

SIMULATION AND DESIGN OF HELICAL FCG WITH SIMULTANEOUS INITIATION OF EXPLOSION FROM BOTH LINER ENDS

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The critical limitation for increasing FCG output appears due to limited velocity of detonation. The idea enabling to overcome this limitation by double-side ignition of the explosive charge in FCG liner was already discussed and tested by different authors [1, 2, 3]. The principal challenge in use of this idea is collision of counter-propagating detonation waves, which should be thoroughly described in order predict liner dynamics.

In contrast to the design considered in [1] we propose to use mirrored FCG inductors of equal length with load connecting point located in the middle. Simulation of helical FCG of this design with simultaneous initiation of explosion from both liner ends is presented.

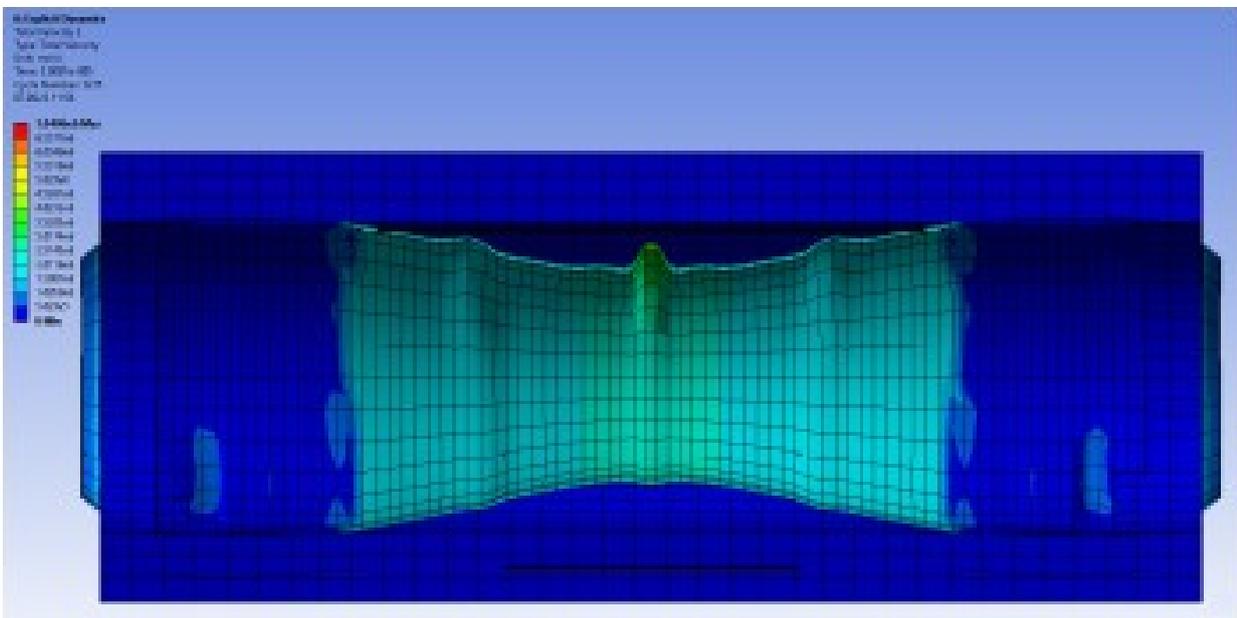


Fig.1. Snapshot of liner geometry after the collision of two detonation waves

Liner dynamics is considered separately in order to describe the geometry and velocity of liner wall at different operation stages. Power transmitted to the load is shown to be increased as compared to the helical FCG of the same length (volume) initiated from one end. Design approaches and solutions are considered to eliminate load damage, which could happen due to significant increase of liner expansion velocity in the area of two detonation waves collision (see Fig.1).

REFERENCES

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