

Assignment 9
Due 11/06/2025

Application Problem 1

Using your heat exchanger that you have created, create a control variable to monitor the total heat transfer through the pipe walls from the tubes into the shell. For this problem, use the deck that runs on a time dependent junction, not a pump, for simplicity in this problem. Run this deck with your transient that models a break in the shell and stops flow through the tubes. Plot the total heat transfer through the pipe walls as a function of time, as well as the temperature of the secondary side as a function of time, and explain your plots (does it make sense, any strange phenomena, etc.). Choose a specific time in your problem where heat transfer is not 0 and verify the value calculated from the code by performing hand calculations. Ensure that before the break occurs, this systems needs to be at steady-state. To do this, run a steady state model, plot the variables of interest to ensure steady state has occurred, and then use PYGI to initiate a new transient deck that matches the steady state conditions of the previous deck.