A vegetable oil refinery was facing increased costs/fees for both City water and wastewater and wanted a way to reduce these costs by reusing treated wastewater for cooling tower makeup. Following treatability testing at the Dynatec lab and pilot testing at the plant, it was determined that permeate from the MBR ultrafilter would, in fact, meet the quality needed for cooling tower makeup water.

The refinery produces approximately 125 gpm of biologically treated wastewater.

After review by management, the decision was made to install a 50 gpm system with the capability to expand to 75 gpm in the future.

The refinery operates an SBR wastewater treatment system to reduce BOD, COD, phosphorus, and TSS in their wastewater prior to discharge to a city POTW. Two reaction tanks provide the sequencing batch treatment. These tanks then decant to a third tank for further treatment. This third tank is used as the feed to an ultrafilter. Permeate flow is sent to the cooling tower based on the tower basin level. When makeup is not needed, the permeate is automatically diverted back to the third reaction tank. Wasting is used to maintain the solids concentration in tank three between 3,000 – 5,000 mg/L. Provision is provided to send the permeate to the effluent manhole, as needed, to balance tank volumes.

The Dynatec ultrafilter system has proven to be a successful and cost saving addition to their treatment system. They are able to meet the permit for phosphorus without using chemicals which represents additional cost savings. Operators are pleased with the system and management achieved the savings they hoped to produce through reduced city water, reduced chemical use and reduced effluent volume which are reported to save in excess of $10,000 per month.