

Transition  
to the  
**Low  
Carbon  
Utility  
Room**



from WASTE heat to...

...useful PROCESS heat

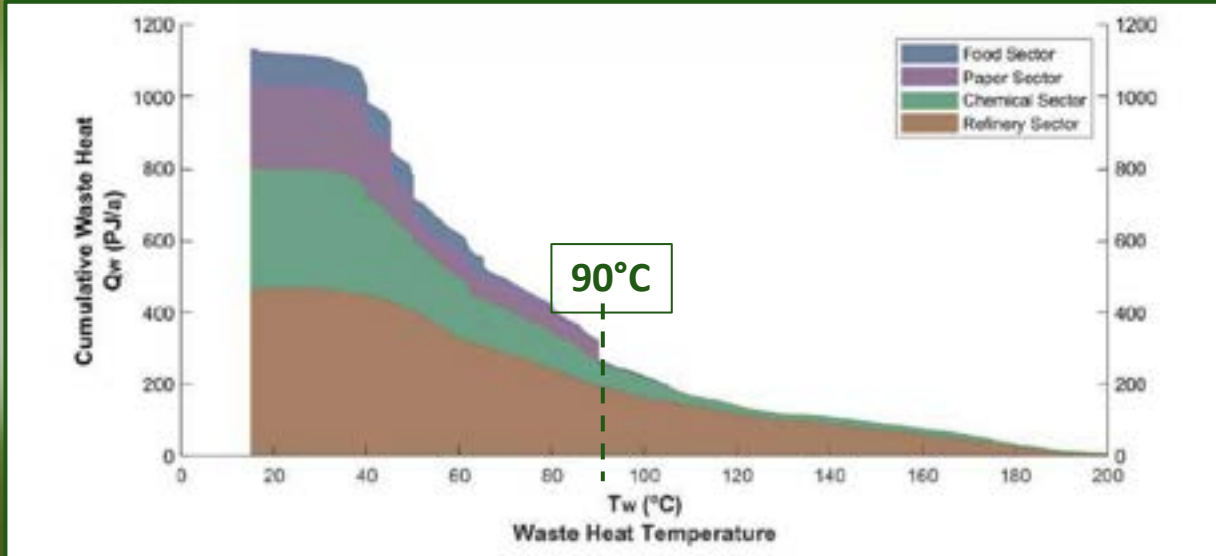


Fig. 6. Cumulative waste heat <200°C in EU28 identified in processes which make up the heat pump market study.

