

Recycling Sewage for the Urban Need

It is high time recycling technologies like MBR get their due attention.

Membrane bio-reactor, as a technology for recycling sewage, has been there for quite some time. In the past 15 years, there have been a number of installations worldwide, either replacing existing conventional technology or Greenfield projects.

What's available since the start of waste-water treatment has been the conventional activated sludge process which is no doubt a robust biological process. There were a number of innovations in reducing the areas occupied by aeration tanks and few innovations in the screening and tertiary treatment of the scheme. However, all the innovations did not assure the provision of ultra-clean water at the end of the tertiary treatments.

Membrane bio-reactor brought an innovation in ultra-clean water from the sewage treatment system. It eliminated tertiary treatment systems and operated at very high MLSS, resulting in drastic reduction in the footprint area. It uses a membrane system in the bio-reactor tank to suck out ultra-clean water. Since these membranes are capable of handling high turbidity, it is possible to install the same in the bio-reactor tank, thereby reducing space requirements drastically.

The costs of fresh water utilised by hotels, IT parks and other commercial building segments in metropolitan cities have risen steadily in the past 10 years. The data shows the rise to be more than 20 per cent year on year for the past five years. For example, in Chennai, a 10 KL tanker was costing an average of Rs 1,000 five years back. It costs Rs 2,500 now. The rampant exploitation of groundwater is also capped and implemented strictly by the government authorities.

In this scenario, the potential for recycling sewage is on the rise. In the hotel industry and in IT parks, there exists major avenues for recycling. Cooling tower requirements in typical commercial buildings account for 30 – 40 per cent of their freshwater requirements. Flushing requirements may account up to another 15 – 25 per cent. These applications can be safely applied with recycled water.

MBR combines two distinct advantages of high-end technology and less footprint to achieve the goal of recycling. It ensures ultra-clean water and requires less operating space. This is not possible using conventional technology due to inconsistent treated water quality, shock load limitations and occupying at least 40 per cent more footprint.

Though membrane bio-reactor has been there for a while in the recycling market, its full potential is yet to be realised. In the Indian context, potential benefits have not been communicated efficiently. The scepticism about very sophisticated control systems and lack of local service support, in case of a breakdown, has prevented the full realisation of the benefits of the technology.

QUA, the leading developer of advanced membrane products, from USA, addresses these challenges with their unique product, ENVI Q, which is a Flat sheet PVDF membrane, immersed in the bio-reactor tank. ENVI Q combines the ruggedness of the flat sheet membranes and filtrate quality of ultra-filtration membranes, which no other alternative provides. The PVDF membrane has a nominal porosity of 0.04 micron which ensures ultra-clean water devoid of bacteria and virus. This recycled water can be used directly for cooling tower and flushing applications. In the event of a recovery cleaning of PVDF membrane, the unique ENVI Q Flat sheet

configuration ensures easy maintenance. Membranes can even be cleaned at site in case they are fouled. It requires a very simple control mechanism. The state-of-the-art manufacturing facility at Pune, widespread distribution network and local expertise of the global technology, ensures quick service report to meet any kind of emergency.

With the costs of freshwater pushing north combined with the lack of availability of sufficient resources, it is high time recycling technologies like MBR get due attention in the commercial building segment of the urban landscape.

This article has been authored by K Karthikeyan, Sales Manager, QUA.



ENVI Q is a unique product from US-based QUA