

Utilizing ICME To Optimize Extended Range Munitions Performance

LIFT's Simulation Capabilities Drive Welding Strategy

THE CHALLENGE

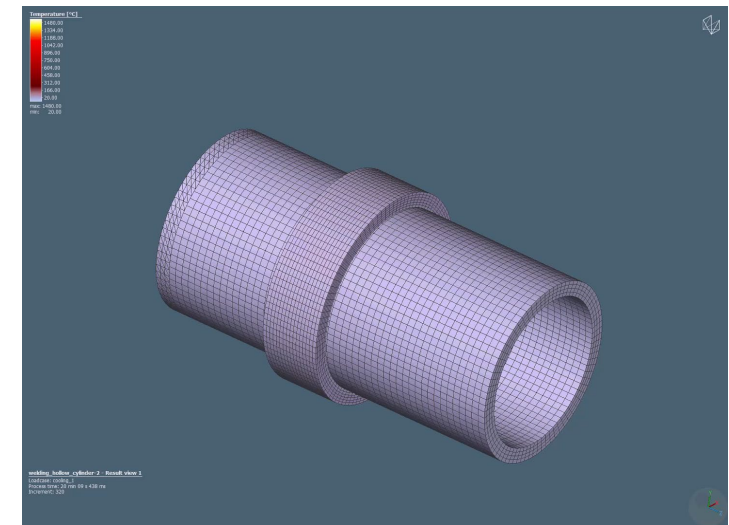
- ▶ Rotating bands, the band of material outside of a projectile that helps provide spin and holds back the charge during firing, must survive faster speeds and longer time of flight. Harder, stronger materials such as nickel are of interest, but must minimize damage to the projectile shell during processing and gun barrel liner during launch.

THE LIFT SOLUTION

- ▶ LIFT's integrated computational materials engineering (ICME) workflow simulated the influence of weld toolpath and cooling strategy on the material structure to predict damage such as cracking.
- ▶ This workflow identified alternate toolpaths and strategies that maximize deposition rate while eliminating cracking.

THE OUTCOME

- ▶ Physical validation of these simulations is underway using LIFT's Wire Directed Energy Deposition (DED) platform located in Detroit.



Virtual Modeling of Band Welding