

Team Members

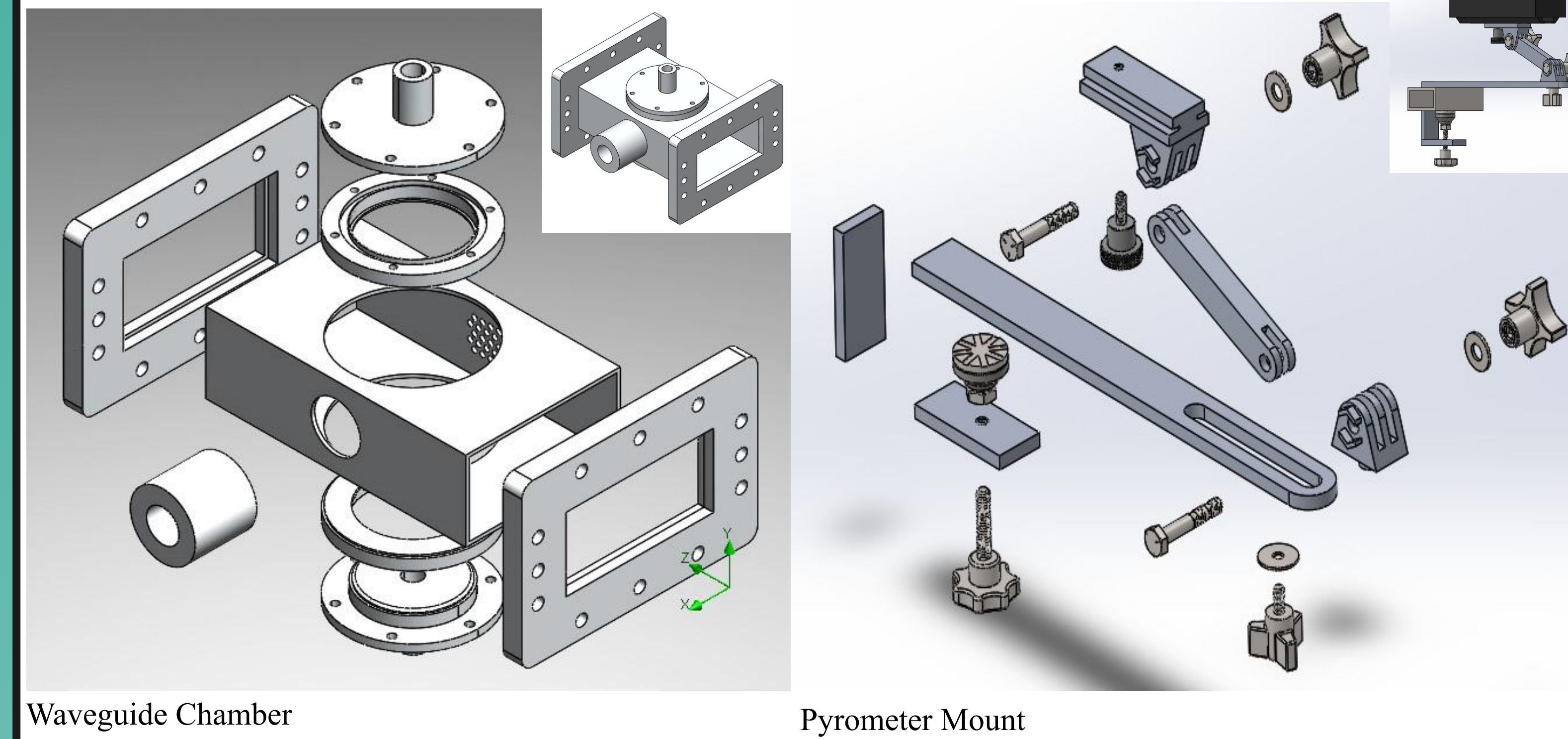


Team Members (by row): Eric Segura, Aquin Manners, Christopher Sarabia; Logan Beltz, Gabriel Facco Bettinelli, Dante Gonzalez Corbett; Jimmy Tran, Omar AlShatti

Project Overview

The Powder Technology Lab requires a sintering chamber to be replaced as well as the creation of a PID controller for their Microwave Press system. Sintering Engineers have reconstructed a sintering chamber that will allow for their newly implemented PID control system for the existing Microwave Press. The PID controller utilizes the input data from the materials' increase in temperature and difference in the emitted and reflected power over time, to govern the energy emitted from the magnetron. The intention is to flash sinter a powder based material, under pressure to create more homogeneously transparent material and progress microwave sintering technology.

