Oil Removal from Wastewater of Al-Bezerqan Crude Oil Field by Air Flotation

In this study, an attempt was made to study the efficiency of dissolved air flotation process to remove the emulsified oil in the wastewater generated from Al-Bezerqan oil fields. The emulsified oil in water prepared by addition the desired concentration of oil and salt solution to the water and then mixed with air sparger mixing. The experiments were carried out in a continuous dissolved air flotation system. The range of variables that studied in this work were, (0.5-2bar) gauge pressure, (0.6-1.2lit./min.) flowrate of air saturated oily water, (10-100g/lit.) salinity concentration, (25-40 ^{O}C) temperature of water,. In order to study the effect of addition of some chemicals on the enhancement of the efficiency of oil from oily wastewater, some experiments were carried using alcohols as frother with concentration range from 0.05 to 0.5% vol. and best operating conditions for dissolved air flotation process. Three type of alcohols (ethanol, propanol, hexanol) were used in this work to show the effect of increasing the long chain alcohol on oil removal. The best conditions of flotation obtained are:

1bar gauge pressure, 1lit./min. flowrate (the best space time in pressure vessel = 2min), 100 g/lit. salinity concentration, 40 ^{O}C temperature of water, 0.5%vol. concentration of alcohols and the efficiency of removal increase with increase the long chain alcohol from ethanol to hexanol.