S2.4.1 INDUSTRIAL MEMBRANE SEPARATIONS CASE STUDY - POYLALKYLENE GLYCOL SOLUTION RECOVERY & REUSE

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The world has seen tremendous economic growth over the past century plus. The goal of economic growth is improved standards of living, but with the continued growth of industrialization comes the threat of increasing environmental pollution, the effect of which may result in a decreased standard of living.

New and improving membrane separations techniques are increasingly important as environmental regulations, and industry itself, focus on pollution control and waste stream resource recovery. Generally, the driving forces that promote evaluation and implementation of waste water and industrial waste stream separations techniques include solids generation, handling and haulage costs, disposal, increasingly stringent environmental regulations, increasing costs of fresh water, improved performance, the need for environmentally compatible processes, energy preservation, and the economic pressure to salvage or recycle useful or expensive components from various streams.

Simply, membrane filtration (microfiltration (MF), ultrafiltration (UF), nanofiltration (NF) and reverse osmosis (RO)) technologies are being employed on water, waste water and industrial streams for recycle, reuse and discharge.

This paper will give an overview from laboratory to full scale system of an industrial heat treatment quench process recovering 70+% of a polyalkylene glycol solution for reuse reducing chemical consumption & disposal costs by greater than 50%.

Topics of review:

- Removal of oil & grease (O&G) and suspended solids from an industrial waste water stream that has processed / quenched heat treated parts for reuse with UF membrane technology,
- Preliminary laboratory testing, membrane selection,
- Full scale system and return on investment (ROI).