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## ABB drives keep canoeists on course

The Cardiff International White Water (CIWW) centre is using ABB variable speed drives (VSDs) to help it maintain the correct flow rates of its artificial river system.

The CIWW centre is used for recreational and professional white water canoeing activities and may be used as a practice centre for competing canoeists. The system therefore needed to be capable of supplying various flow rates of water, corresponding to standards of various participants such as amateur, intermediate and expert.

Owned and operated by Cardiff Council, the facility has four, low harmonic ABB drives, each of 350 kW, housed in a motor control centre. The system is designed, supplied and installed by Industrial Automation and Controls (IAC), which also supplied the PLC and SCADA system.

The CIWW centre takes water into a reservoir from the River Ely and uses the VSD driven pumps to raise the water from the reservoir through a height of two metres to the course. Each pump can move 4 m<sup>3</sup> of water a second, giving a total maximum flow of 16 m<sup>3</sup> a second.

This system of four VSDs gives maximum flexibility, allowing the centre to maintain standard flow rates by switching in successive pumps. Paul Howell, Sales Manager for IAC, says: "The ability to achieve standard flow rates means that people know that the different levels, amateur, intermediate and expert, will match those in other similar centres, such as the Olympic Course at Broxbourne."

As well as having preset flow rates, corresponding to the maximum pumping rate of each pump, the system can use the variable speed control of the drives to make adjustments via a manual slider. An example is two pumps running, giving a flow rate of 8 m<sup>3</sup> per second. This can be adjusted down to give a lower rate of say 5 m<sup>3</sup> or 6 m<sup>3</sup> per second, allowing the course to be adjusted to suit any level of experience.

Each of the ABB drives communicates with the system's PLC over a Profibus network. "The drives interface very well with the system", says Howell, "and it was very easy to integrate."

Level sensors within the course and reservoir feed back data to the PLC, allowing it to calculate and adjust pump speed slightly to maintain the correct flow rates. Each pump is tuned, so that for example, if the motor is running at 450 rpm, the system knows the pump is achieving a 3.8 m<sup>3</sup> per second flow rate.

An ABB soft start is also used on the conveyor, which raises the boats from the bottom of the course and drops them into the top pool ready for another descent.

IAC Ltd ([iac-ltd.co.uk](http://iac-ltd.co.uk)) is a leading electrical systems integrator, operating on a world wide scale from a 35,000sqft manufacturing facility in Newport, South Wales.

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**Caption:** The Cardiff International White Water centre is using ABB variable speed drives to help it maintain the correct flow rates of its artificial river system.

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