Case Study:

Managing High Flow 80°C Water in Underground Mines Within Volcanic Features

Howden
A Chart Industries Company

The Customer

Joe Evert from Mineright is a dewatering engineer consultant, with substantial experience in unprecedented and destructive water events impacting underground mining operations.

The Challenge

An Indonesian mine faced the challenge of managing high flow rates of hot water encountered during routine mining operations in their underground gold mines. Water temperatures inside the gold-bearing vein structures ranged from 65°C to 82°C, emanating from the active thermal feature they resided in. The presence of hot water posed operational and safety risks, requiring effective dewatering strategies to be implemented.

The Solution

To address the dewatering challenge, Joe designed and assisted the mine in implementing a comprehensive program consisting of geological, hydrogeological modelling, and operational project work. *"This task was not possible without Pumpsim,"* Joe explains. The software was utilised to simulate and optimise pumping systems in a variety of circumstances, to aid in managing the high flow rates of hot water. Pumpsim allowed them to model and analyse the behaviour of dewatering boreholes, optimise pump placement, and plan the installation of pumping infrastructure with certainty for the end customer.

The Results

The use of Pumpsim and the integrated approach to dewatering boreholes resulted in improved targeting success rates and increased individual borehole water flows from 150 L/s peaking to 450 L/s. Refining the hydrogeological model and gaining knowledge over time, the mine achieved better outcomes in intercepting hydrothermal flows, limiting unnecessary bore installations at a cost of US$200K each. Informed decision making led to the strategic approach to dewatering the vein structure ahead of mining fronts mitigating the risks associated with hot high flow water rates encountered during mining operations. The successful dewatering program not only improved the safety and efficiency of mining operations but substantially extended the mine life allowing access to previously inaccessible ore at depth in the underground gold mine.

KEY ADVANTAGES

200%
Increase in high flow hot water mitigation

SAFETY
Improved working environment and reduction in high flow hot water risks

OPERATIONS
Heightened efficiency and more informed decision making

PUMPSIM™
3D Pumping Simulation Software

An intuitive and interactive 3D modelling software for the accurate design, optimisation and simulation of complex real world pump and liquid distribution systems. It seamlessly enhances decision making through automatic calculation of flows and pressures. **Try it today!**

47 Peel St, South Brisbane QLD 4101 Australia +617 3733 0760 ventsim@howden.com www.pumpsim.com