RETROFITTING AIR SOURCE HEAT PUMPS
INSTALLER COSTS

Simplified Central Heating
With heat store

MCS Central Heating
With Thermostatic Control

Approximate Cost Only
Cost of Heat Pump **£3,000**
Controls **£500**
Cost of Affordable Heat Device **£130**
Total **£4,000**

Approximate Cost Only
*Cost of Heat Pump **£7,500**
Cost of Hot Water Cylinder **£2,000**
Cost of Buffer Tank and Upsize Pipes **£3,000
Thermostatic Controls **£1,000**
Upsize Radiators **£2,000**
Total **£15,500**

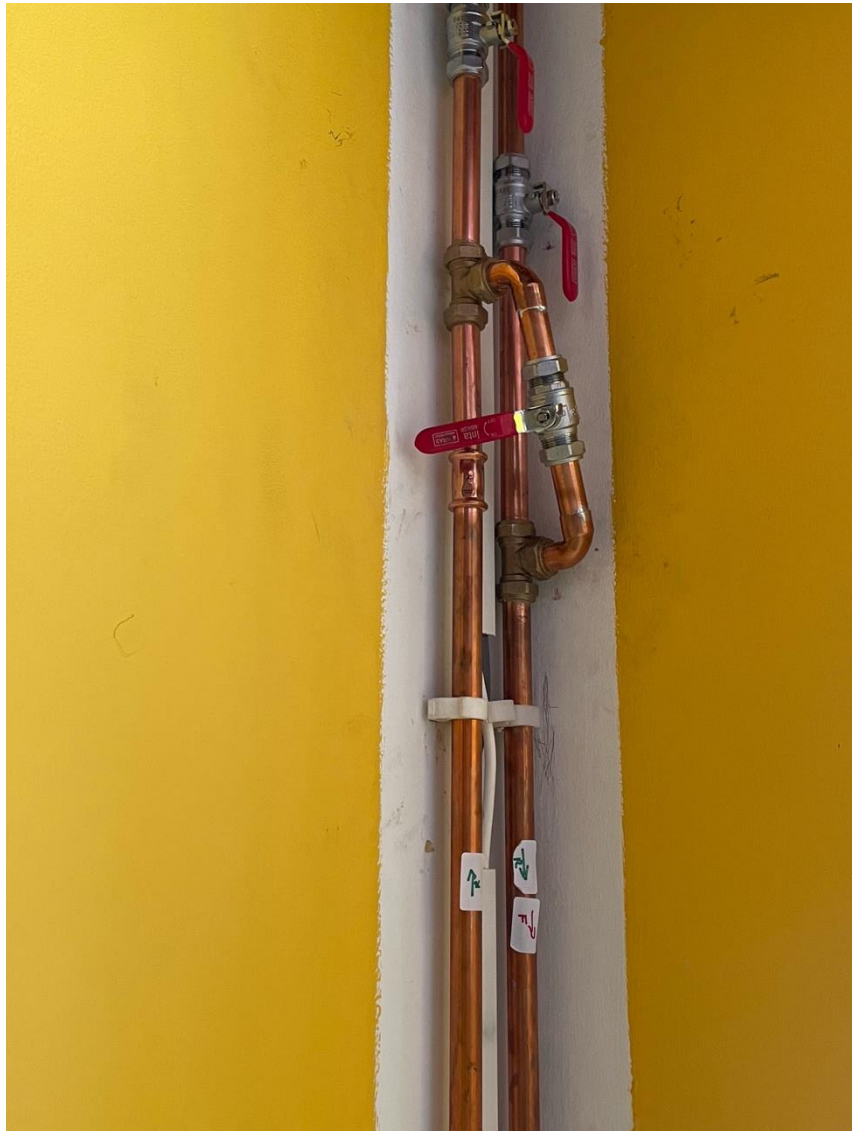
* A bigger heat pump is needed to heat hot water and radiators instead of radiators only.
**A buffer tank and upsize pipes can only be avoided if you have a hot water heat store and no thermostatic controls

Let me introduce the details of a full-scale demonstrator in a 5-bedroom home in which I replaced a gas boiler with an air source heat pump.

The existing gas boiler was retained to demonstrate the difference between a gas boiler heating system and an air source heat pump and system.

Connected to the boiler is a ”flow pipe” giving pumped hot water from the boiler to radiators.

