

## DSG Ansys R&D Meeting

Date: August 3, 2023

Time: 2:00 PM – 2:30 PM

Attendees: Aaron Brown, Pablo Campero, Brian Eng, Tyler Lemon, and Marc McMullen

### 1. NPS thermal analysis with Ansys Mechanical

Aaron Brown

1. Worked with Ansys technical support to figure out why the steady state and transient simulations didn't match
  - There were two causes of the problem
    - When the geometry of the steady state simulation was copied over, all model components were assigned the default structural steel
    - The applied heat load of 0.3 W was a heat flux instead of a heat flow
2. Resolved these issues and ran simulations for a 0°C, 1°C, 5°C, and 10°C increases in ambient temperature
  - The results of these simulations confirm the results of the steady state simulation—the temperature of the crystals is dictated by the ambient temperature

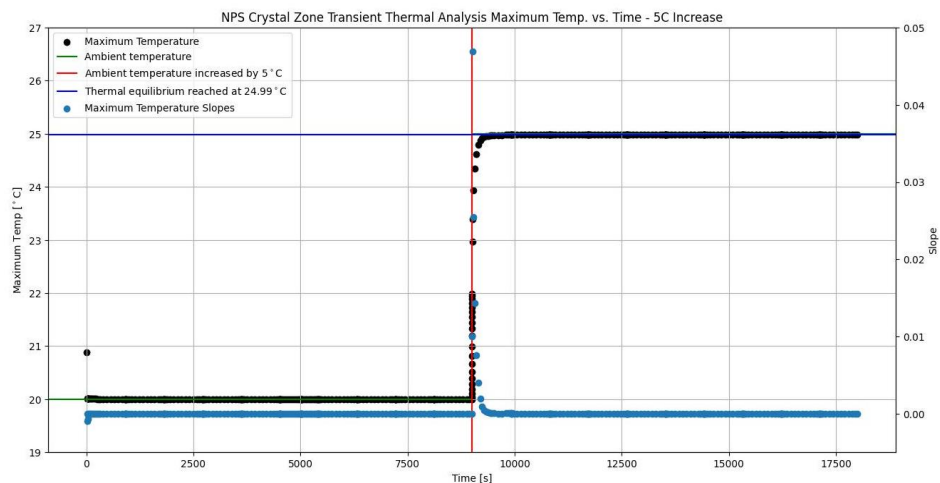


Fig.1. Plot of crystal array maximum temperature vs. time; 5°C increase in ambient temperature

3. Re-doing plots after corrections for overshooting points at the beginning of the simulation

### 2. NPS thermal analysis with Ansys Fluent

Pablo Campero

1. Contacted Ansys Fluent support to solve issues with the mesh
  - Revised methods to create name selections that would be useful for the crystal's faces
  - Discussed the high-performance-computing licenses and hardware required to run Fluent with complex models
  - In Fluent Meshing software, changed scope proximity from *face* to *faces-and-edges*
    - Surface mesh with applied changes in progress