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## Enhancement of shock wave from underwater electrical wire explosion by replacing one thicker wire with many thinner wires

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An energy-efficient method for significantly enhancing the shock wave generated by underwater electrical wire explosion was developed. The method is to replace one thicker wire with many thinner wires under the conditions that the total mass of the wires and the initial storage energy are kept unchanged. It was found that maximum pressure of the shock wave rises from 30MPa to about 90MPa when one wire of 0.2mm in diameter is replaced with 16 wires of 0.05mm in diameter for a given initial energy of 200J. For a given wire and wire current, the maximum pressure of the shock wave linearly rises with the increase of the total number of the wires, which implies that the shock wave has decayed to acoustic wave after propagating a distance of 50mm from the wires to the pressure probe.

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