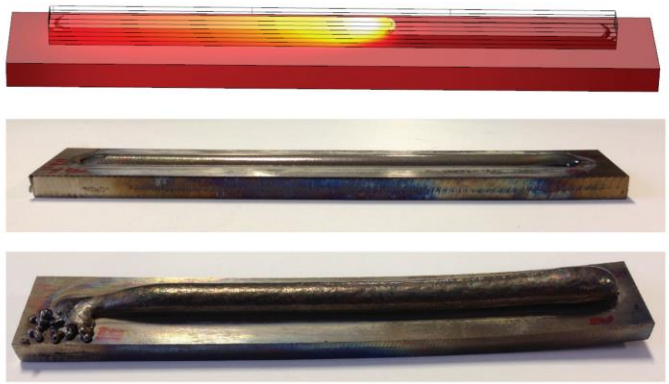
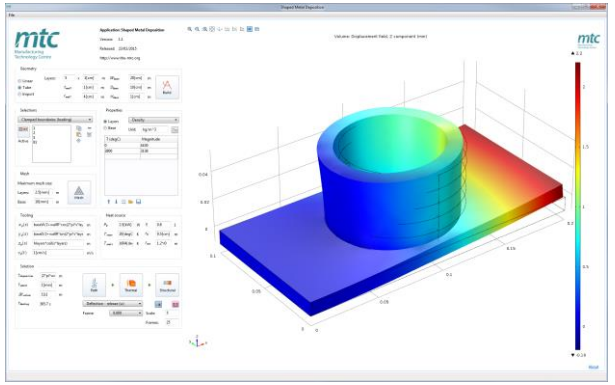
# Optimizing 3D Printing Techniques with Simulation Apps

- The simulation of shaped metal deposition (SMD) requires a time-dependent, coupled thermomechanical analysis.
- Engineers at MTC built an app with COMSOL Multiphysics and its Application Builder that allows users to experiment with geometry, material, heat and deposition paths to determine if SMD processes will result in the proper form.
- COMSOL News 2015: Borja Lazaro Toralles, Manufacturing Technology Centre (MTC), Coventry, UK



*During manufacturing, thermal cycling has the potential to induce thermal stresses. Top: Simulation of the SMD part. Middle: After one deposited layer, no noticeable deformation. Bottom: After six deposited layers, deformation is visible.*




*A simulation app allows the user to change variables such as geometry, material, heat source, and deposition path to check the form that will be produced.*