CLADE

DAVID LLOYD CLUBS, HARROGATE

CASE STUDY

OVERVIEW

David Lloyd Clubs, Europe's leading premium health and wellness group, has replaced is gas boiler heating system at its Harrogate club with Clade's Rowan R290 commercial air source heat pumps for the ultimate low carbon heating system. The entire system has been designed, installed, commissioned and maintained by Clade and fully financed through our funding partners, which provides Heat-as-a-Service, eliminating the upfront capital investment and servicing costs.

KEY POINTS

- **Heat Pumps:** 2 x Clade Rowan R290 air source heat pumps
- **Output:** 240kW each at 60°C flow temperature
- **Refrigerant:** R290 (Propane)
- **Controls:** PLC, cloud-connected, BACnet to BMS
- **Finance:** Heat-as-a-Service
- **Service Model:** Fully integrated design-to-aftercare delivery
- **Annual Carbon Saving:** 254 tonnes CO_2

David Lloyd CLUBS

UNDERSTANDING THE CUSTOMER

David Lloyd Clubs is Europe's leading premium health and wellness group, with 134 clubs across the UK and Europe, used by more than 800,000 members and with 11,500 staff.

The company puts sustainability at the top of its agenda: "We're as committed to having a positive impact on our environment as we are to enhancing the lives of our members. This is woven into the fabric of our business, from taking clear steps to move to carbon net zero to partnering with national fundraising campaigns like Children in Need and empowering clubs to support their local charities. We aim to always do the right thing by our members, our team and the communities we're part of."

To achieve net zero the company aims to transition energy usage from fossil fuels to electricity across its portfolio, deploying renewable technologies, before eliminating Scope 3 emissions (i.e. emissions from its supply chain). Its near-term and long-term science-based emissions reduction targets and its net-zero science-based target have been validated by the Science Based Targets initiative (SBTi).

David Lloyd Clubs actions to date have resulted in a reduction of 10,000+ tonnes CO2e. These actions include investing £20 million in energy efficient technology and utility-related initiatives, including switching to 100% renewably sourced electricity in the UK, and overhauling its heating and cooling systems. At its Harrogate, North Yorkshire club, this has seen the replacement of gas boilers with Clade natural refrigerant air source heat pumps.

THE CHALLENGE

David Lloyd Clubs in Harrogate is a large site in a residential area, with demanding heat requirements. It is home to a state-of-the art gym, indoor and outdoor tennis courts, indoor swimming pool, sauna and steam room, and a crèche, as well as a variety of studios for fitness classes.

The Club's aim was to cut 254 tonnes of carbon a year from the site by decarbonising the heating system, without any disruption to members and without any impact on the heating and hot water provision.

PREPARING THE WAY

Following the completion of the feasibility study, Clade took the design to RIBA Plan of Work Stage 4, where detailed technical drawings and specifications, including heat loads, were produced to retrofit the club with a low carbon heating system.

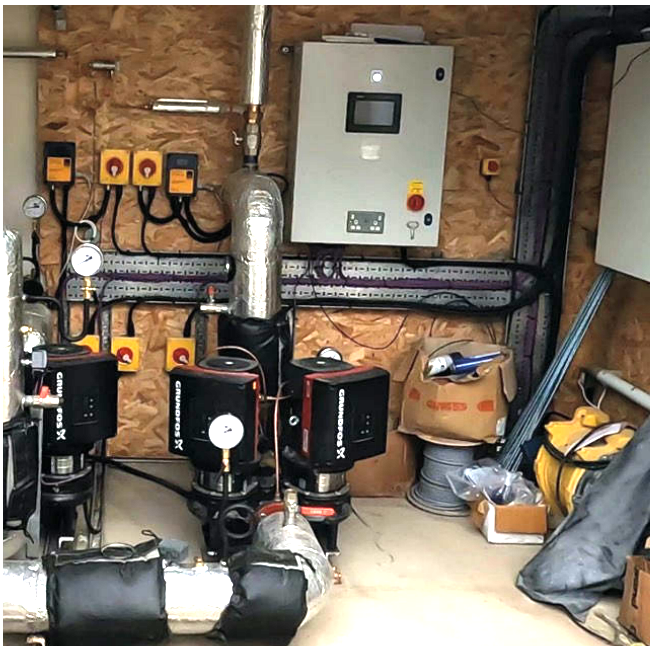
On behalf of David Lloyd Leisure Clade submitted a Distribution Network Operator (DNO) application – a formal request to connect a new load, in this case, heat pumps – to the local electricity grid. This was approved, with no upgrades required to the local grid, and planning permission was obtained.

