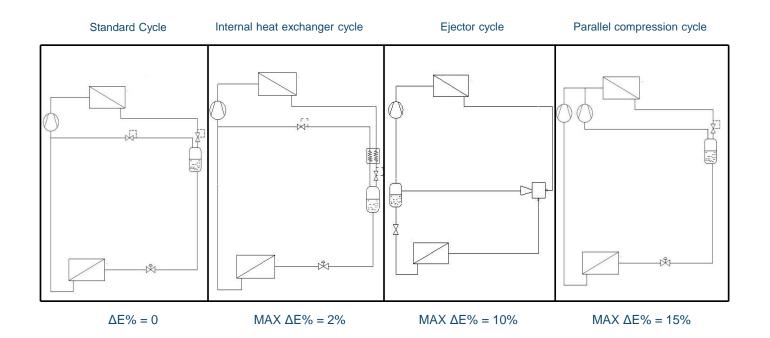


Co-funded by the European Union

– TURBOALGOR CO2 -

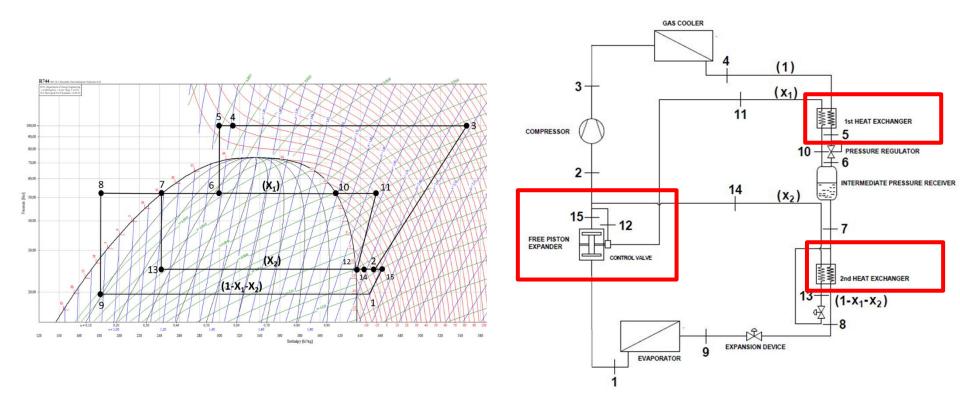
STATE OF ART

снициента

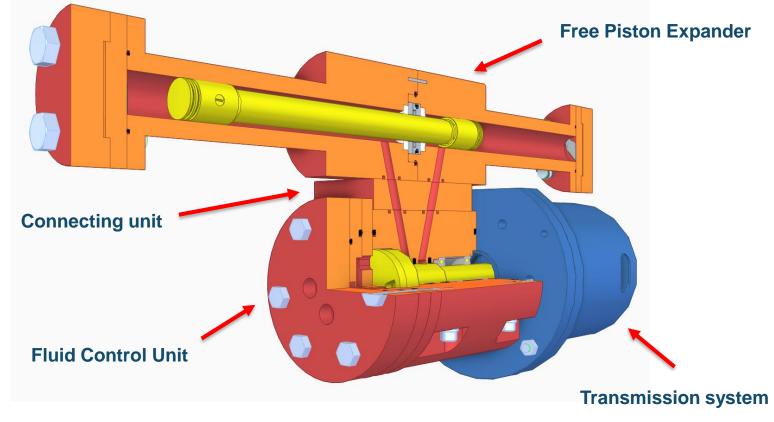


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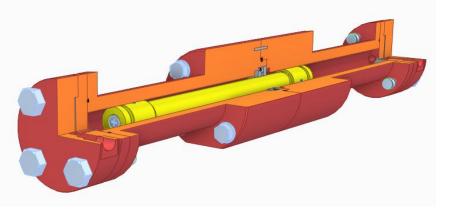
STATE OF ART



