



Cooling Hierarchy Statement

RAC Refrigeration Services Ltd

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At RAC Refrigeration Services Ltd, we follow a structured and sustainable approach to cooling system design, installation, and commissioning. Our work encompasses both refrigeration systems and air source heat pump (ASHP) splits, in alignment with recognised industry best practice and British Standards, including but not limited to:

- BS EN 378 Refrigerating systems and heat pumps Safety and environmental requirements
- BS EN 14511 Air conditioners, liquid chilling packages, and heat pumps Testing and rating for performance
- BS EN 14825 Seasonal energy efficiency of heat pumps and air conditioners
- BS EN ISO 5149 Refrigeration systems and heat pumps Safety and environmental requirements (ISO harmonised version)
- BS ISO 50001 Energy management systems Requirements with guidance for use

1. Avoid Unnecessary Cooling

We assess site-specific thermal loads to eliminate or reduce the requirement for mechanical cooling. Passive measures are prioritised, including:

- - Fabric improvements (e.g., insulation, glazing specification)
- - Natural ventilation, thermal zoning, and occupancy-based controls
- - Application of thermal mass and off-peak precooling strategies

2. Minimise Cooling Loads

We focus on reducing internal heat gains and maximising passive cooling potential:

- - Specification of low-energy equipment and LED lighting
- - Load shedding via intelligent scheduling and night purging
- - Design of thermal buffering systems in refrigeration applications

3. Optimise System Efficiency

Where mechanical cooling is required, RAC Refrigeration Services Ltd designs systems for maximum efficiency and integration:

- - Transcritical CO₂ refrigeration systems with floating head pressure and ejector technology
- - High-efficiency air source heat pump splits selected for seasonal performance (SCOP/SEER in accordance with BS EN 14825)
- - Heat recovery for space heating and DHW from rejected refrigeration heat
- - Integrated BMS control and energy metering for real-time optimisation







4. Low-Carbon and Natural Refrigerants

Our design philosophy supports a transition to low-GWP and natural refrigerants:

- - CO₂ (R744) and R290 prioritised in refrigeration systems in compliance with BS EN 378
- - R32 used in ASHP splits with consideration of future low-GWP alternatives
- - Full refrigerant lifecycle consideration (leak detection, recovery, reuse, or destruction)

5. Monitoring, Maintenance and Compliance

We ensure our systems remain compliant and efficient through:

- - Adherence to BS EN ISO 5149 and BS ISO 50001 for safety and energy management
- - Commissioning and leak testing in line with F-Gas Regulation and REFCOM accreditation
- - Remote monitoring, scheduled maintenance, and energy performance reporting

This hierarchy underpins every project delivered by RAC Refrigeration Services Ltd, ensuring that our systems meet performance targets, regulatory requirements, and the sustainability ambitions of our clients.