

# TOSHIBA

Leading Innovation >>>

## Toshiba Solutions

VRF systems cut building's CO<sub>2</sub> load

### Equipment:

Toshiba VRF SHRM  
Windows™-based controls



*Potentially redundant buildings can be transformed*

### Application details

The transformation of a large office block in the Manchester suburbs, Rutherford House, formerly British Nuclear Fuels Limited's design department, into a flagship for regeneration by New Age Properties, relies heavily on the installation of high quality, controllable and efficient air conditioning. Previously, the building relied on air conditioning provided by a fixed speed R22 refrigerant-based system.

Most of the buildings on the surrounding industrial estate either have no air conditioning or old inefficient central plant installations. This office refurbishment programme, set new standards for lettable, efficient, business accommodation in the area.



The re-clad shining glass and aluminium shell with its thick concrete core looks like something from Silicon Valley as it is glimpsed through the trees of a leafy campus. The contractor designed the project in conjunction with Toshiba's Project Team, working to the specifications of the client and the consultant. The replacement air conditioning system is key to the comfort of the tenants.

*Air conditioning is essential to the process of letting this building*

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### Solution

The Toshiba VRF systems, utilising R410A and inverter technology have enabled energy cost savings of up to £14,000 to be made each year. This provides a CO<sub>2</sub> reduction of 24,000 kg for the building over a twelve month period. Additionally, the project qualified for the Government's Enhanced Capital Allowance scheme, which enables the owners of the building to offset up to 30% of the total project cost in year one, significantly improving both cash flow and profitability.

The floors have been laid out on an open plan basis with a typical floor area of 600 sq metres. The block has five and three storey elements. Eight Toshiba VRF SHRM2 three-pipe systems serve the building, one to a floor, so that each can be let individually. It is a ducted, heat recovery scheme to enable maximum layout and energy usage flexibility.

The building management system used is a Toshiba control system and is Windows™-based with a package to cover each floor so that the landlord can provide individual floor control but retain overall control for billing purposes.

The air conditioning system can achieve a Co-efficient of Performance (COP) of 5 at 40% (typical) operating load requiring just a 20 Amp power supply because this inverter-controlled system has automatic soft start and can operate at a lower synchronous speed than previous systems. Altogether the system is providing almost 700 kW of heating and cooling to this large building. In the past this might typically have been provided by water based central plant but today's high efficiency R410A VRF systems cope well with this challenge.

Within the project, ease of installation and project management to finite time frames was critical – this was assisted greatly by the use of the Toshiba equipment. The contractor carried out the modifications to the existing air handling system and undertook the essential site removal and disposal of the previous out-dated plant.

The compact new systems were installed within the footprint of the existing plant village on the roof so there were no civil engineering or structural complications from increasing the overall cooling and heating capacity for the building.

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*The VRF systems enable floor by floor occupation*



*Old systems had to be taken away*

**TOSHIBA AIRCONDITIONING**

Advancing the **eco**-evolution