

ICG Heat Pumps: Commercial DHW Technical Guide

Specifying High-Temperature Natural Refrigerant Heat Pumps for Heavy Domestic Hot Water Loads

Executive Summary: The Commercial DHW Challenge

Generating Domestic Hot Water (DHW) in commercial environments is fundamentally different from space heating. Leisure centres, hotels, hospitals, and large residential blocks experience massive, continuous peak draw-offs. Furthermore, strict UK safety regulations (ACOP L8 and HSG274) require water to be stored and distributed at high temperatures to prevent Legionella bacteria proliferation.

Traditional synthetic refrigerant heat pumps (using R32 or R410A) struggle to meet these requirements efficiently. They typically max out at 55°C to 60°C, meaning they must rely on highly inefficient direct electric immersion heaters to push cylinders to pasteurisation temperatures, destroying the system's overall Coefficient of Performance (COP).

ICG Heat Pumps eliminates this inefficiency. By utilising advanced R290 (Propane) natural refrigerant technology, our commercial heat pumps deliver primary flow temperatures of up to 85°C, providing fast recovery times and guaranteed Legionella compliance—using only the heat pump compressor.

The R290 Advantage for High-Demand DHW

Our "Natural Refrigerant First" approach transforms commercial hot water generation, delivering high performance and low operational costs.

- **100% Heat Pump Pasteurisation:** With primary flow temperatures up to 85°C, our Midea, Euroklimat, and Clivet units can easily heat calorifiers to 60°C+ for thermal disinfection cycles without ever engaging an electric immersion heater.
- **Rapid Recovery Rates:** Inverter-driven R290 compressors provide exceptional thermal output even at elevated temperatures, ensuring storage cylinders recover quickly during peak draw-off periods (e.g., morning hotel showers or post-match leisure centre demands).

- **Future-Proof & Sustainable:** R290 has a Global Warming Potential (GWP) of just 3. Specifying R290 protects the estate from the ongoing F-Gas phase-down quotas and future refrigerant bans.
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Intelligent System Design & Architecture

DHW system efficiency is dictated by system design. ICG provides comprehensive technical support to ensure optimal hydraulic architecture:

- **Cascade Configurations for Peak Loads:** For multi-megawatt requirements, our units can be cascaded. This provides N+1 redundancy, precise load-matching, and superior part-load efficiency during off-peak hours.
 - **Optimised Thermal Storage:** We assist in designing systems that promote high thermal stratification within the DHW cylinders or thermal stores, ensuring the heat pump always receives the lowest possible return temperature to maximise its COP.
 - **Plate Heat Exchangers (PHE):** Support with specifying and sizing primary-to-secondary PHEs to ensure maximum heat transfer from the heat pump primary circuit into the DHW storage system.
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Proven on the UK's Most Demanding Estates

Our high-temperature systems are specified by leading M&E contractors for estates that simply cannot afford a drop in hot water performance. We have successfully supplied continuous-operation sites including:

- **Leisure & Health Clubs:** Supplying massive pool heating and shower block DHW loads (Including sites for **David Lloyd**).
 - **Retail & Mixed-Use Commercial:** Providing reliable, high-efficiency hot water services (Including sites for **Specsavers**). *(Designer Note: Include the David Lloyd and Specsavers greyscale logos here).*
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Uncompromising Safety & Compliance

Specifying natural refrigerants requires strict adherence to safety standards. Our engineering team holds the highest levels of certification to ensure safe, compliant plant room design:

- **HSE DSEAR Trained:** Fully trained in Dangerous Substances and Explosive Atmospheres Regulations, supporting consultants with risk assessments and safe specification of R290 systems.
 - **City & Guilds (6187-316):** Advanced qualifications in safe Hydrocarbon RAC system handling.
 - **F-Gas Certified:** Fully compliant with all UK fluorinated greenhouse gas regulations.
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The Intelligent Comfort Guarantee

Commercial hot water is a critical service; any downtime poses a severe health and operational risk. We back our equipment with our Intelligent Comfort Guarantee:

1. **72-Hour On-Site Support:** Direct, rapid-response engineering support. If a DHW fault cannot be resolved remotely, an ICG engineer will be on-site within 72 hours.
 2. **10-Day Commissioning Turnaround:** We guarantee to be on-site to fully commission the system within 10 working days of your request, keeping your handover schedule intact.
 3. **Direct Engineering Access:** Deal directly with the technical specialists who specified the system, ensuring rapid, accurate troubleshooting.
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Specify Your Commercial DHW System

Partner with the UK's natural refrigerant commercial heat pump specialists to ensure your next DHW project is compliant, highly efficient, and delivered on time.

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