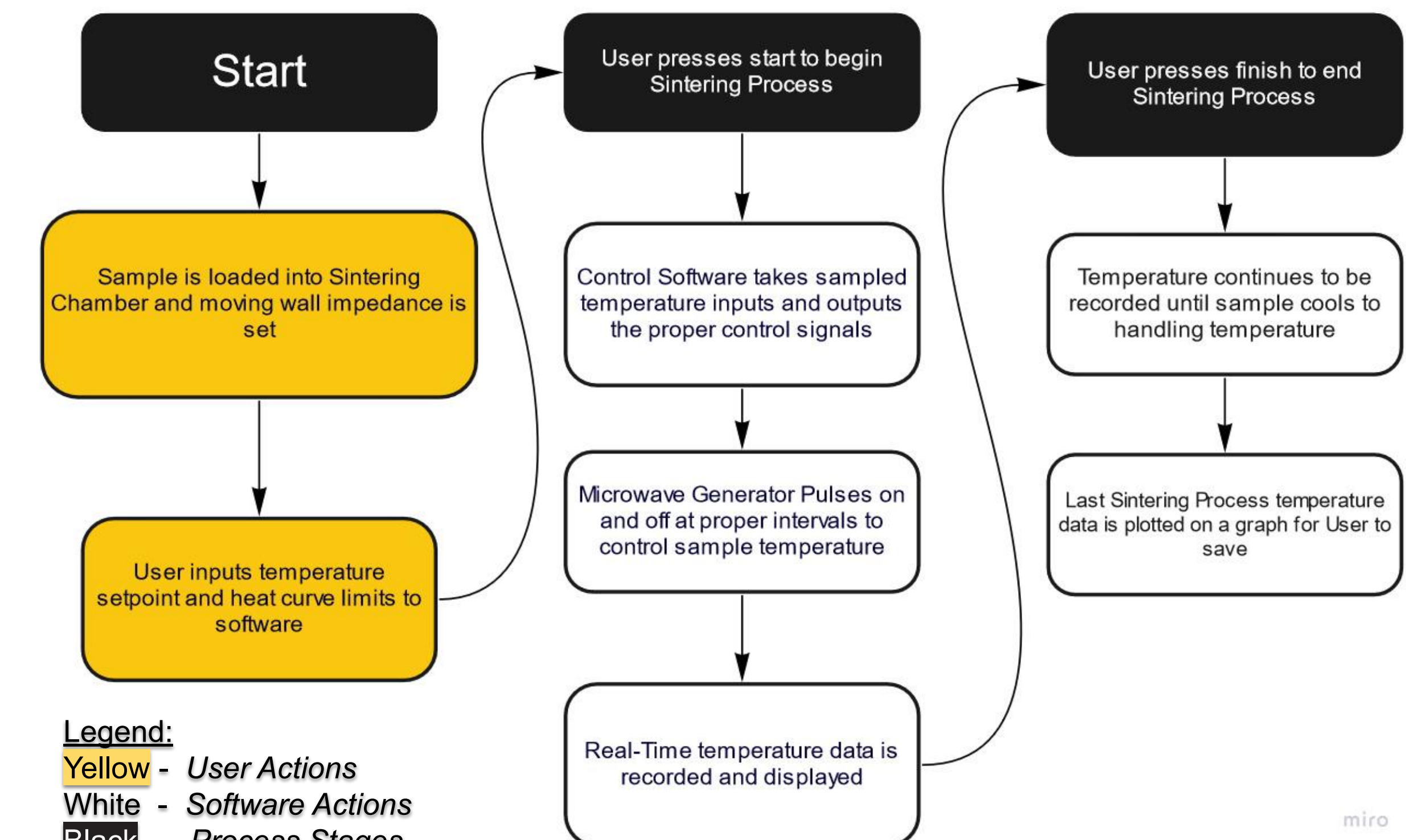
CAD Models



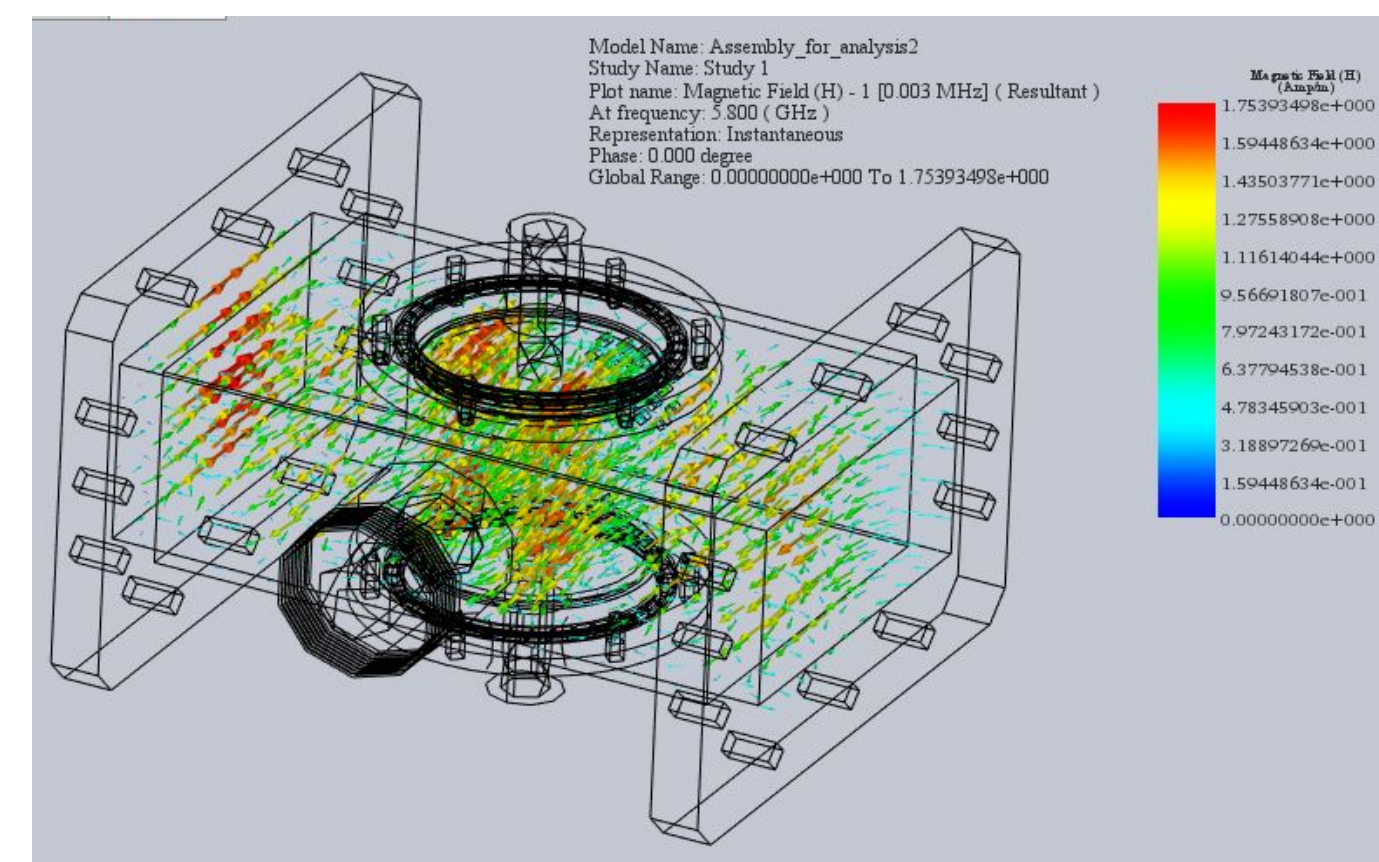
