

Aqua

The Temperature
Control People.

The Aqua ProHeat Range



Heating *Redefined.*

The Aqua ProHeat Range.

Heat pumps are becoming an essential solution for businesses striving to meet their sustainability goals. If you're aiming to cut operating costs, decarbonise your heating systems, and reduce your Climate Change Levy (CCL), our Aqua ProHeat range is the smart choice.

Designed to deliver exceptional performance, Aqua ProHeat units use the latest natural refrigerants to produce hot water at temperatures up to 120°C, even in ambient conditions as low as -20°C. Whether you're heating a building, recovering waste heat from industrial processes, or replacing an outdated boiler system, our heat pumps are engineered to meet your needs.

With operating efficiencies of up to 5:1, every 1kW of heat input can deliver up to 5kW back into your system. That translates into substantial energy savings, achieved with significantly reduced fossil fuel usage or none at all, if powered by green electricity.

Heating
as high as
120°C

Cooling
as low as
-20°C



Aqua ProHeat

Unit Types

The Aqua ProHeat range includes 4 model types, as follows:



Air to water

Takes heat from the ambient air, often referred to as an air source heat pump. These units work with an external air temperature as low as -15°C.



Water to water

Heat is taken from your waste water stream and transferred into your heating system with temperatures as low as -40°C. These are smaller and more efficient than air source units.



Reverse cycle

These units can function as an air source heat pump or a chiller and have the ability to switch between the two modes of operating. Ideal for heating in the winter, cooling in the summer or cyclic testing for manufacturing processes.



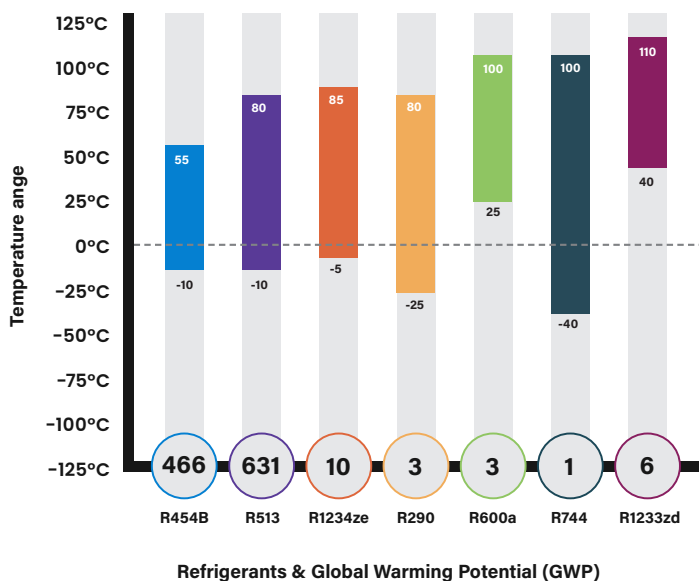
4 pipe simultaneous heating & cooling

A true multi tasker! Able to take heat from the ambient air, act as a chiller OR it can take heat from its cooling cycle and add it to the hot water stream. Plus, if you have multi circuits it can do more than one of these functions simultaneously!

Wide Range of Refrigerants

There's a choice of 7 different refrigerants, including low GWP and natural options such as **R290, R744 and R600a**.

This graph illustrates the temperature capabilities of each.



Features & Benefits

- Energy efficient design – scroll, screw, semi-hermetic or inverter driven compressor technology + EC fans
- Co-efficient of Performance (COP) as high as 5
- Intelligently controlled defrost function – guarantees hot water temperatures, important for critical processes
- Smaller footprint - a heat pump can replace your chiller & boiler
- Reduced maintenance costs
- Quick ROI

Heat your way to **net zero**. Total heat recovery.

Rather than focusing on purely removing the heat from your process and dumping to the external air, what about if you could recover it and recycle it into high grade hot water which could be repurposed within your business? The days of energy dumping are gone!

You've already paid to create the energy, so if you recover it, effectively you gain heating for free!

Here's just a few applications where heat pumps are hugely beneficial:



Food & Beverage

Cook chill and pasteurisation.



Chemical

Reaction vessels and steam requirements.



Pharmaceutical

Mixing vessels and clean room needs.



Agriculture

Grain drying, animal storage and biomass.



Commercial

Heating large spaces and direct hot water.



