

Pilot Study Using Reverse Osmosis Plant to produce Soft Sterile Water for Pharmaceutical Industry

A Pharmaceutical manufacturing industry utilized treated municipal water for the production process. The water treatment process undergoes softening and sterilizing by boiling to comply with the BP standards. The softening process utilized was not adequate to maintain required water quality and sterilization method was not cost effective. Hence, the client requested our assistance to improve the process water quality with special consideration on its conductivity.



Pilot Scale RO Plant

By considering available information, source water quality, required water quality and present issues Reverse Osmosis (RO) technology was recommended to achieve required process water quality. Since the source is surface water supplied through municipal line, the concentrate stream generate from the reverse osmosis process could also be recycled for other operations. As significant investment is needed for full scale plant, the client agreed to carry out pilot study using pilot-scale RO plant available at Environmental Technology Section of ITI to ensure that the recommended technology is acceptable to obtain intended water quality.

This study was continued for two months providing water for the production process. The results revealed that the required water quality could be obtained consistently and concentrated stream could also be recycled for other cleaning activities.

Pilot study for Palm Oil Mill Effluent

Anaerobic digestion followed by aerobic digestion is the best available treatment technology for this type of effluent due to presence of high organic content in the forms of both soluble and insoluble (colloidal) form. Aerobic treatment is a straight forward design for any kind of biodegradable effluent. However, it is not economical in case of highly concentrated effluent even with dilution to bring down the organic strength. Therefore, anaerobic digestion is the most economical treatment technology for biodegradable effluent with high organic strength prior to the aerobic treatment. Since number biochemical reactions involved in the anaerobic digestion process (Hydrolysis, Acidogenesis, Acetogenesis and Methanogenesis), effectiveness of the treatment process is very specific to the type of effluent to be treated. Use of typical design parameters is not economical particularly in large scale design. Since various interferences could be possible for microbial activity, operation of prototype/pilot plant/demonstration plant is required to ensure effectiveness of the anaerobic digestion technology for treatment of palm oil effluent.

Therefore, following demonstration plant was proposed to determine effectiveness of anaerobic treatment technology.



Pilot Scale Membrane Anaerobic Digester