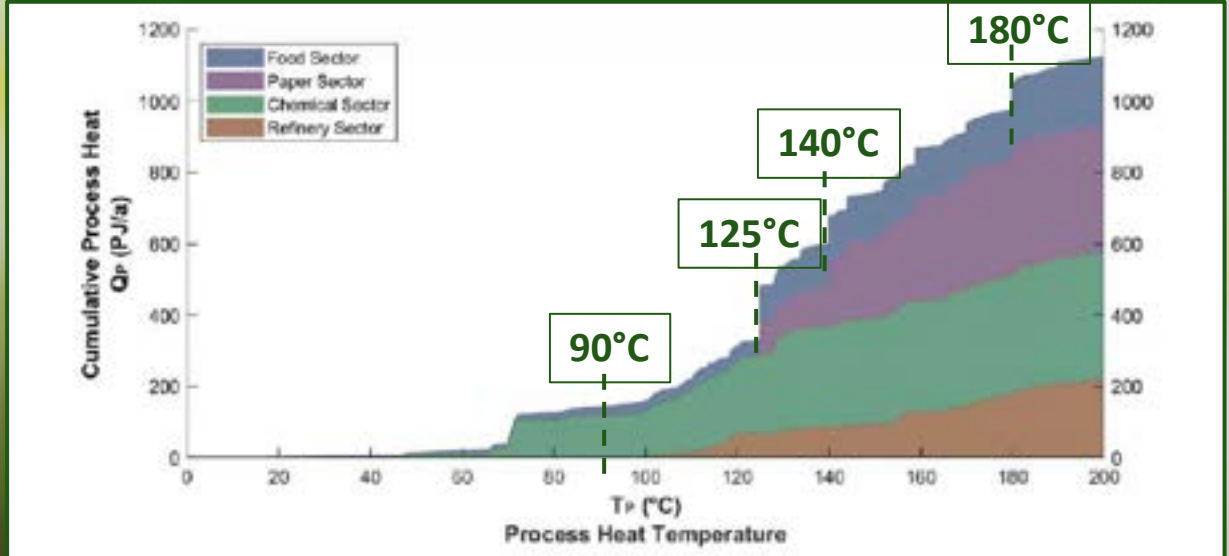
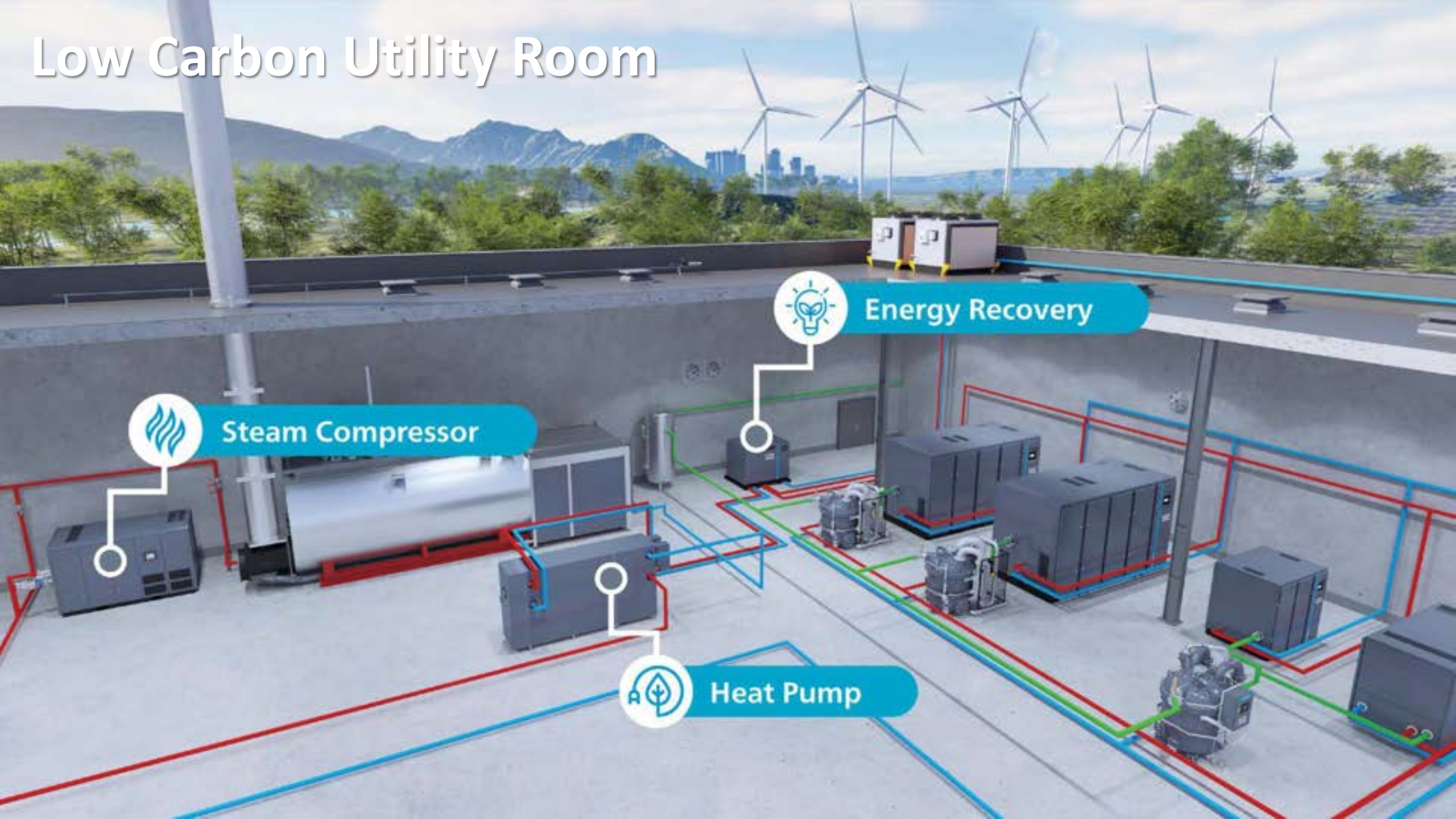


Fig. 5. Cumulative process heat <200°C in EU28 identified in processes which make up the heat pump market study.



