COUPLING NUMERIC AND SYMBOLIC MODELING IN BLAST DESIGN

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Abstract

The objective of blast optimization can be approached either in a qualitative sense of designing *a blast which will be "trouble free", or quantitatively in the sense of minimizing overall mining costs. Blast design simulators and fragmentation models have become an accepted tool in blasting over the last decade. Numeric simulators are very useful for solving quantitative problems, but are limited in their ability to address more qualitative problems such as post-blast bench condition. Also, current blasting models are limited by the complexity of site-specific blasting and are not functionally suited to mathematical optimization. As a result a great deal of expertise os still needed in optimizing a blast. The following describes the application of an expert system approach to* integrating *both a symbolic model of the expertise of the blasting engineer for* attaining *a trouble free blast, and a numeric optimization model relating* fragmentation *to unit operations from drilling to grinding. Research into thos application of a coupled modeling approach to blast design os being carried out to develop a modeling methodology which will provide a suboptimal design for qualitative design goals as well as minimizing blast related costs.*