FEA of Moller Hybrid Vacuum Chamber

J Kelsey

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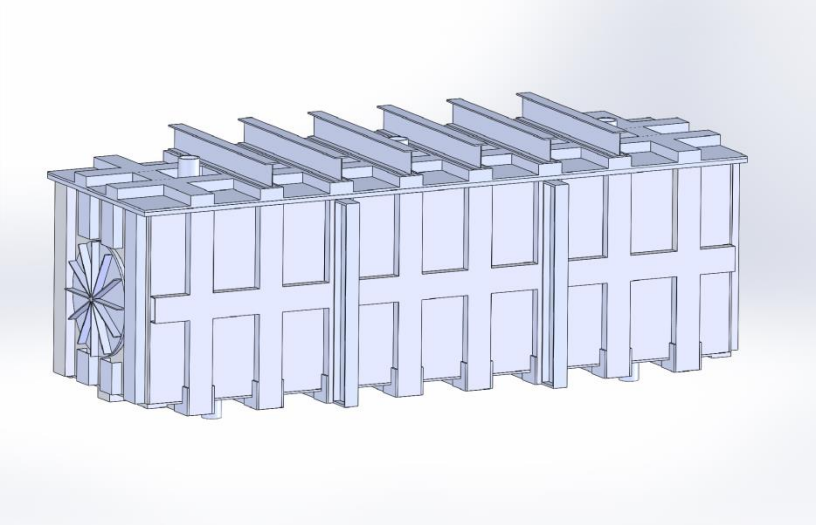
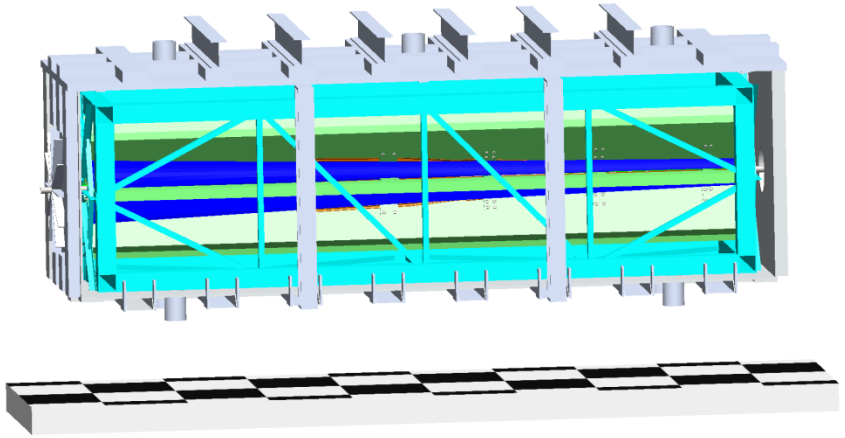
Moller Hybrid Toroid Vacuum Chamber



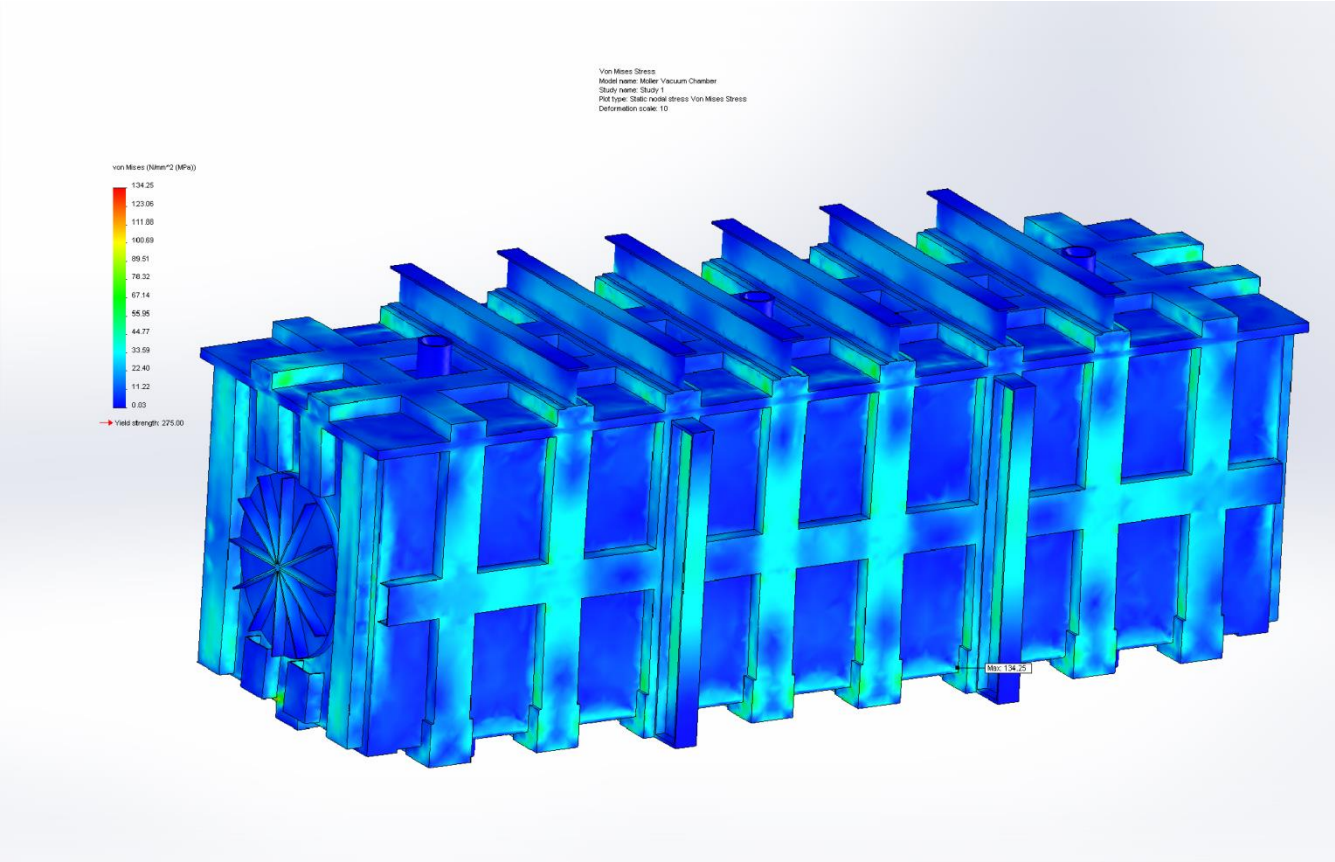
- Aluminum chamber with reinforcement. Weight approx. 19,000 lbs. (8600 Kg) End blankoff flanges for initial testing.

