

AMC BOS™ doubles metres drilled per day

Objectives

- Increasing productivity with improved drillhole stability
- Reducing consumption of mud and water due to lost circulation and high torque

Project Details

Location: Chile

Resource: Au

Application: Drill hole efficiency

Challenges



Some 3,500 to 5,200 metres above sea level, the site had issues with constant formation changes and complicated fault zones.



Formations consistently produced complete or partial fluid losses. There were several soft and problematic formations resulting in lost circulation and issues such as hole failure, stuck rods, and lost casing.



Such lost circulation problems delayed the drilling program, which, in turn, delayed total progress of the project and its comparative performance against other campaigns in the same area. The client implemented reverse circulation pre-collars before diamond drilling to complete more drillholes; however, they were searching for a preventative solution to address lost circulation.

IMDEX Solution

IMDEX Borehole Optimisation System™ (BOS)

The AMC BOS solution includes the AMC BOS UNIT™ a driller-operable in-hole lubricating and casing while drilling tool, and AMC BOS FIX™, a rapid-fill polymer grout.

After an initial trial, AMC BOS had achieved strong results. For the second trial, it was suggested the method be implemented from the commencement of the hole as a preventative measure against lost circulation.

From the implementation of the AMC BOS, several improvements in drilling efficiency were achieved, and all were pleased with the overall result.

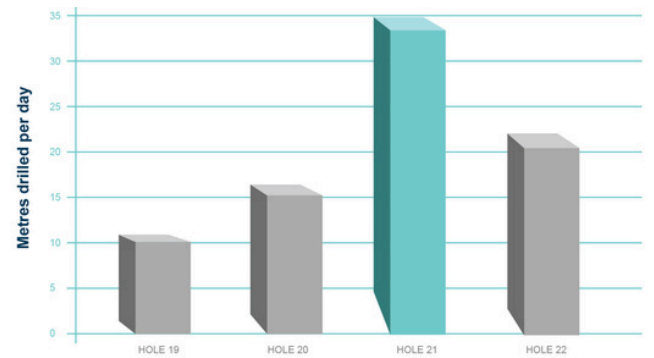
Strategy

Throughout the trial at hole 21*, AMC BOS FIX was injected at regular intervals, penetrating fractures and securing unstable rock by encasing the borehole wall with a thin lubricating membrane. AMC BOS was able to treat the application area, which consisted of semi-compact rock with fractured zones to improve stability, torque control and fluid losses from beginning to end.

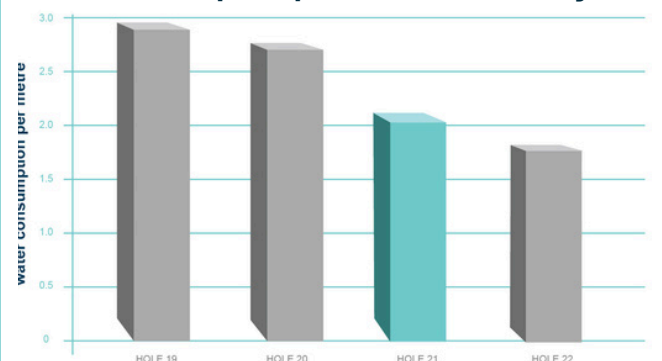
Comparing results from similar holes 19, 20, 21 and 22* - holes which were drilled using Reverse Circulation (RC) pre holes and continued with Diamond Drilling (DOH). At hole 21* AMC BOS maintained a lubricating membrane down the borehole allowing for safe, constant and controlled drilling.

*Compared to holes with similar characteristics (19, 20, and 22). Numbering of the holes has been modified for confidentiality.

Metres drilled per day doubled

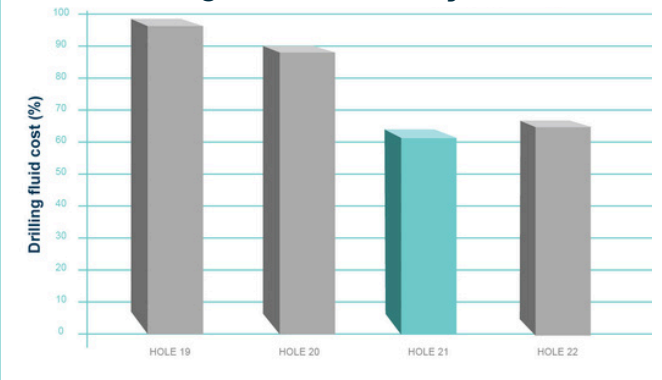


Water consumption per metre reduced by 32%



Note: Hole number 22 presented a lithology consisting of mainly compacted ground, therefore water consumption was naturally low, while hole 21 presented a semi-compact ground with highly fractured zones.

Cost of drilling fluids reduced by 26%*



Note: Cost of hole 21* includes the cost of BOS FIX

Results

IMDEX Borehole Optimisation System™ (BOS) delivered:



Metres drilled per day increased by an **average of 200%**



Reduced cost of drilling fluids by **up to 26%***



Reduced water consumption per metre by **up to 32%**



Torque remained constant and controlled, ranging between 1900 - 2000 psi



Avoided the use of wedges to correct hole deviations by keeping controlled conditions



Offered an alternative to the traditional lost-circulation methods



Reduced the risk of lost boreholes, stuck rods and other drilling issues through the complicated fault zones