CASE STUDY

SAVING OUTSTRIPS SPENDING AT SCOTTISH SPORTS COMPLEX

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It has taken less than eight months for North Lanarkshire Council to recoup the money it invested on putting in a Trend building energy management system at the Sir Matt Busby Sports Complex in Bellshill. Paid for from the Central Energy Efficiency Fund provided by the Scottish Executive, the £17,500 system has cut heating fuel consumption at the site by 31% – equivalent to an annual saving of over £27,000. Trend's energy-saving building controls are now to be found in some 30 of the council's properties, including schools, offices and retirement homes.

The Sir Matt Busby Sports Complex was built in the nineteen seventies and extended around ten years ago. Its facilities include two swimming pools, a games hall, Turkish baths, a sauna and a gym. Some years back a system had been installed to automatically control its heating and ventilation, though this had gradually begun to fail and more and more of the plant was being regulated manually. The poor level of control resulted in unnecessary plant operation and the overheating of some areas.

The commissioning of a Trend BEMS at the beginning of 2005 transformed the situation. Its close control and monitoring of the H&V services ensures that they now operate in accordance with actual demand, one effect of which has been to reduce boiler cycling. In the pool hall, the system has made significant savings by maximising air recirculation and heat recovery, and by controlling to a setback temperature and humidity level outside occupancy hours.

The BEMS's control and monitoring functions are performed by four network-linked IQ outstations. Two of these operate the pool hall air handling unit, controlling it to achieve a space temperature setpoint of 29ºC and a relative humidity of 50% and modulating its recirculation and heat exchanger dampers to limit operation of the main heater battery – which previously saw very heavy use owing to needlessly high fresh air flows. The AHU fans have been fitted with Trend NX variable speed drives, allowing energy efficient control of humidity.

Another IQ controls the main gas-fired boilers and various VT and other wet heating circuits in the pool and adjoining areas. One of these, a poolside radiant panel circuit, had been a particular source of energy waste. It had also made conditions uncomfortably hot for the pool attendants. Under the IQ's close control the flow temperature in this circuit has been reduced by some 20ºC. This same outstation also controls two large DHW calorifiers. In the past, the flow temperature from the latter had been wastefully high, whereas now it is controlled to 60ºC.

The remaining IQ controls a smaller boilerhouse and the plant that this serves, which includes the games hall AHU and the reception area variable temperature radiator circuit.

Installation of the Trend system was completed in February of last year. In the following 12 months it reduced boiler gas usage by 1,548,642kWh

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(degree day corrected), a saving of £27,240. Its control of fans and pumps has also contributed to a cut in electricity consumption.

The system has the potential to make even greater energy savings – eg, if it were to take control of the kitchen/cafeteria's split air conditioning unit – which currently runs continuously – or VSDs were fitted to the pool water circulation pumps. Also, if extra sensors were installed in the pool balcony and other areas, it would be able to 'trim' the heating circuit flow setpoints in accordance with space temperature levels and thus control with even greater accuracy.

System monitored data and control settings can be accessed remotely from a Trend '963' supervisor at the council's offices in Cumbernauld. This is also used for monitoring and managing the other Trend sites. At the sports complex itself, authorised users can make adjustments via an IQView touch-screen display.

The Sir Matt Busby Sports Complex has also reduced its energy bill by fitting new lighting and lighting controls. This too was paid for out of the Central Energy Efficiency Fund. With access to £930,000 of such money, North Lanarkshire Council is implementing energy saving projects across the county.

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