One aspect that became apparent during this planning stage was the need to reduce the noise levels generated by the heat pumps, bearing in mind their proximity to local housing. This was readily achieved through the introduction of acoustic fencing and some adjustments to the controls to further reduce sound levels at night.

PROVIDING AN EFFECTIVE SOLUTION

To effectively decarbonise the heating system and meet the Club's goal of reducing carbon by 254 tonnes a year – the equivalent of powering around 390 average UK homes for the same time frame – two Clade Rowan R290 commercial air source heat pumps have been installed, each delivering 240kW at 60°C flow temperature, even in -5°C conditions. The system is controlled through Clade's Master Controller, which communicates with the Club's existing BMS via BACnet.

UK made, Rowan heat pumps use natural refrigerant propane (R290) for an ultra-low Global Warning Potential (GWP) of just 0.02 and an Ozone Depletion Potential (ODP) of 0.



Efficiency is further enhanced through the tracking of five buffer sensors and multiple pipework points, to avoid short cycling and give smooth, efficient performance with full visibility in the cloud.

As there are several heating circuits with different temperatures and temperature differentials at the club which have to be allowed for in the controls, a three port valve has been installed which gives great control over the temperature differential that the heat pump sees, keeping the heat pump in the best operating conditions at all time.

The Club's aim was to cut 254 tonnes of carbon a year from the site by decarbonising the heating system, without any disruption to members and without any impact on the heating and hot water provision.

> "The Clade team were great to work with, they made the process as easy as it could be and did not interrupt our club operations. We're very pleased with the heat pumps so far, they have been reliable and consistently kept the club warm. We are continuing to work with Clade to optimise the performance over the coming winter period."
>
> Lee Manley, Head of Sustainability, David Lloyd Clubs.

All the new equipment, including the Rowan heat pumps, Clade Master Controller and other ancillary equipment, have been installed in a new compound alongside a mini-plantroom on site.

The remainder of the heating system, including the air handling units, radiators and pool heat exchangers, was assessed and found to be mostly in good working order. These were therefore integrated into the new heat pump based system with minimal changes, which helped reduce costs and on site disruption to members, as well as providing a more sustainable approach by preventing product going to landfill unnecessarily.

OVERCOMING CAPITAL EXPENDITURE

Replacing a gas based commercial heating system with a low carbon electric heat pump one requires a significant upfront investment. At Clade, we have recognised this can be an impediment to organisations, even those genuinely committed to decarbonisation. That is why we have created Heat-as-a-Service (HaaS), eliminating the upfront capital investment, as well as the servicing costs.

David Lloyd Clubs has taken full advantage of this financing option, enabling them to swiftly move forward with their decarbonisation plans at Harrogate.

HIGH PROFILE CUSTOMER, LOW PROFILE ENGINEERING TEAM

The replacement of the gas boilers at David Lloyd Clubs Harrogate with Clade natural refrigerant heat pumps has not only delivered a low carbon heating system that will meet their target of reducing 254 tonnes of carbon per year, as well as providing efficient reliable heating across the site, but it has all been achieved with minimal disruption on site. Clade engineers worked quietly around club operations, maintained a tidy environment at all times, and staged the process so that the gas boilers remained operational until the new system was fully commissioned.

AFTERCARE AND ONGOING PERFORMANCE

Following project completion, the Clade construction team seamlessly handed over to our dedicated service division, who have since maintained the heat pumps and remain on standby to provide both remote and on-site support. This comprehensive aftercare is part of Clade's end-to-end value proposition, where we take full responsibility for the system's long-term performance — ensuring it operates efficiently, reliably, and sustainably. Six months into operation, the heat pumps continue to perform exactly as designed, achieving a Coefficient of Performance (COP) between 2.5 and 3.2. This confirms that the system is delivering the expected efficiency and reinforces Clade's commitment to long-term value, reliability, and carbon reduction for David Lloyd Clubs.

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