
EUROPE
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Tecumseh

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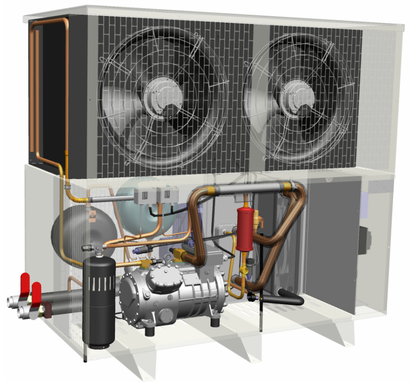
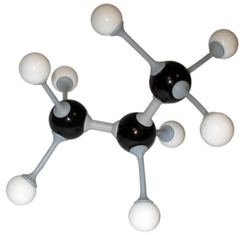
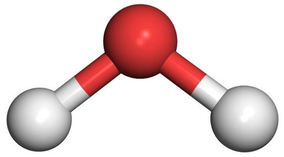
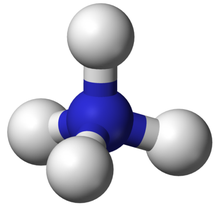
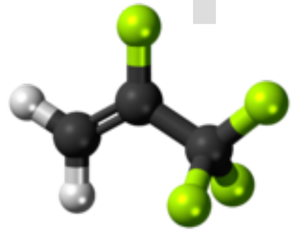
PROJECT ECOFRIENDLY MINICHILLER



Propane chiller up to 50 kW

- Safety design strategy
- Efficiency

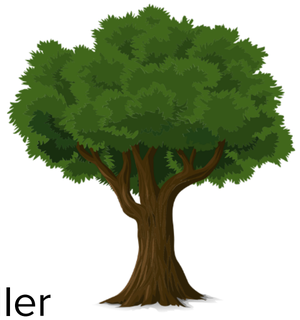
REFRIGERANT CHOICE

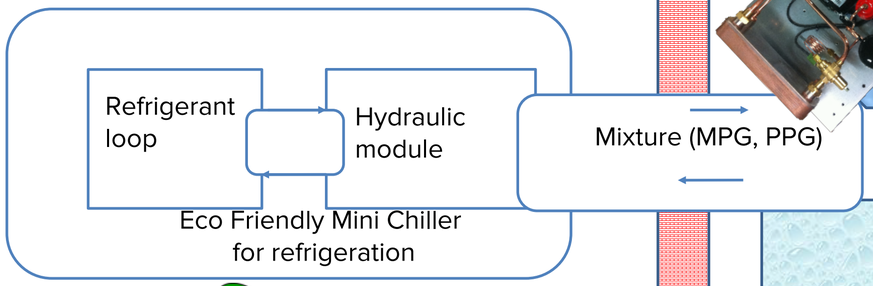
Final refrigerants	R290	CO_2	NH_3	HFOs
GWP(500)	<3	1	0	<4
Natural fluid	✓	✓	✓	✗
System complexity	✓	✗✗✗	✗	✓✓✓
Efficiency	✓✓✓	✓✓	✓✓✓	✓✓✓
Toxicity	✓	✗✗	✗✗✗	✓
Flammability	✗✗✗	✓✓✓	✗✗	✗✗

