



Municipal



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

### The challenge

Stara Strojarna Ultrafiltration plant is located in Petrinja, Croatia. The plant was started up in April 2015, and it is working at a constant production capacity of 7,776 m<sup>3</sup>/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.

### The 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 DuPont™ UF SFD-2880 modules, operating at a flux of 70 LMH (L/m<sup>2</sup>/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.

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.

The produced water is continuously disinfected 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.

### Fast Facts

**Location:** Petrinja, Croatia

**OEM:** Tehnobiuro d.o.o.  
Maribor Slovenia

**Market segment / Application:**  
Municipal, Drinking Water

**Technology:** Ultrafiltration

**DuPont products used:**  
60 DuPont™ UF SFD-2880\*  
modules, 20 modules per line

**Feed Water Source:** Well water

**Capacity:** 324 m<sup>3</sup>/h

**Start-up Date:** April 2015

\*now under IntegraTec™ brand

## The benefits

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.

DuPont™ 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 DuPont™ Ultrafiltration brings innovative drinking water solutions to the community.

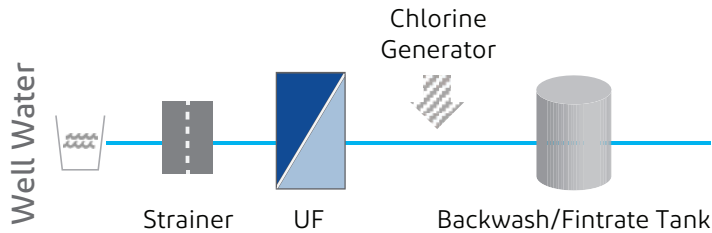


Figure 1: Schematic diagram of Petrinja Ultrafiltration water treatment plant.

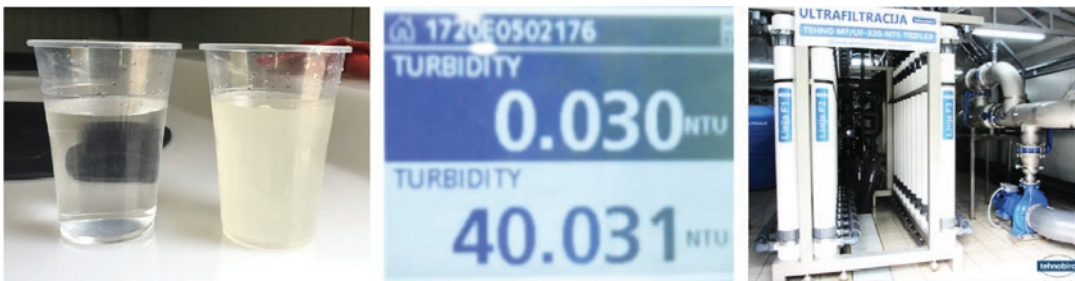


Figure 2: Left. Filtrate and feed UF water. Middle. Turbidity of filtrate (top) and feed water (bottom). Right. Petrinja UF installation.



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