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5P10 - Design and simulation of compact explosively-driven magnetic flux compression (MFC) generators for high energy applications.

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Explosive-driven magnetic-flux-compression generators are devices that convert part of the energy contained in high explosives into electromagnetic energy. These generators are one of the most efficient techniques for generating high magnetic fields and current impulses. In most generator designs, a small seed current from a capacitor bank is used to create an initial magnetic field between a pair of conducting surfaces. High explosive then drive these surfaces together, compressing the trapped magnetic flux and generating a large output current in the process. This paper presents an ALE3D magnetohydrodynamic simulation and experimental investigation of two explosively driven magnetic flux generators design by the US Army Research Laboratory. Simulation results are in good agreement with the experimental data.

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