APPLICATIONS

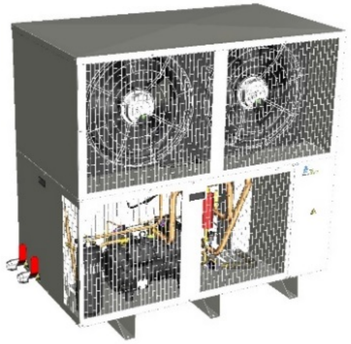
Below 50kW cooling per chiller

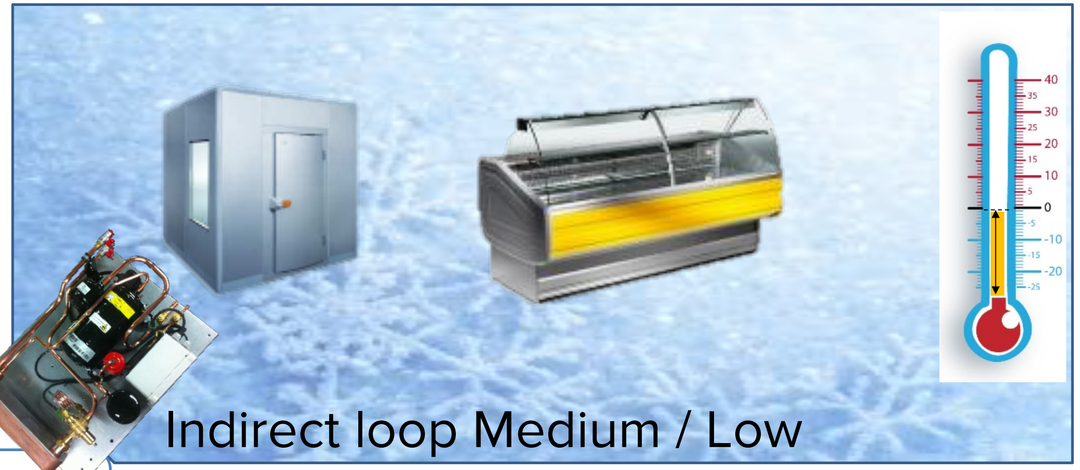


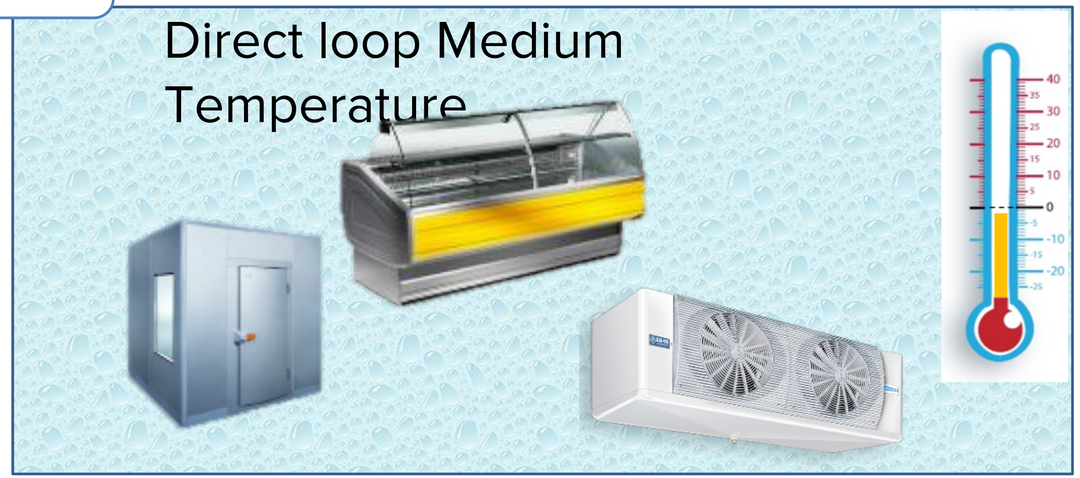
Mini Chiller



Remote Outdoor location

