



使用卡乐的控制与监控系统的中国首家 二氧化碳跨临界店铺项目

China's first transcritical CO₂ store with CAREL control solutions, Beijing

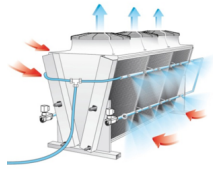


Business Case for
Natural Refrigerants

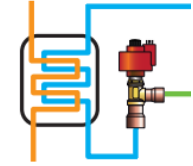
11-12/04/2018 – Beijing

Eason Cheng
April 12th 2018, Beijing

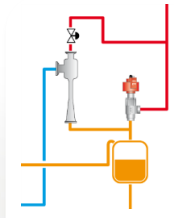
CO₂ proposal for Commercial Retail refrigerating systems



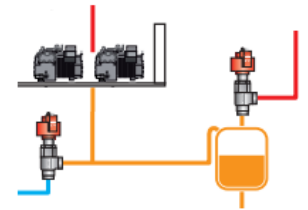
Evaporative cooling



Subcooler



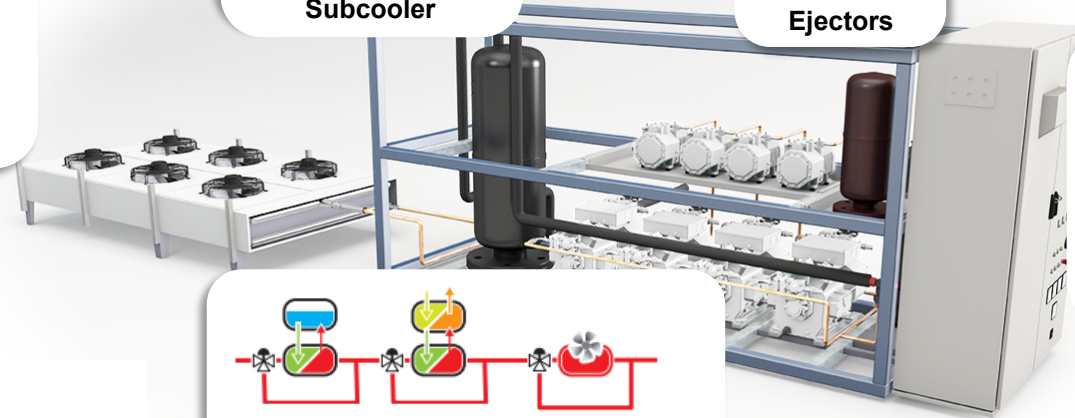
Ejectors



Parallel compression



