

"COMPUTER AIDED DESIGN OF RING BLASTS"

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Abstract

The design of a single, large mass blast using ring drilling may take two to three months. This time requirement inhibits the evaluation of multiple designs. It also reduces the flexibility to redesign a blast when a parameter affecting the blast changes. Manual preparation exposes the design of a ring blast to a greater probability of human error. The use of Computer Aided Design (CAD) can help to overcome the shortcomings of manual design preparation. High speed electronic calculation, as well as programming, allow for many designs to be considered before blasting. Parametric programming allows single or multiple parameter changes to be introduced into an existing design, such as changes in drilling equipment, variations in ore density or changes in explosive. Exposure to human error is reduced by programming that performs calculations and produces graphical displays for review by the designing engineer. The goal of achieving desirable fragmentation for the minimum cost, when using ring blasting, is obtainable using blasting design techniques and CAD. Multiple designs can quickly be generated and costed, producing cost curves that indicate an optimum design with respect to cost.

This paper presents research performed at The Ohio State University to study the feasibility and applicability of using CAD to determine the optimum design of ring blasts with respect to costs.