



ANSYS® + General Fusion

"We relied on ANSYS at a variety of points during our development process which aided us in reducing costs and shortening our timeline. Our engineers were able to use the software quickly because it is built with applied engineering in mind. We will continue to use ANSYS as we construct a full-scale prototype."

David Plant
Engineer
General Fusion

General Fusion relied on ANSYS simulation codes for structural analysis

The Case for Fusion

Dr. Michel Laberge founded General Fusion (Burnaby, BC, Canada) with a singular focus to develop economically viable fusion energy. His key insight was realizing that Magnetized Target Fusion, with the aid of modern electronics, materials, and advances in plasma physics, could provide a faster, lower cost, and more practical path to fusion power.

General Fusion has built a world-class Magnetized Target Fusion research and development team consisting of over 50 research and development professionals who have demonstrated the ability to quickly and cost-effectively design, simulate, prototype, and test advanced fusion systems.

General Fusion's Magnetized Target Fusion system uses a sphere filled with molten lead-lithium that is pumped to form a vortex. On each pulse, magnetically confined plasma is injected into the vortex. Around the sphere, an array of pistons impact and drive a pressure wave into the center of the sphere, compressing the plasma to fusion conditions.

General Fusion's system has three key advantages that allow for rapid and lower-cost development, and a fast path to commercialization:

- A thick liquid metal wall
- A compressed gas driver
- No consumables

At the center of the magnetized target fusion system is a large liquid metal-filled sphere compressed with pistons. In the engineering design of this system, General Fusion relied on ANSYS simulation codes for structural analysis.

ANSYS codes enabled General Fusion to simulate the dynamic loading of the structure from pressure pulses generated by 14 large, high-speed pistons. The results of the simulation have been verified against actual measurements from the commissioned machine.

ANSYS platforms are built with applied engineering in mind, which made them accessible to the company's engineering staff, and enabled rapid iteration during the experimental phase of the project.

In the next phase of development, General Fusion will be constructing a full-scale prototype system. The prototype will be designed for single pulse testing, demonstrating full net energy gain on each pulse.