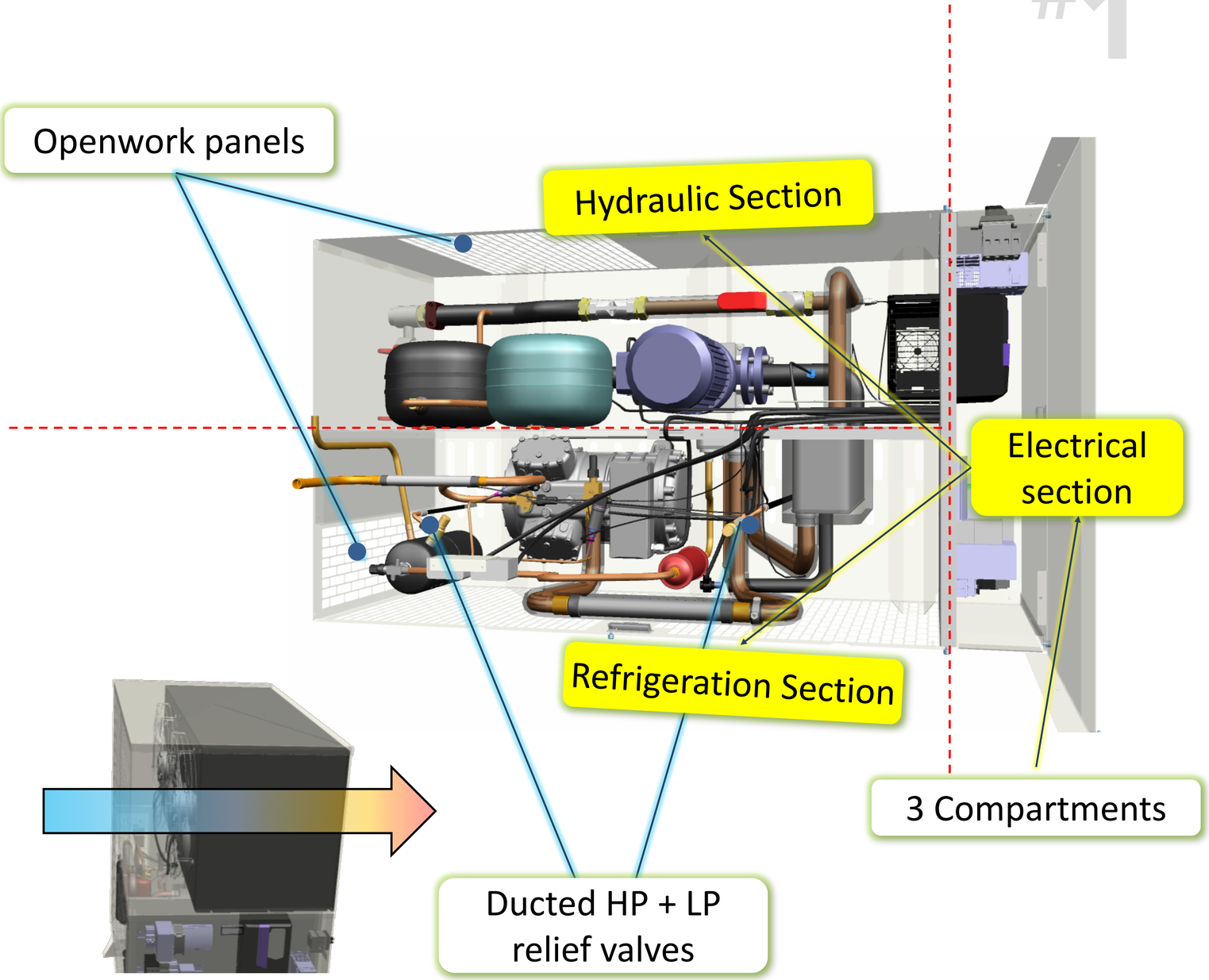






SAFETY STRATEGY

- Passive protections:
  - 3 separated compartments
  - Open panels
  - Ducted relief valves
  - Maximum Propane load = 4.5 kg
  - Sparks minimization design
    - (ex: pushed air flow)

