MOOSE project grading notes

Nermeen

Grade: 90

Some typos. Identification of material properties. Good display of centerline temperature data in both steady state and transient cases. Images are not publication quality, which doesn’t matter for this report, but will matter for our publications in the future. Would like to have seen the axial distribution of stresses as well. Didn’t show a convergence study with the mesh. Your mesh is likely too coarse. You could be missing out on information here. Any context on the stresses that are induced? A comment on potential fracture would have been good. You used incorrect BCs in part 3. Should have pulled from part 2 to get axially varying fuel surface temperature as the BC. Was looking for von mises stresses I believe. You show the components, but not the actual value of interest. A conclusion/summary and more discussion of part 3 would have been preferable. But it all generally looks good to me.

Mohamed

Grade: 92

Maybe I wasn’t clear, but I wanted a final report that included all three parts with a bit more discussion/analysis. Don’t think your earlier parts had something like a mesh convergence study, which would have been good to show. Would have preferred the actual varying fuel surface temp from part 2, instead of an approximated constant fuel temp. This leads to incorrect temperature profiles axially, and thus incorrect stresses. Was looking for von mises stresses I believe. You show the components, but not the actual value of interest. Some typos in caption. Good figures, well written report.

Justin

Grade: 88

Very well written report. First part looks all good. Second part was off, and I had a hard time finding it. But you utilized the wrong value for Z0 in your equations. I didn’t catch this the first time. You used 100 for Z0, when Z0 is the length/2. So it should have been 50. This would have changed your temperature profiles appropriately. You should have plotted your LHR, and it would have been obvious that you had the wrong expression. Double check your functions when implementing them. In Part 3, by fixing the top and bottom boundaries you biased where the stresses would be, in that you ensured the highest stresses would be in the hottest part of the fuel. In reality, the fuel is not fixed at the top and bottom, but free to expand. Thus, only the fuel centerline should have been fixed. The bottom could have also been fixed to provide a fixed point of reference. However, you induced artificial stresses in your system due to the B.C.s. Based on the stresses we showed in class, your results should have jumped out at you as incorrect.

Aidan

Grade: 94

Well written report. I like the use of the piecewise linear functions for the thermal conductivity variation. One of the ways to do it. Got the correct von mises stresses in the fuel. I couldn’t get some of your part3 files to run without making minor edits. With those minor edits, I was able to confirm your results. So, I don’t know what you were using or how you got them to work without modification. Didn’t need to include gap/cladding for part 3, but interesting that you did, and its nice the effects it shows. Axial stress profile looks good, all temperature profiles look good. Good comparisons of all relevant cases. You were concerned with your MOOSE project report, but you did a great job here. Stitching the meshes from the beginning \*should\* lead to less trouble in convergence.