

Case Study: Lake Erie Continuous MicroFiltration Plant, Ontario, Canada

“Lake Erie continuous Microfiltration plant has solved water problem in the region around Ontario. The plant fulfills the requirement of more than 10,000 residents of the area by maintaining a regular supply of six million gallons of water per day”.

In 2002 Ontario municipality awarded the contract to noted MNC to provide the first microfiltration plant to treat water from Lake Erie. The company after completing the survey of the project decided to go for continuous microfiltration plant. It was expected that the plant will provide six million gallons of water per day to over 10,000 residents in the Ontario area. The area that was expected to be served by the plant include south Chatham-Kent including the communities of Blenheim and Erie Beach.

The continuous microfiltration (CMF) make use of air/liquid backwash technology for removing inorganic or organic contaminants which are greater than 0.2 microns. The system is designed in such a way that organic and inorganic contaminants are not allowed to enter the hollow fiber membranes which acts as barrier for CMF. The plant also incorporates activated carbon for taste and odour control, and chlorine for disinfection. This microfiltration unit was finally commissioned in 2003.



Microfiltration Facility At Ontario

Microfiltration treatment process

In microfiltration process, wastewater is first transfer into one or more reaction tanks. Water is then pretreated by using pretreatment chemicals that results in the precipitation of the contaminants to filterable particles. Reactions are controlled automatically. The wastewater after chemical pretreatment passes to a concentration tanks. The chemically pretreated wastewater then flows to the concentration tank.

From concentration tank, using high fluid velocity water is pumped continuously through the tubular membrane filtration modules. Water is forced at the normal pressure. Clean water passes through the membrane whereas contaminated particles remain suspended in the recirculated stream. The contaminants however does not accumulate on the surface of the membrane. Their accumulation is prevented by the turbulence of the recirculated slurry. This enables high and continuous filtration rates.

The clean water or the membrane filtrate finally flows into a final neutralization tank. Using reverse osmosis process, the filtrate is finally processed. Wastewater concentration slurry is maintained between 2% to 5% solids. Portion of the slurry left is further reprocessed and the filtrate from this slurry is returned to the feed system for reprocessing.