Waveguide Chamber

Pyrometer Mount

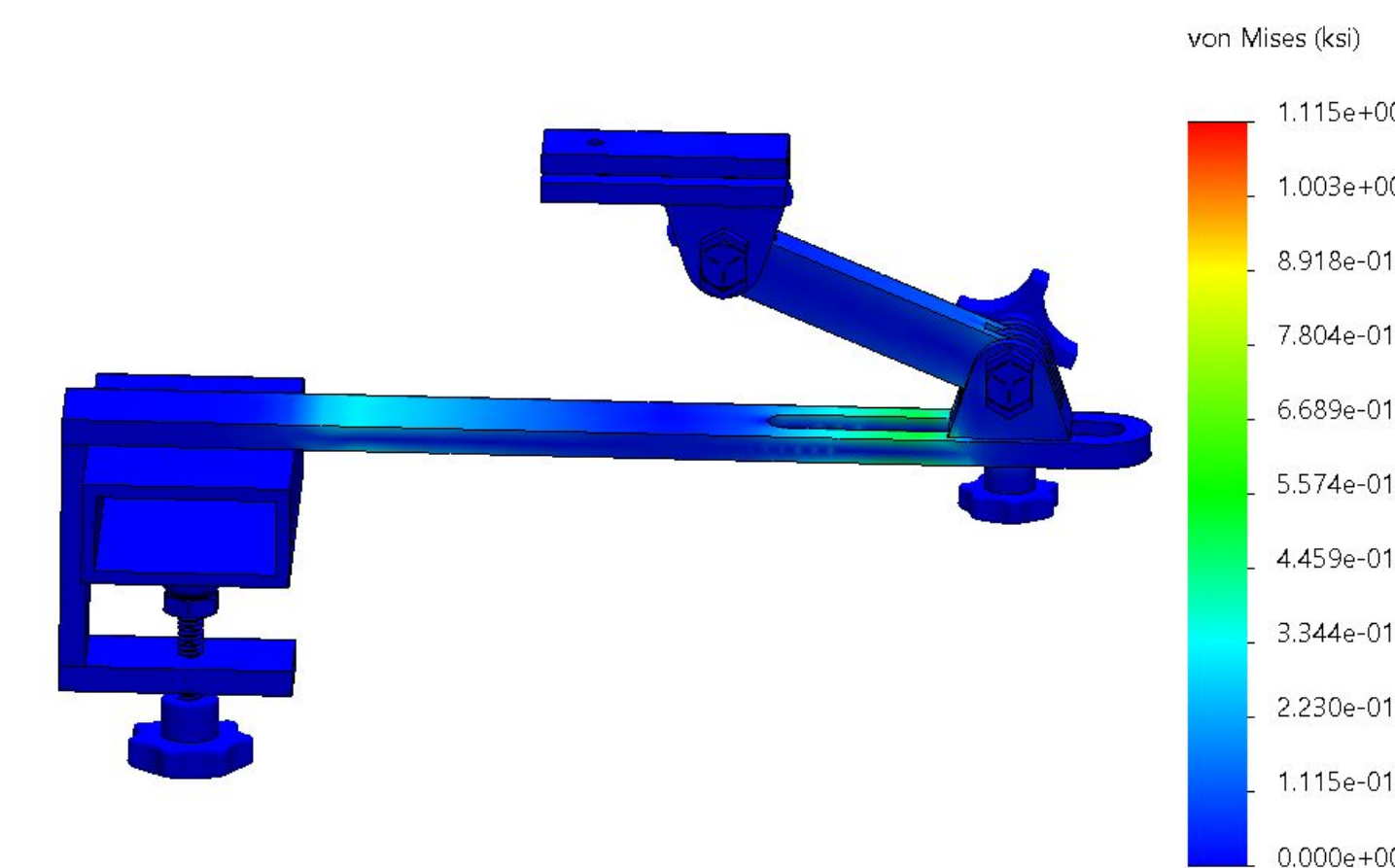
System Operation



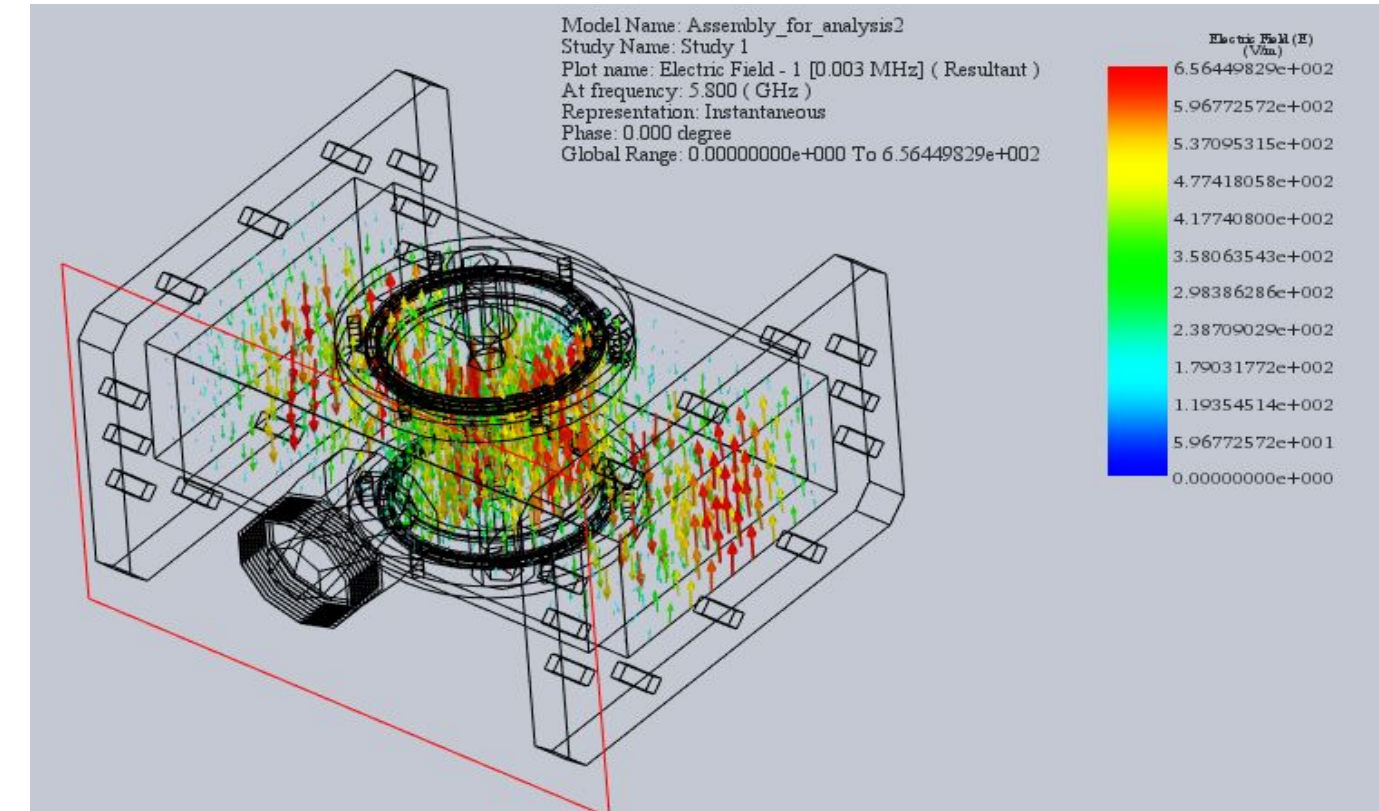
