

INTERNAL GEOMETRY COMPLEXITY EFFECTS ON THE DEVELOPING LOAD INSIDE A STRUCTURE

O. Ram, E. Nof, O. Sadot, G. Ben-Dor

Shock Tube Laboratory, Protective Technologies R&D Center, Faculty of Engineering Sciences,
Ben-Gurion University of the Negev, Beer-Sheva

ABSTRACT

Small-scale experiments were conducted on various single story structures in order to study the influence the inner geometry has on the loads developing inside the structure. The inner complexity varied from structures that had no internal divisions to structures with as many as seven rooms arranged in a three row configuration. Each structure was subjected to a blast wave generated by an exploding wire and the pressure was measured on the back wall of the structure. As expected, it was found that as the complexity of the inner structure increased, the peak overpressure measured on the back wall decreased. However, the impulses were found to be only slightly affected by the inner geometry. Furthermore, it was found that as the complexity of the structure increased, the load developing on the structure's back wall became more heavily dependent on the inflicted impulse rather than the specific pressure profile at the structure's façade. In this paper, we will present the experimental results and analysis and discuss the implication of the results.