

# TOSHIBA

Leading Innovation >>>

## Toshiba Solutions

Computer room cooling – without up-rating the mains supply

### Equipment:

Toshiba R410A VRF SHRM  
and SMMS  
Directional cowls  
Ducted indoor units  
Cassettes  
Central control  
R410A Split systems



*The outdoor units are discreetly sited – the cowls have proved an excellent solution*

### Application details

The computer server rooms that support the administration of the whole of Derbyshire are being kept at the required temperatures by a strategic combination of the latest R410A two and three pipe Toshiba SMMS and SHRM VRF systems, which are proving themselves to be ideal for computer room applications.

Derby County Council's main offices occupy the magnificent Grade II listed large Victorian former spa hotel buildings that overlook the Dales' town of Matlock. They provide an ongoing supply of building services conundrums. The latest of these was how to provide very discreet cooling, without interfering with the building's fabric, in large rooms with unusually high ceilings – up to five metres in places, and limited space for the outdoor units.

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### Solution

The availability of a narrow outdoor gully space and the need to provide different temperatures in different areas, while allowing 100% back-up and capacity for future expansion, drove the decision to use VRF systems to provide the air conditioning. The long pipe-runs favoured the use of Toshiba SMMS.

The more conventional solution of floor-mounted close control units was considered but was not an option as floor space is at a premium and equipment is moved frequently. A further condition that favoured the use of inverter-controlled VRF systems with their smoothly controlled start-ups was that the new, increased cooling capacity required for the expanding server facilities had to be achieved without increasing the demand on the existing mains electricity supply.

Cooling had to be provided continuously for the servers so some of the existing water chillers had to be kept going during at least part of the new installation. As a result, their location could not be used for the new equipment, which in any case needed to be sited more discreetly than on an overlooked roof. Cowls have been attached to the new outdoor units to facilitate the air rejection from their partially concealed location. These units are considerably quieter than the equipment that they have replaced.

Each area is served by a two-pipe and a three-pipe system, providing automatic back-up in the case of system failure. The two 33.5 kW cooling and 37.5 kW heating three pipe Toshiba SHRM VRF units enable heating and cooling to be provided simultaneously to those areas with shared office use. Here, a degree of heating is required in some areas at some times of year by some of the occupants. Cassette style indoor units have been provided to cover areas where a large number of staff are located. The four two pipe Toshiba SMMS VRF units supply the server rooms via concealed ducted indoor units. The units were specified on the basis of sensible cooling loads. The large ceiling void areas have been used as a plenum for the air.

Control is centralized and zones can be reset if computer equipment has to be relocated. This is a frequent occurrence and a high level of flexibility was demanded of the Toshiba control system. It is coping extremely well. The client is pleased with the energy-efficiency in particular and has ordered a number of additional Toshiba Digital Inverter Split systems to serve separate isolated parts of the 26000 sq metre estate.

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*The building's computer suites, behind these forbidding walls, needed a lot of cooling*

TOSHIBA AIRCONDITIONING

Advancing the **eco**-evolution