‘CALEBRE’: Consumer-Appealing Low Energy Technologies for Building Retrofitting

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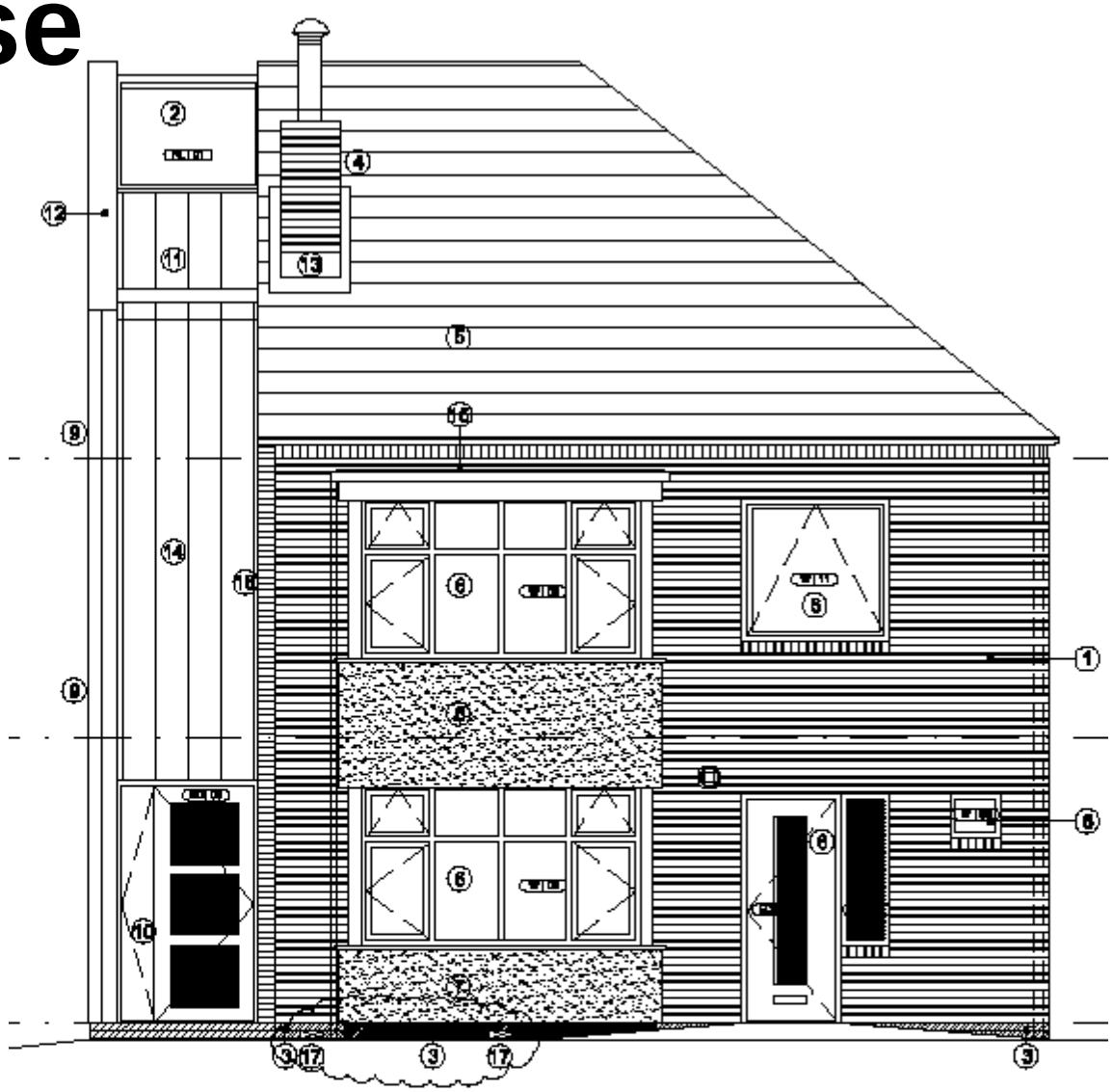
CALEBRE Project

