



Robert Pacanowski, Manager of Water Production Department and Energy Services, PWiK Gniezno. The new frequency-controlled pumps and a new MPC-EC control cabinet helps the water utility to save electricity and manpower. Now, the network can be controlled remotely via SCADA and optimised for best efficiency.

Grundfos Energy Audit helps Polish waterworks save 30% energy

The situation

The water utility in Gniezno, Poland, has three pumping stations supplying water to about 90,000 people in the city and surrounding villages. The pumping stations are hydraulically interconnected. The biggest station near the city centre had older, yet efficient pumps that struggled with ineffective controls. A smaller station in the south at Sosnowa, however, was causing too much work for the operation crew. It used five, ageing 45 kW fixed speed pumps.

"We had very little control of what was happening in the station," says Robert Pacanowski, Manager of Water Production Department and Energy Services

at PWiK Gniezno. "All of the control was done manually by the field crew, who were basically just changing the throttle and opening or closing the valves."

As a result, the pumps were using too much energy and were generally running inefficiently. "The pressure in the network was also fluctuating a lot with high oscillations over 1 bar," Robert Pacanowski says.

The water utility's crew knew they needed an improvement, but the system had to be flexible and work with a wide range of flow. Normally it supplied 200-250 cubic metres per hour (m³/h), but in emergency situations, it had to supply the city with up to 800 m³/h.



A Grundfos Pump Audit kit is measuring pump system performance in the control room of the Żwirki i Wigury pumping station in Gniezno, Poland.

The solution

In order to offer the best way forward to the water network's energy optimisation, Grundfos performed an Energy Audit on the Sosnowa pumping station in 2016, then a second one on Żwirki i Wigury in 2018. The audit showed that the customer could save 30% on the cost of energy consumed by the pumping system in Sosnowa, by installing smaller, optimally chosen high-efficiency pumps with Grundfos controls. Payback time was estimated to be around five years.

Thus, the Gniezno waterworks replaced Sosnowa station's old pumps with five new 37 kW NBG 125-80 pumps with frequency converters and a dedicated controller. Both stations got a new MPC-EC Control Cabinet.

After just the first year, Gniezno was already saving 30% on energy costs, but that's not the only benefit they experienced.



