



Enclosure Pressure Relief for Industrial Applications

Project Overview

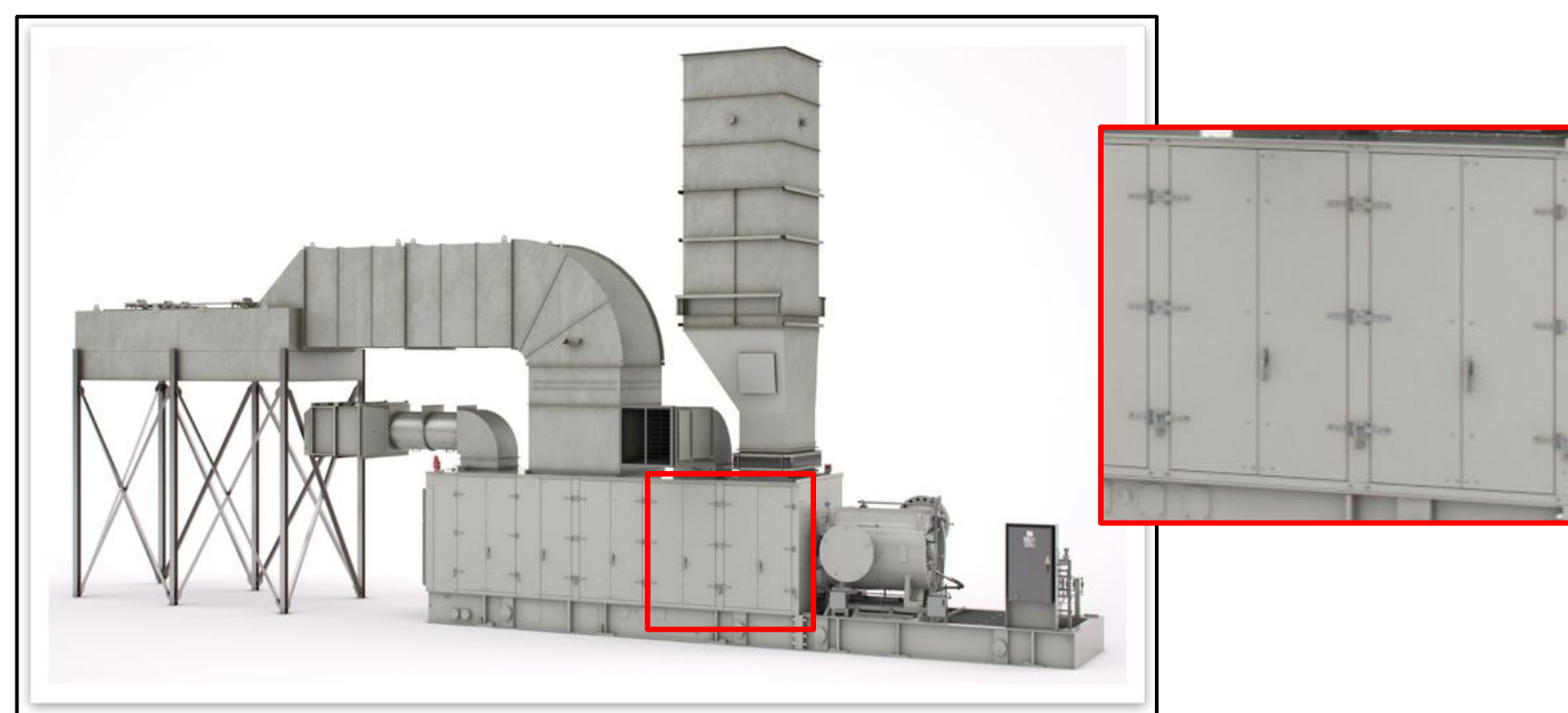
Solar Turbines is responsible for the design and manufacturing of industrial gas turbines for various onshore and offshore power generation applications.

