



Pharmaceutical Effluent Recycle, India

Location: Pune, India

Model: Q-SEP 6008

Capacity: 34.5 m³/hr

Number of Membranes: 10

Application: Pharmaceutical Effluent Recycle

Project Overview

The customer is a renowned pharmaceutical company based in Pune, founded with the aim of manufacturing lifesaving immuno-biologicals. Their range of products have been supplied to international health agencies like the WHO, UNICEF, PAHO and their vaccines are being used in more than 140 countries across the globe. The Customer's manufacturing facilities conform to the WHO current Good Manufacturing Practice (cGMP) requirements.

The customer installed a water treatment system to recycle pharmaceutical process wastewater for reuse. Ultrafiltration was chosen as pretreatment to a reverse osmosis system, and the feed water was tertiary treated pharma effluent.

Soon after operation began, the existing UF membranes were repeatedly choking. The customer had to frequently backwash and resort to chemical cleaning, often up to three times in a day.

RO performance was impacted due to frequent cleaning because of higher SDI values. After seven to eight months of operation, the membranes were completely fouled. The customer started searching for a more reliable and advanced ultrafiltration solution.

QUA Solution

QUA understood the criticality of the situation and offered Q-SEP ultrafiltration modules to the customer to replace the existing UF membranes. Before replacing the existing membranes in their system, the customer desired to conduct pilot trials with Q-SEP membranes on actual site conditions.

The trials were a huge success and delivered the required product water quality with no irreversible fouling in the membranes, an essential requirement for reliable and sustainable operation of an RO unit. With the success of the pilot trials, the customer replaced the existing UF with QUA's Q-SEP 6008 membranes.

The patented Cloud Point Precipitation technology that provides a uniform pore size distribution was the differentiating factor. This technology has proven to be extremely effective even in challenging effluents. QUA conducted a detailed system audit and confirmed the suitability of the existing feed, backwash pumps, chemical dosing and automated valves.

Q-SEP membranes were installed through a water treatment system integration partner who modified the existing feed, product and reject pipe headers.

Project Profile

Challenging Pharmaceutical Effluent Recycled Using Q-SEP® Hollow Fiber Ultrafiltration Membranes

Results

The customer's UF plant with Q-SEP Ultrafiltration membranes has been in successful operation for more than two years now.

- The chemically enhanced backwash frequency has been reduced to **one third**
- Reverse Osmosis cleaning frequency has been reduced to **half** and membrane life prolonged
- Continuous and enhanced RO performance has been achieved
- The customer has experienced increased membrane reliability with Q-SEP Ultrafiltration membranes.

Q-SEP Ultrafiltration facilitated the customer to reduce their water footprint and:

- Recycled pharmaceutical wastewater for their utility
- Reduced fresh water consumption
- Reduced the quantity of effluent for final disposal

QUA's Q-SEP successfully provided their customer with a robust pretreatment component to ensure a long term solution for their effluent recycling system.

Pilot Trial Operational Parameter

	Unit	Value
Turbidity	NTU	~ 0.1
SDI		1.5
TMP	psi	6.5 to 7.5

UF Product Parameter

	Unit	Value
Q-SEP 6008	Numbers	10
Turbidity	NTU	~ 0.1
SDI		1.5
TMP	psi	7

UF Operational Parameter

	Unit	Value
Feed Flow to the Plant	m ³ /hr	37
Product Flow Rate	m ³ /hr	34.5
Cross Flow Rate	m ³ /hr	2.5
Backwash done every 45 minutes The chemically enhanced backwash is done once in 30 hours using sodium hypochlorite, sodium hydroxide and hydrochloric acid.		