A “return pipe” returns warm from the radiators to the boiler



I have introduced cross connections so that the heating system can work with either a boiler or an air source heat pump.

In my home there is a single flow and return but if you have multiple flows and returns, this solution works.

As the water flows through the loops, the pressure in the flow is always greater than the return.

With an open loop system you will need to reduce the flow to those radiators closest to the boiler or heat pump. The closest radiators will steal more water than they need if the flow is not reduced with a simple manual valve.

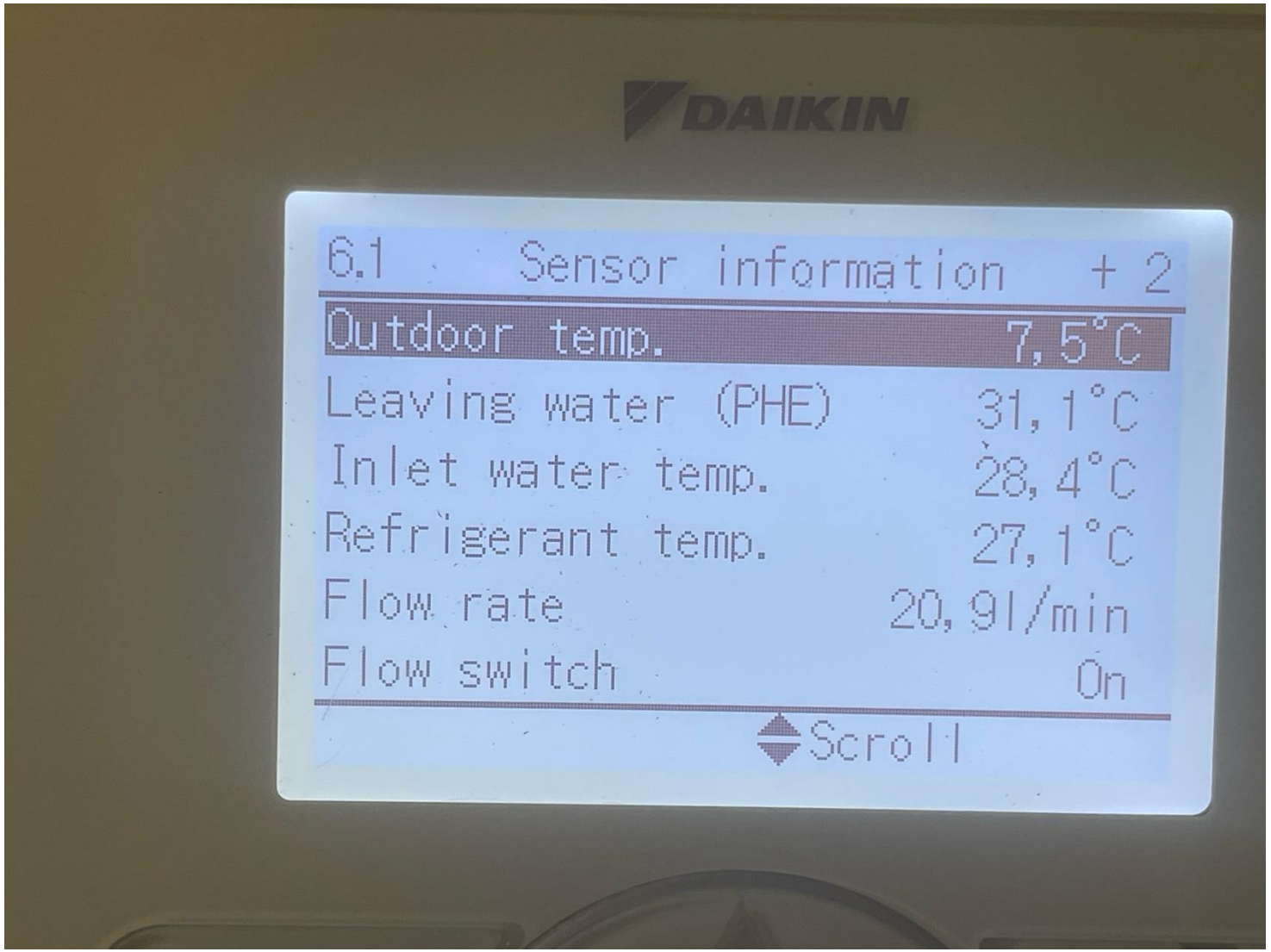
In my home there is a 15mm cross connection between the 22mm flow and return which was open for commissioning and now remains permanently closed. This forces water through the radiators at the end of the flow and return loop.