- Funded by the EPSRC and E.ON
- Coordinated by Loughborough
- Variety of energy saving products to be retrofitted to a test house at Nottingham University, including:
  - Electric heat pump
  - Vacuum glazing
  - Nano-particle insulation
- Warwick's role is to demonstrate a gas heat pump

Test house

- 3 bedroom semi-detached house to 1930s specifications
- Testing to be carried out in the winter of 2010/2011



Previous Research

- A two-bed heat pump system has been demonstrated in the laboratory
- Plate heat exchanger adsorption generators
- Air source
- Powered by an electric heater

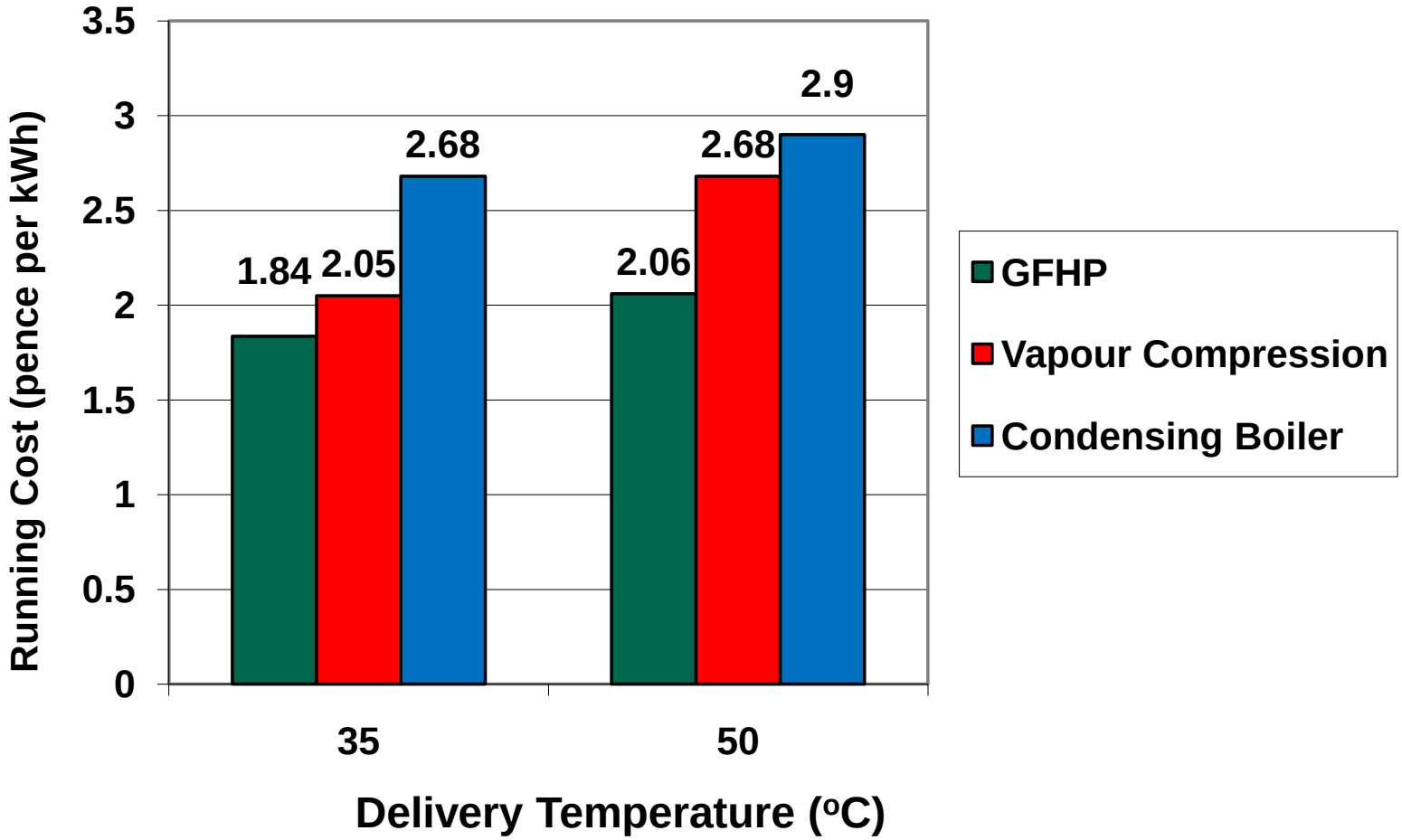
Previous Research

- COP 1.5-1.6
- Heating Power 7-11 kW

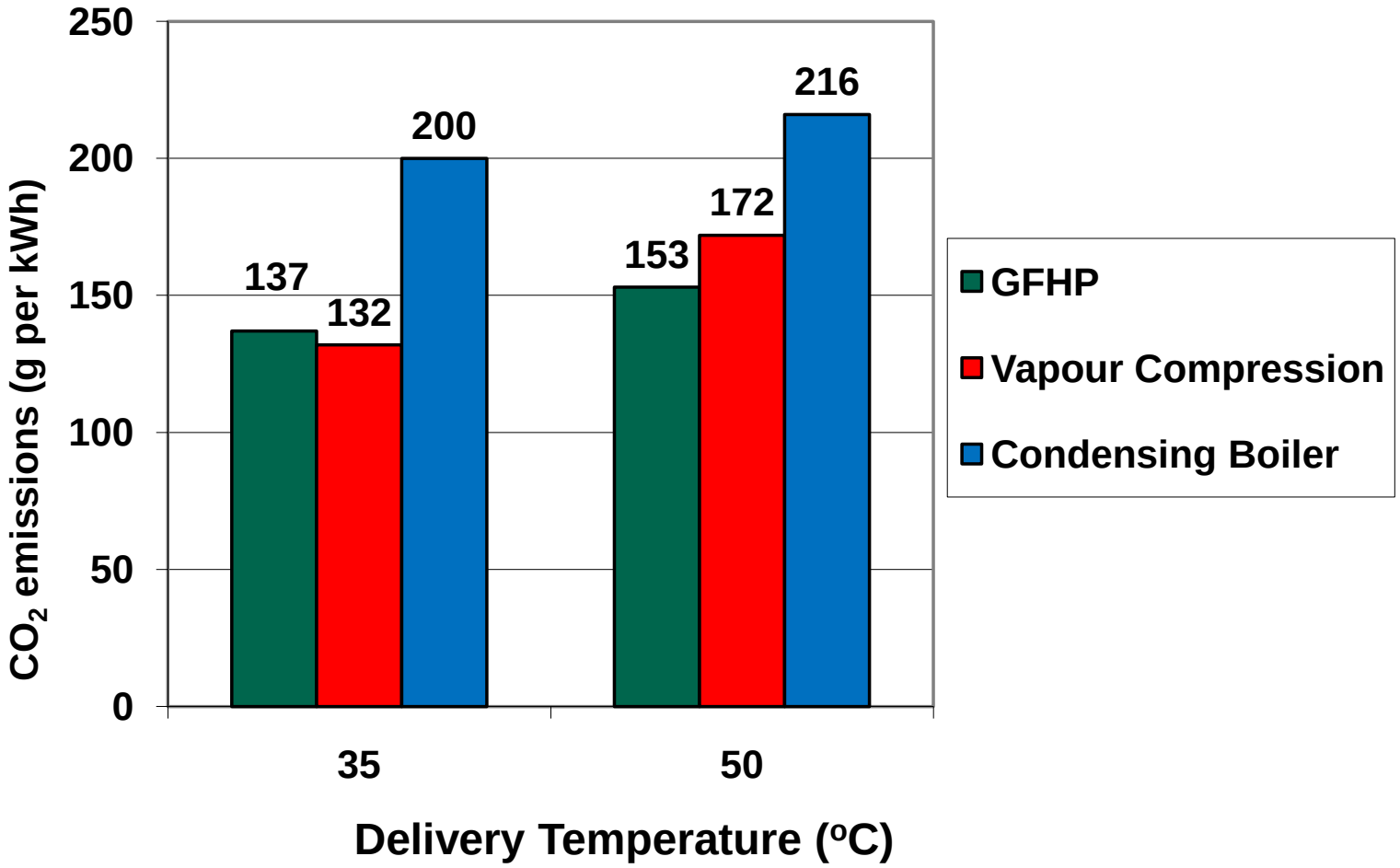
Proposed CALABRE System

- Four-bed system for high efficiency
- Nominal heating power of 7 kW for space heating and hot water
- Modelling predicts a seasonal COP of 1.35 in the Midlands assuming a burner efficiency of 80%