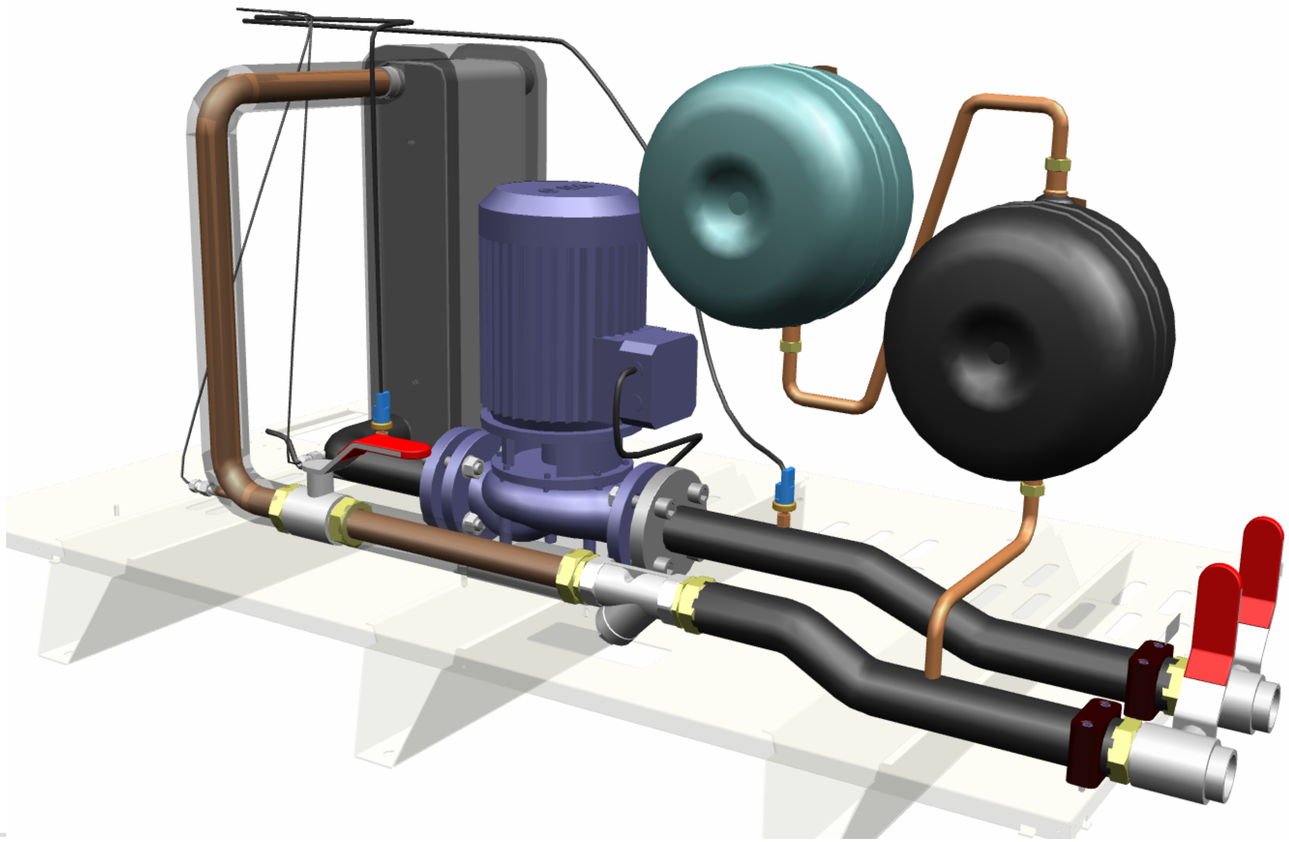


Hydraulic

MAINTENANCE SAFETY

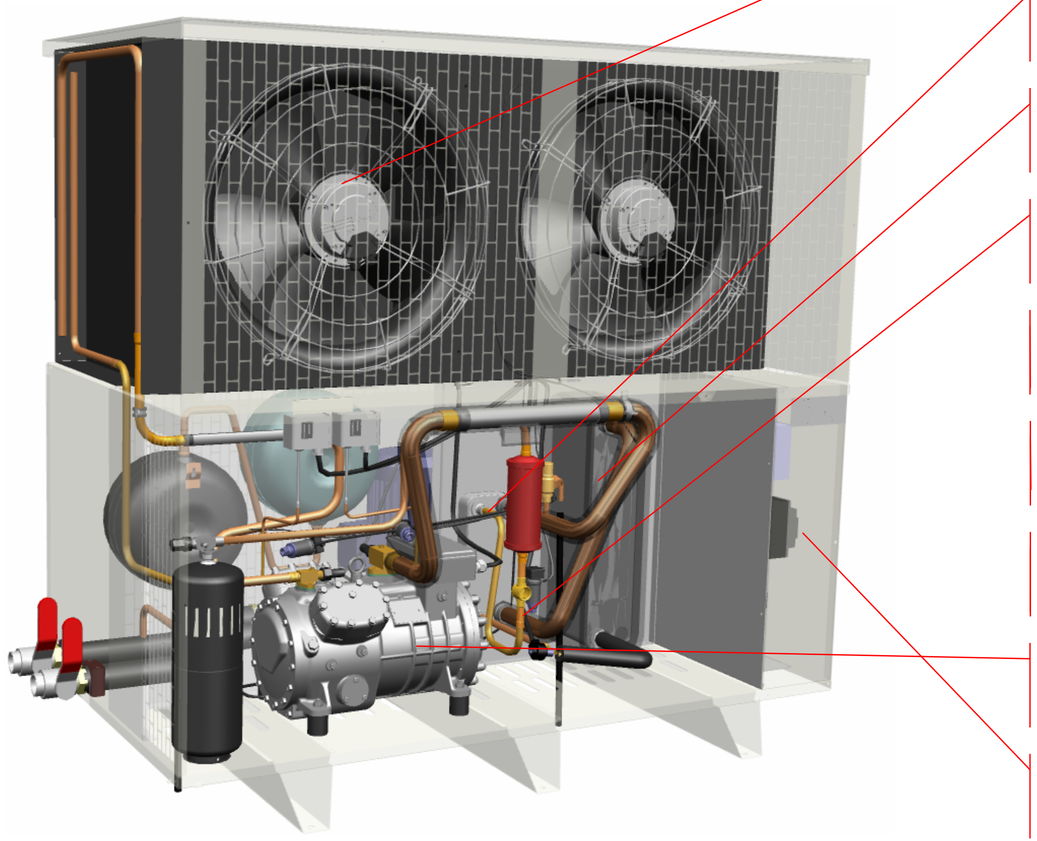
Most maintenance is on the water

- Hydraulic module
  - isolated from Refrigeration
  - Fully furbished:
    - Inverter pump (delta P control)
    - Strainer
    - 3 isolating valves
    - 6 + 6 liter expansion vessels
    - Insulation …