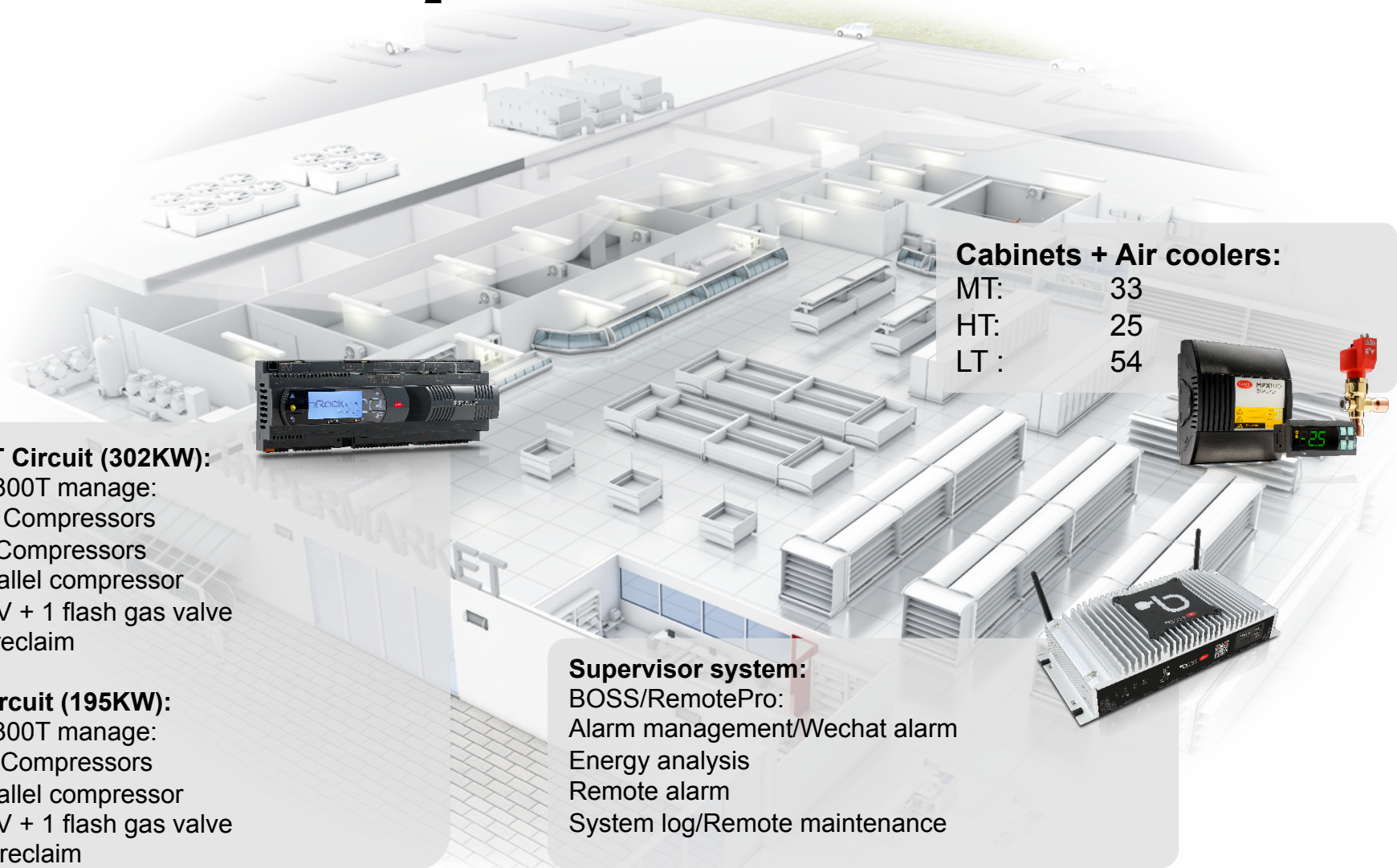
Heat Reclaim & AC integration



CAREL CO₂ solutions in Commercial Retail Refrigeration in China (Since 2015)



Solution in first CO₂ Trans-critical Store



LT/MT Circuit (302KW):

- 1 pR300T manage:
- 3 MT Compressors
- 3 LT Compressors
- 1 parallel compressor
- 1 HPV + 1 flash gas valve
- Heat reclaim

HT Circuit (195KW):

- 1 pR300T manage:
- 3 HT Compressors
- 1 parallel compressor
- 1 HPV + 1 flash gas valve
- Heat reclaim

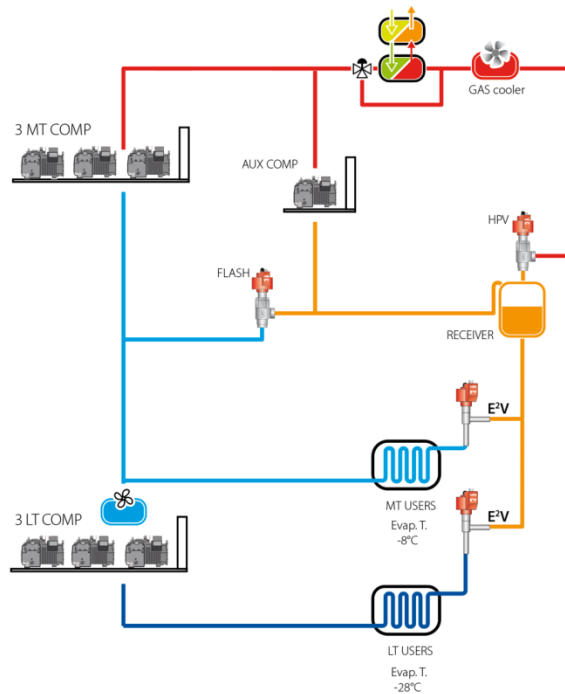
Cabinets + Air coolers:

- MT: 33
- HT: 25
- LT: 54

Supervisor system:

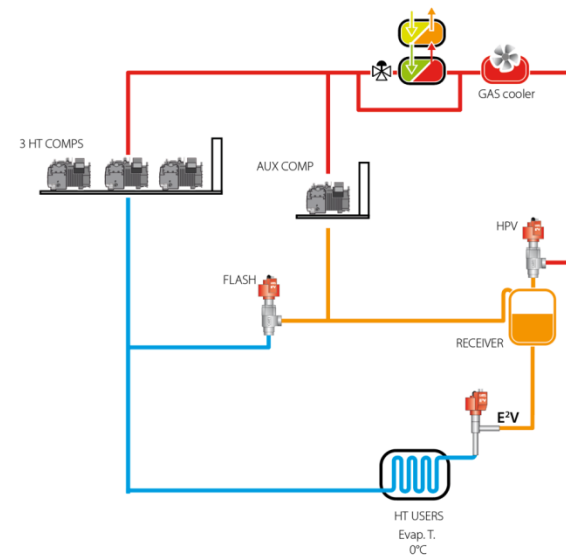
- BOSS/RemotePro:
- Alarm management/Wechat alarm
- Energy analysis
- Remote alarm
- System log/Remote maintenance

Solution in first CO₂ Trans-critical Store



Low/Medium temperature Booster compressor rack A:

- Refrigerant: R744 (CO₂)
- Total cooling capacity: 302kW
- 3 MT compressors (evap. temp. -8°C)
- 3 LT compressors (evap. temp. -28°C)
- 1 parallel compressor
- 1 pRack pR300T for centralized management
- 1 pRack



High temperature rack B:

- Refrigerant: R744 (CO₂)
- HT Cooling capacity: 195kW
- 3 HT compressors (evap. temp. 0°C)
- 1 parallel compressor
- 1 pRack pR300T for centralized management
- 1 pRack pR300T for backup

Solution in first CO₂ Trans-critical Store

Supervisory system

- Advanced tool for commissioning team to start and optimize the system
- Reliable alarm management with WeChat connection
- Remote access to improve the configuration & give fast response to possible issues
- Energy management
- Efficiency improvement (Smooth lines, floating suction)

