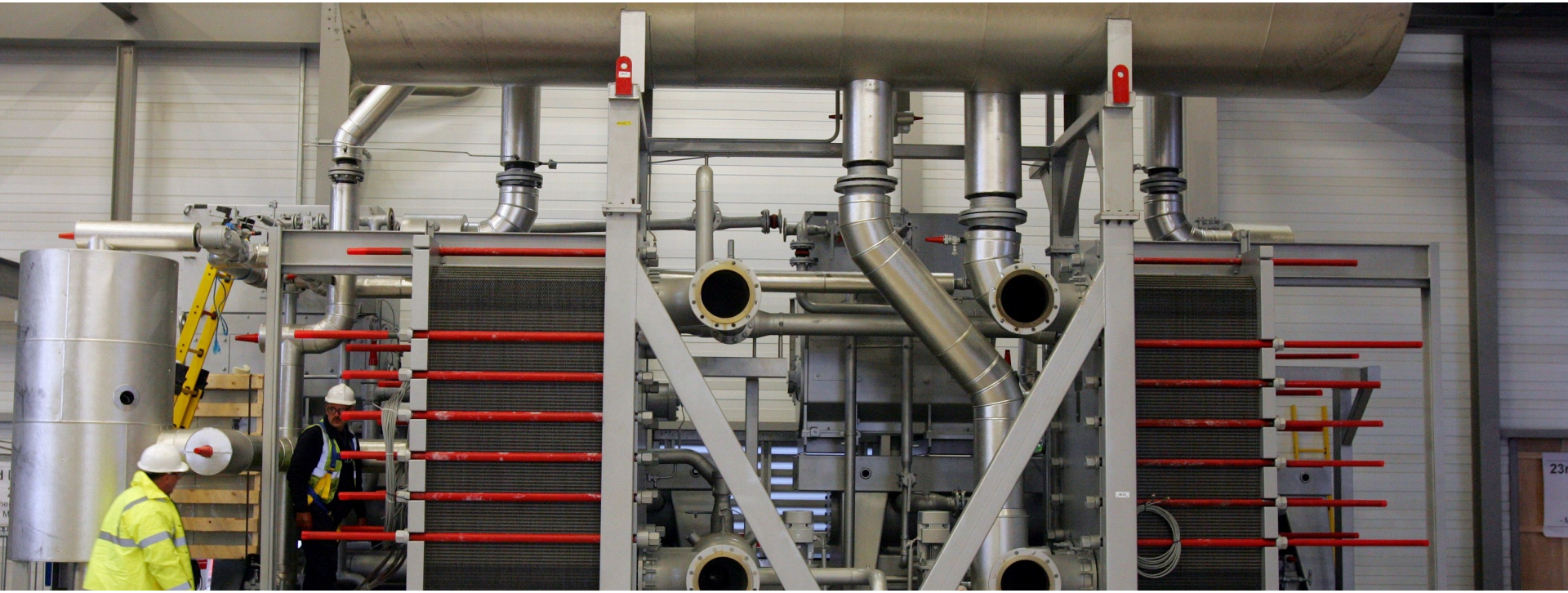
Air Conditioning Systems



Industrial Air Conditioning systems

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NH_3 as working fluid in Air Conditioning systems

- NH3 is widely used and has many advantages such as higher efficiency and green image.
- Some examples:
  - Heathrow Airport has 4 chillers installed (6.4mW each) in terminal 5, which opened in 2008.
  - Copenhagen Airport has critically charged low charge NH_3 chillers installed in their terminal.
  - Oslo Gardemoen Airport has NH_3 chillers and heat pumps installed for heating flight parking positions in winter.
  - Many cities have shopping malls with NH_3 solutions.

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- After a lot of research and site visits the project management found that the issues with the safe use of NH3 could be managed
- The yearly efficiency was accepted

PAC 283L(T) Chiller Unit Operating Data	
Design Cooling Capacity	6660 kW
Power consumption	2 x 618.4 kW
Condenser Rejection	7421 kW
Oil Cooling Duty	2 x 243 kW
Full Load Coefficient of Performance	5.38
Cooled Water Inlet Temperature	14.0° C
Cooled Water Outlet Temperature	5.5° C
Cooled Water Flow	676 m^3/h
Cooling Water Inlet Temperature	29.0° C
Cooling Water Outlet Temperature	35.0° C
Cooling Water Flow	1074 m^3/h
Oil/Motor Cooling Water Flow	2 x 38.4 m^3/h
Drive Motor (ABB 11 kV)	2 x 750 kW
Shaft speed	2970 rpm
Ammonia charge	1370 kg
Oil Charge (PAO 68)	930 kg
Operating weight	50000 kg

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Conclusion

- Depending on the need different solutions exist.
- Market already has many suppliers.
- Market for the different solutions is still growing.
- Even for penguins and polar bears it is feasible to make an Air Conditioning system.

  The picture is showing a -80°C system for pharma storage.

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Thank you !

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