

# **A NOVEL EXPLODING WIRE BASED EXPERIMENTAL FACILITY FOR INVESTIGATING SMALL SCALE BLAST WAVE SCENARIOS**

O. Sadot, A. Schenker, I. Anteby and G. Ben-Dor

*Protective Technologies R&D Center,  
Department of Mechanical Engineering, Faculty of Engineering Sciences, Ben-Gurion University  
P.O. Box 653, Beer-Sheva 84105, Israel  
sorens@bgu.ac.il*

## **ABSTRACT**

The understanding of the interaction of an explosion-generated blast wave with a structure is important in order to calculate the dynamic response of the structure. The common way to investigate this interaction is by full-scale field tests. These types of experiments are expensive and therefore, are rarely performed. A different and less expensive method is to conduct a laboratory small-scale controlled experiment. Since the laboratory experiments are made in a reduced scale, the transformation from the small-scale size to real large scale (and vice-versa) is carried out by means of scaling laws, such as the Craze-Hopkinson law.

This basic research includes the design and construction of a small-scale experimental facility at the Protective Technologies R&D Center at the Ben-Gurion University (BGU-PTR&DC). This system will simulate explosion effects of a charge and the interaction of resulted blast wave with structures. The experimental method is based on an induced blast wave produced by exploding a wire rather than a TNT charge. The wire is exploded by a high-electric pulse discharge. With the current existing diagnostics system, pressure profiles were measured and the blast wave propagation was recorded by high-speed photography and schlieren imaging.