

CASE STUDY

BMS TAKES CLOSE CARE OF HOSPITAL SERVICES

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At the new ENT and Ophthalmology block at Nottingham's Queen's Medical Centre, much has been done to ensure the efficient operation and high availability of the facility's building services. This shows clearly in the design of its Trend building management system, which has been supplied and engineered by Electrotech Control Design Services Ltd of Banbury. Configured to perform a wide range of close control and monitoring functions, the system has also been designed so that maintenance can be carried out easily and without causing disruption.

The Queen's Medical Centre is one of Europe's largest teaching hospitals. Scheduled to open in January 2001, its new ENT (Ear, Nose and Throat) facility is a Private Finance Initiative funded project. Under a 35 year agreement with QMC University Hospital NHS Trust, the building will be run and maintained by Century Health Nottingham Ltd, the consortium that has financed and built it.

The consortium comprises Halifax Building Society, Ideal Cleaning and Clugston Construction, with the latter acting as main contractor on the project. The M&E contractor, Haden Young, has been responsible for design, installation and commissioning of all mechanical services.

Five storeys high and comprising operating theatres, wards, testing rooms, offices and research areas, this

is inevitably a heavily serviced building. All theatres are fully air conditioned, most other areas have warm air ventilation and comfort cooling, and several floors have weather compensated perimeter heating. All the HVAC services are controlled and monitored by the Trend system, which also monitors the emergency generator, lifts, medical gases and blood bank.

The seven theatres are served by five air handling units; two are twin units, each supplying two theatres and having a common supply fan. Using Trend's small IQ223 controllers, Electrotech has devised a cost-effective, modular control solution, which ideally suits the application. One 223 controls/monitors the AHU's frost coil, filter and supply and extract fans, another does the heating coil, cooling coil and humidifier. On the twin air

handlers there are therefore three controllers.

The AHUs that serve other areas of the building are mostly controlled by IQ222s, which differ only from the 223s in that they have fewer input/output points. All other functions, including general monitoring and the control of heating/DHW calorifiers, circuit pumps and chiller sequencing, are carried out by a single IQ250, which is the largest model in Trend's comprehensive controller range.

Almost all the controllers are housed in a large, multi-cubicle panel. Within this, the controls for the theatre AHUs each have their own separate cubicles, which can be individually isolated. As a consequence, maintenance work can be done on one set of controls without the other theatres being affected. Similarly, none of the theatres need to



be taken out of service if maintenance is required to the general plant controls. Even when the theatres are not in use, air flow must be maintained to keep them positively pressurised and thus ensure sterile conditions.

A Trend '945' PC-based supervisor in the building manager's office serves as the system's main operator interface for accessing controller monitored data, changing control settings and receiving alarms. In addition, each theatre has a surgeon's panel which links to the AHU's controllers and allows local monitoring and manual adjustment of temperature and humidity. In the theatre reception area is another panel, from which the AHUs are switched between set-back and normal modes of operation in accordance with theatre usage.

There is also an extensive Trend BMS covering other parts of the QMC site. This has been linked to the ENT

system to allow monitoring of the services to continue when the building closes overnight. Any critical alarms will be automatically re-transmitted to the other system's 945 supervisor, which is manned 24hrs a day.

Steam from the hospital's central boilers provides ENT with its main source of heat. Steam usage is metered and logged by the Trend system, which also records the readings from the building's five electricity sub-meters. The data will be used for energy monitoring and targeting.

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