

EXPERIMENTAL SETUP FOR A SINGLE DIAMOND CUTTER DRILL TEST

MINEX CRC PROGRAM 1

Drilling Technologies

MASTERS PROJECT

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RESEARCH PROJECT

The project investigates the effect of properties associated with diamond/rock interface on drilling response of an impregnated diamond bit. An impregnated diamond bit can have 100 to 200 active diamonds working at the same time to remove rock. With the existing drilling response model, diamond properties are characterised as an entirety under equivalent blade concept - a single blade that integrates properties of all active diamonds. Due to self-sharpening capability, it is a challenge to understand the variation of the properties such as cutting angle, wear flat length and polishing rate at different rate of penetrations.

The research provides invaluable insights to review the existing drilling response model and an estimation of diamond status by looking at real time drilling data. This can be linked to drilling optimisation ultimately which coincides with Project 1 of MinEx CRC.