

Coupled Rock Motion and Gas Flow Modeling in Blasting

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Abstract

The spherical element computer code DMC (Distinct Motion Code) used to model rock motion resulting from blasting has been enhanced to allow routine computer simulations of bench blasting. The enhancements required for bench blast simulation include: 1) modifying the gas flow portion of DMC, 2) adding a new explosive gas equation of state capability, 3) modifying the porosity calculation, and 4) accounting for blastwell spacing parallel to the face.

A parametric study performed with DMC shows logical variation of the face velocity as burden, spacing, blastwell diameter and explosive type are varied. These additions represent a significant advance in the capability of DMC which will not only aid in understanding the physics involved in blasting but will also become a blast design tool.