WARWICK

SCHOOL OF ENGINEERING

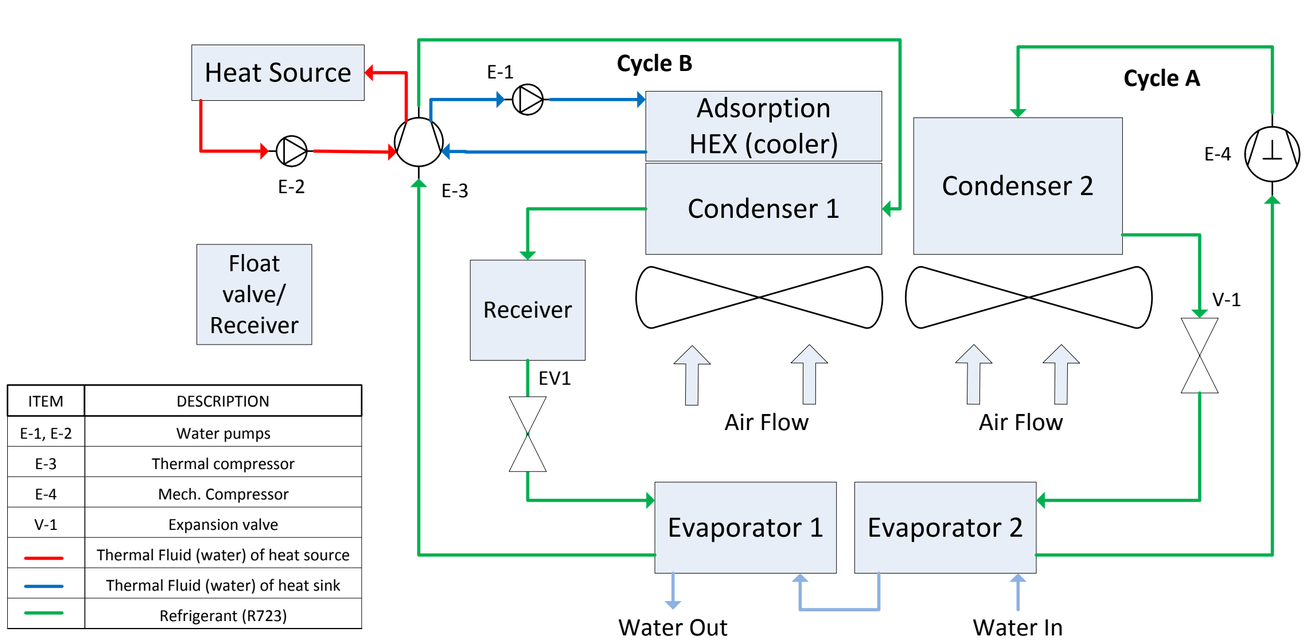
Thermal Systems Development Lab

The Thermal Systems Development Lab is used for development of novel thermal transformation technology. The lab focusses on thermally driven heat pumps and refrigeration.

Hybrid chiller using R723 refrigerant

This is a research project funded by EPSRC (EP/J000876/1) aimed to develop a novel hybrid refrigeration and heat pump system. The hybrid system uses an environmentally friendly refrigerant as R723 (azeotropic mixture: 40% DME and 60% Ammonia) The system combines both adsorption and conventional vapour compression refrigeration. The proposed cooling system is driven by dual source (heat and/or electricity) and offers high flexibility and potential energy saving.

8 kW cooling capacity prototype



ITEM	DESCRIPTION
E-1, E-2	Water pumps
E-3	Thermal compressor
E-4	Mech. Compressor
V-1	Expansion valve
	Thermal Fluid (water) of heat source
	Thermal Fluid (water) of heat sink
	Refrigerant (R723)

System layout

The thermal compressor consists of four generators with 1 kg of Activated Carbon each. The convectional compressor is a semi-hermetic from Frigopol with a nominal power of 1.1 kW. Preliminary test results have demonstrated a maximum cooling capacity of 6 kW (about 35% from heat and 65% from electricity).