

Electric Discharge in the Water– Source of Shock Waves for Non-lethal Weapons

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Modern resources of science and engineering allow developing devices using powerful and super powerful pressure impulses. Generation of such impulses are based on various physical processes, water electric discharge is one of them.

The process of water electric discharge is characterized by high power density in the discharge duct and, as a consequence, it is a source of high pressure impulse waves with amplitudes that may run up to several hundred thousands atmospheres. Formation of pressure wave spatial patterns is described by hydrodynamic laws of shock waves propagation.

Totality of water electric discharge characteristics is often named in the literature as (EH effect).

Simplicity of pressure impulse generation by water electric discharge (capacitor discharge through the discharge gap in the water) allows introducing this method in industrial technologies, in particular, stamping of metal products, fracturing of solid materials etc.

EH effect is a promising technology for developing non-lethal weapons since it allows generating pressure impulses without using explosives or high pressure vessels.

Key words:

Stun gun, shock wave, electric discharge, electro-hydrodynamic effect, pressure impulse generation