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ENERGY COST OPTIMIZATION FOR AN INTEGRATED GREENFIELD POTASH SOLUTION MINE

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Abstract

A study was performed in order to determine the optimum energy balance between the solution mine caverns, refinery and crystallization ponds for a theoretical Saskatchewan potash solution mine. NG Consulting's solution mining cavern model was integrated with Hatch's surface refinery-crystallization pond models to provide an overall simulation from mine face to product. Simulations were carried out at varying cavern temperatures (from 60°C to 100°C) to estimate the energy consumption of the overall cavern-refinery crystallization pond system. The results of this work outline some of the benefits of a holistic approach to building a potash solution mining plant that is optimized in terms of energy costs.

Key words: Crystallization Cooling Ponds, Energy Optimization, Potassium Chloride, Potash Solution Mining, Integrated Model Approach.

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