# Low Carbon Utility Room



Steam Compressor

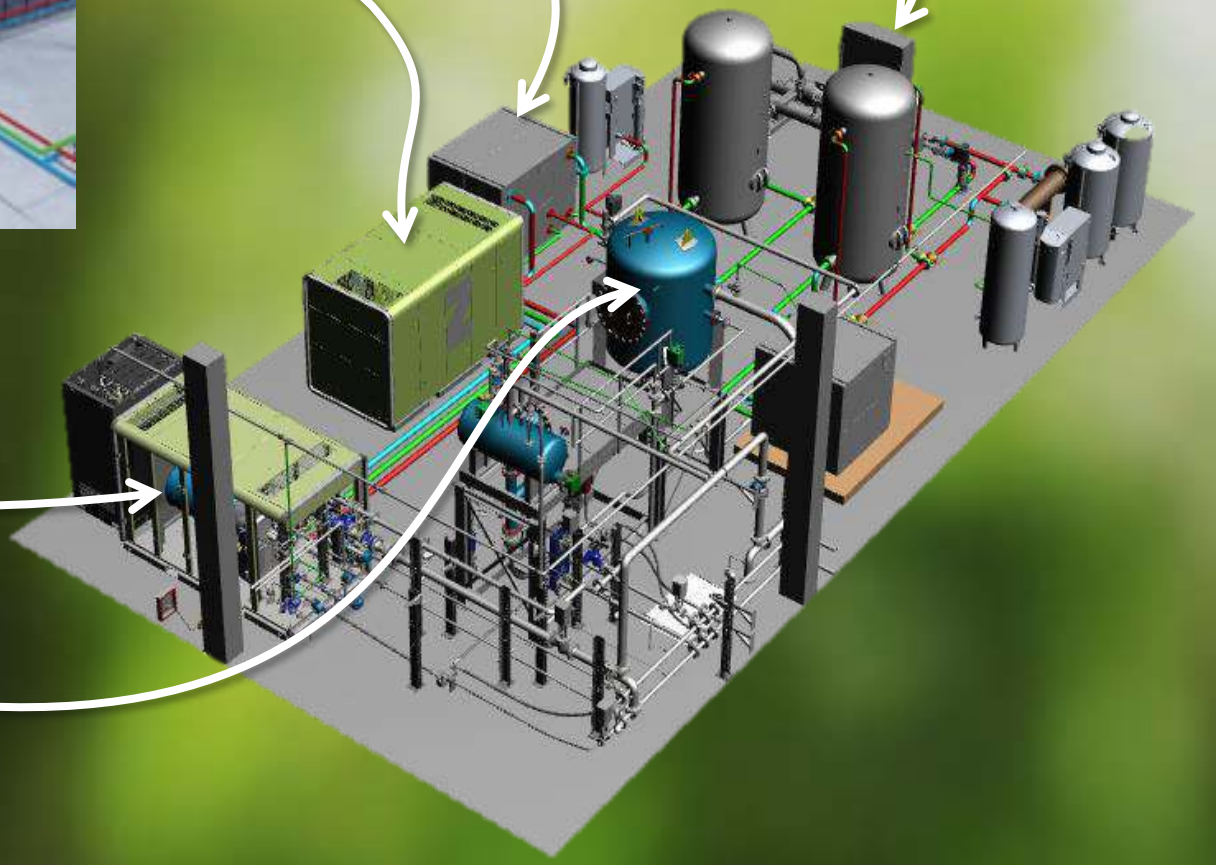
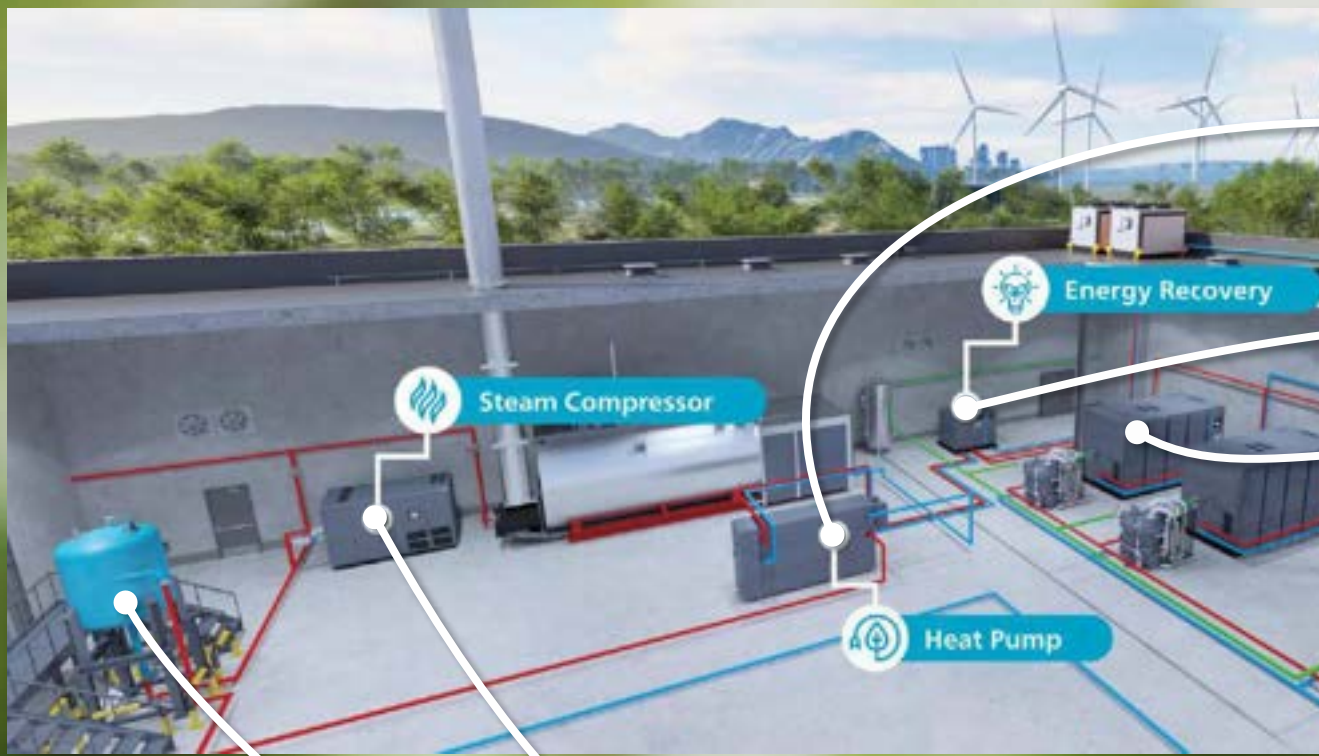


