Dow Water & Process Solutions

DOW™ UF SFD-2880

Dow's Ultrafiltration Solutions Produce Drinking Water to 25,000 People in Croatia

FAST FACTS

Location:	Petrinja, Croatia
OEM:	Tehnobiro d.o.o. Maribor Slovenia
Market segment, Application:	Municipal, Drinking Water
Dow products used:	60 DOW™ UF SFD-2880 modules, 20 modules per line
Feed Water Source:	Well water
Start-up Date:	April 2015

Challenge

Stara Strojarna Ultrafiltration plant is located in Petrinja, Croatia. The plant was started up in April 2015 and it is working at constant production capacity of 7,776 m^3/day of filtrate water. This installation is fed with water from 5 different wells, and the water product is collected in a reservoir that reaches the potable water distribution network providing drinking water to the surrounding community of 25,000 people.

Solution

The feed water entering the UF system has turbidity values ranging from 8 to 120 NTU, depending on the season. The well water is pretreated through a 200 µm self-cleaning filter prior to the Ultrafiltration system. The plant configuration consists of 3 lines in operation. Each line is designed with 20 DOW™ UF SFD-2880 modules, operating at a flux of 70 LMH (L/m^2/h). When one of the lines enters in backwash or chemical cleaning mode, the other two lines are able to absorb the increase in flux up to 105 LMH to maintain the total water production constant.

The produced water is continously desinfected with 0.3 ppm of Sodium Hypochlorite (NaOCl), which is added to the filtrate line before the Product Reservoir so that the product water is ready to be directed to the distribution network. Figure 1 shows a schematic diagram of the water filtration process. The filtrate water used for Backwashes (BW) also contains NaOCl, which is generated in-situ. The addition of NaOCl during BWs enhances the cleaning efficiency and helps to reduce membrane fouling, ultimately leading to a more stable operation.

Regarding the cleaning strategy, the continuous dosage of NaOCl in the filtrate water and during BWs is enough to maintain a sustainable operation during most of the time. Only during periods of bad weather when turbidity values are higher, additional BW cleanings with 0.8 mg/L of NaOCl are conducted every 10 standard BW cycles for 3 minutes, to remove the organic fouling accumulated on the UF fibers and guarantee the production of potable water for the community. In addition, only 1 Chemical Enhanced Backwash (CEB) is performed every 6 months.

Impact/Results

After one year in operation the Trans Membrane Pressure (TMP) stays at 0.7 – 0.9 bar at 70 LMH and 0.9 – 1.5 bar at 105 LMH, same values as in the startup, and no Cleaning-In-Place (CIP) has been carried out so far. Product water quality has been consistent during operation, with turbidity values below 0.1 NTU and free of bacteriological contamination. Figure 2 shows actual turbidity measurements of the feed and the product water after the Ultrafiltration system.

DOW™ Ultrafiltration membranes act as a barrier for fine particles, suspended solids, colloidal matter, microorganisms and low molecular weight species without modifying the salinity of the final potable water. Stara Strojarna Ultrafiltration plant is an example where DOW™ Ultrafiltration brings innovative drinking water solutions to the community.