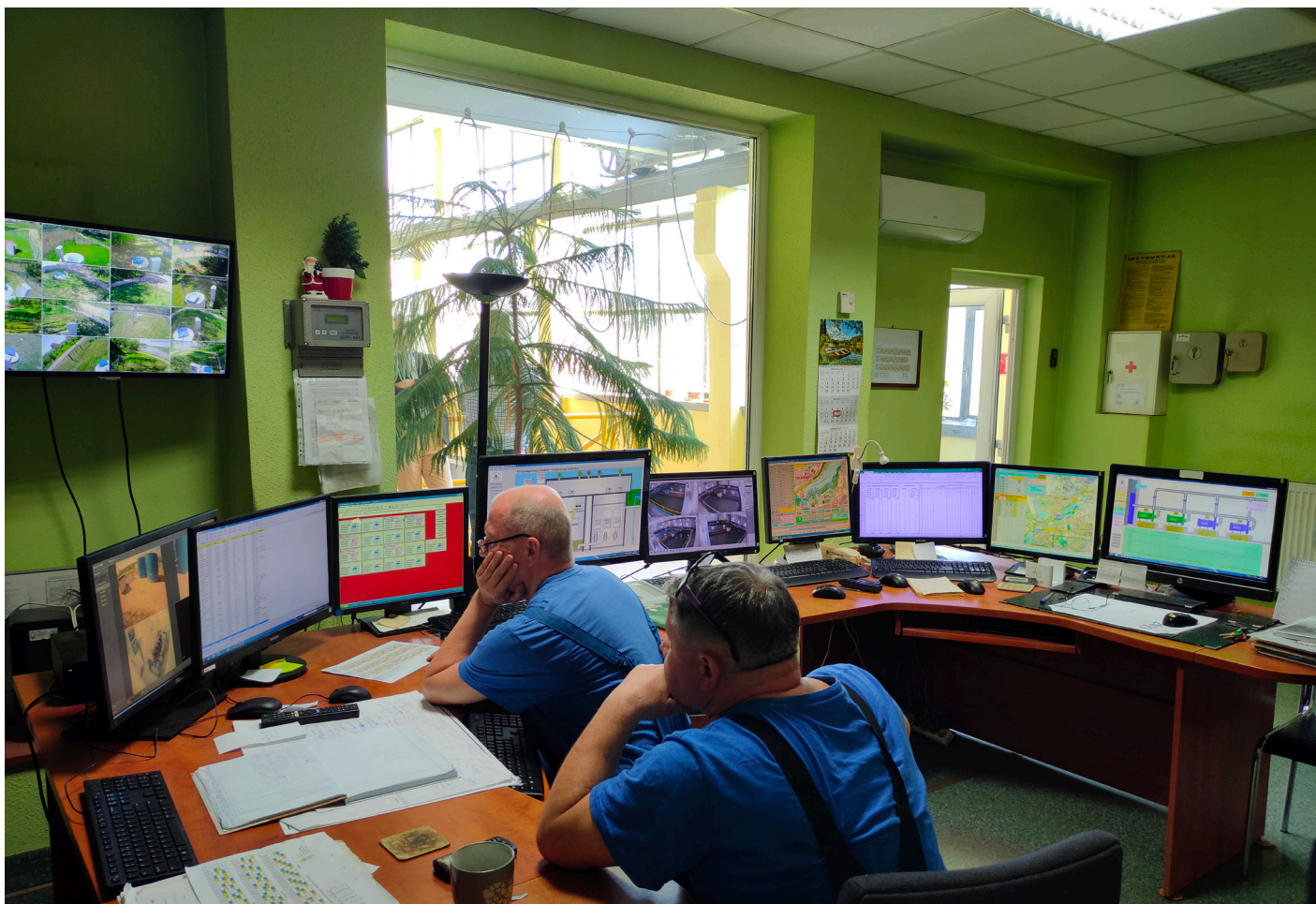
The new Grundfos Control MPC electrical cabinet helped the waterworks manage the city network's water pressure for the best efficiency. It was also integrated into the SCADA system for full overview. Here is Gniezno's Robert Pacanowski with Robert Góra, a Grundfos Sales Engineer.

The outcome

"First of all, the system is now reacting super-fast to the network's behaviour," Robert Pacanowski says – after several years' experience with the Grundfos solution. "Even if something is going wrong in the main station, the small station picks up very quickly and maintains the pressure at a very stable and constant level. The end customers are experiencing a better comfort because the pressure in the network is stable at any time of day and is not dropping anymore. The reduced pressure fluctuations have significantly improved the network condition, reducing the amount of pipeline bursts."

He says the new control system allows the operators to program the system pressure according to demand – and this allows the station to save a lot of energy.

"We were also supplied with SCADA systems," he adds. "So we can see the whole system from our computers. We used to send a technician to the station to open and close valves, but now we can just change the settings from our central control room. Everything is super-good."



The Gniezno water utility's central control room, which includes the Grundfos SCADA system.

Grundfos supplied:

For the Gniezno water network's energy optimisation, Grundfos first performed an Energy Audit, then supplied NBG 125-80

close-coupled pumps, Control MPC electrical cabinet, commissioning, SCADA integration, and extended warranty. Read more about the Grundfos solutions for municipal water distribution.



Our customer says:

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- Robert Pacanowski, Manager of Water Production Department and Energy Services at PWiK Gniezno Sp. z o.o.

Topic: Water network energy optimisation

Location: Gniezno, Poland

Customer: PWiK Gniezno Sp. z o.o.