TURBOALGOR TECHNOLOGY



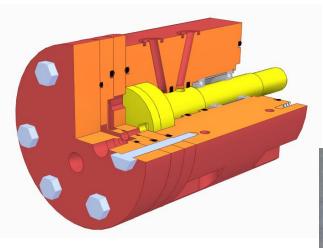
FREE PISTON EXPANDER



- Easy construction
- High thermodynamic efficiency
- High oscillation frequency (>10Hz)
- Compactness
- Wide cooling power range



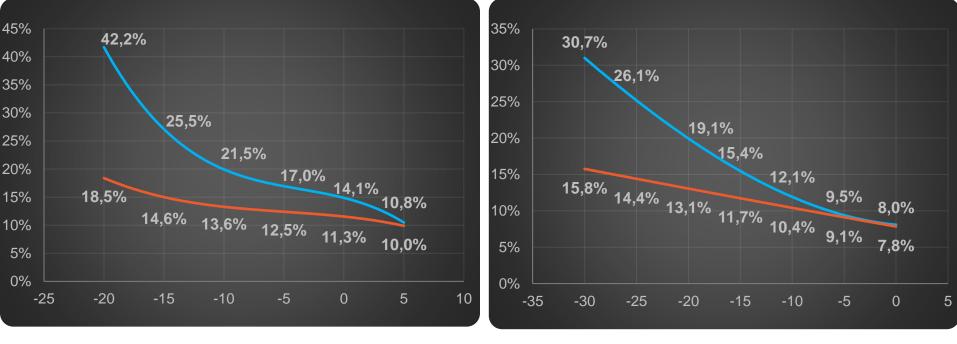
FLUID CONTROL UNIT



- Simple mechanical design
- High reliability



EVAPORATING TEMPERATURE



WARM CLIMATE-Gas cooler outlet Temperature 40°C

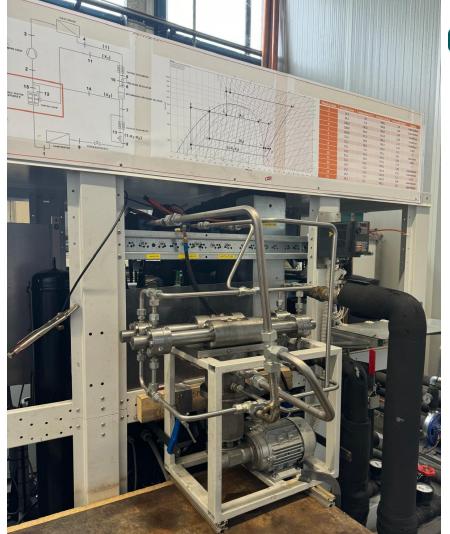
PERFORMANCES

WARM CLIMATE-Gas cooler outlet Temperature 40°C

COOLING POWER

TEST BENCHES

- R744 transcritical plant
- Mechanical power 15kW
- Evaporating temperature -20°C / 0°C



