

## STACK DESIGN FOR AN HRSG UNIT

**PURPOSE:** Review stress and deflections due to wind and seismic, combined with maximum operating temperature

HLA was responsible for the structural analysis and design of a stack that was part of an HRSG unit. The stack was 12'-0" O.D. x 75'-0" tall with a large breach opening for the gas inlet. A finite element model was created to accurately review the stress and deflections due to the wind and seismic loads. Wind loads governed over seismic. A buckling analysis was performed for each wind direction to ensure that no local plate buckling would occur. Platform and ladder dead weights, along with the platform live loads were also included. The base plate thickness and anchor bolt chairs were initially designed using traditional formulas for tall towers. After the analysis and design were complete, a set of fabrication drawings were generated for the stack, platforms and ladders.

- Wind loads per ASCE-7
- Linear elastic stress analysis
- Buckling analysis
- Base plate design
- Anchor bolt sizing
- Bolt reactions for foundation design
- Breach reinforcement
- Fabrication drawings

