



Automobile Manufacturing Plant, Chennai, India

Q-SEP Model: Q-SEP® 6008

Total Q-SEP Membranes: 14

Permeate Flow: 45m³/hr

Application: Automotive car manufacturing plant effluent treatment

The Facility

The client is a wholly owned Indian subsidiary of one of the world's largest automobiles conglomerates. The Indian subsidiary is one of the largest manufacturer and exporter of passenger cars in India.

Project Overview

The client had set up a new plant and was looking to expand their ETP to treat the increased effluent. Ultrafiltration was required in tertiary treatment to provide consistent product water with low silt density index (SDI), to safeguard downstream Reverse Osmosis (RO) unit from colloidal fouling. The feed turbidity to Ultrafiltration (UF) unit varies from 5 NTU to 20 NTU. QUA's Q-SEP Ultrafiltration modules successfully met the plant's requirements due to their low fouling characteristics, uniform pore size distribution and large surface area which provides high operating efficiency and reliable operation. The Q-SEP system follows a pretreatment process comprising a dual media filter followed by a bag filter, and precedes a reverse osmosis treatment system for tertiary treatment.

QUA Solution

The automobile plant effluent passes through a primary treatment followed by secondary treatment which is a biological process involving aeration. This is followed by settling, clarification and disinfection. The disinfected water then passes through the DMF before being taken into the UF system.

Q-SEP UF skid comprises 14 modules of Q-SEP 6008, there are of 2 parallel rows with 7 Q-SEP modules each. The system is designed to operate in both dead-end and cross-flow mode, depending on the feed turbidity variation. The BOD value at the inlet of UF is between 20 - 40 ppm and COD 150 - 200 ppm.

The Q-SEP UF system was commissioned in February 2017, and has been in successful operation for more than a year now. The system is able to provide a consistent permeate output of 45m³/hr. The Trans-membrane pressure (TMP) has been consistently below 1 bar. Chemical Enhanced Backwash (CEB) is done once a day. The output SDI is consistently below 3 since the startup.

About QUA

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

Q-SEP® Hollow Fiber Membranes

Q-SEP® hollow fiber UF 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 pore size distribution in the membrane; 90% of the pores are of the size 0.02 micron. Q-SEP modules deliver superior performance characteristics and product water quality that surpass the quality from conventional UF modules. The uniform pore size distribution allows the membrane to produce water with a low silt density index (SDI), which 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 trans-membrane 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.