

Pretreatment of Seawater using Precipitation agents to reduce Scale formation in distillers

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Abstract. The objective of this study is to investigate the scale formation in multi stage flash distillers. The scale is a result of the precipitation of insoluble species including calcium sulfate as well as calcium carbonate and hydroxide magnesium. The solution of the problem involves a pretreatment of seawater before introduce into distillers. The pretreatment is based on the removal of the calcium and magnesium cations from seawater, using precipitator agents as: soda ash, potassium hydroxide, and mixture of soda ash with potassium hydroxide at different temperature of 25, 35, 50, and 100°C. Pretreatment achieved by a mixture of potassium hydroxide and soda ash in seawater gave the best results. The results of this work show that by mixture soda ash (10g/L) and potassium hydroxide (3g/L) at temperature of 100°C favor the precipitation of calcium and magnesium ions. The calcium and magnesium concentrations in seawater were completely reduced.

Keywords: desalination, scale, temperature, soda ash, potassium hydroxide.