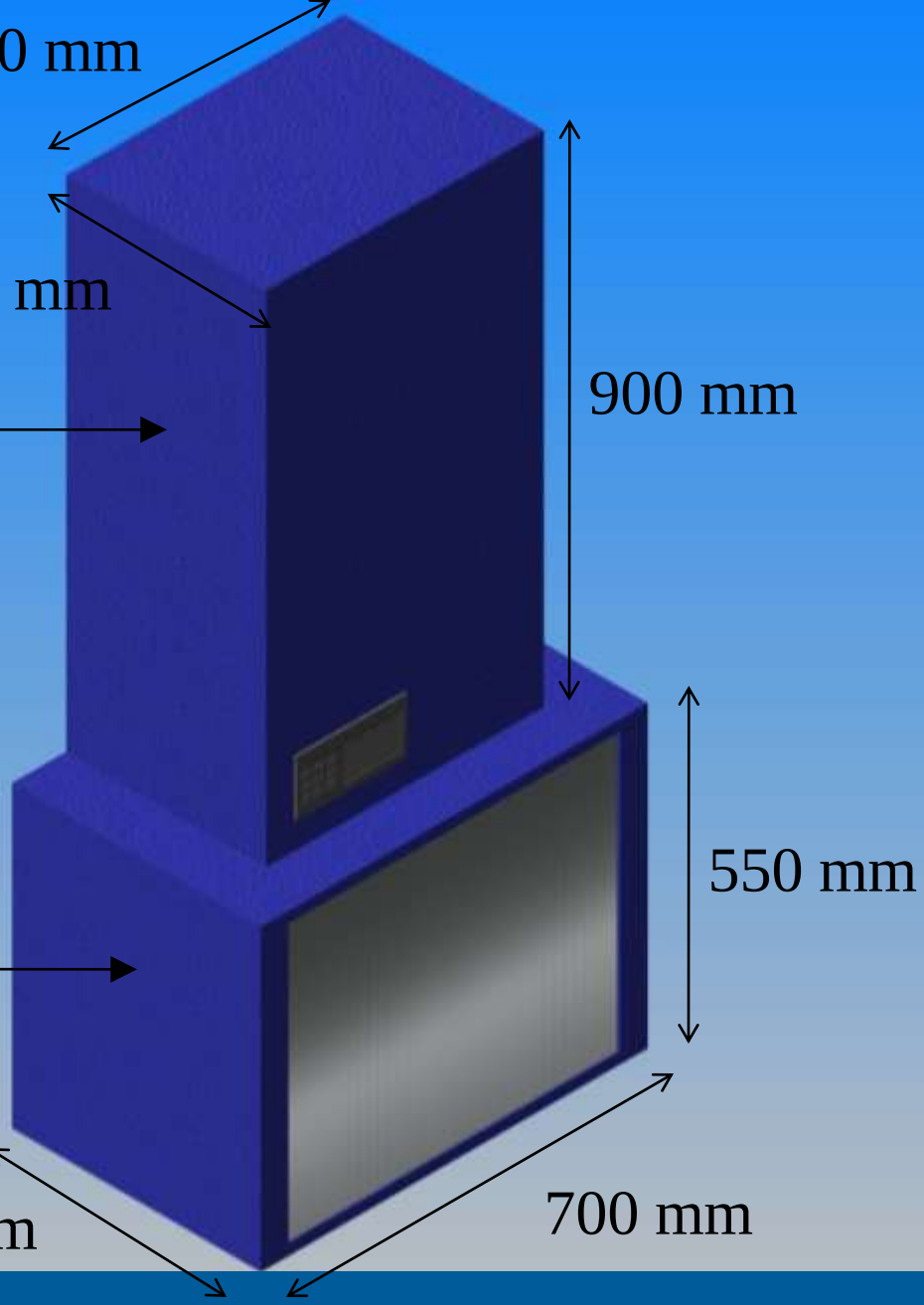
Comparison of Technologies



Comparison of Technologies



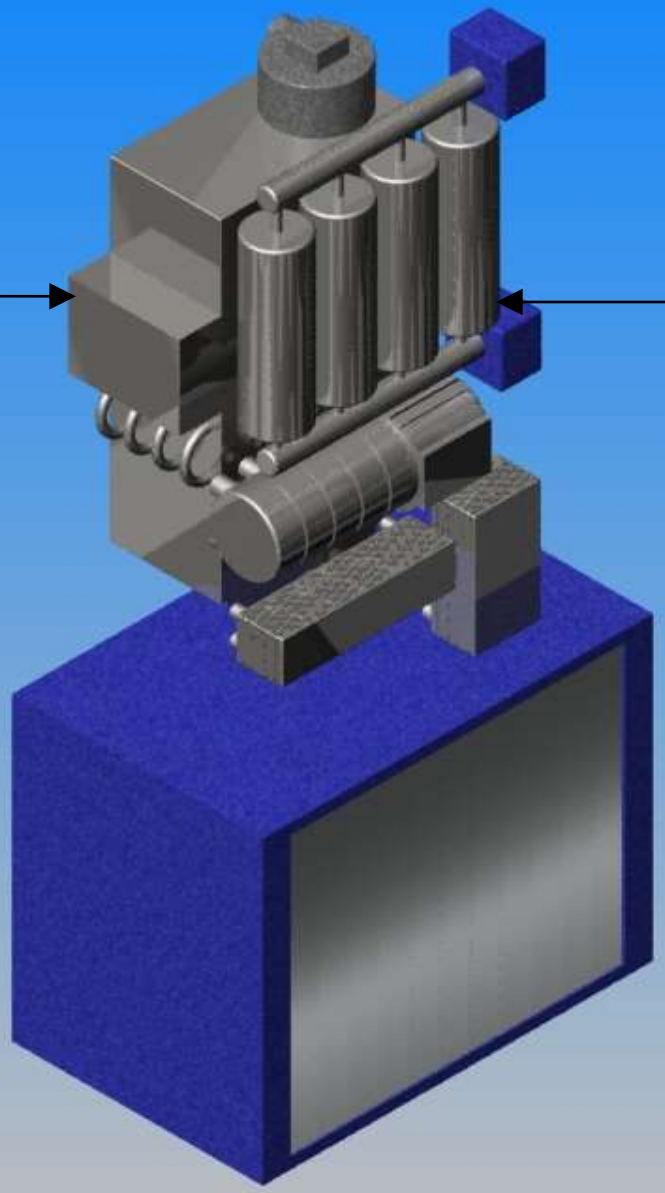