Refrigeration

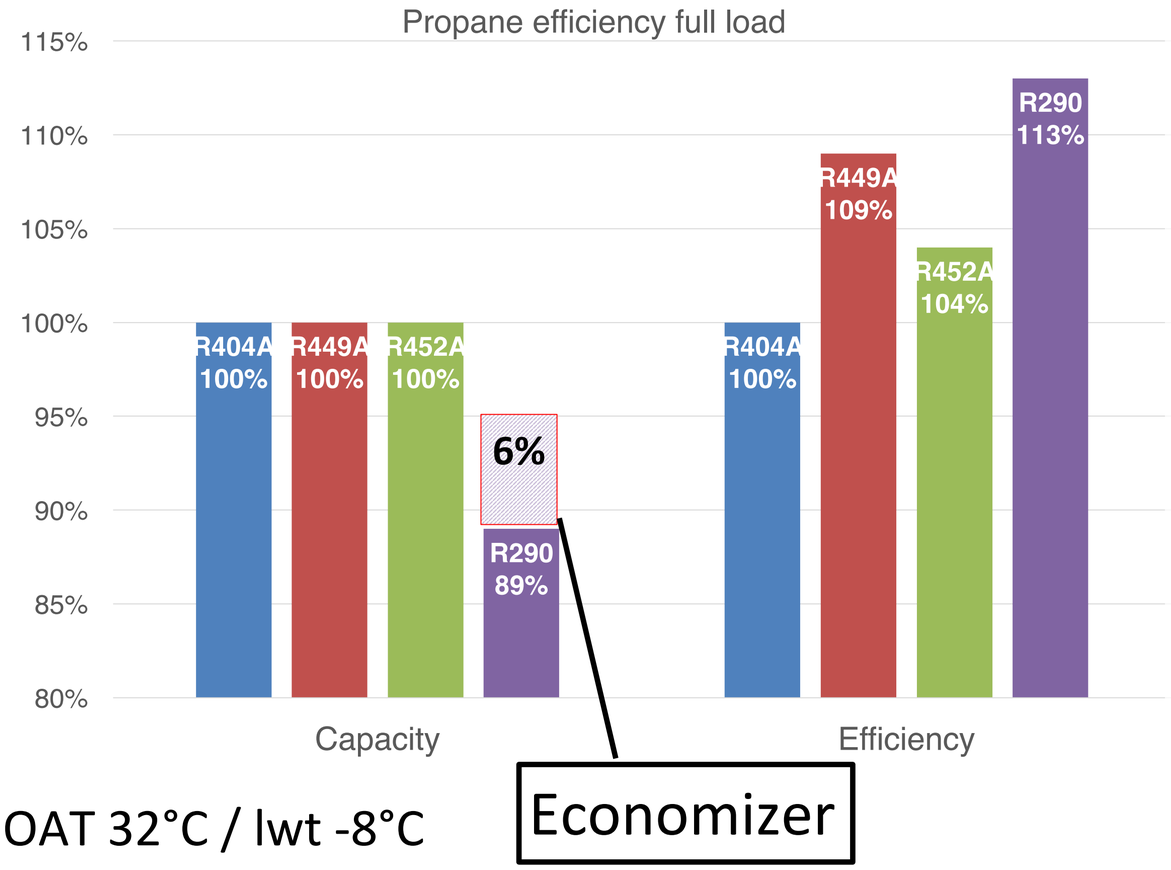
CHILLER REFRIGERATION DESIGN



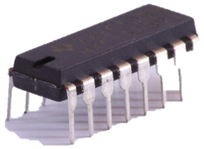
- EC fans
- BPHE economizer
- BPHE Evaporator
- Electronic Expansion valve
- Pressure + temperature transducers
- Safety valves (electrical and electromechanical)
- Ducted relief valves HP + LP
- Inverter driven compressor (25 to 87 Hz)
- PID Control

EFFICIENCY

Full Load



OAT 32°C / lwt -8°C



Part Load

- Refrigeration
  - Compressor drive
  - Variable speed fans
  - Electronic expansion valves and sensors
- Hydraulic
  - Pump drive
  - Delta Pressure control

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Thank you very much!