
WARRINGTON, UK, OCTOBER 18, 2016

Leisure centre cuts air handling and pool energy costs by 20% with ABB drives

Successful retrofit delivers energy savings and helps simplify swimming pool operation.

A Kent-based leisure centre operated on behalf of Ashford Borough Council is achieving up to 20 percent energy savings following the installation of ABB variable-speed drives (VSDs).

The air handling unit (AHU) at Tenterden Leisure Centre, operated by Tenterden Leisure Trust, has been retro-fitted with two ABB HVAC drives and low voltage motors, one each on the air inlet and exhaust fan, together with three ABB industrial drives for the swimming pool recirculation pumps.

The project originated when ABB authorised value provider, MKE, was installing some electrical panels on the site. "We saw that the motors for the AHU were direct-on-line," says MKE's Steve Bootes, "and we thought we could install a VSD-based system that would save energy."

The AHU's two-speed motors were operating at either 22 kW or 4 kW controlled via relative humidity and temperature requirements through a BMS system. The motors had to start and stop on different speeds many times during opening hours.

Craig King, Site Manager for Tenterden Leisure Trust, says, "Following the loss of a motor on the AHU, we decided to replace both motors and use VSDs to drive them." Funding for the project was provided jointly by Tenterden Leisure Trust and Ashford Borough Council.

MKE replaced the motors with two ABB standard induction motors, each driven by a 22 kW ABB HVAC drive. "Now, the motors are no longer 'stop and go'," says King. "The VSDs tell the motors to start, running them at 40 Hz for the high speed during the day and 20-15 Hz for the low speed at night."

Part of the AHU refurbishment is the replacement of a number of mechanical components in the drive train, including four taper lock bushes on the bearings, four pulleys and six tension belts.

MKE also installed three 12 kW ABB drives on the pool pump system, removing the old star/delta starting contactors and supplying new power cables. The VSDs are protected to IP54 as they are sited in a dusty area and are also subject to a high moisture environment. "We have three pool pumps and previously ran two of them on duty, one off. With the new VSDs, we can run all three at a reduced speed saving a quarter of the electrical consumption," says King.

Ashford Borough Council also funded the replacement of a basic water flow-speed meter with a digital unit in order that the pool turnover rates would not be affected and could be accurately measured when reducing the pump speed.

King adds: "Running the pool is now simpler. When running the backwash program it is easier to slow down rather than switch pumps on and off - with a head of water, stopping and starting pumps is not ideal."

“As well as saving energy, it avoids an impeller sitting idle in chlorinated water for extensive periods, which can cause corrosion.”

MKE estimated an 18 months payback but Tenterden Leisure Trust has achieved that in just over a year since the drives were installed.

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Caption: Tenterden Leisure Centre has cut 20 percent off air handling and pool energy costs with ABB drives.

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