Problem Statement:

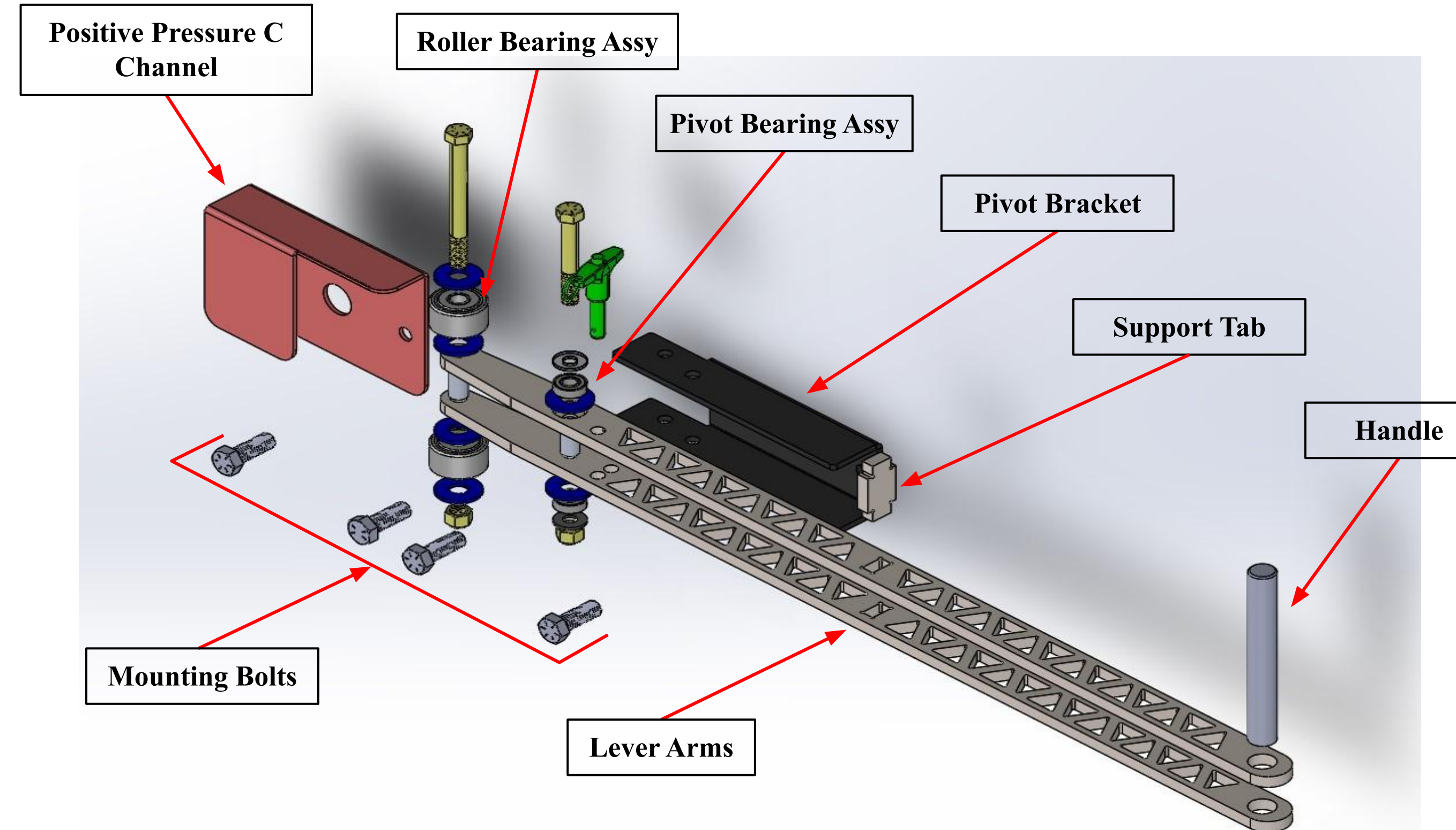
Turbine equipment produced by Solar Turbines is often packaged in a ventilated enclosure. The ventilation system creates a significant pressure differential between the inside of the enclosure and the atmosphere. Currently, technicians are required to shut off the ventilation system before opening the enclosure doors to perform inspection.

