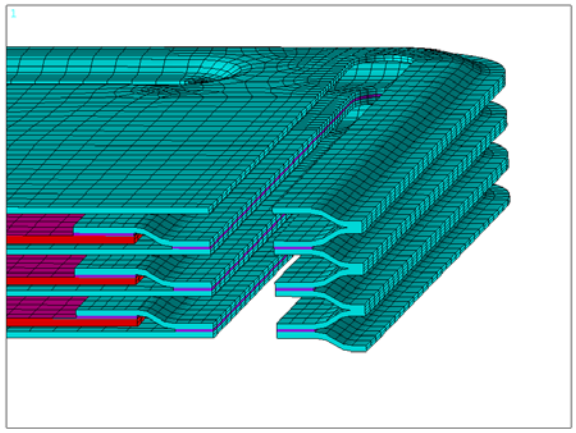
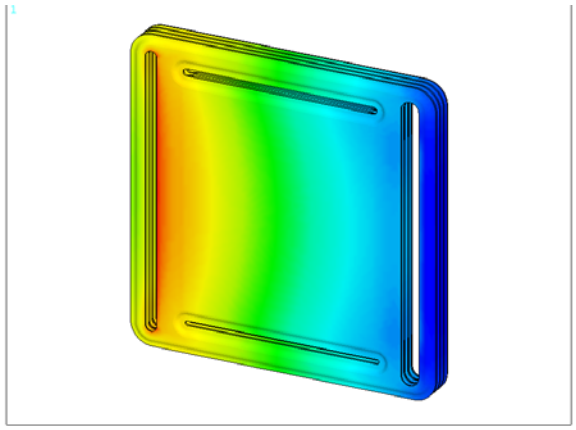
Pilot-Energy2 Highlights

Solid Oxide Fuel Cells: Rapid Start-Up

JE Deibler, MA Khaleel, BK Ahn





Solid Oxide Fuel Cells (SOFC) operate in the 800 – 1000°C temperature range. Minimizing the start-up time to reach this temperature is a key to implementing SOFC's in transportation applications. Finite element modeling (FEM) of the transient thermal stress was conducted to optimize the SOFC design. The temperature distribution during steady state operation is governed by the electrochemical reactions. An electrochemistry module was incorporated in the FEM code. The results are being validated by comparsion with other modeling methods and ultimately with experimental testing.