



Case study: Derwent House

Chiller installation



Situated in the heart of the city centre, Derwent House is one of Sheffield's most prestigious buildings. Recently refurbished, the building, which comprises of ground and seven upper floors, has a high-quality specification, and offers one of the most appealing working environments in the city.

Brief

To supply, install, test and commission a new chiller and all associated works situated on the roof external plant deck on the South side of the building's 7th floor level.

Summary of works provided

Following an initial survey, our team identified that the client had incorrectly specified a larger duty chiller than the existing one servicing the building. Changing to a larger duty chiller would require additional works including increasing the mains electrical supply, the chilled water primary pump flowrate and duty changes, resulting in unnecessary additional expense. In response, we provided an alternative solution, sized to match the capacity of the existing system and provide operational cost savings.

| | |
|--------------------------------|---|
| Chiller model: | Trane RTAF 190HSE LNSB |
| Refrigerant: | R134a |
| Cooling capacity: | 714 kW @ 30°C ambient, 6°C/12°C leaving/entering evaporator water temperature |
| Evaporator flow rate: | 28.42 l/s @ 36.5 kPa pressure drop |
| Pipework specification: | BS EN 10255 welded medium weight steel tube |

Client

Trident Building Consultancy

Sector

Commercial property

Location

Sheffield

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Although the existing chiller plant had not reached the end of its indicative life cycle, it was defective, unreliable and inefficient, and the building management team had made the decision to replace it to benefit from improved reliability, energy efficiency and reduced running costs.

The replacement chiller was to be installed and commissioned within a maximum timeframe of just seven working days from the removal of the existing chiller plant, to minimise downtime and disruption to the building's tenants.

To meet these tight deadlines, before work started, our team commissioned prefabricated welded steel pipework sections, that would connect the new chiller to the existing system pipework. They also liaised with the local council, to have the road closed and parking suspended to allow a crane lift to take place.

Our team positioned anti-vibration mounting points on the chiller base, to

allow it to be safely crane lifted into its precise location and facilitate the installation of the prefabricated pipework transition sections.

The new chiller plant has a European Seasonal Energy Efficiency Ratio (ESEER) of 4.54 at Eurovent conditions, with inverter driven compressors to provide favourable running conditions. With immediate effect, this has resulted in reduced electrical energy consumption and created significant ongoing operational savings.

The new chiller system has an estimated life cycle of 20+ years, providing peace of mind for the building management team.

Outcomes

4.54

European Seasonal Energy Efficiency Ratio

>20 years

life cycle

reduced ↓

electricity consumption

increased ↑

operational savings

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