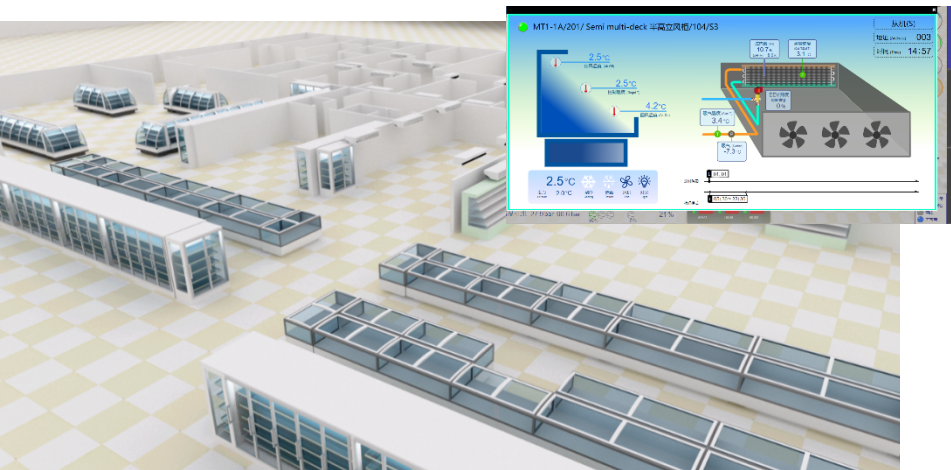
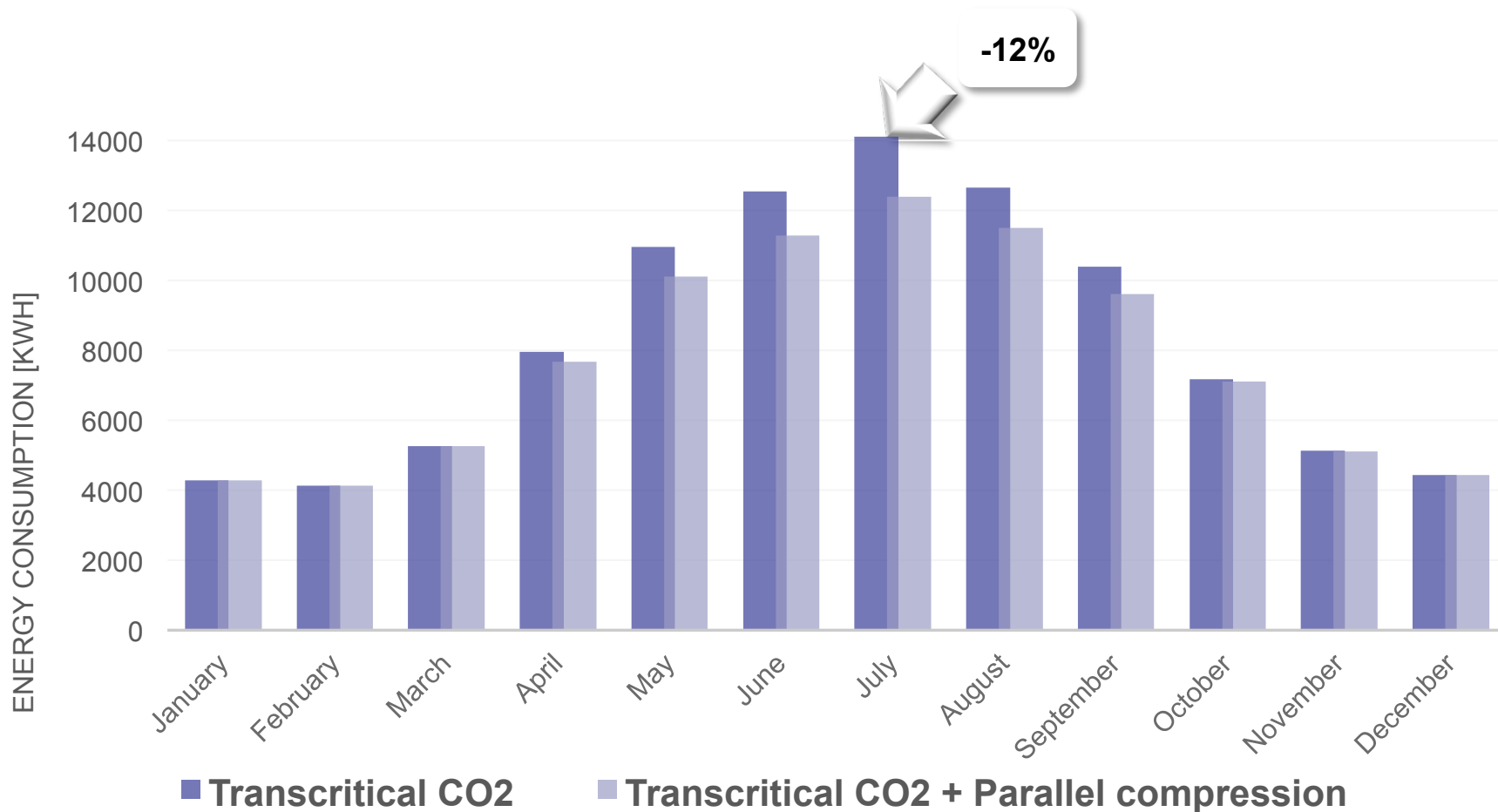
