



Case Study

Textile Plant
Central India





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Q-SEP Model: Q-SEP 6008

Total Q-SEP Membranes: 18

Feed Flow: 64m³/hr

Feed Water: Textile Wastewater

The Q-SEP UF system, designed at high flux rates of 60 LMH, required 30% lesser number of modules to be installed, saving on client's capex.

A central India textile plant was in need of ultrafiltration membranes for the pretreatment portion of a wastewater recycle system. The client was looking to treat and recycle their textile effluent. Textile effluent is severely contaminated and contains considerable amounts of hazardous pollutants. Environmental regulations have made it mandatory to treat effluent before allowing it to flow into the natural ecological system. The scarcity of fresh water availability has also necessitated that wastewater to be treated for recycle and reuse. The client explored various UF options, and found Q-SEP® hollow fiber UF membranes to be the most suitable and robust solution for their polluted effluent. The Q-SEP system has been running successfully since installation in 2015.

Project Overview

The textile plant is a state-of-the-art integrated manufacturing facility located in Central India, and produces premium pure wool, wool blended and polyester viscose suiting. This plant has achieved a record production capacity of 14.65 million meters, giving it the distinction of being the single largest integrated worsted suiting unit in the world.

Client's turnkey wastewater treatment project was awarded to a large well-known OEM, to recycle the textile effluent for reuse in the textile manufacturing process.

The wastewater recycle system comprises of biological treatment, HRSCC media filter, color removal unit followed by Q-SEP ultrafiltration and the reverse osmosis system. Q-SEP Ultrafiltration membranes have been installed in the RO pretreatment system, to safeguard the RO membranes from fouling due to fine colloidal impurities. The feed water to the UF plant is tertiary treated textile effluent.

Textile wastewater is highly challenging in terms of treatment, and is characterized by extreme fluctuations in many parameters such as chemical oxygen demand (COD), biochemical oxygen demand (BOD), pH, color and salinity.

The client found Q-SEP® hollow fiber UF membranes to be the most suitable and robust solution for their polluted effluent. The superior patented technology, and lower capex as a result of lower number of modules required as compared to other manufacturer's UF system, persuaded the client to select QUA's Q-SEP ultrafiltration. **The Q-SEP UF system is designed at high flux rates of 60 LMH, and required 30% lesser number of modules to be installed, saving on capex.**

Q-SEP® hollow fiber ultrafiltration modules contain membranes manufactured with QUA's innovative patented "Cloud Point Precipitation" method. This process ensures a high pore density along the length of the fiber and uniform narrow pore size distribution in the membrane.

Project Profile

Q-SEP modules deliver superior performance characteristics and product water quality that surpass the quality from conventional UF modules. The narrow pore size distribution allows the membrane to produce water with a low silt density index (SDI). The lower product SDI leads to less frequent and easier cleaning of downstream RO membranes. In addition, the Q-SEP membranes provide an excellent rejection of bacteria and viruses.

Q-SEP UF membranes are made of modified hydrophilic polyether sulfone (PES) material that offers high fiber strength and excellent low fouling characteristics, resulting in higher membrane productivity. These hollow fiber membranes operate under a low transmembrane pressure in an inside-out flow configuration for superior performance. Applications of Q-SEP UF include pretreatment to RO systems (brackish and seawater applications), purification of surface and well water for potable applications, filtration of industrial water, and wastewater recycle and reuse.

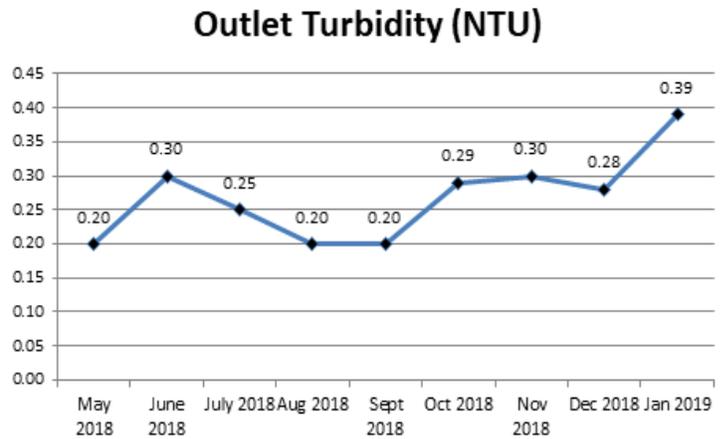
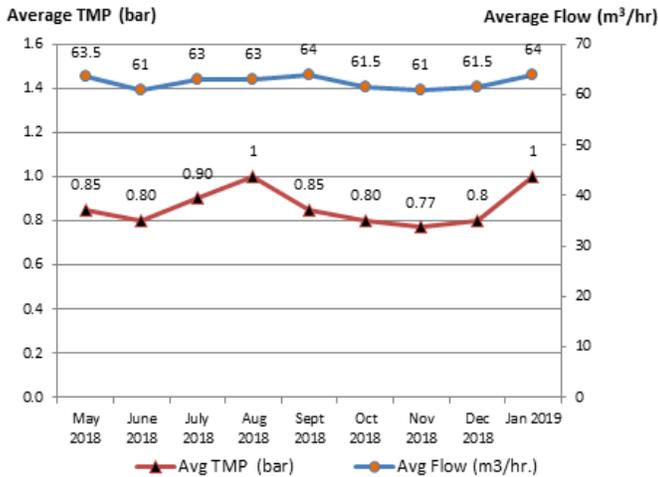
QUA Solution

UF Feed Turbidity has been in the range of 9-12 NTU. The Q-SEP system has been running successfully at the client's plant since mid-2015, and the performance of the membranes on textile wastewater treatment has been very encouraging.

The system is designed at around 60 l/m²/hr flux with a backwash flux of 200 l/m²/hr. The Chemically Enhanced Backwash is performed using sodium hypochlorite, sodium hydroxide and citric acid.

The UF Transmembrane Pressure has consistently been 1 bar and below, since the startup. The cleaning of Q-SEP membranes is done by regular backwash and CEB's. The product water turbidity has been consistently less than 0.5 NTU and SDI less than 3, which meet the RO membrane inlet requirement.

The above results make it quite evident that Q-SEP[®] is very effectively treating the textile waste producing superior product water quality at low operating cost.



Q-SEP® Hollow Fiber Membranes

Q-SEP® hollow fiber ultrafiltration modules contain membranes manufactured with QUA's innovative patented "Cloud Point Precipitation" method. This process ensures a high pore density along the length of the fiber and uniform narrow pore size distribution in the membrane. Q-SEP modules deliver superior performance characteristics and product water quality that surpass the quality from conventional UF modules. The narrow pore size distribution allows the membrane to produce water with a low silt density index (SDI). The lower product SDI leads to less frequent and easier cleaning of downstream RO membranes. In addition, the Q-SEP membranes provide an excellent rejection of bacteria and viruses.

About QUA

QUA is an innovator of advanced membrane technologies that manufactures and provides filtration products to address the most demanding water challenges.