Engineering Analysis



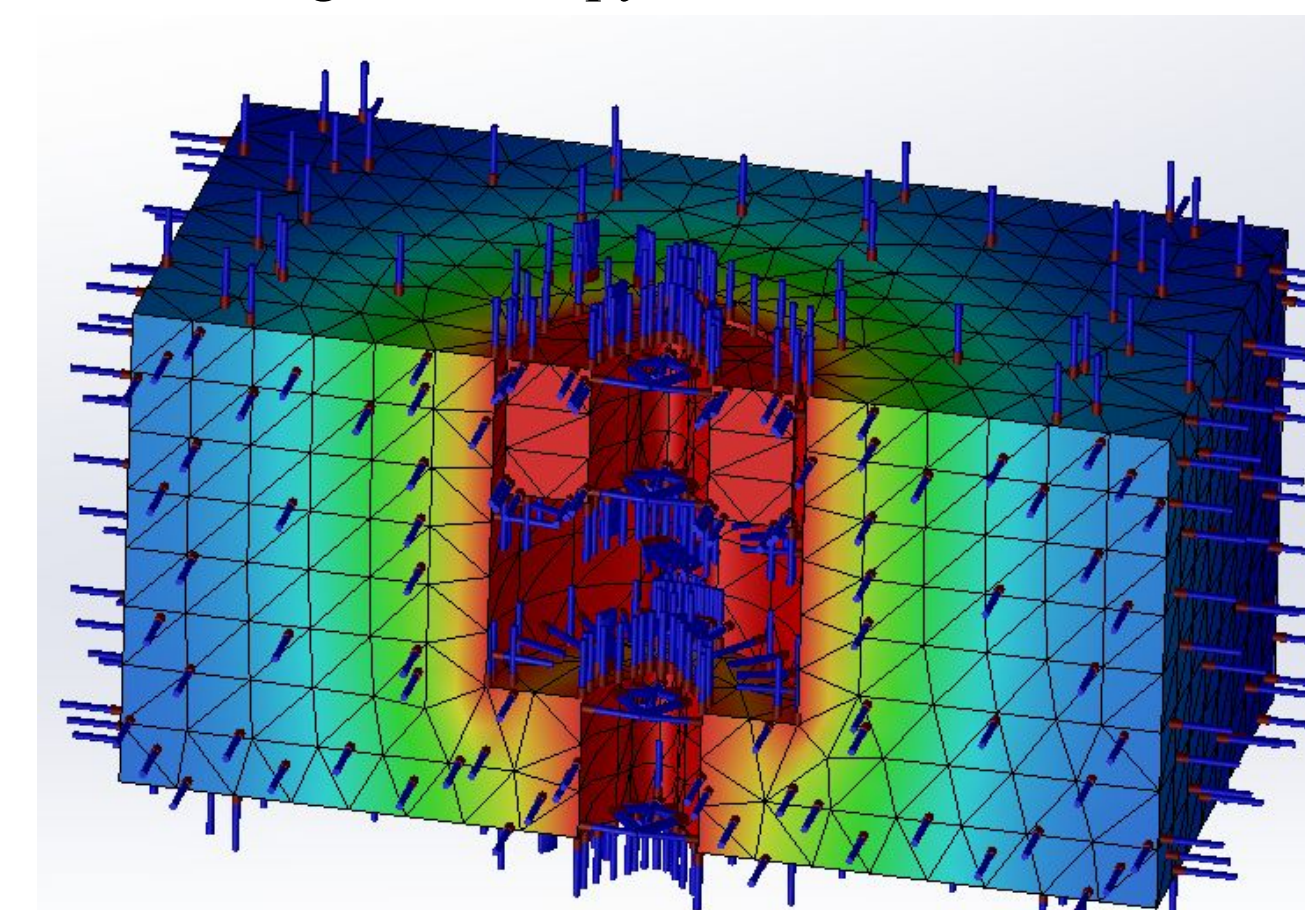
Magnetic Field Analysis verifying no magnetic field outside of the chamber.