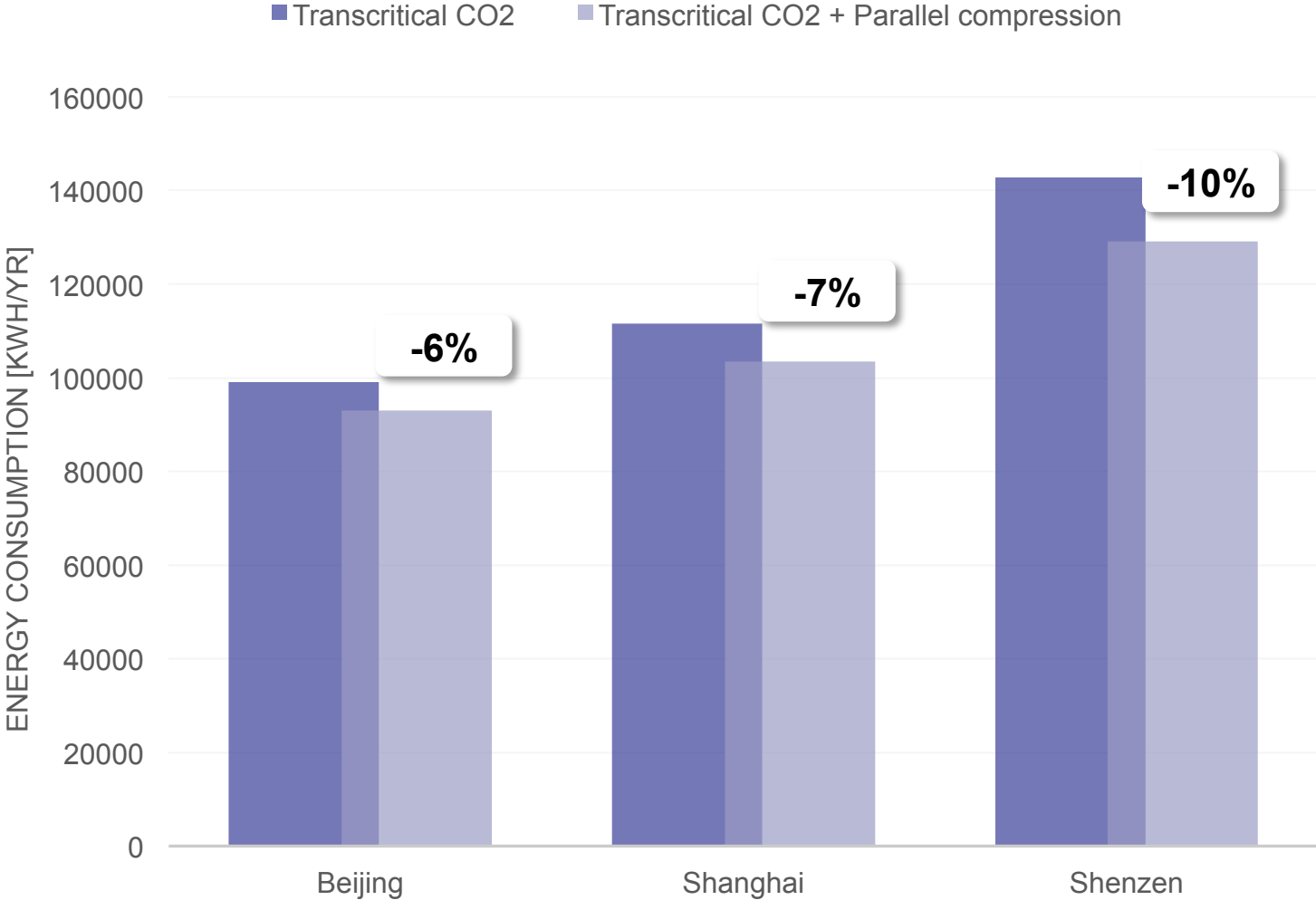


