

LCC analysis provides reliable facts

The 'Zweckverband Wasserversorgung und Abwasserentsorgung der Westuckermark' (Utility Association for Water Supply and Wastewater Disposal in the Westuckermark) currently operates 28 water works and 458 kilometres of pipeline. Its 54 employees supply drinking water to almost 33,000 inhabitants (within an area covering 1000 km²!).

The Situation

After 29 years of service, Waterworks 1 in Templin underwent a full overhaul in 1998. One year after work commenced, the water works, now incorporating state-of-the-art technology, was reconnected to the network – in hindsight, everything, including the pipelines and the power of the pumps, was actually designed to handle a much larger capacity of drinking water. Dipl.-Ing. Bernd Riesener, the Managing Director of the Association explained the dilemma: "On the one hand, we are witnessing a decrease in water consumption year-on-year. Furthermore, our intention at the time of the overhaul was to expand the area supplied by the waterworks and so it was inevitable that the technical solutions that were installed would be overdimensioned."

The waterworks consist of five pure water pumps - four large units and a small low rating pump. "In practice, this means that the small pump, together with one of the large pumps, is always able to maintain normal operation," explains Riesener. For reasons of security of supply, Riesener needs to keep the other three units on stand-by to cover periods of peak demand and for use in emergencies in particular (cases in which a fire needs to be put out).

The Grundfos Solution

TOPIC:

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LOCATION:

Germany

COMPANY:

Zweckverband
Wasserversorgung und
Abwasserentsorgung der
Westuckermark

But is the available technology still up to date? That was the question that Bernd Riesener, assisted by service and distribution specialists from Grundfos, set out to answer. The outcome of their investigation was conclusive: - "Many operators realise that some of their pumps are not working particularly efficiently and that was the case here too, but thanks to a clearly set out and well-documented LCC analysis from Grundfos, it was possible to confirm what many had already suspected and based upon that confirmation, plans were drawn up in September 2007 to install a new CRE pump at Waterworks 1 in Templin.

The LCC analysis was based upon measurements of the power and flow characteristics of the low rating pump which were taken by a specialist from Grundfos Services back in March 2007. A load profile was also compiled, i.e. the distribution over time of the required pumping capacity and only once this profile had been established was it possible to select the most suitable and most efficient pump system on the basis of objective usage criteria.

The replacement pump that was proposed was a stainless steel centrifugal pump with integrated frequency converter (CRE 45-3). At the same pumping capacity, the annual electricity saving comes to 8795 kWh, at an electricity price of €0.12 Euro/kWh, which corresponds to an annual saving of €1055/year, or 25% of the current operating costs of the old pump.

The Outcome

One of the four large generators was replaced by the proposed pump, which was less powerful and in the future, the two small pumps will provide sufficient coverage for normal operations.

The 'Waterworks 1 Templin' is a classic example of the extent to which customers appreciate authoritative and expert service advice. The benefits are felt on both sides. The company operating the pump is able to reduce its operating costs and, as the entire system has been optimised, is able to rely upon enhanced process security. And as far as the manufacturer of the pump is concerned, providing this level of customer service will increase the likelihood that the manufacturer's efforts will lead to a beneficial relationship with the customer.

Also, an important additional benefit of carrying out an LCC analysis before purchase lies in the fact that by measuring the specific load placed upon the pumps over a period of 24 hours, all parties involved gain a much greater knowledge than before of the power that the pumps are required to provide. The configuration of the new pump is then geared to the actual levels of demand.