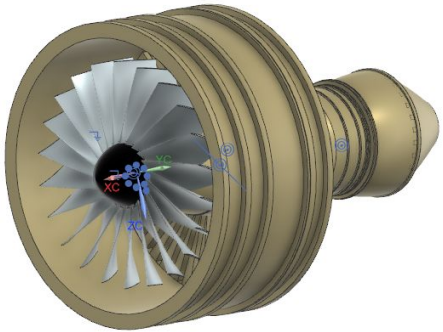
Project Overview

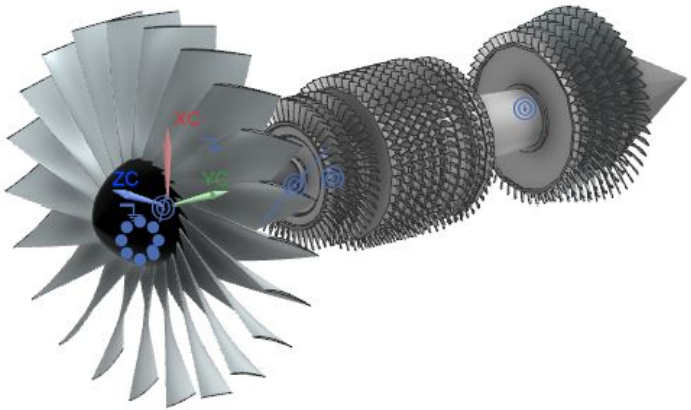
- Modeled a CFM56-7B-inspired turbofan
- Recreated major engine sections
- Approximated proprietary fan blade geometry
- Analyzed blade performance from 1,000–5,500 RPM
- Compared multiple materials

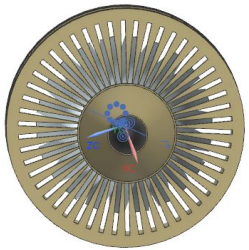


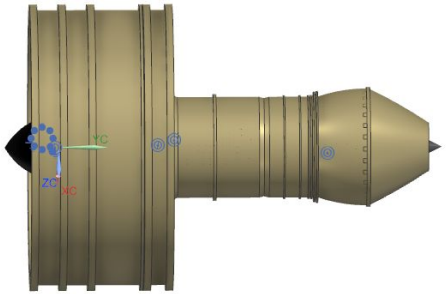


Turbofan CAD Model

- Fan
- LPC
- HPC
- Combustor
- HPT
- LPT
- Shafts, casing, and exhaust
- Simplified repeated geometry

