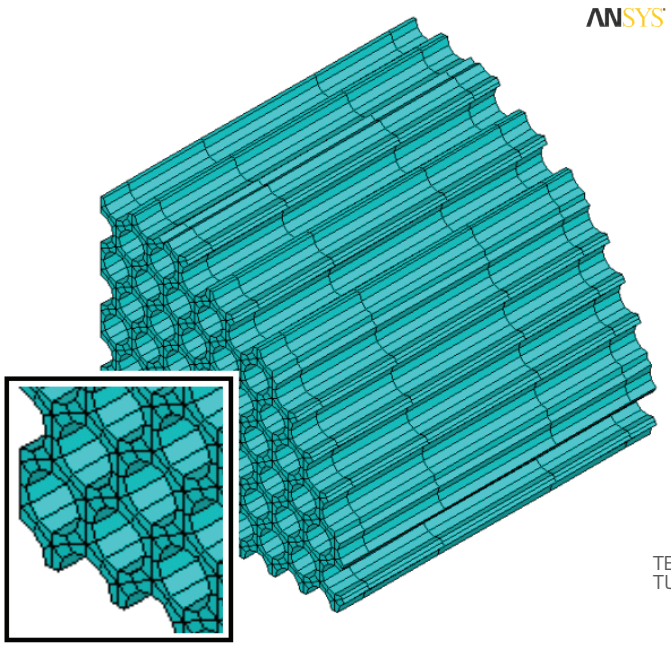
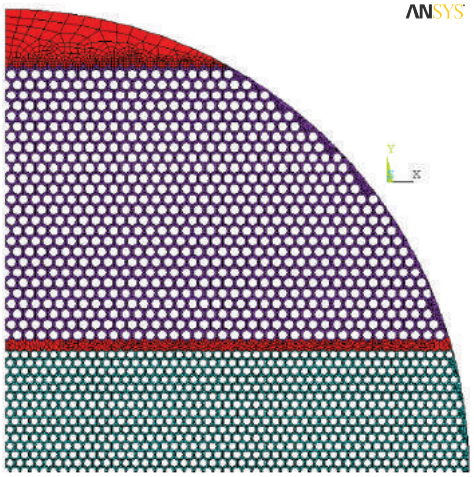
HLAENGINEERS, INC.

ANALYSIS OF A TUBE SHEET FOR THERMAL STRESSES

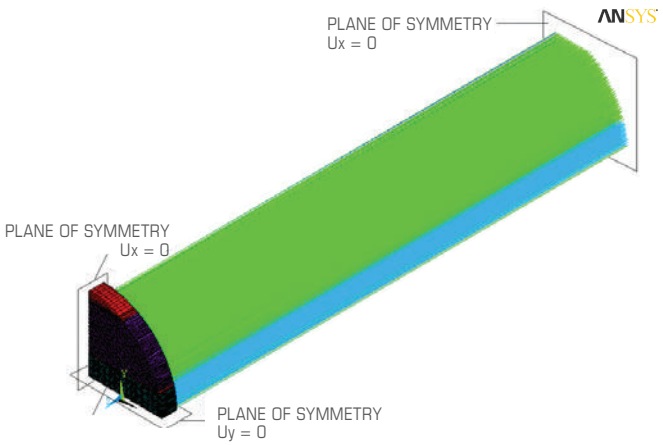
PURPOSE: Thermal-structural stress analysis of a heat exchanger tube sheet

A stress analysis was performed for a heat exchanger tube sheet. A 3D FEA model of the tube sheet was built using ANSYS. A quarter FEA model consisted of about 114,000 nodes and 96,000 solid elements with 3 dof and an additional dof for temperature. An internal pressure and temperature differential load was applied to the model to simulate steady-state fluid flow through the structure. The analysis was performed in two stages: a heat conduction analysis using thermal elements to obtain a temperature distribution, followed by a structural analysis with the necessary static boundary conditions, pressure differential and nodal temperatures.





TEMPERATURE DISTRUBUTIONS ON
TUBE SHEET READ FROM THERMAL RUN



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