

# Free Piston Stirling Heat Pump for deep freezers

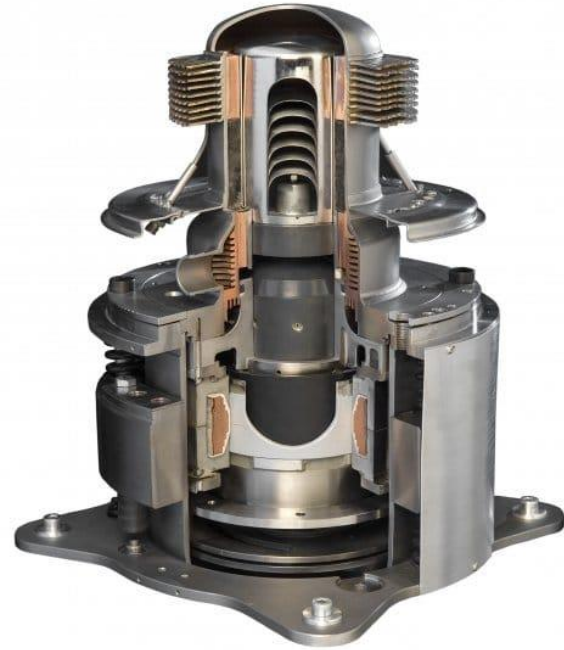
Hydro Norder, Harry Holland and Srinivas Vanapalli

Alternative to (cascaded) vapour compression

- HFC free
- Wide span in temperature range
- Modulated cooling capacity

Goal:

- Size reduction by increasing power density
- Increase frequency from 50 Hz to 100 Hz



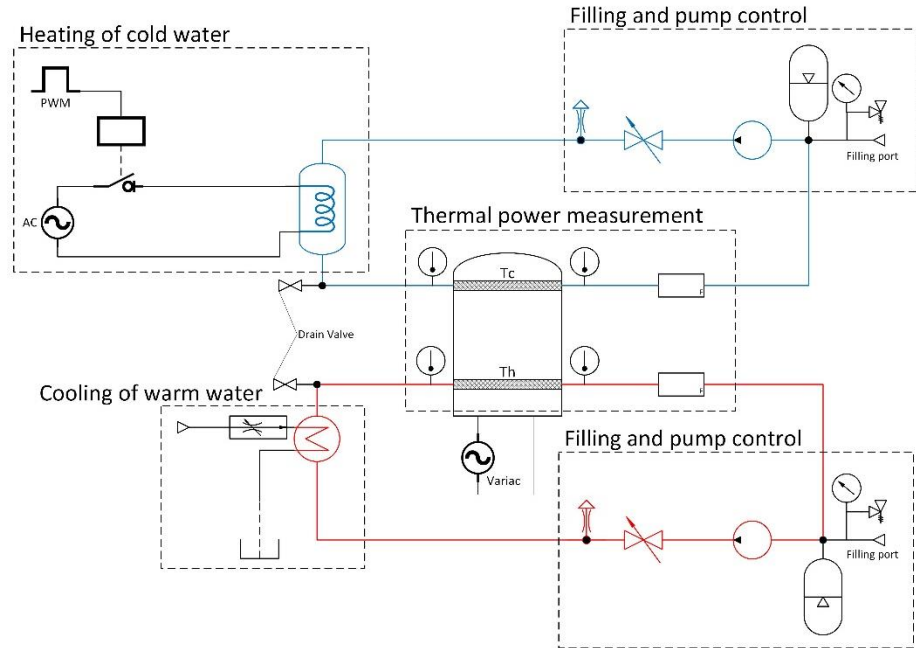
# Test rig

Controllable:

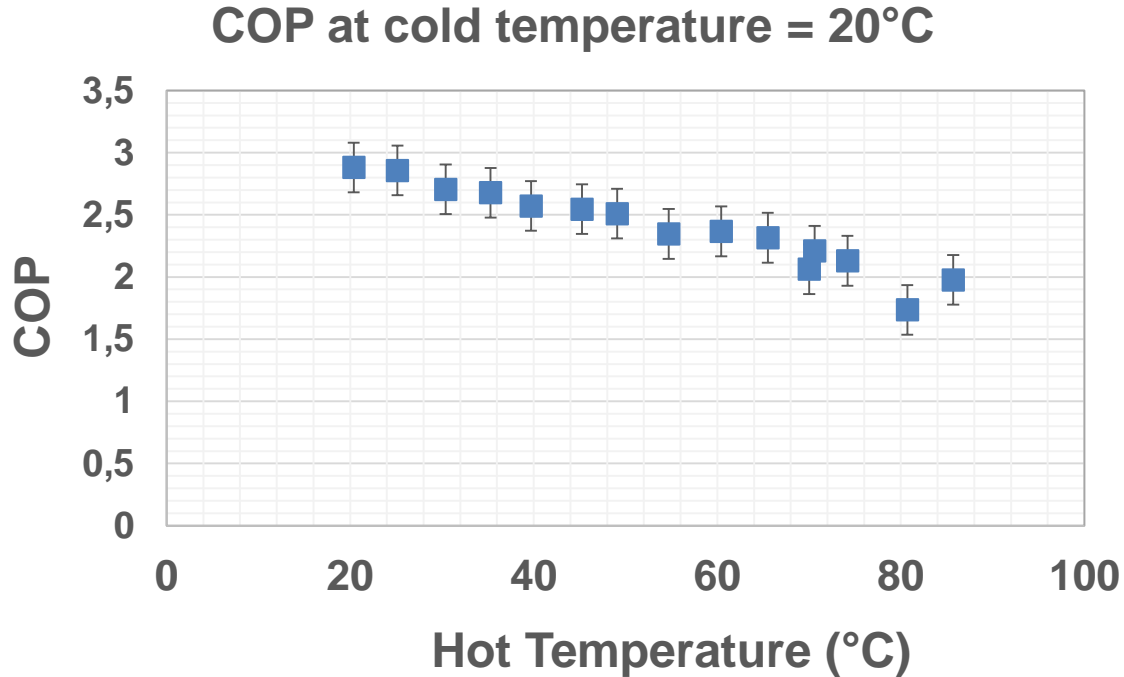
- Temperatures
- Input powers

Determines:

- Thermal powers
- COP
  
- Internal pressure swing
- Displacements of piston and displacer



# Preliminary data



- ~500 W input
- Up to 36% of Carnot COP