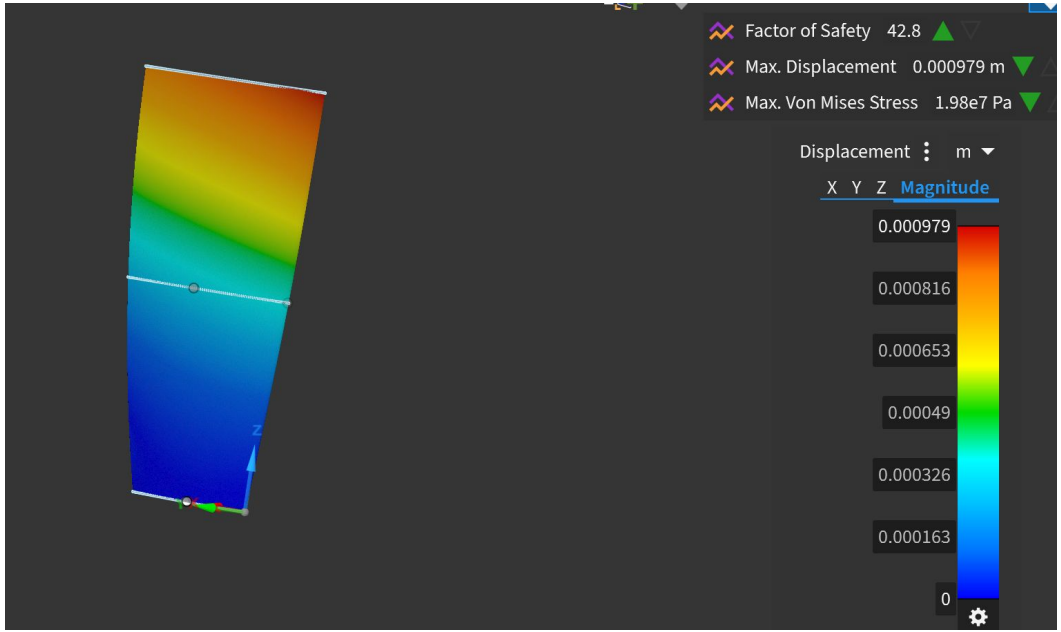




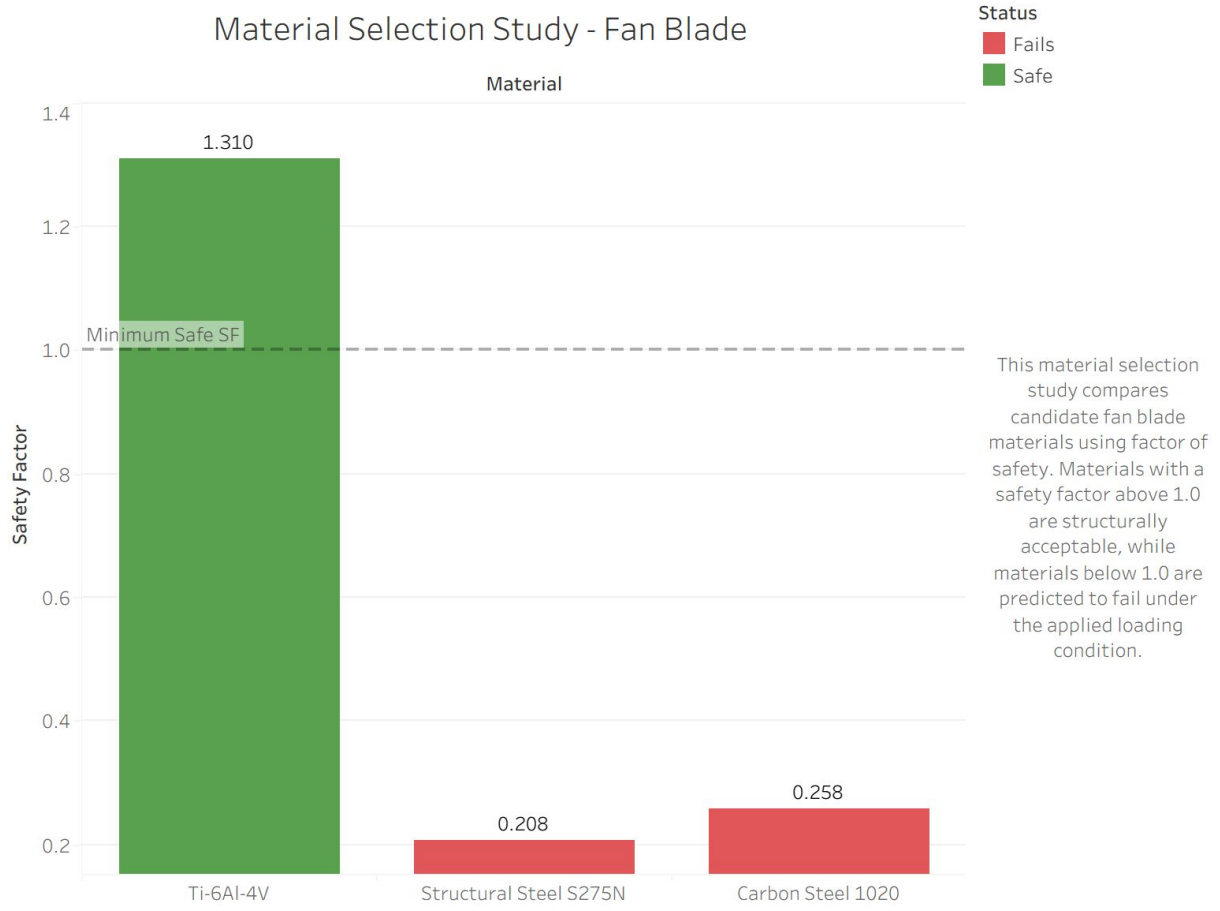


Fan Blade Geometry/FEA

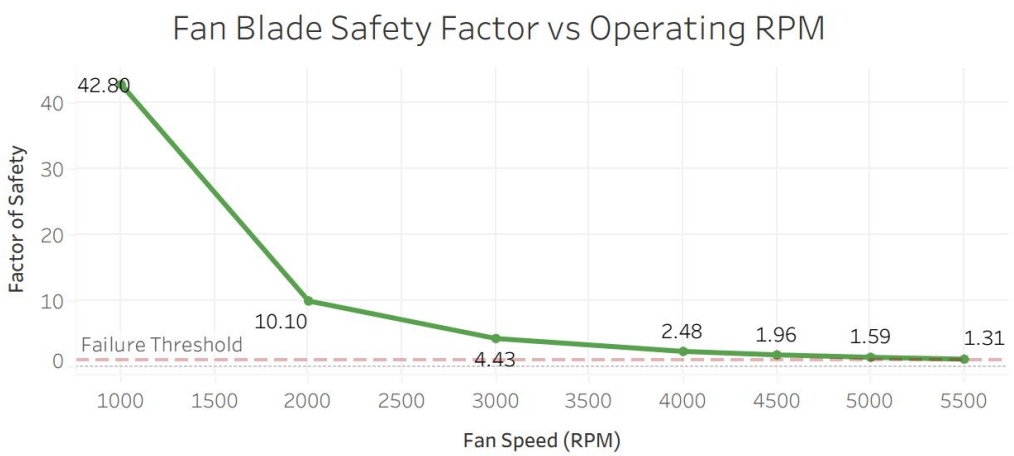
- Approximated CFM56-style blade geometry using NACA 4410, 4406, and 4403 profiles
- Lofted the airfoils into a full blade and analyzed it in ANSYS
- Evaluated 1,000–5,500 RPM across multiple materials
- Compared stress, deformation, and factor of safety



Results - Tableau Dashboard 1



Results - Tableau Dashboard 2



This dashboard evaluates the fan blade under increasing RPM with titanium as the chosen material. As fan speed increases, maximum stress increases and the factor of safety decreases. A safety factor above 1.0 indicates acceptable structural performance, while values below 1.0 indicate predicted failure.