Why Aqua?

We have our own in-house design & installation engineering teams, meaning we can deliver your entire heat pump system from end to end.

We'll start by undertaking a detailed analysis of your existing system, using state of the art energy logging equipment. We'll then present back the difference heat pumps will make to your business, from both a financial and infrastructure point of view.

Our design team will model the entire proposed system, including fluid dynamics. Once agreed, you'll be in the very capable hands of our project management & installation teams who will bring the project to life.

Our aim is to help you accelerate your drive to net zero but in a fully transparent, hassle free way so you're free to focus on your business.

The Cascade & Booster Effect

Depending on your process temperature requirements, we can incorporate a "cascade" or "booster" effect into your heat pump system.

A cascade set up is designed to achieve temperatures in excess of 90°C. We simply replace your existing chiller – or cooling system – with a combination of heat pumps. The first unit will achieve a temperature of 50°C+, this will then be boosted by a second unit, to achieve temperatures up to 120°C. In some scenarios it's possible to achieve higher than this.

A booster is identical to the second stage of a cascade system. This is used where the temperature of your waste heat is sufficiently high enough that it just needs a boost. This is achieved by just adding a single heat pump.



Heat Pump Hire

We have heat pump options within our hire fleet, ideal if you're working within R&D, looking for a short term replacement to your boiler or just keen to avoid upfront capital investment. Equipment rental is a great way to trial a system to ensure it meets your needs. You'll get all the benefits with fixed monthly payments and service and maintenance all included.

Ice Cream Producer Scoops Benefits of Heat Pump Technology

With over 1,000 companies producing ice cream in the UK, Aqua has been fortunate enough to work on several projects within the sector over the years. Our most recent project, for a new client, involved an energy efficient re-design of their existing temperature control system.

Situation

As an artisan producer, with their own dairy herd, sustainability and quality are at the heart of their business. The production process centred around a chiller, a heat exchanger and 200kW gas boiler. This equipment provided all the heating & cooling necessary for their production line.

Ice cream manufacture typically involves blending together liquid and dry ingredients. This mixture is then pasteurised, to destroy any microorganisms, as well as helping to preserve the product and extend shelf life. Pasteurisation involves quickly heating the product to 72°C+, stabilising it for 10-15 seconds before lowering it back down to 4°C. It's then homogenised, which makes the particles very small and improves the texture, then quickly cooled. The product is rested – or aged – any liquid flavourings are added and then it's frozen. During freezing, air is added which improves product density.

We were asked to review this process for our client, to determine if any energy efficiencies could be gained and improvements made.

Solution

As a first step, our Engineers conducted a full site survey, looking in depth at the process, the existing equipment and making sure we understood their business objectives and goals.

Because pasteurisation requires heating & cooling, the customer was able to consider heat pump technology. Heat pumps are ideal for pasteurisation applications because they offer a highly cost effective, sustainable approach. They use the thermodynamic cycle to transfer heat from air, or water, which can be used for heating. So, rather than needing to generate the heat, it's reclaimed from the process and re-used.

Aqua supplied and installed an Aqua ProHeat water to water heat pump, which would take the waste heat from their process and recycle it as high-grade hot water. The unit works on R1234ze refrigerant which has a Global Warming Potential (GWP) of <7 and an Ozone Depletion Potential (ODP) of zero.

Results

By adding the heat pump, our client was able to dramatically reduce boiler usage, with it only being required at initial start-up stage when there is no cooling required. Subsequent heating requirements would be met by the heat pump. Whilst the heat pump requires electricity to run, it's a small amount and results in practically free heating. Our client is no longer dependent on gas, their process is much more environmentally friendly plus they have built in redundancy and system resilience by having a heat pump plus boiler. Should one ever fail, the other can pick up the load until repairs are undertaken.

“Heat pump technology has evolved significantly over recent years”

explains Aqua's Founder and Managing Director, Simon Davis. “Heat pumps now offer a highly cost effective, renewable approach, with our water to water units achieving up to 120°C. For this particular client we've saved them all the costs involved with running their boiler and they gain their heating for next to zero cost. The ROI with heat pump technology is so impressive and they're a fantastic option for any client that uses heating and cooling within their business.”





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Difference...



0333 004 4433



aquacooling.co.uk



sales@aquacooling.co.uk

