

Welsh Water uses turbine and drive to generate power

An ABB industrial drive, ACS800, is helping produce up to 100 MWh of energy for Welsh Water as part of a pressure control system at its Pen y Cefn water treatment works. This accounts for some 10 per cent of power demand at the site. The ABB drive forms part of a pressure and flow control system supplied by Zeropex, a specialist manufacturer of water turbines. Known as the Difgen, the system also recovers energy from water pressure in pipelines.

Within the Difgen, a turbine resists the incoming water, controlling its flow. The turbine turns the generator, which produces power that is synchronised to the grid supply by the 37 kW variable-speed drive.

As part of Welsh Water's programme to reduce costs, there is always a focus on identifying potential energy savings.



Hydro turbines are one such potential saving opportunity as they use a head of water and a flow, which provide an ideal opportunity to generate power to meet on-site demands.

The Pen y Cefn water treatment works is gravity fed with raw water at a pressure of up to 11 bar from a nearby storage reservoir. Water is fed into an open dissolved oxygen flotation tank, so this pressure is no longer required for the

process. Previously this pressure would have been removed through a pressure reduction valve.

Welsh Water asked Zeropex to look at the site and recommend a hydro turbine that could be used in the pipelines. The requirements were to provide highly accurate control of flow or pressure,

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with a smooth operation that would avoid any water hammer or surges. Zeropex identified the site as ideal for installation of its Difgen pressure control system.

Duncan Collins of Zeropex says: "The ABB drive is an integral part of this system, providing excellent control. We use ABB drives in our products because the company has an excellent reputation within the UK water industry. They also have supplier agreements with most water companies, meaning that our control systems meet the required electrical standards. ABB offers an excellent after-sales support structure and replacement parts are readily available. ABB drives have been used in all our European installations to date."

Cleaning carrots for consumption

Hidrostral Ltd has provided a leading fresh vegetable grower and supplier, Produce World Group, with an enhanced solution for the cleaning of carrots in the vegetable processing operation.

Produce World is the largest grower and supplier of high quality fresh vegetables in the UK and one of the largest in Europe. It provides a wide range of conventional and organic vegetables to the major supermarket chains. All its produce is picked fresh from the fields and processed without the addition of any chemical additives.

Hidrostral have supplied Produce World with an immersible pump to aid it in the pre-wash process at its Yaxley site which deals exclusively in organic vegetables including carrots. Upon arrival at the plant the carrots are off loaded from a lorry and pre-washed using recy-

pump selection in this type of arduous application has always been to err on the side of caution and to compromise by sacrificing pump efficiency for the sake of a pump which can handle solids and fibrous material; the result being a forgiving impeller design but greater power absorption and energy usage.

In all cases the largest cost is the running cost, the cost of electricity which is affected directly by pump efficiency. Produce World Yaxley took the decision to change from the norm and choose Hidrostral.

The Hidrostral Screw Centrifugal impeller is a unique design, whereby the single spiral vane impeller is axially extended creating a large free passage for solids but at the same time maintaining an optimum hydraulic design leading to high efficiencies, low shear pumping and low velocity at the pump inlet.



clered wash water. Produce World had previously used an enclosed web, open belt conveyor method in this process but the pump that Hidrostral have supplied is part of a new open catchment design with a sloping bench arrangement to the sump area. The boom wash system aids the movement and flushing of newly arrived field carrots off the lorry at the very start of the process into the sump. The wash water is pumped using Hidrostral's immersible pump to a rotary screened drum where most of the solids are filtered out before re-entering the boom wash system once more. This process occurs each time a lorry arrives with fresh field carrots.

The carrots from the field, when mixed with the water, leave a very abrasive media consisting of flint, stones, sand, soil, weed and the occasional carrot!

The common approach to

The Hidrostral pump retained the desired solids handling capabilities and has provided longevity in its operation. The Hidrostral pump has also ensured a reduction in maintenance costs, down-time and operational spend associated with the cleaning and maintenance of the previous open belt conveyor method.

In addition, in this case the Hidrostral immersible pump with its 5.5kW 4 pole 3 phase motor has resulted in reducing power consumption by 50%, a huge power saving from the previous end suction style pump that required an 11kW motor.

Kevin Lander, the Lead Engineer for Produce World, has enthused: "I have been very pleased with the performance of this pump over the last 18 months. It has gone beyond our expectations outlasting previous designs three times over."

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American Water, America's largest publicly traded water and wastewater utility company, and LG Sonic, a Dutch manufacturer of algae control systems, received a Business Achievement Award from the Environmental Business Journal (EBJ) yesterday for the installation of four solar-powered algae control buoys (MPC-Buoys) in a drinking water reservoir at the Canoe Brook Water Treatment Plant in Short Hills, New Jersey. Blue-green algae cause problems when blooming in lakes and water reservoirs, such as health issues, fish deaths, and odour problems. In order to provide an environmentally friendly solution to these problems, LG Sonic developed the MPC-Buoy, a floating solar-powered platform that emits specific ultrasonic parameters to target the algae present. In 2014, American Water installed four buoys in a drinking water reservoir at the Canoe Brook water treatment plant in Short Hills, New Jersey. Extensive testing conducted during 2014 showed that the installed buoys had a significant impact on the algae, allowing the treatment plant to reduce chemical consumption by more than 20% and reducing the concentration of compounds that can cause undesirable tastes and odours.

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