Project Profile

Auto Ancilliary Manufacturing Plant - Chennai, India
EnviQ® Submerged Ultrafiltration Membrane

Model: EnviQ® 12C
Capacity: 3.0 m3/hr
Number of modules: 1
Facility: Auto Ancilliary manufacturing plant
Influent: Biologically Digested Sewage
Product Turbidity: < 1 NTU

The Facility

The client is an auto ancillaries unit, manufacturing auto components, with operations headquartered at their factory near Chennai, India.

Project Overview

Client's Chennai facility was generating about 50KLD of sewage on a daily basis. The sewage was being treated in a conventional Activated Sludge Process (ASP) wastewater system. The ASP system was more than a decade old and quite timeworn. It was reaching its limits with frequent breakdowns, and continuously failing to deliver the desired output quality.

The client had meanwhile added more workforce, and was exploring a brand new sewage treatment plant of an increased capacity of 60 KLD. Their requirement was for a system that would effectively treat the sewage and produce high quality water that could be reused in their process, be able to meet the Pollution Control Board (PCB) norms, and also reduce their raw water intake. Client evaluated and finally chose a membrane bio-reactor (MBR) solution, due to its capability of minimizing unit operations while still producing high quality, ultrafiltration-grade water for their use.

New technologies have emerged over time to treat and recycle water, that are environmentally friendly and sustainable, with minimum space requirement and minimal chemical usage. Membrane Bio Reactor (MBR) is one such membrane based technology for wastewater treatment that is far superior in terms of product water quality and process control. Whilst ASP has a secondary clarifier followed by media filters and then ultrafiltration membranes, MBR completely eliminates the secondary and tertiary treatment process. The treated water after MBR is much superior to the one achieved after conventional activated sludge, and can be directly used for recycling.

MBR being a robust membrane, the feed limiting conditions can be flexible and beyond the limits of a conventional activated sludge process. As the units of operations get reduced in MBR, power and chemical consumption also reduces considerably when compared to conventional systems. MBR technology is thus most reliable as compared to all other existing wastewater treatment processes, and in today's times of water scarcity, can play a pivotal role in recycling water and saving fresh water consumption.

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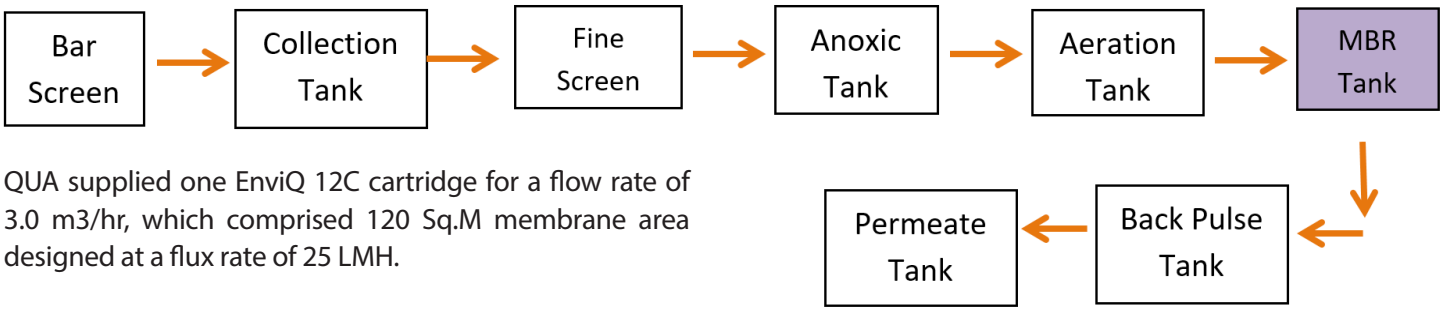
QUA Solution

After reviewing several membrane options, the client finally selected QUA's EnviQ® submerged MBR membranes. EnviQ® was preferred due to its unique patented process of manufacturing, which provides rugged flat sheet membranes with a pore size of 0.04 micron, resulting in high grade ultra-filtration quality water. Due to the frameless design, membrane cartridges are able to withstand high organic load while minimizing biofouling.

QUA is the leader in advanced membrane technologies providing solutions for the most demanding water purification requirements. QUA manufactures the highest quality membrane products for water treatment plants all over the world. Headquartered in USA and with offices located around the world, QUA has the personnel and logistical capability to offer complete service and support to our customers and partners through pilot testing, field service and training.

A prefabricated MBR membrane skid was supplied for sewage treatment application at client's Chennai plant. Following is the STP scheme at the site:



QUA supplied one EnviQ 12C cartridge for a flow rate of 3.0 m3/hr, which comprised 120 Sq.M membrane area designed at a flux rate of 25 LMH.

The MBR based STP was commissioned in February 2017. During commissioning, the Mixed Liquor Suspended Solids was steadily increased to 8000 mg/l, and has been maintained at the same level since then. The excess sludge is taken through the sludge handling system comprising sludge drying bed.

The Permeate from the MBR has been consistently < 1 NTU at all times.

The system treats 60,000 liters per day (MLD) for use as process water for various applications in the auto ancillary plant, such as sprinkling for their cooling system; a part of the treated water is further treated through RO and DM plant. Due to effective utilization of recycled sewage within the facility, the raw water usage has been reduced by 40% from their original intake of 100KLD.

QUA provided seamless support to the OEM throughout the system design and en¬gineering process, as well as the commissioning phase of the project, to ensure that a reliable solution is provided to the end user.

Client is expanding their Chennai plant capacity and, owing to the satisfactory performance of EnviQ, they have placed a repeat order on QUA to install another EnviQ based 80KLD MBR at the same site.

Following are the performance graphs of the EnviQ based MBR system operations: