DSG-Ansys R&D Meeting Minutes

Date: June 30, 2022
Time: 14:00 to 15:00

<u>*Attendees*</u>*: Aaron Brown, Pablo Campero, Brian Eng, Scott Marinus, Marc McMullen, and Tyler Lemon*

1. **<u>NPS thermal analysis</u>**
   Aaron Brown, Pablo Campero, and Marc McMullen
   1. Working on CFD thermal simulation in *Ansys Fluent* to include heat exchangers heat removal effect by adding rotation to the fans in a perfectly isolated detector enclosure
      - Removed inlets and outlets in design modeler
      - Redid contact regions
      - Meshed the model and increased the element size (mesh not finer) to optimize simulation time
      - Set materials and boundary conditions in *Ansys Fluent*
      - Set Mesh Motion for one of the four fans to get rotation of the blades; left the other three fans static(with no effect on the thermal simulation)
      - Ran simulation in transient mode since it is required when fans are rotating
      - Got floating point exception error
      - Debugging in process
        - Recommended matching mesh interface with rotating contact regions
        - Ensure that fan are rotating by monitoring vector plots in the rotating sections
   2. Discussed geometry simplified model generated by Marc McMullen
      - Decided to use porosity options on the heat exchanger blocks
      - Removed wrapping parts from the crystals