

Laboratory Scale Evaluation of Organized Industrial Zone (OIZ) Wastewater Reuse by MBR-NF/RO: Kayseri OIZ

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Abstract- In this study, an aerobic membrane bioreactor (MBR) system to treat a highly polluted mixed organized industrial zone (OIZ) wastewater was presented at laboratory scale. Flat sheet (FS) microfiltration (MF) and ultrafiltration (UF) membranes were used for the effluent of the primary sedimentation tank of the wastewater treatment plant (WWTP), while raw (effluent of primary sedimentation tank) wastewater was treated with MBR to further reuse with six different nanofiltration (NF) and reverse osmosis (RO) membranes. A 20 L of MBR was used with 2 different FS membrane modules after selecting the membranes by means of resistances. MBR results showed that UF membrane with a molecular weight cutoff value (MWCO) of 250 kDa was the best-performance membrane. It was cleaned with physical techniques and performed better with high quality water effluent. Results indicated that both systems directed to XLE (RO) membrane that provides both better salt removal and better membrane performance. This membrane effluent could be used for irrigation purpose which provides Turkish irrigation water standards.

Keywords- Organized industrial zone wastewater, MBR, NF-RO, reuse, membrane

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