

Skandia chooses Turbomiser chillers for UK headquarters re-fit

Global financial group saves thousands of pounds a year, with double chiller replacement at UK headquarters. **Andrew Bailey** reports

■ A major chiller replacement project at Skandia's landmark building in Southampton will save the global financial services company an estimated £20,000 a year in energy costs.

The company has replaced two existing chillers operating on R407C refrigerant with ultra-efficient Turbomiser machines, manufactured by Italian company Geoclima and supplied by UK distributor Cool-Therm (UK) Ltd.

The units are delivering immediate energy savings and a high quality working environment for the company's 1000 plus headquarters staff. The chiller replacement is part of a major upgrade by Skandia of its facilities in Southampton.

The three year project has involved investment in new IT systems, building modernisation, and a drive to cut carbon emissions and improve energy efficiency.

The project involved replacing two original screw compressor-based chillers with new 1.05MW Turbomiser units, based on oil-less magnetic bearing centrifugal compressors.

One of the existing units was a free-cooling chiller, requiring the building's entire chilled water system to be filled with 25 per cent glycol to minimise the risk of freezing. This required in excess of 20,000ltrs of glycol.

The previous free-cooling approach also relied on significant inputs of pump and fan power, and reduced the efficiency of heat exchange in air handling units and fan coils around the building.

Because of the exceptional energy performance of Turbomiser technology at all seasonal conditions, it was possible to overcome the need for an expensive glycol-based system – while achieving improved performance and efficiency.

The Turbomiser is a new type of "ultra efficient" chiller that delivers exceptional energy savings and reduction in carbon emissions, while ensuring high quality comfort for building occupants.

It achieves this by harnessing a combination of several innovative technologies, which together deliver unprecedented



energy savings. These include:

- Inverter-controlled Turbocor compressors whose output can be precisely matched to load;
- Micro-channel aluminium condensers, that reduce refrigerant charge while increasing the effectiveness of heat exchange;
- Flooded evaporators that ensure optimum energy transfer between refrigerant and water;

- Use of a liquid refrigerant pump system that significantly increases thermodynamic efficiency across the chiller's operating range;

- Speed control on fans to match performance to demand and reduce energy consumption;

- A sophisticated chiller control system that integrates with that of the onboard compressor control to optimise performance of the whole system.



Skandia's landmark building in Southampton is served by two rooftop-mounted Turbomiser chillers

The new chillers will save some £20,000 a year in energy costs

As a result, Turbomiser requires between a third and a half of the energy used by conventional screw or reciprocating chillers.

The chiller replacement was required following performance problems and breakdowns in the previous installation. An investigation showed that pipework modifications since the original system was installed had resulted in the two chillers working against each other. The project required rectifying pipework layout to stop conflicts, and removal and replacement of the chillers.

An important design issue for the chillers was to ensure that all pipework connections were positioned and engineered to the millimetre, to match those of the existing installation and enable rapid and effective replacement.

To achieve this, one Turbomiser chiller was designed as a left-handed unit and the other as a right-handed unit – to dovetail with the existing building services design.

Control panels for the chillers were designed and engineered with equal precision, to ensure that when craned into position they were accurately located inside roof-top plant rooms, making service and maintenance activities easier and safer.

Given the coastal location, the micro-channel condenser coils in the roof-top mounted units are epoxy coated to protect against the corrosive effects of maritime air.

The chillers, painted in a bespoke colour (RAL 9018) to match the architecture of the building, are also equipped with side screens to protect against incursion by nesting seagulls.

The change-over on the top of the nine-storey city centre building required meticulous planning. The lifts took place in full view of the public and adjacent local government offices.

Ralph Birch of Prima4, who project managed the operation, said: "Given the location and scale of the task, it required



One of the replacement Turbomiser chillers is lifted into position on the rooftop



a lot of detailed planning teamwork. It was a truly collaborative project, with all parties contributing to the successful end result."

Ken Strong, managing director of CoolTherm, said: "We are delighted that a world-class company such as Skandia has put its faith in Turbomiser. Following recent successful installations at The Hilton, Stansted, and The Dorchester in London, this project is further proof of the growing impact of Turbomiser technology on the UK market.

He added: "I have no doubt that as energy costs rise and pressure on companies to adopt sustainable solutions increases, Turbomiser will become the chiller solu-

tion of choice across a growing range of applications."

Skandia has a track record in pioneering approaches to energy and building services.

For many years it has been a key player in Southampton's groundbreaking district energy scheme. This provides high efficiency heating and power to large public and commercial buildings across the centre of the city, powered by a 5.7MW combined heat and power engine.

The scheme overall saves some 200,000 tonnes of carbon dioxide a year, and provides low cost energy to a substantial proportion of the city's large buildings.