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BLASTING SOLUTIONS **CONTROL OF FINE MATERIALS**

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Duality in generating fine materials in blasts is a recurring theme in the energy materials industry. On one hand, aggregate quarries are greatly concerned by the presence of fine materials resulting from the blasts, as often these cannot be put to use, thus becoming an environmental and economic problem.

On the other hand, the latest trends in optimising energy in mining projects believe that introducing fine materials in the comminution process can have a great impact in terms of both productivity and energy consumption.

This situation can be minimised, or even avoided completely, by correctly designing the blast operations, ensuring they increase or decrease the level of fine materials in accordance with requirements.

GENERATING FINE MATERIALS

The fragmentation process involved in all blasts generates fine, small-sized materials. The mechanism used to generate them is difficult to define, although potential sources such as those from the crushed zone around the blast holes as a result of the high pressures generated during detonation can be identified. Actions which have a direct impact on this crushed zone can be carried out as part of the overall fragmentation to be achieved.

The production of fine materials is determined by the energy level and its distribution and timing in the rock mass. Decoupled and spaced loads (intermediate stemming) tend to generate less fine material, as well as lower energy consumption.

Meanwhile, an increase in diameter, explosive density and detonation velocity, combined with a reduction in the drilling mesh (reduction of the total relative volume compared to the volume of the crushed zone) will usually lead to an increase in the level of fine materials. Furthermore, it should be remembered that generating fine materials also depends on the geo-mechanical characteristics of the rock mass, its geology and exploitation conditions.

CONTROL OF FINE MATERIALS REDUCTION OR INCREASE?

Reducing fine materials has a major impact on the viability and productivity of all operations in the aggregates industry. Large financial savings are possible with an improvement of just a few percentage points in the mass of fine materials generated.

Strategies for reducing fine materials require a methodology to monitor and measure the fragmentation resulting from the blast, as well as constant adjustment to the geological conditions of the quarry.



Generating fine materials in mining, on the other hand, can bring significant savings in the comminution process, which is why this aspect is given careful consideration when designing and carrying out the blast.

The distribution of the energy from the explosive, the timing of the blast and its adaptation to the geological and geo-mechanical characteristics of the rock mass all depend on whether or not fine materials are to be generated.



Be sure to contact MAXAM if you would like to add value to your mining project by fine material control services.