Carnallite Froth Flotation Optimization and Flotation Cells Efficiency in the Arab Potash Company – Jordan

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Abstract

Arab Potash Company (APC) was formed to develop minerals from the Dead Sea which is the main and only source for the potash industry in the form of potassium chloride.

Dead Sea salts are converted into a final sailable product in the form of potassium chloride which is commercially known as Potash.

Currently, APC is producing potash for agriculture, chemical industry, industrial salt, bromine and NPK (Nitrogen, Phosphorus, and Potassium) fertilizers.

The flotation unit at APC is a significant part of the overall processes, which end up separating Halite from mixture, Halite separated as float, while Carnallite as sink.

The current study aims to provide a better understanding of flotation process. In this investigation, several laboratory experiments were conducted that covered main factors which affect significantly on flotation cell.

The best flotation cell efficiency in experiments was achieved in term of Halite removal and Carnallite recovery.

Tests were covered: Agitator speed, pulp density, reagent quantity, conditioning time, temperature effect, Ph effect, additives effect, size distribution effect, and wet screening analysis were performed.

The conclusion is based on analyses of the obtained results incorporated with direct observation from APC flotation cells.

Obtained results indicated that considering certain significant experimental parameters will reduce the loss and the overall cost, and, consequently, will increase the overall production