

# Finite Element Analysis

## Finite Element Analysis (FEA)

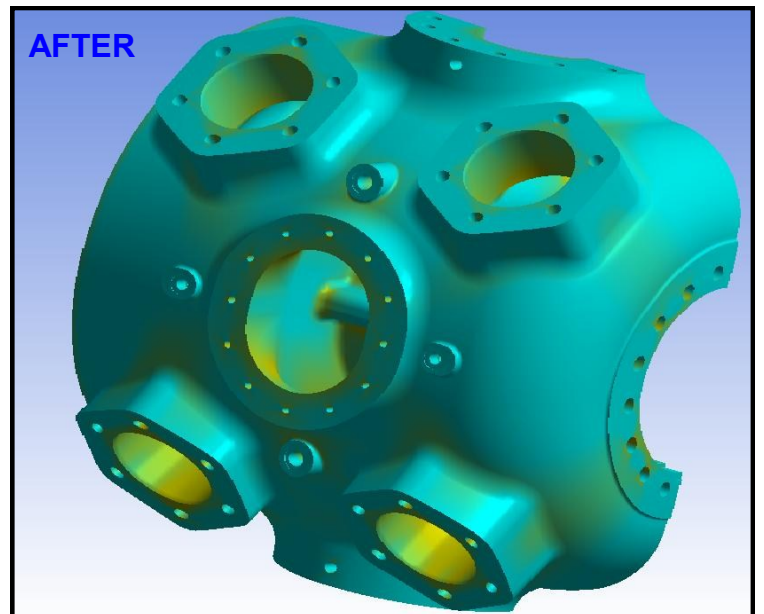
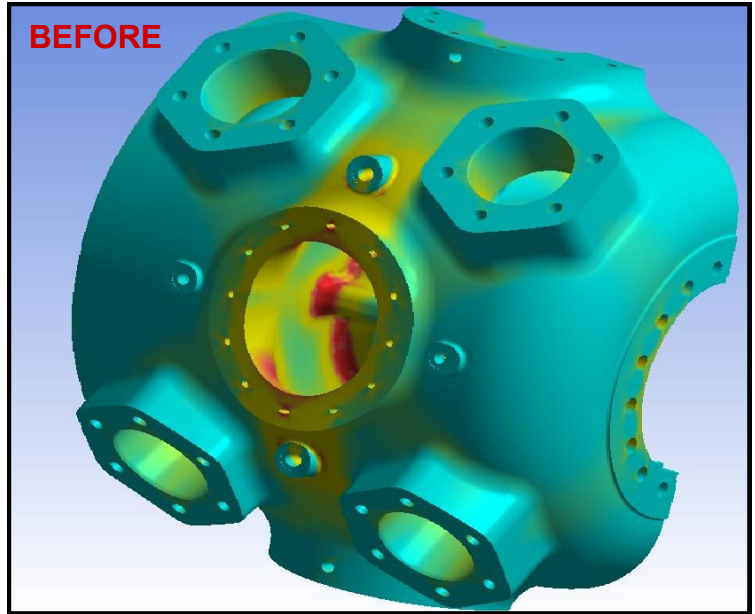
ACI's extensive experiences with reciprocating compressors, 3D modeling and FEA analyses provide advantages such as:

- Shortened Development-to-Design Time
- Evaluation of New Concepts
- Failure Avoidance
- Field Problem Trouble Shooting
- Weight Reduction
- Material Savings

ACI's FEA capabilities are used to provide customers with both efficient and cost-effective designs. The two adjacent images show the BEFORE and AFTER stress models from FEA simulations of a customer's existing cylinders and the final ACI-designed replacement cylinders.

The new cylinders were designed to not only increase cylinder throughput, but also to reduce, or eliminate, existing stress areas — shown in red.

As seen in the AFTER image, the final cylinder design completely eliminated the high-stress regions that were concentrated around the gas passageways, valve ports and internal ribbing. Moreover, the detailed FEA analysis permitted reduction of maximum deformation by almost 50%.



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