



DESIGNING INNOVATIVE SOLUTIONS

United Technologies

OFFICE BUILDING SOLUTIONS

Customer

**CITI, BANKING
AND FINANCE**

Location

**LONDON,
UNITED KINGDOM**

Equipment running since

July 12



Carrier brings new levels of energy-savings through an innovative solution based on converting fixed speed centrifugal chillers to variable speed units.

Carrier delivers energy-saving chiller retrofit for Citi's prestigious London headquarters

Project

In their efforts to help customers manage energy consumption and operational costs, Carrier engineers added Greenspeed® intelligence for Variable Speed Drive (VSD) functionality to two Carrier AquaEdge™ 19XR5 centrifugal chillers serving Citi's UK headquarters at Canary Wharf, London. Power use was monitored before and after deployment of Greenspeed® intelligence, demonstrating substantial reductions in energy consumption, and proving the case for such VSD retrofits.

Project summary

KEY ADVANTAGES

Operational savings through reduced energy consumption

Optimized environmental impact with lowered carbon emissions

Reduced service maintenance requirements: less wear and tear due to “soft start” and “soft stop” functions

Creation of productive building environment for occupants: chiller delivering very stable comfort conditions

Reduction noise emission: ability to adapt the speed of compressor motors to the current cooling demand thus avoiding constant full speed operating

TECHNOLOGIES

2 X AquaEdge™ 19XR5 centrifugal chiller

Carrier custom designed and built Greenspeed® intelligence variable speed drives

Updated version of Carrier's Interface Chiller Visual Control (ICVC) and software package, with Integrated Starter Module

Contact

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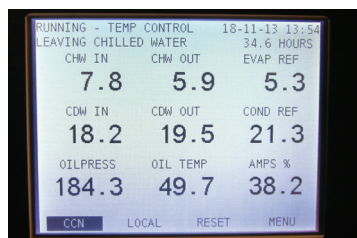
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The VSD installation was delivered in sections then re-assembled in the plant room.



Centrifugal chiller in situ in plant room at Citi's headquarters.



Display shows real-time operating parameters for chiller.

Background

The Citi retrofit project was carried out in two stages. Stage one involved installing Greenspeed® intelligence on the first centrifugal chiller. To help the customer quantify the benefit in terms of lower energy consumption and reduced running costs, Carrier monitored energy use before and after installation using Carrier's IVU system. The tracking showed substantial energy savings as a result of the use of variable speed drives, encouraging Citi to request the installation of a second centrifugal chiller with Greenspeed® intelligence.

Following completion of stage two, Carrier monitored actual performance data for the two chillers with Greenspeed® intelligence, and compared the data with previous energy consumption figures prior to retrofitting. The results enabled savings of £33,966 for the first three months of 2013, in line with projections and proving the case for the retrofit of variable speed drives.

Challenges and solutions

The solution addressed a number of specific challenges:

- **A custom-made variable speed drive:** An off-the-shelf, ready-made variable speed drive solution was not available for the chillers. Therefore, Carrier designed and built a custom solution, matched to the exact requirements of the project. Greenspeed® intelligence reduces chiller energy consumption by adjusting cooling capacity to match the current load. At the outset, Carrier calculated that the energy savings for both chillers retrofitted with Greenspeed® intelligence would be in the region of £126,000 a year.
- **A re-assembly on-site:** Carrier responded to the installation site ceiling height limitations by delivering the system in several modules which were assembled once in position.

Perspectives

Carrier's ability to upgrade chiller performance with the addition of custom-designed variable speed drive function offers customers the ability to reduce their cooling energy costs, cut carbon emissions and extend the operational life of their plant.

As a result of the success of the project, Carrier has secured subsequent orders for several Greenspeed® intelligence retrofit projects on centrifugal chillers serving multi-storey commercial buildings in London and elsewhere in the UK. Clients include well known global names in banking and finance.