Fig. 1.j - Energy Dashboards

Expected energy consumption and saving comparison in Beijing



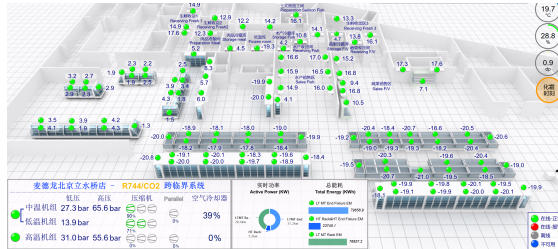
Expected energy consumption and saving comparison



Accelerate the deployment of CO₂ system

Work closely with partners:

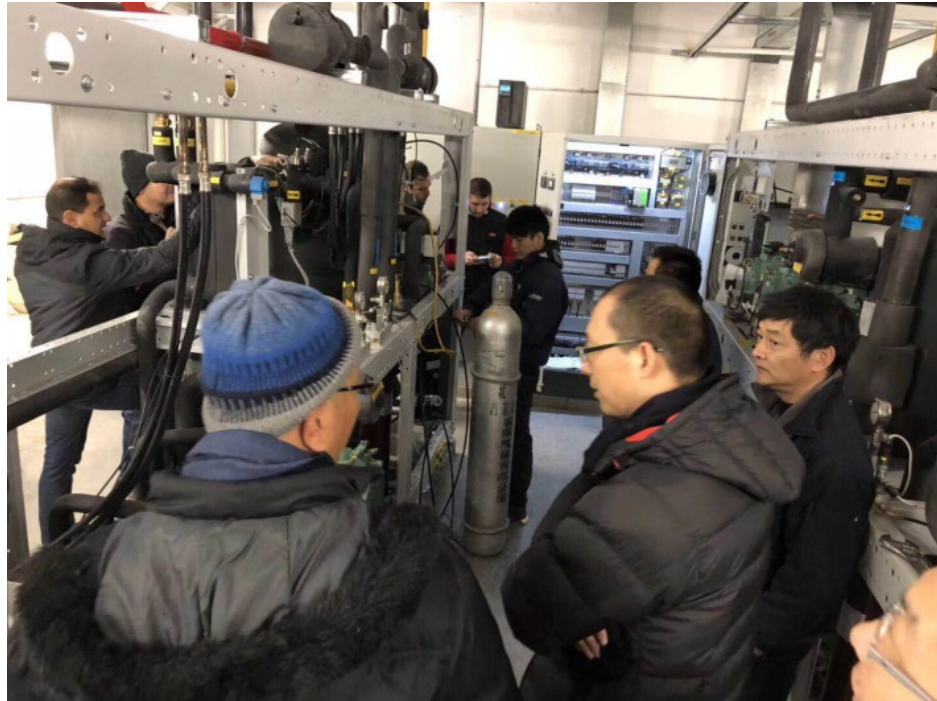
- Design support
- Seminars
- Trainings
- In field commissioning supports



Accelerate the deployment of CO₂ system

Work closely with partners:

- Design support
- Seminars
- Trainings
- In field commissioning supports



Conclusions

To deliver CO₂ booster systems and make it successful, simplicity and reliability in an all in one solution are mandatory

CAREL electronics ease of use helps to manage the installation complexity keeping high levels of efficiency

This first transcritical installation is a starting point for transcritical CO₂ deployment in China and we are very proud to have contributed on it

All the partner involved were very committed and cooperated to reach a big success together