CALEBRE System



WARWICK

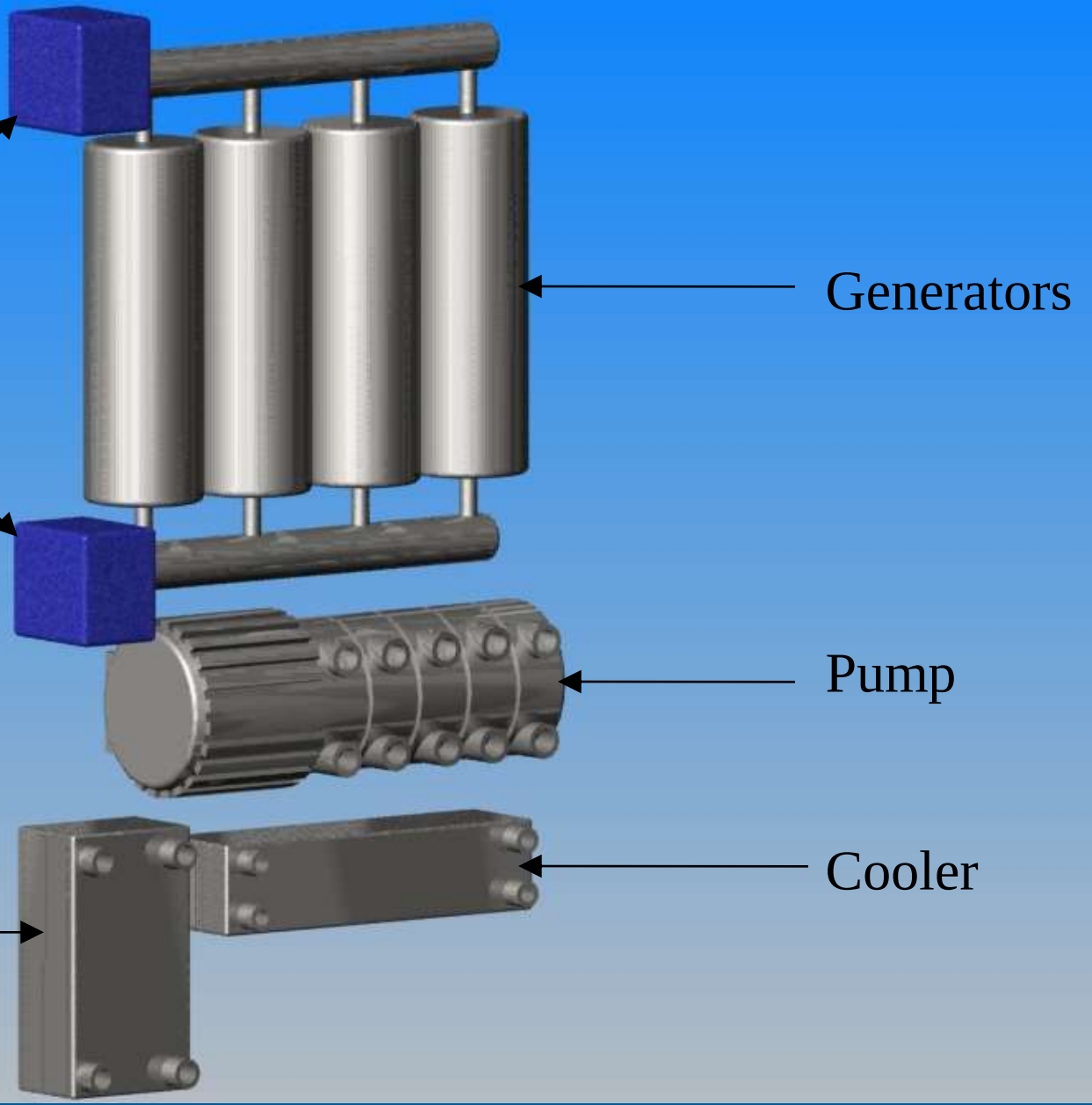
CALEBRE System

Rear Section:
Gas Burner

