

Eawag consulting: millions of francs saved

Thanks to studies carried out by Eawag, the municipality of Gordola in Canton Ticino was able to shelve the planned large-scale expansion of its water supply system, saving around CHF 10 million in investments. In addition, reductions in water consumption and the streamlining of distribution led to substantial energy savings – an example that could well be followed elsewhere.

In many communes, water supply systems are ripe for renewal, and in many cases the infrastructure built in the 1960s and 1970s is now oversized. Planning at that time was based on projected growth which did not always materialize, and water consumption per capita has declined over the last few decades. Moreover, since 1992, “economical use of drinking and process water” has been required under the Water Protection Act, and – in line with the polluter-pays principle – water users rather than taxpayers have been responsible for financing water supply systems and operations. Faced with a CHF 15 million expansion project mothballed since 1993 which appeared excessively elaborate and costly, the local authority of Gordola in Canton Ticino sought expert advice from Eawag.

Scope for research and education

The situation was analysed by the Urban Water Management department of Eawag under the leadership of Professor Markus Boller, with internal studies being complemented by a number of dissertations at the ETH and at the Zurich University of Applied Sciences School of Engineering (HSZ-T). Work began with an assessment of the current status and a systematic search for water losses from the distribution network. It soon became clear that over 500 m³ was lost per day – almost a third of the total volume supplied – and presumably this had been the case for years. When the leaks and overflows were rectified, these losses were reduced by 80%. In addition, a system was developed to permit continuous monitoring of the network with the aid of meters installed at strategic points.

Peak demand reduced

A user survey and an analysis of available data revealed that peak demand in Gordola was attributable solely to the sprinkling of gardens and lawns and the simultaneous filling of swimming pools. The water utility has now introduced regulations whereby private swimming pools can only be filled at nighttime and according to a schedule. With this simple solution, the local authority has been able to reduce peak demand. Further measures are currently being examined with individual major users. In the near future, for example, a vegetable farm is to be connected to the football pitch watering system, which is not fed with drinking water supplies.

Producing green power

The local councillor responsible for water supplies, Bruno Storni (see p. 9), is convinced that by saving water, energy savings can also be achieved. As a result of the rectification of leaks, which cost just CHF 20,000, around 120,000 kWh less pumping energy is now required than was specified in the original project. 2008 also saw the replacement of the main pipeline leading from the springs to the distribution network. The way is now clear for the implementation of another proposal emerging from Eawag’s analysis: the 250 m slope down to the village is to be utilized for a small-scale power plant, producing 160,000 kWh of green energy per year – enough to meet the needs of at least 40 households. Experience also shows that greater awareness of drinking water use, associated with water-efficient fittings and appliances, automatically reduces hot-water consumption – with corresponding domestic energy savings.

Saving water means saving energy, too.



Bruno Storni

The commune of Gordola, lying at the foot of a valley on the Magadino Plain in Canton Ticino. Visible in the foreground is the reservoir, undergoing renovation work.

Gordola has now applied other measures proposed by Eawag, including efforts to educate consumers about potential savings, the reopening of disused springs and improved integration with neighbouring communes to allow regional optimization of water supplies. These modifications naturally required investments. In addition, the water utility had to invest around CHF 3 million in quality assurance and the provision of adequate firefighting water capacity. According to Storni, however, savings of at least CHF 10 million have been achieved over the original CHF 15 million project. ○○○

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