Non Lethal Barriers based on Airbag Systems

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Abstract

The investigation of the possible application of an airbag system as non lethal barrier was aim of this study. The specific requirements for the airbag barrier concerning space, weight and other criteria were defined. A gas generator formulation was modified to meet these specific requirements and characterised with respect to burning behaviour, specific gas yield, burning temperature and other important parameters. The gas generator formulation was tested with a standard combustion module in a 60 l can device. The optimum venting area of the combustion chamber was determined to reach maximum pressure within the specified time frame. Additionally theoretical calculations based on the pressure time histories in the 60 l volume were performed to determine the forces and accelerations resulting from the barrier deployment. The deployment behaviour of an industrial airbag module was characterised by High Speed Video. The deployment rate and the leading edge velocity were determined. The investigations were compared with the specific requirements giving promising results for the aim mentioned above.