

## **THE ENERGY OF AIRBLAST WAVES**

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**Keywords: Airblast – Energy Flux - Shock Waves – Shock Impedance – Gamma**

The airblast characteristics of various explosives have been evaluated by conducting full scale and modeled field tests since World War II. Comparisons between explosives have been made by performing equivalent weight analyses which are only comparative and do not provide the energy of the blast wave itself. The parameters usually observed (shockwave time of arrival, peak pressure, positive duration, positive phase impulse) are obtained from measurements of the overpressure of the blast wave in air versus time (P-t curves).

The energy flux of the blast wave, based on the integral of the overpressure squared versus time, has been problematic to evaluate as this integral must be divided by the characteristic impedance (product of the density and wave velocity) of the air. The shock impedance of air varies considerably with shock pressure.

We describe and demonstrate performing energy flux measurements from P-t curves taking into account the variation of characteristic impedance of air as a function of overpressure along the P-t curve.