Need:

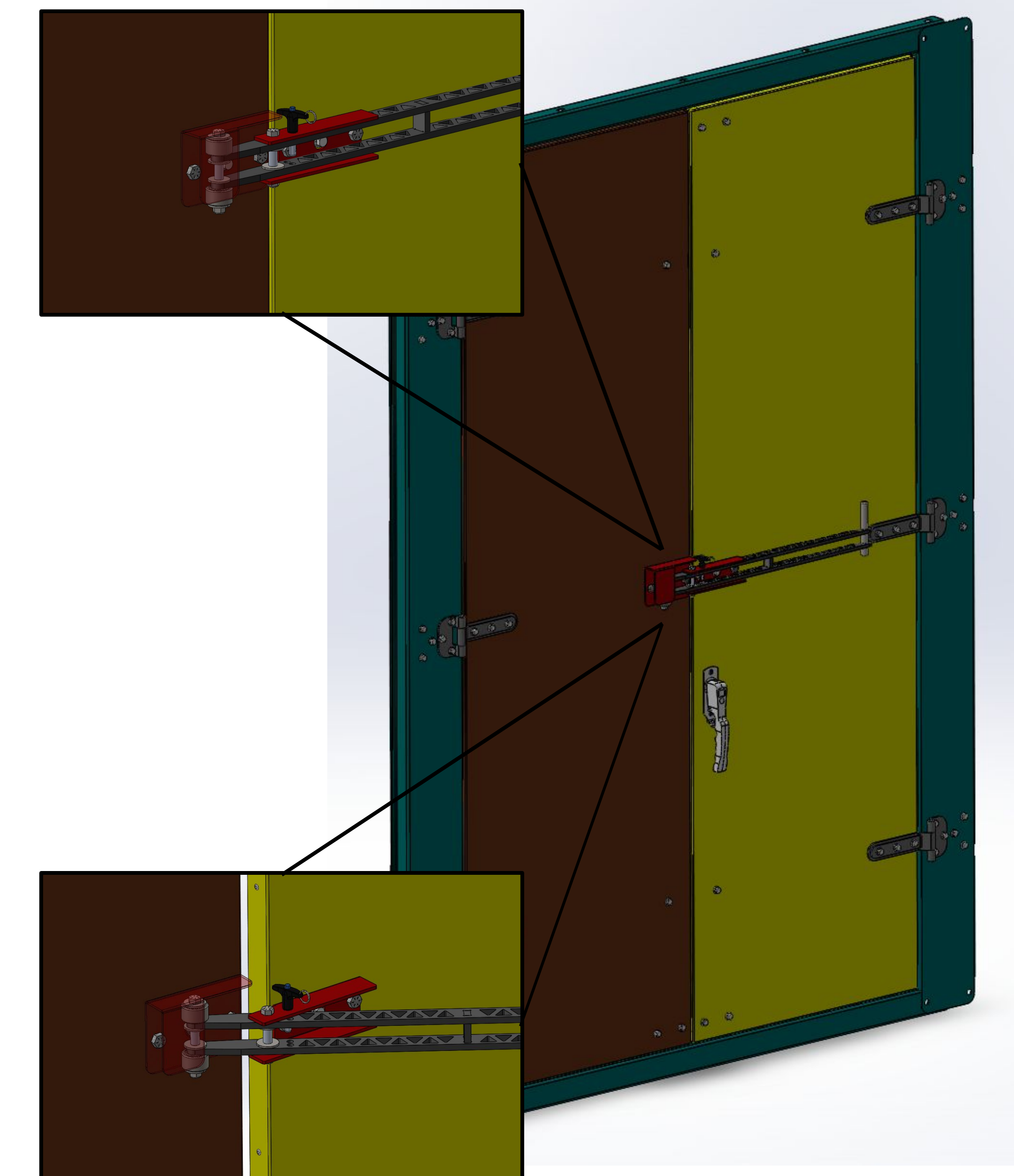
An ergonomic, safe and easy to use pressure relief mechanism must be designed that allows technicians to perform inspection on the gas turbine packages while the ventilation system is operating.