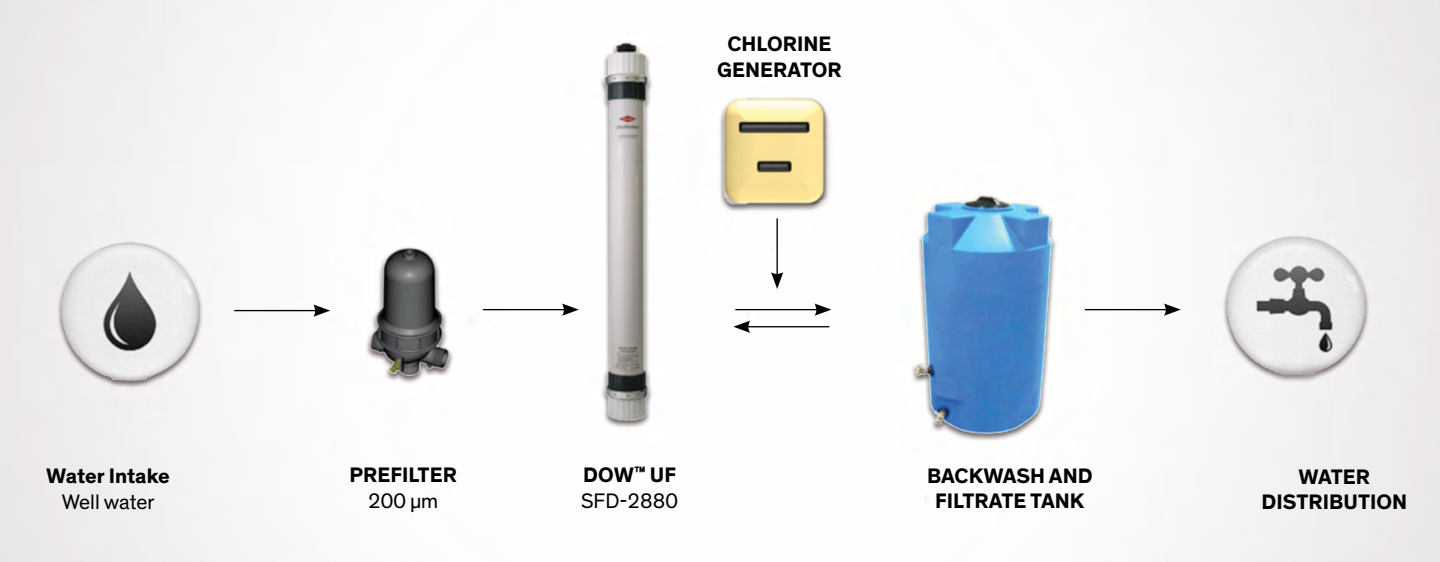

Figure 1. Schematic diagram of Petrinja Ultrafiltration water treatment plant.

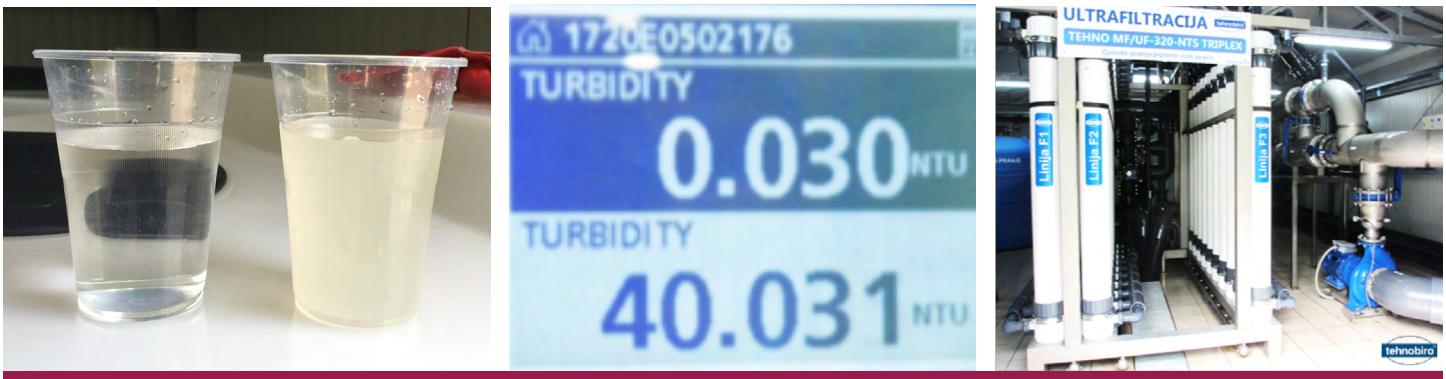

Figure 2. Left. Filtrate and feed UF water. Middle. Turbidity of filtrate (top) and feed water (bottom). Right. Petrinja UF installation.

Water & Process Solutions
7600 Metro Blvd.
Edina, MN 55439

For more information, contact our Customer Information Group:

Asia Pacific	+86 21 3851 4988
Europe, Middle East, Africa	+31 115 672626
Latin America	+55 11 5184 8722
North America	1-800-447-4369

NOTICE: No freedom from infringement of any patent owned by Dow or others is to be inferred. Because use conditions and applicable laws may differ from one location to another and may change with time, Customer is responsible for determining whether products and the information in this document are appropriate for Customer's use and for ensuring that Customer's workplace and disposal practices are in compliance with applicable laws and other government enactments. The product shown in this literature may not be available for sale and/or available in all geographies where Dow is represented. The claims made may not have been approved for use in all countries. Dow assumes no obligation or liability for the information in this document. References to "Dow" or the "Company" mean the Dow legal entity selling the products to Customer unless otherwise expressly noted. NO WARRANTIES ARE GIVEN; ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED. All information set forth herein is for informational purposes only. This information is general information and may differ from that based on actual conditions. Please note that physical properties may vary depending on certain conditions and while operating conditions stated in this document are intended to lengthen product lifespan and/or improve product performance, it will ultimately depend on actual circumstances and is in no event a guarantee of achieving any specific results. Nothing in this document should be treated as a warranty by Dow.

®™Trademark of The Dow Chemical Company ("Dow") or an affiliated company of Dow.

Form No 795-50274 CDP
September 2016