

VLT® control for fresh water production pays back in two years

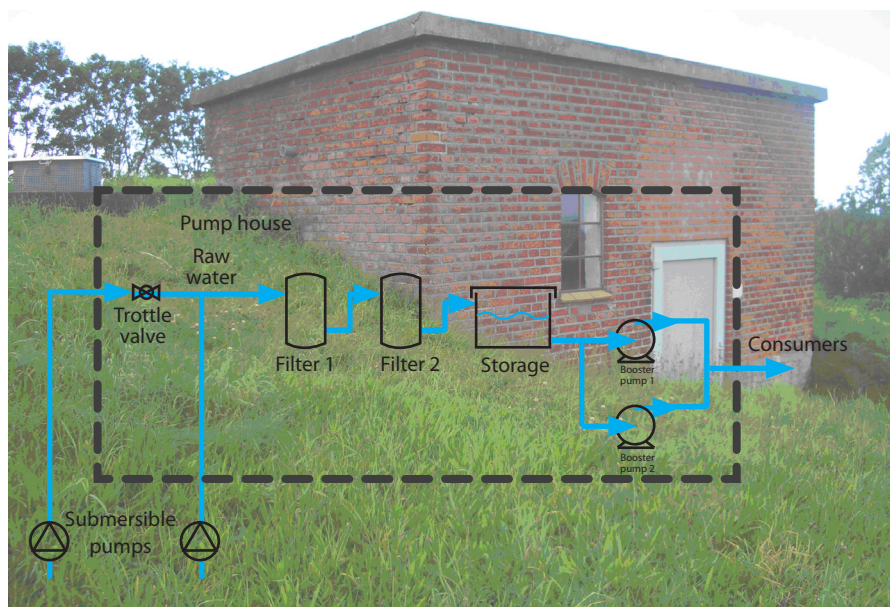
Variable speed control instead of valve damping pays back in only two years for the waterworks in Havnbjerg, Denmark. The works supply about 250 families and two farms with fresh water.

The water is pumped from 40 m deep wells. The raw water is pumped up to the waterwork by two submersible pumps. The raw water is pushed through two hermetic filters, each with a capacity of 12 m³/h., by the submerged pumps and further up into a buffer containing 60 m³. Two speed controlled booster pumps maintain a pressure up to 32 m WC of the water leaving the waterworks.

The booster pumps are both CR 30-3 Grundfos pumps driven by 7.5 kW motors. Rated capacity is 30 m³/h. The motors are controlled by a VLT® 3500. In 2007 the water works investigated the power consumption in the search for possible reductions.

One pump showed a power consumption about 0,59 kW/m³ and the other about 0,775 kW/m³. This difference was due to a significant over capacity of the second pump compared to the filter capacity requiring a damping throttle.

Speed control in stead of throttle



A 7,5 kW VLT® AQUA Drive was installed. To protect the windings in the pump a VLT® Sine-wave filter was applied.

By opening the throttle valve and reducing the speed of the pump from 50 Hz to 35 Hz, the power consumption was reduced to about 0,6 kW/m³. A saving of 0,175 kW/m³.

Assuming that the pumps are equally employed, savings means a pay-back time of 2 years.

On top of that:

- It's easier to optimise the cleaning process of the raw water.
- Water hammering is prevented.
- The risk of sand flowing into the spring is reduced