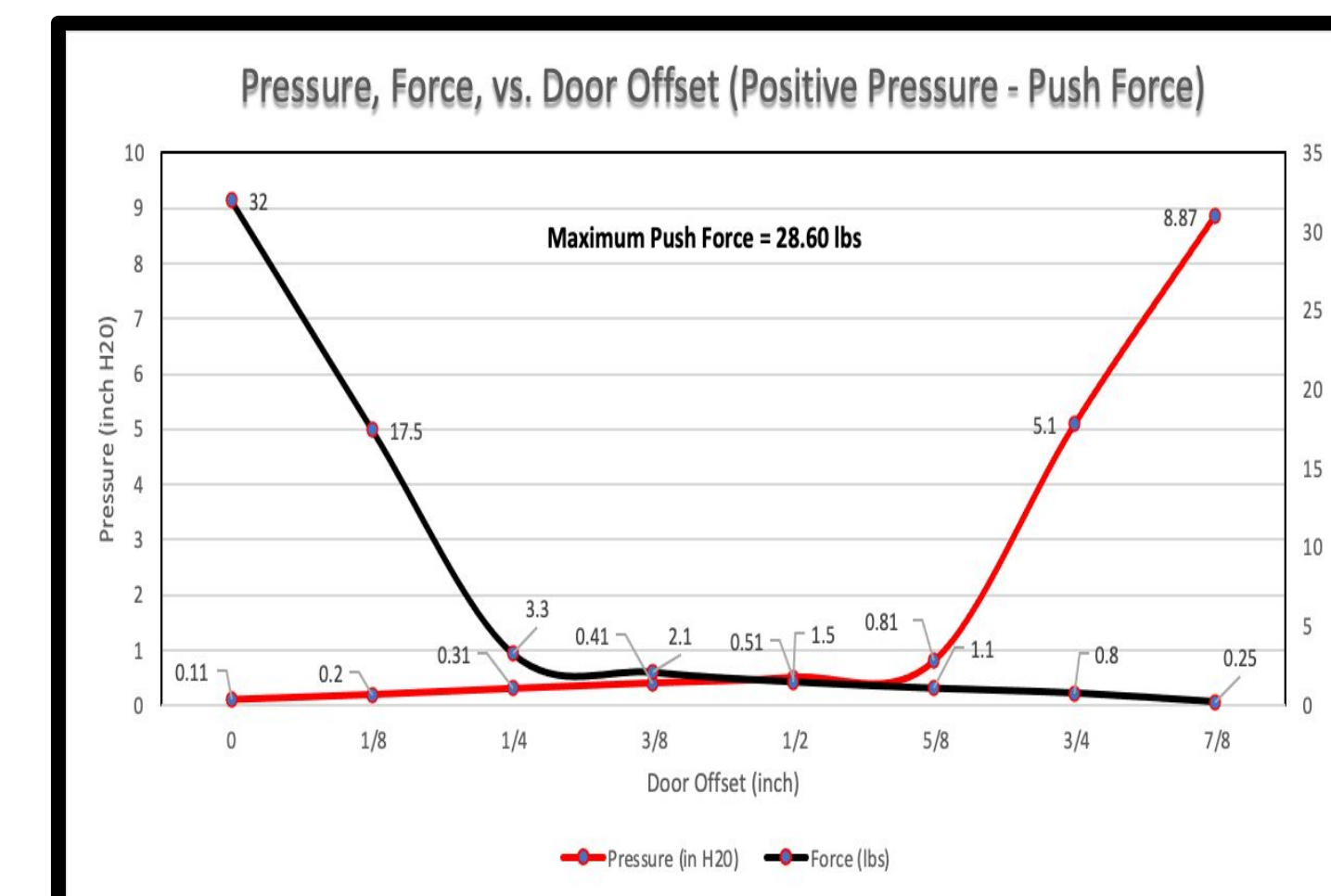
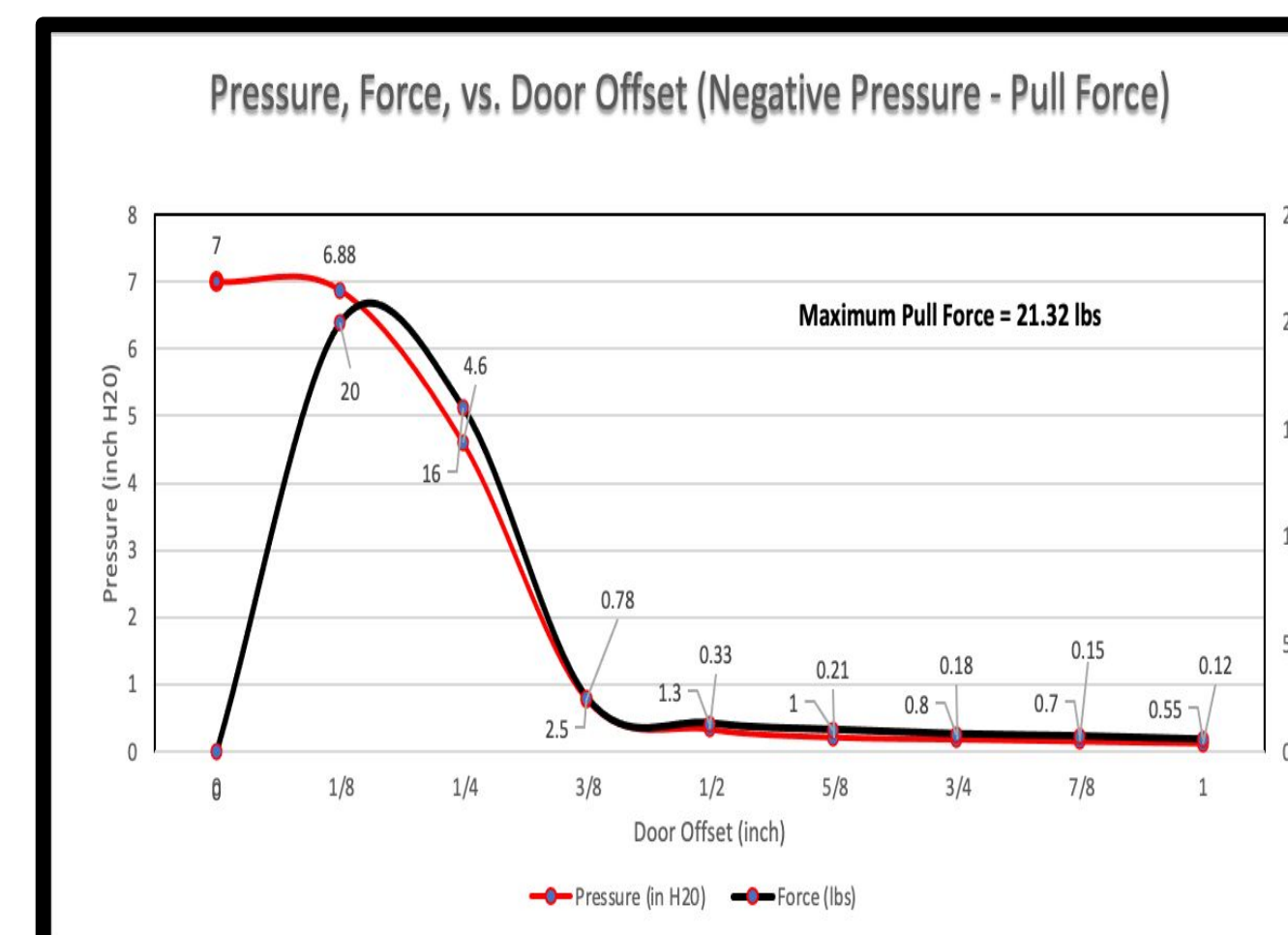
Exploded View



Final Product



Test Data / Results



Negative Pressure

21.32 lb max (pull) for 6.83 inch H2O

Positive Pressure

28.60 lb max (push) for 6.65 inch H2O

Experimental Overview

Testing was performed with 6.60 inches of H2O, a Shop-Vacuum, & a one-off metal & acrylic test rig, designed and fabricated by the team. The test rig was slightly below half scale in height & the door was full scale in width to save on material costs, manufacturing time, & space. Force and pressure values were collected at 1/8 inch increments using a digital manometer, force gage, and a tape measure. Force and pressure were plotted against door offset distance.

Team Members



Kamron Arvand



Manuel Aldana



Enrique Neyra



Eddie Greer



Aidan Donaghe

Acknowledgements

Role	Name
Program Coordinator	Dr. Scott Shaffar
Sponsor Manager	Gregor Robertson
Sponsor Advisor	Jordan Ferreira
Sponsor Subject Matter Expert	Kevin Goon
ME Machine Shop Manager	Michael Lester
AE Machine Shop Manager	Paul Ahlers
DFP Systems	Matthew Lane
Vacuum Chamber Expert	Dr. Meysam