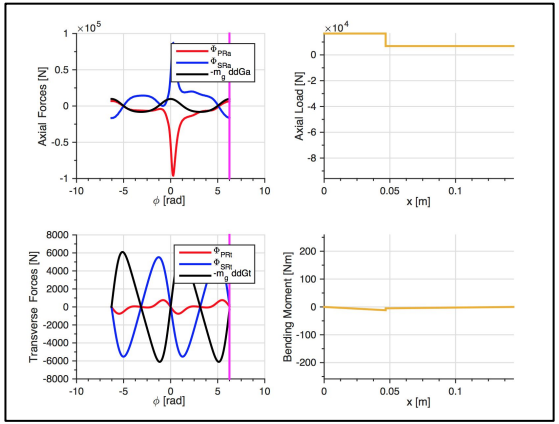
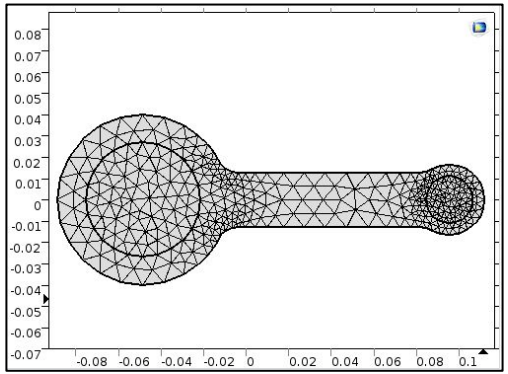
Erik Kramer | Ferrari F136 F Engine Connecting Rod

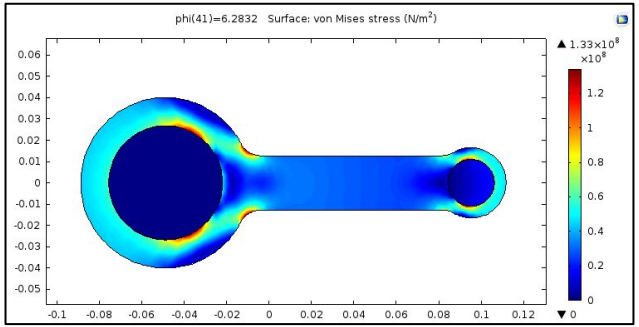
Project → A low weight and cost effective connecting rod for an F136 engine which holds up to all safety standards
Tasks → Analytical load studies, design iteration using 2D & 3D Finite Element Analysis, fracture & fatigue analysis

Load Calculations

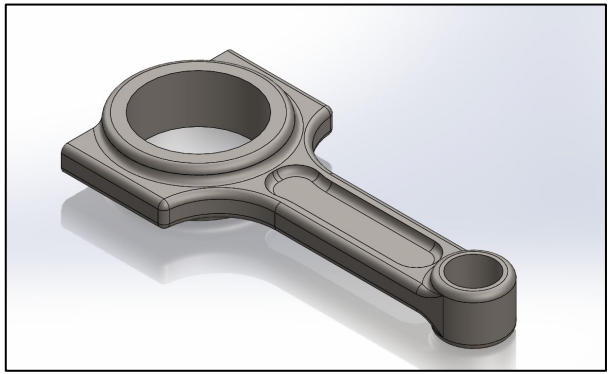


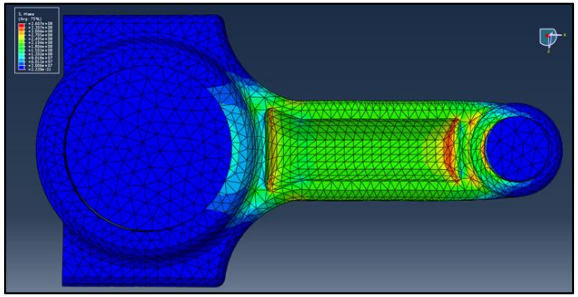
2D Parameter Optimization





3D Design Iterations and FEA





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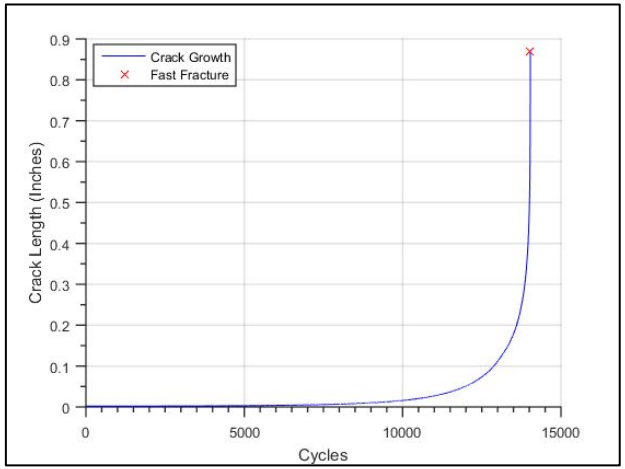
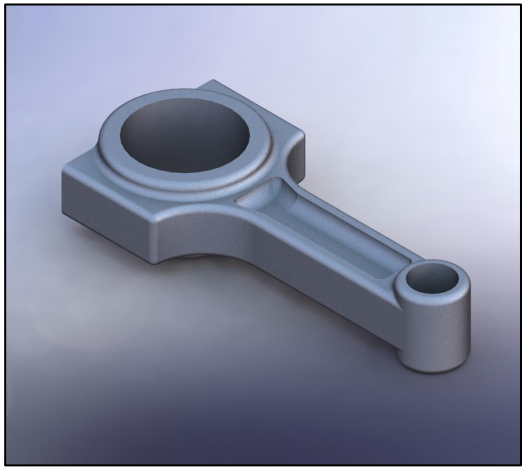
Objectives
- ➔ Design a connecting rod that can interface with a Ferrari F136 F Engine
- ➔ Confirm design holds up to all safety standards while being low mass and cost effective

Process
- ➔ Utilized MATLAB to model engine loads, perform beam bending analysis, and fatigue analysis
- ➔ Used COMSOL FEA to explore and optimize design parameters in 2D
- ➔ Employed Abaqus FEA to iterate on 3D designs

Results
- ➔ Produced a design with a yield safety factor of 2.09, minimum buckling safety factor of 16.25, and an infinite lifetime using S-N methods
- ➔ Documented results in a 50 page report





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