

Smart Water Management in Azerbaijan: The Jeyranbatan ultra-filtration water purification facility complex



Country: Azerbaijan

City/region where project is based: Baku

Population (of area where the project is based): 561,450

Key organisations /stakeholders involved in the project: "Azersu" Open Joint Stock Company

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Links: www.azersu.az - www.sukanal.az



Water challenge

There are no natural sources of drinking water in the Absheron peninsula, where the capital of Azerbaijan, Baku, is located. To supply this city of more than 2 million people with drinking water, four pipelines lead water into the city from different regions of Azerbaijan. Most of the raw water supply of Baku requires treatment before it can be supplied to end users.

Project approach

To address this problem, Azersu, the country's water and sanitation company, developed an automated water purification facility. The initial purification of the raw water supplied to the purification facility is carried out in the mechanical filter facility and then water is accumulated in the reservoir.

The water transferred to processing is first treated by 200 micron filters and then filtered into the main purification modules of the facility. The water is cleaned within a total of 20 seconds by passing through special filters of 0.02 microns installed inside the modules.

In order to ensure the continuity of the treatment process in the facility, the filters are washed periodically and cleaned from suspended matters. Filters are cleaned with backwash and chemical dosing pumps. The process is carried out in turns, i.e. while backwash and chemical dosing is carried out in one part of the facility, the water processing continues in other sections. This, in turn, ensures the continuity of the treatment process. The total capacity of the 5280 modules built in the facility is 6.6 cubic meters per second. All treatments are fully automated and regulated within the facility.

Results and next steps

The construction of the Jeyranbatan Ultra-Filtration Water Purification Facility Complex is complete and it is producing high quality water at full volume.

The Jeyranbatan reservoir collects water from the Samur-Absheron channel and transmits it to the treatment plant. Water is mechanically processed without any chemical treatment, its natural mineral content is maintained, and water is cleaned of bacteria, viruses, some unsaturated salts and heavy metals. The water processed in ultrafilters fully meet the drinking water quality standards adopted by the World Health Organization. This facility purified 0.6 km³ water since it was built in October 2015 and provided clean and safe water for 25 percent of the population (561,450 people).

The only technical obstacle that remains is that plankton forms in raw water in the Jeyranbatan water reservoir in spring when the water temperature is between 17-22°C. This plankton clogs 200 micron filters, creating the need for additional washing of filters.

In the future, the installation of additional modules, as well as the increase of the processing capacity by 7.5 cubic meters per second can be achieved through introducing an electro-mechanical system and some additional technical solutions.

SWM solution

The water treated within the facility is fully enclosed and regulated automatically.

The quality of drinking water coming from the filters is controlled in an online mode. For this purpose, special analysis panels (real-time sensors) have been installed so that they transmit water quality parameter signals (2 times every 1 second) directly to the SCADA control room.

On the basis of the experience gained from this project, similar projects are planned to be implemented in other regions of the country.