

Ceramic Membrane Filtration Technologies for Oilfield Produced Water Treatment

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Abstract : "Produced water" (PW) is any fossil water that is brought to the surface along with crude oil or natural gas. By far, PW is the largest waste stream by volume associated with oil and gas production operations. Due to the increasing volume of waste all over the world in the current decade, the outcome and effect of discharging PW on the environment has lately become a significant issue of environmental concerns. Therefore, there is a need for new technologies for PW treatment due to increase focus on water conservation and environmental regulation. The use of membrane processes for treatment of PW has several advantages over many of the traditional separation techniques. In oilfield produced water treatment with ceramic membranes, process efficiency is characterized by the specific permeate flux and by the oil separation performance. Apart from the membrane properties, the permeate flux during filtration of oily wastewaters is known to be strongly dependent on the constituents of the feed solution, as well as on process conditions, e.g. trans-membrane pressure (TMP) and cross-flow velocity (CFV). The research project presented in these report describes the application of different ceramic membrane filtration technologies for the efficient treatment of oil-field produced water and different model oily solutions.

Keywords : ceramic membrane, membrane fouling, oil rejection, produced water treatment

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