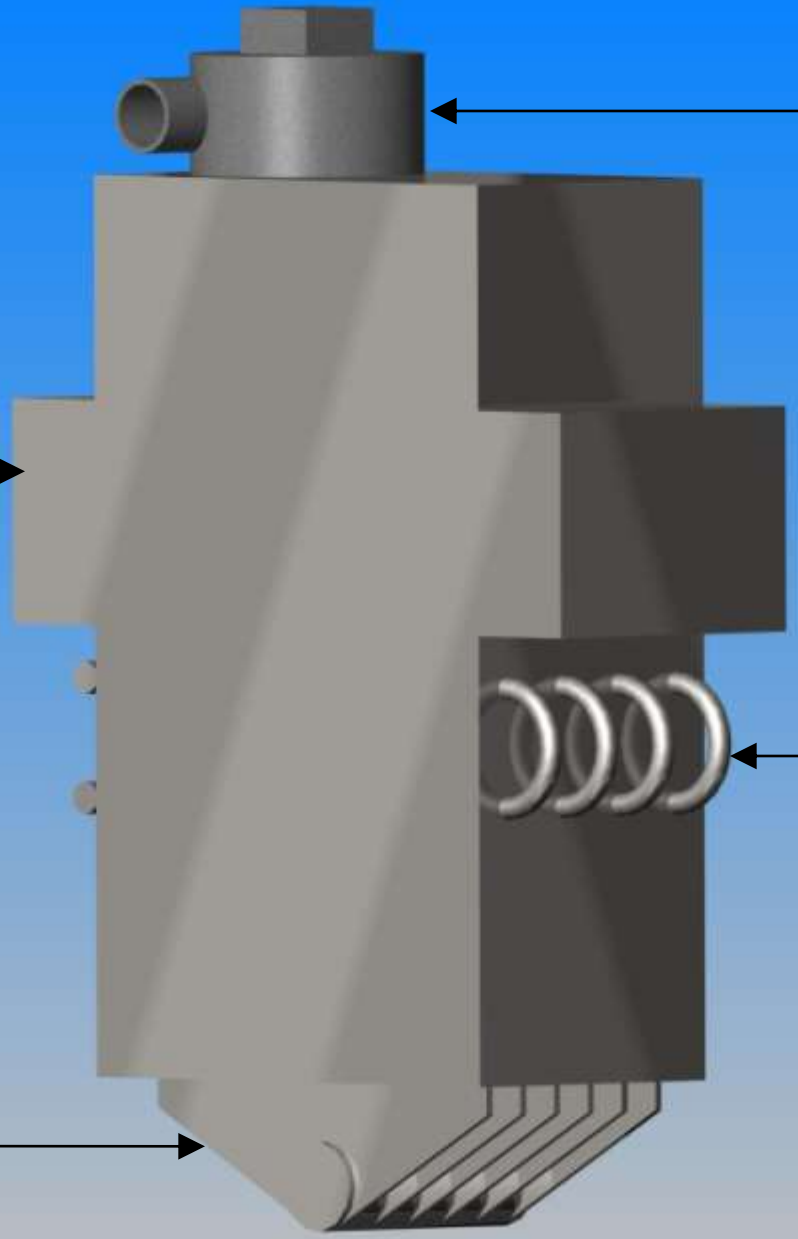


Front Section:
Adsorption
Heat Pump

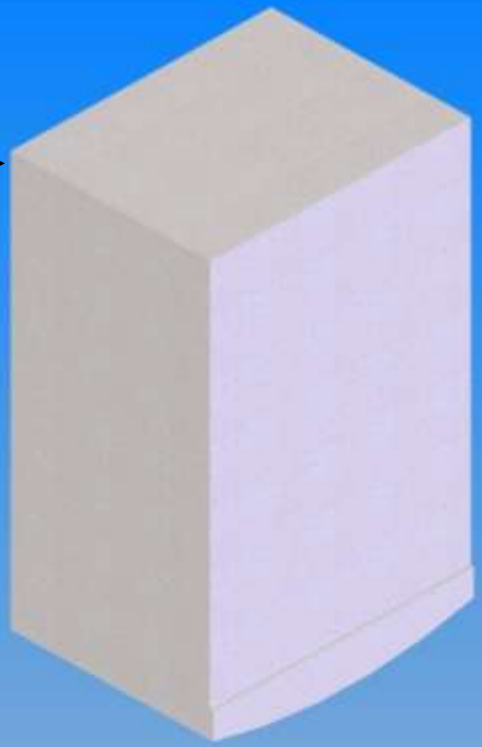
CALEBRE System



CALEBRE System



Baxi Combi 80e:
120 litres



Gas Fired Heat
Pump: 160 litres

Thank you

Questions?