

Experimental Study on Abrasive Size Effect in Abrasive Waterjet Drilling

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ABSTRACT

Abrasive Waterjet (AWJ) technology is non-conventional, unlike conventional drilling methods with drill bits. AWJ drilling removes the target rock, accompanied by continuous impacts of high-pressure water and abrasive. Drilling performance is affected by various parameters of the waterjet system and is highly dependent on the abrasive size. Thus, the selection of an optimal abrasive size is of importance. In this study, an AWJ drilling experiment is conducted to investigate the aspect of drilling performance. Garnet is used as an abrasive, granite as a target rock. The results show that the abrasive size is a critical parameter that affects rock drilling performance. Careful consideration of abrasive size can significantly enhance the efficiency of AWJ drilling operations. As a result, this research will be a basis for understanding the effect of abrasive size on AWJ rock drilling.

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