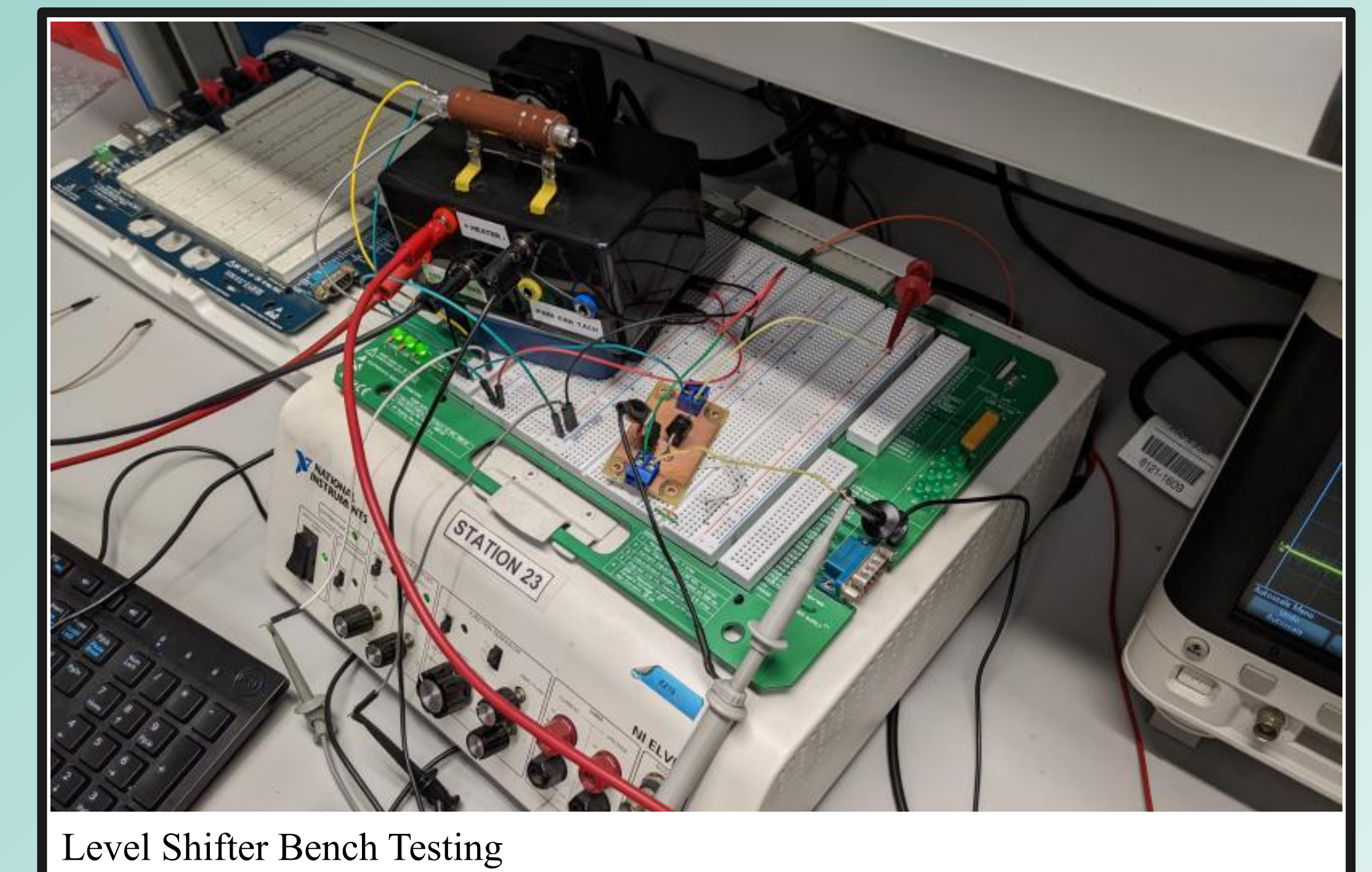
Pyrometer Stress Analysis to validate low stress from the weight of the pyrometer.



