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# Pulsed power developments at First light Fusion

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First Light Fusion Ltd is a privately funded company in the early stages of researching energy generation using inertial confinement fusion. Efforts are currently centred around developing both simulation and experimental capabilities. First Light Fusion (FLF) currently operates a two stage light gas gun which is capable of projectile velocities approaching 8 km/s, and two low inductance capacitor bank pulsed power drivers which deliver 1 MA and 3.5 MA into various load configurations. Experimental campaigns are focussed on validation of Hytrac, the simulation tool developed by FLF, increasing the understanding of the target physics, and developing electro-magnetic launch technologies to enhance the experimental programme.

World class diagnostic capabilities have been established at FLF, including ultra-high speed images (˜ 3 ns exposure), streak spectroscopy, VISAR and dynamic x-ray radiography providing a greater understanding of electro-magnetic launch and target interactions. This feedback enables rapid iterations within experimental campaigns and continuous improvement of engineering designs.

Ongoing pulsed power developments, simulations and experimental data will feed in to the design and construction of a future driver which will be designed to demonstrate fusion in the laboratory. A conceptual design of this much larger machine will be presented, along with experimental images and results from the existing facilities.

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