Case Study
Treatment of Lake Water for a Swiss Municipal Water Works

Location: Maennedorf, Switzerland
System Integrator: VA Tech WABAG
End User: Municipal Water Works Association
Plant Capacity: 17,600 m³/day
Market / Industry: Municipal
Application: Drinking water
Feed Water Source: Surface water
Commissioning Date: December 2005
Membrane Type: dizzer® 5000 MB
Total No. UF Modules: 164
Racks / Lines: 4
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Overview

In recent years, Switzerland has undertaken a program of drinking water improvements, which have reflected the trend of improving drinking water standards adopted within the EU. As in Germany and France, there has been a particular concern with waterborne pathogens and a desire to reduce the dependence of water supply on chemical disinfectants. Switzerland has adopted membrane barrier technology to meet removal and disinfection targets, and has set even more exacting standards for microbial removal than those of EU countries. This profile describes a drinking water plant installed with inge multibore membranes in 2005 to provide a UF barrier for a surface water source at Maennedorf, Lake Zuerich. The plant has achieved its treated water quality targets, and membrane integrity has been excellent with no decline in membrane integrity, and no fibre breakage. In addition, permeability has been stable since start up.

Treatment Objectives

Lake Zuerich normally operates with a relatively low turbidity of approximately 0.8 NTU, but water quality can vary particularly during the spring snow melt.

In Switzerland, the microbial treatment standard of < 20 cfu/ml (germs per milliliter) is particularly exacting, and UF membrane barriers have been utilized on numerous drinking water installations. In addition to this microbial standard, the UF system has to achieve a treated water turbidity of < 0.2 NTU. Due to occasionally algae blooms, the UF has been preceded at Maennedorf by Ozone/Granular Activated Carbon, as shown in the Process Flow Diagram in the Figure.

Performance

The plant has operated at a flux of 110 l/m²h, with a low consistent operating pressure. Apart from a 5 ppm chlorinated backwash once or twice per day for disinfection, no chemical cleaning has been required. Treated water quality has consistently met the < 0.2 NTU target, even during feed turbidity spikes. Of particular importance to the customer, the pressure decay test has confirmed that membrane integrity has remained consistent since the modules were installed, and no fibre breaks have been recorded.

Customer Statement

„UF provides the Drinking Water Authorities a microbial barrier to meet stringent Swiss standards. The inge membranes have shown excellent integrity and performance.“

Victor Leimgruber, Operations Manager

Process Flow Diagram