

SHAPING OF A SIMULATED BLAST WAVE SIGNATURE BY A CONE OR BY ORIFICE PLATES INSTALLED IN THE DRIVERS OF A BLAST SIMULATOR

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For short blast simulators driven by generators, behind the produced blast front a plateau in pressure can be observed before the pressure decay occurs. By installing reflection surfaces in the generators, e.g. a cone or several reflecting orifice plates, a pressure drop can be realized immediately behind the blast front.

For the experiments conducted at the EMI, in each generator of the EMI model blast simulator, which is a small-scale model of the large blast simulator at Reiteralpe proving ground, reflection surfaces were installed, such as cones of variable length, step-cones, and a system of orifice plates.

The results are discussed by pressure-time histories for a peak overpressure of 1 bar. It could be shown that for the tested blast simulator a cone with 75% of the internal generator length is sufficient. There is no significant differences between the use of a smooth cone and a step-cone. The loss in positive flow duration caused by the reduced driver volume when inserting cones can be neglected by installing hollow cones with small bores.

Instead of cones, also a system of orifice plates was installed in each generator. With this system, too, a blast wave without a plateau in pressure can be produced.

Under certain circumstances, even only one orifice plate is sufficient.