

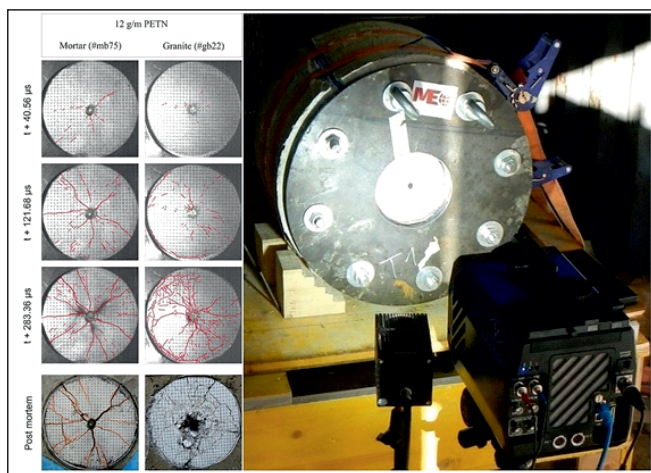
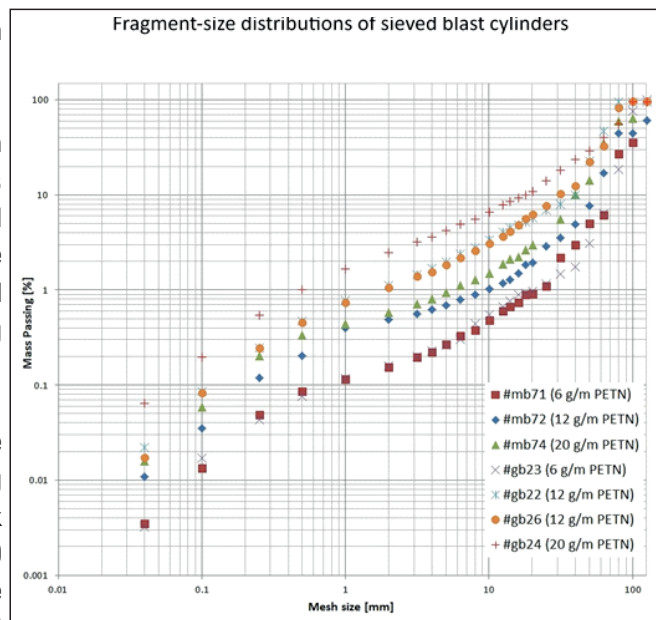
DYNAMIC CRACK BRANCHING IN MORTAR AND GRANITE

FWF PROJECT P27594N29 INVESTIGATES THE BRANCHING/MERGING OF DYNAMIC CRACKS AS A SOURCE OF FINE MATERIAL IN BLASTING.

Fine material produced during blasting is a financial loss and an environmental liability.

In the experimental part, this effect has been studied by blasting $\varnothing 150 \times 300$ -mm cylinders of mortar and granite with decoupled PETN cord inside a blast chamber with a side window. The space between the cylinder and the chamber wall is filled with damping material to minimize the explosive effects.

The blast tests were made at MUL's test site at VA Erzberg (Eisenerz). High speed imaging was used for capturing dynamic crack development through the window with 25.000 fps at 336 336 px. The high-speed images are used for tracing the dynamic mechanisms and defining fragmentation phases.



CT-scanning is used for analysing the internal crack system of the blasted cylinders. The results will serve for comparing crack patterns with respect to different explosive-charge amounts and materials blasted. SEM and optical microscopy will be used for further analysis of the crack patterns on the micro-level.

Finally, the observed dynamic mechanisms will be correlated with results from fragmentation analysis of the blasted cylinders to determine the importance of the branching/merging in the fines generation.



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