In my home each of my skirting board radiators has a valve.

You can close radiator valves in rooms you do not need to heat, but always leave at least two radiators fully open.

You should not have thermostatic valves because there is a danger that all radiator loops will close at the same time and then you will need a buffer tank.

For gas boilers there is a pre-existing design condition that at least one radiator needs to be open loop. In my trial, I found at least two radiators need to be open loop.



The heating is regulated through adjusting the water temperature output from the air source heat pump only and turning off radiators in unoccupied rooms.

The pump is currently run between 30°C & 35 °C during the day & 40°C when needed.

My Operating System

Uses efficient low temperatures in mild weather and high temperatures during short cold snaps.

I up the temperature whenever to take advantage of cheap electricity tariffs.

I avoid less efficient high temperatures every day just to heat domestic hot water.

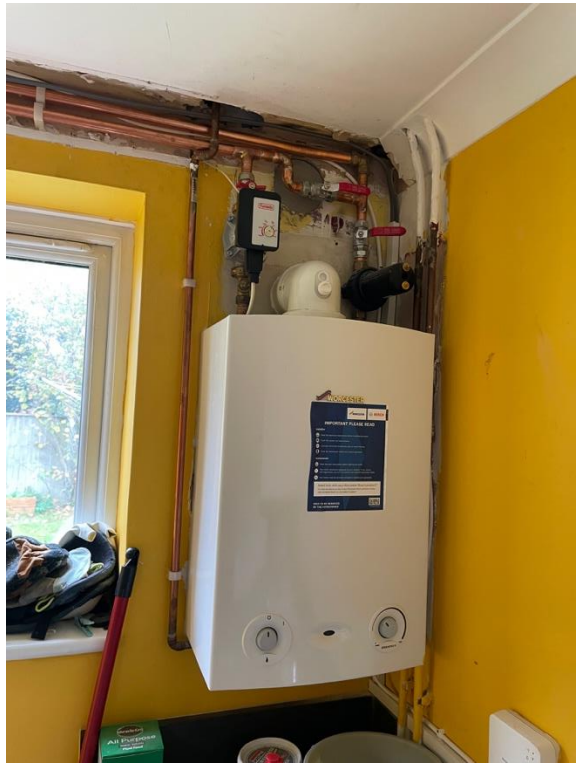
https://www.heatpumps.org.uk/wp-content/uploads/2024/11/Heat-pump-controls-guide-FINAL.pdf

My Daikin altherma low temperature monobloc air source heat pump uses R410A refrigerant which can run at a maximum output temperature of approximately 55°C

Since 2025 air source heat pumps systems now use propane (R290) refrigerant which typically provide water temperatures in the range of 60°C to 75°C (140°F to 167°F)

The typical Coefficient of Performance (COP) for an R290 (propane) heat pump providing hot water at 60 degrees Celsius is around 3.

An air source heat pump can be a direct swap for a gas boiler if and only if you install a new hot water heat store for £2,000 or convert your existing standard hot water cylinder into an affordable heat store for £130 (plus £350 if you decide to fit a new cylinder)



A modern heat pump system can replace a gas boiler system at zero additional cost.

New heat pumps using propane (R290) refrigerants began to be introduced to the market around 2024. The “tank device” to give “affordable heat stores” was patented in 2025.

Because of this:-

Buffer tanks – ARE NOT NEEDED
A new hot water cylinder – IS NOT NEEDED
Increasing the size of pipes – IS NOT NEEDED
More Radiators – ARE NOT NEEDED

We spend millions of pounds every year to support the installation of heat pumps when all that is needed today, is a practical and simplified system design and operating regime.

WINNERS AND LOSERS

Simplified Central Heating
With heat store

MCS Central Heating
With Thermostatic Control

WINNERS
Heat pump manufacturers
Non MCS Installers
Tax-Payers
Consumers
Grid Balance
Environmental Groups

LOSERS
Tank Manufacturers
MCS Installers
Thermostatic Control Manufacturers
Radiator Manufacturers
Fossil Fuel Industry