



New cooling solution reduces costs and protects masterpieces

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Danfoss Turbocor Compressors are part of new cooling solution which saves the National Gallery in London €18,200 a year in energy costs. And on top of this, the highly efficient compressors help protect valuable masterpieces too.



The electricity meter at the National Gallery in central London has slowed its pace lately. A new cooling solution containing four Danfoss Turbocor Compressors has cut a big chunk off the gallery's annual energy bill. Being much more efficient at part load capacity compared to equivalent compressors, the Turbocor compressors have contributed significantly to energy reduction in the new so-called TurboChill system.

"The TurboChill is giving us enhanced reliability and energy performance. The first chillers installed have saved us approx. €18,200 over the last year compared with the R22 chillers," says National Gallery Head of Technical Services, Steve Vandyke.

Helping to protect masterpieces

The gallery was on the lookout for a new cooling solution, because the refrigerant R22 (Chlorodifluoromethane) has to be replaced in Europe as a whole by 2014. The requirements of the new system were quite stringent because the gallery houses one of the largest art collections in the world which dates from the 13th to the 20th centuries and includes many famous masterpieces. Therefore tight control of temperature and humidity were critical. The task fell to British air-conditioning manufacturer Airedale with their innovatively designed TurboChill units which consist of chillers built around the oil-free centrifugal Danfoss Turbocor Compressor.

"We undertook an independent study of the market place and Airedale was the only one that ticked all the boxes in terms of footprint, build quality, new technology – such as the centrifugal compressor – and high efficiency," says Project Engineer Martin Goswell, mechanical consultant from the company Troupe, Bywaters and Anders, which has worked for the gallery.

Four TurboChill units have already been installed on the rooftop of the National Gallery and they supply cooled water to a primary circuit. Two more units will be operational in 2011.

Facts about Turbocor compressors:

The Danfoss Turbocor is one of the first compressors to be used in air-cooled applications. It can reduce up to 35-50 percent of the energy consumption in systems in commercial buildings. The centrifugal compressor contributes to a smaller energy bill thanks to its high efficiency. It works without using oil as a lubricant. Instead magnetic bearings replace the oil. This reduces the friction losses making the compressor more efficient. The oil-free operation also reduces complexity while at the same time cutting costs.

Photo to the right: In central London, the National Gallery is saving energy with a new cooling solution containing compressors from Danfoss Turbocor.



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