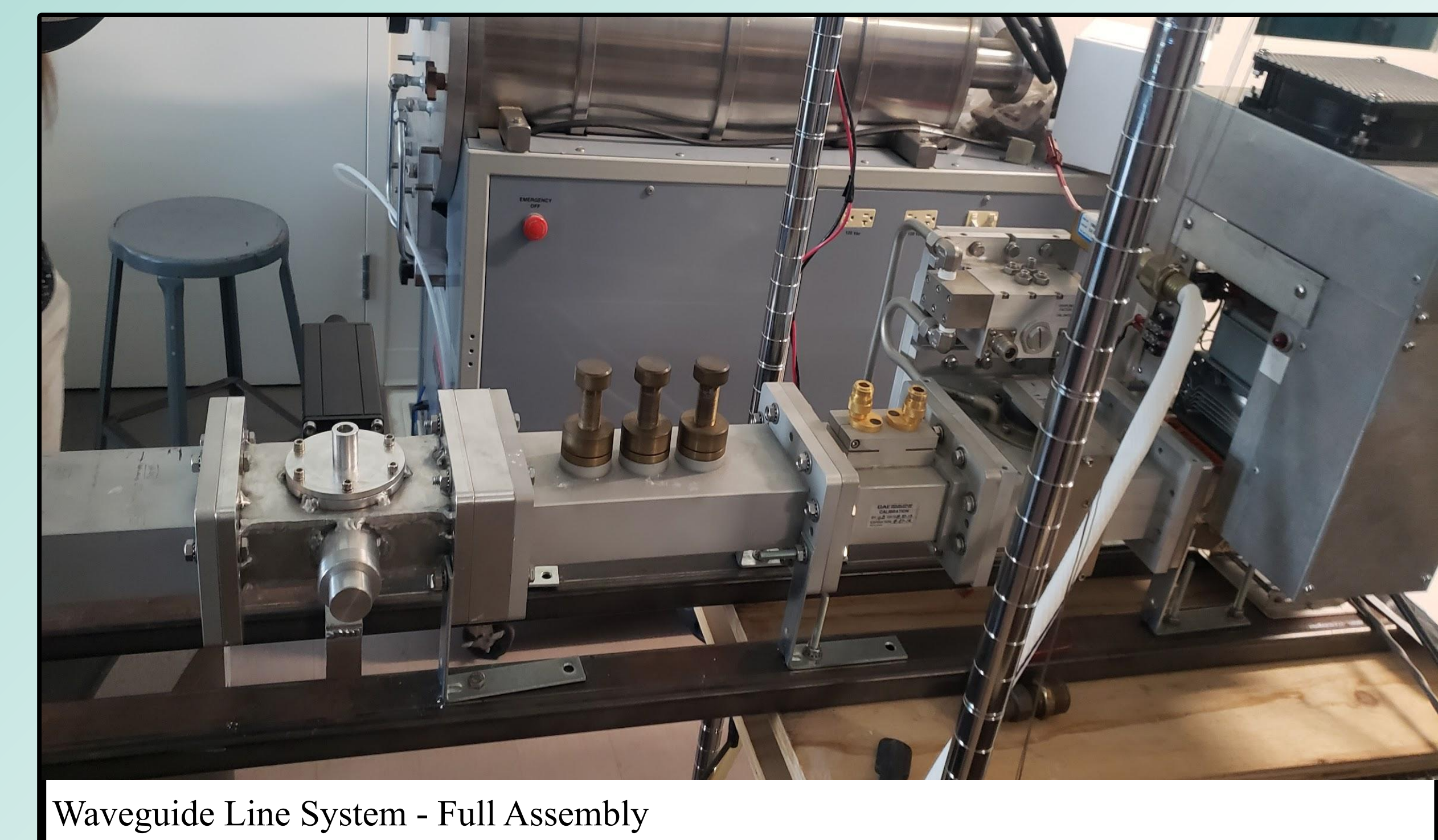
Electric Field Analysis verifying no electric field outside of the chamber.



Insulation Thermal Analysis to verify minimum heat transfer through the waveguide walls.



Level Shifter Bench Testing



Waveguide Line System - Full Assembly

Acknowledgements

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|---------------------|-----------------------|----------------|
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| Dr. Elisa Torresani | Dr. Sridhar Seshagiri | |