Energy Recovery



Heat Pump

# Proof-of-Concept



# Atlas Copco: a fully released product portfolio

## Energy Recovery



- ER 90 – 900
- Energy recovery: 75% up to 94% of installed power electric driver
- Hot water temperature up to 90°C for showering, space heating and specifically process applications

## Heat pump



- High Temperature up to 120°C
- Heating Capacity up to 2.5MW
- COP between 2 – 6
- Higher efficiency with sub-cooler
- Variable Speed Drive
- Global Monitoring system

## Steam Compressor



- “Open Heat Pump”
  - Inlet >80°C = 0.45bar(a)
  - Outlet <200°C = 14.5bar(a)
- Delivery of dry superheated steam
- Heat of Compression results in extra steam

# Industrial Heat Pump EH 300(...)VSD



- Delivering high temperature up to 120°C
- Heating capacity up to 2.5MW
- COP between 2- 6
- Higher efficiency with sub-cooler
- Variable Speed Drive
- Global Monitoring system

# Steam Compressor (open heat pump) SE/SR-Type(...)VSD

- Inlet steam vapor  $> 80^{\circ}\text{C}$  @ 0.45 bara
- Outlet steam vapor  $< 200^{\circ}\text{C}$  @ 14 bara
- Delivering dry superheated steam
- Practical COP possible 3 - 10
- Integrated De-Superheating @ entry compressor element
- Heat of compression -> extra steam output
- Variable Speed Drive





**Atlas Copco**  
**Supporting the Transition**  
**to a Low Carbon Economy.**