RECOVERY OF NICKEL AND CHROMIUM FROM WASTEWATER BY MEMBRANE PROCESSES

BY

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ABSTRACT

In this study recovery of heavy metals (Ni and Cr) and water from wastewater have been explored using the reverse osmosis process. The relationship between permeate flow rate and trans-membrane pressure drop (TMP) for different feed concentrations were derived. The effect of TMP on concentration of heavy metals in the permeate was also studied. Recovery of heavy metals and high quality process water were two main applications studied here using pilot plant membrane unit. A feasibility of reclaiming high quality process water from the effluent was carried out by a comparative study between RO membrane process and deionization process for small and medium scale electroplating industries. A modification of surface force pore-flow (SFPF) model was also included as a part of this study. Experimental data for the modelling work were gathered by using aqueous sodium chloride solutions. The verification of the SFPF model for the aqueous NiSO₄, NiCl₂ and CrCl₃ solutions was not included in the scope of this work.
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