

BLAST PRESSURE DISTRIBUTION DUE TO A PARTIALLY CONFINED EXPLOSION

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The paper presents a study aiming at understanding some characteristics of a partially confined explosion inside a cubicle room. It may simulate an ammunition storage explosion, or an explosive charge as part of a terrorist action or a warhead explosion inside a room following its penetration through the room envelope.

The study includes both experimental and numerical simulations of the problem. The experimental investigation comprises of full scale experiments of TNT charges that explode in the center of the room. The cubicle was designed with relatively stiff walls and some venting at the ceiling. The numerical analysis has been performed for a room with rigid walls having a limit venting by AUTODYN 11 commercial program using the Eulerian multimaterial approach. A comparison has been carried out between the experimental results and the numerical simulations.

The effect of the charge size on the peak stress and impulse distribution along the walls has been investigated.