



Case Study: A WTW in North Wales

Application:

Flow control of raw water entering the treatment process

Key facts:

- Difgen model: DG13-14
- Differential pressure: 9-10.5bar
- Flow range: 10-30l/s
- Power output: 8-17kW
- Annual revenue: GBP 29,000
- Payback period: 2.8 years

Background:

The Pen y Cefn water treatment works is gravity-fed with raw water from the nearby Llyn Cynwch reservoir at a pressure of up to 10 bar.

Since the water enters an open dissolved air flotation (DAF) tank, this pressure is not required for the process. It would previously have been simply removed through a pressure reduction valve.

Since the end of the pipe into the DAF plant is around five metres above ground level, a turbine would normally have to be mounted at this height. That would be challenging and expensive.

The solution:

Welsh Water chose to use a Zeropex turbine which could be positioned at ground level. Owing to its unique operation, this device can generate renewable electricity whilst maintaining a minimum pressure at the outlet. That allows water to enter the raised tank. The turbine also controls raw water entry to the treatment process by matching its speed to the desired flow.

To permit seamless operation, the Zeropex turbine is equipped with a load bank which allows it to continue running even if the electricity supply from the grid fails. That in turn permits a controlled shutdown with no hydraulic issues.