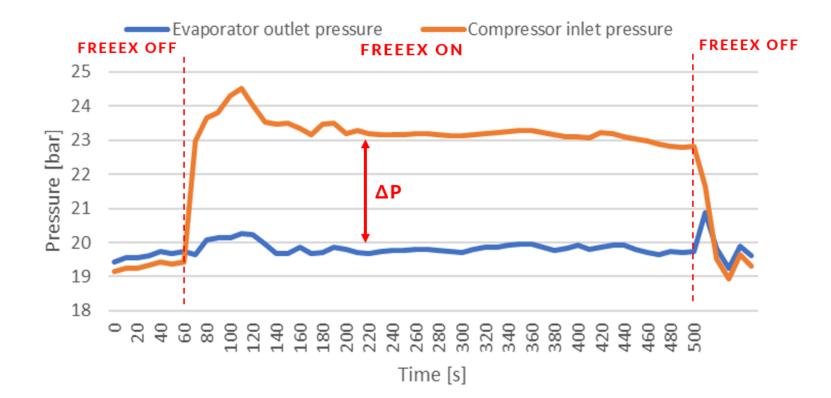
TEST BENCHES

- R744 transcritical plant
- Mechanical power till 37,5kW



сніцуєпта





TURBOALGOR SOFTWARE

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Dashboard		
*	V	
PARAMETRI	MISURE	ELABORAZIONI
🖁 Temperature		^
Tout evaporatore		-6.4 °c
Tin Compressore Principale		12.2 °c
Tout Compressore Principale		129.8 ° c
Tout gas cooler		39.1 ℃
Tin Valvola di Laminazione		-9.8 ℃
Tin espansore FPE		38.7 ℃
Tout 2° scambiatore		-4.8 °c
Pressioni		^
Pout evaporatore		20.26 bar
Pin compressore principale		24.76 bar
Pin espansore FPE		47.28 bar
Pressione gas cooler		88.41 bar
∳ Altre		^
Potenza elettrica assorbita		7451.79 w

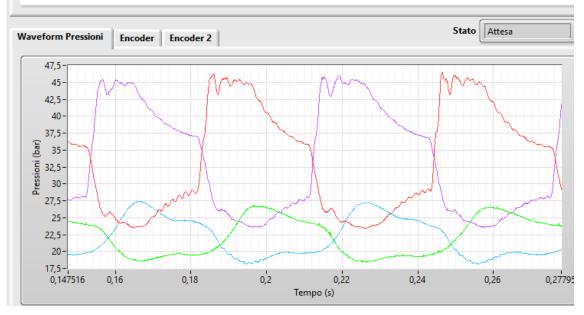
lun 13 r **TURBOALGOR DATALOGGER** 16: Stato Attesa Cicli acquisizion Waveform Pressioni Encoder 2 P CIL1 47,5 Am An 45nn P CIL2 N 42,5-P SP1 CIL1 40 P SP1 CIL2 37,5 P SP2 CIL1 (bar) 35-P SP2 CIL2 5 32,5 Plenum SP1 30 υ ď Plenum SP2 27,5-25-22,5-20-17,5-0.16 0.18 0,2 0.22 0.24 0.26 0.27795 0.147516 Tempo (s) + 10 10 Grafico dati di pressione acquisiti in 1 secondo . Start Stop Manuale

TURBOALGOR SOFTWARE

снициепта

🖄 Turboalgor DataLogger

TURBOALGOR DATALOGGER



EXPANDER 1 COMPRESSOR 1



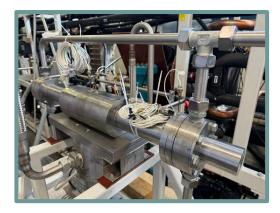
RANGE OF PRODUCT

снициента

Three models are planned: a 7.5kW, a 22kW and 37kW (kW=absorbed power). We are able to cover the bulk of the market for transcritical R744 plants, till 100kW of electrical power.



SIZE INCREASE





1 FCU + 2 PARALLEL FPE





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Turboalgor has developed an innovative technology to improve the efficiency of transcritical refrigeration systems. The heart of Turboalgor's innovation is a patented **Free Piston Expander (FPE)** and its **Control Valve (FCU**), a device designed to pre-compress the gas leaving the evaporator before it can reach the main compressor.

Thanks to this system the gas coming from evaporator is pre-compressed and subsequently sent to main compressor, reducing its specific consumption. Having 30 °C gas cooler outlet temperatures, **FPE can achieve energy savings up to 15%**, while at 40 °C the **savings reach 18%**

Turboalgor is developing a range of FPE models to meet the most of applications in transcritical refrigeration market.

In conclusion, Turboalgor Free Piston Expander development represents a significant step forward in the search for more sustainable refrigeration solutions.

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COME IN A TAKE A LOOK AT OUR NEW TECHNOLOGY!

TURBOALGOR STAND 6-113

THANKS FOR THE ATTENTION

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