Case Study

CASE STUDY: Data Centre | **PROJECT: Thermosyphon chiller**

DATA CENTRE BANKS ON STAR FOR COOL SOLUTION

Customer:	**Confidential**
Location:	**Confidential**
Equipment:	**4 x IT Thermosyphon chillers**
Refrigerant:	**R134a**
Capacity	**4 x 1,100kW**

Star Refrigeration has installed a bespoke cooling system at a UK data centre operated by a major financial institution for retail and commercial banking.

A world leader in cooling and heating system innovation, Star replaced an existing R22 refrigeration plant with a highly energy efficient, low maintenance solution. Star has provided the banking client with a state-of-the-art data centre cooling system designed for low carbon, cost saving operation.

Operating as a data centre since 1990 in a confidential location, the building features two main data halls each with independent power and cooling infrastructure. Earlier this year IT and computer server systems in one of the data halls were being replaced as part of a major refurbishment programme.

Elevated air temperature within the refurbished hall due to the new server equipment demanded a new cooling system with a total capacity of 4,400kW.

The existing plant had a total cooling capacity of 2,700kW and operated on R22, an ozone-depleting HCFC refrigerant currently being phased out by EU regulations.

The new cooling system features four 1,100kW chillers operating on synthetic refrigerant R134a. The innovative design incorporates revolutionary oil-free Turbocor compressors, with variable speed drives and high efficiency at full and part load. The chillers also feature an air-cooled refrigerant circuit configured for thermosyphon operation to provide “free cooling” when possible.

Inside the plant room - Star's high efficiency chiller package for data centre cooling

Star Refrigeration’s Director of Sales – Process, Alan Walkinshaw, says: “Power consumption in data centre’s has quadrupled by some estimates over the last decade. Operators are increasingly looking to reduce energy usage by IT and associated building support systems such as cooling.”

He adds: “In this case our banking client wanted a cooling solution with up to date technology, high efficiency and minimal environmental impact. The solution we adopted was an innovative design using revolutionary Turbocor R134a compressors and an air-cooled refrigerant circuit. The system is configured to provide free cooling by automatically switching to thermosyphon operation for much longer periods than the previous system.”

Additional AHUs (air handling units) to deal with the increased heat load were mounted on the perimeter of the data hall to maintain room air at a supply temperature of 22°C. A new exterior deck was built alongside the existing plant room to accommodate flatbed air-cooled condensers.

The condenser features variable speed EC fans for low noise operation and maximum efficiency, with epoxy coated fins for longevity. The chillers are fully packaged to minimise potential for refrigerant leakage, with welded steel piping and bellows seal valves.

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