- Toroid carrier supported by strut system from top plate.



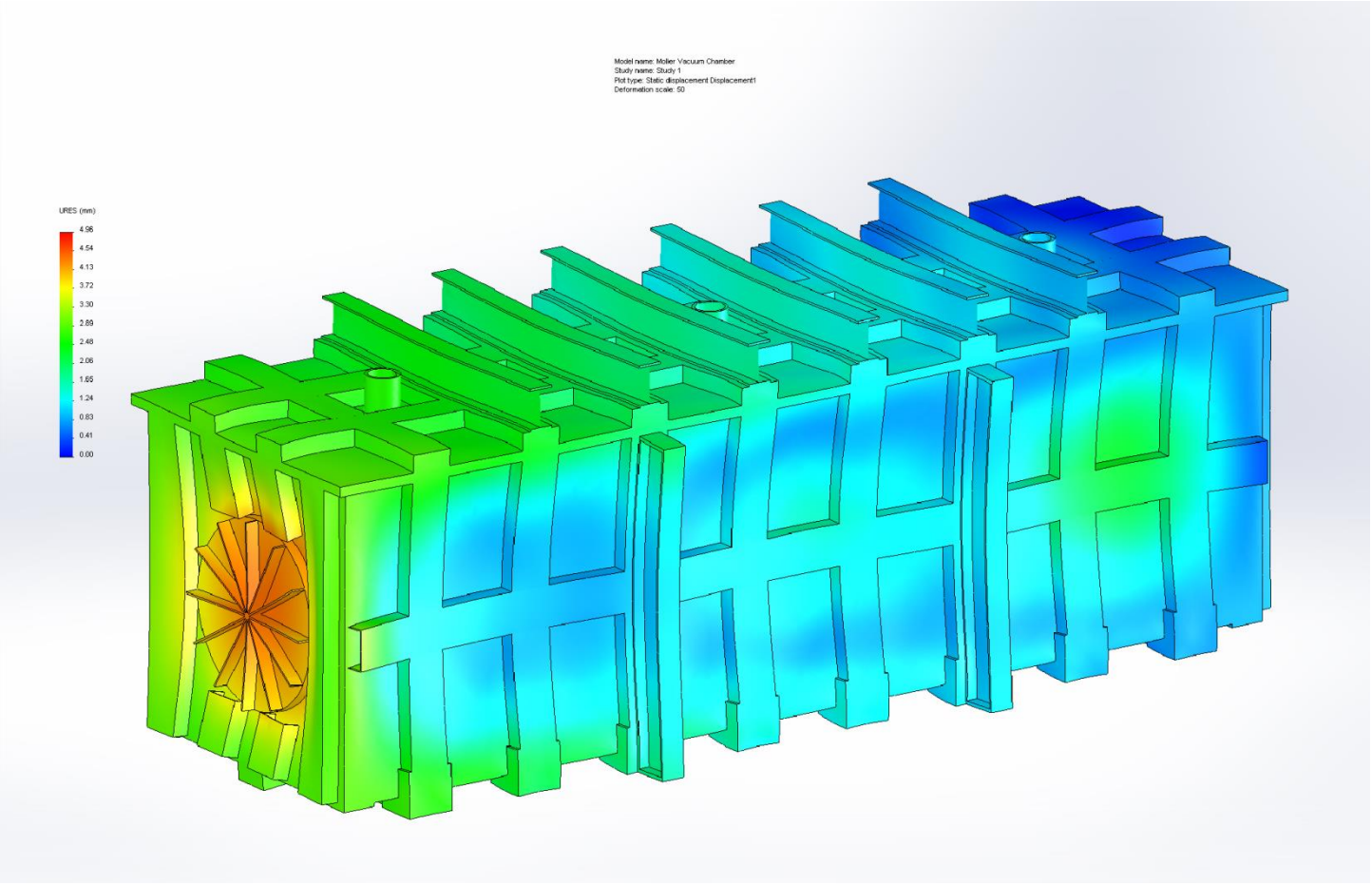
Model	
File Name	Moller Vacuum Chamber.SLDASM
File Configuration	FEA Von Mises Stress
Model Type	Solid, Static
Loads	Gravity + Toroid and Support (20,000 lb) + Vacuum load on all walls (14.7 psi)
Restraints	Flanges on bottom of chamber
Contacts	Bonded

- Upstream and Downstream flanges have appropriately sized ports to provide no interference for particles.

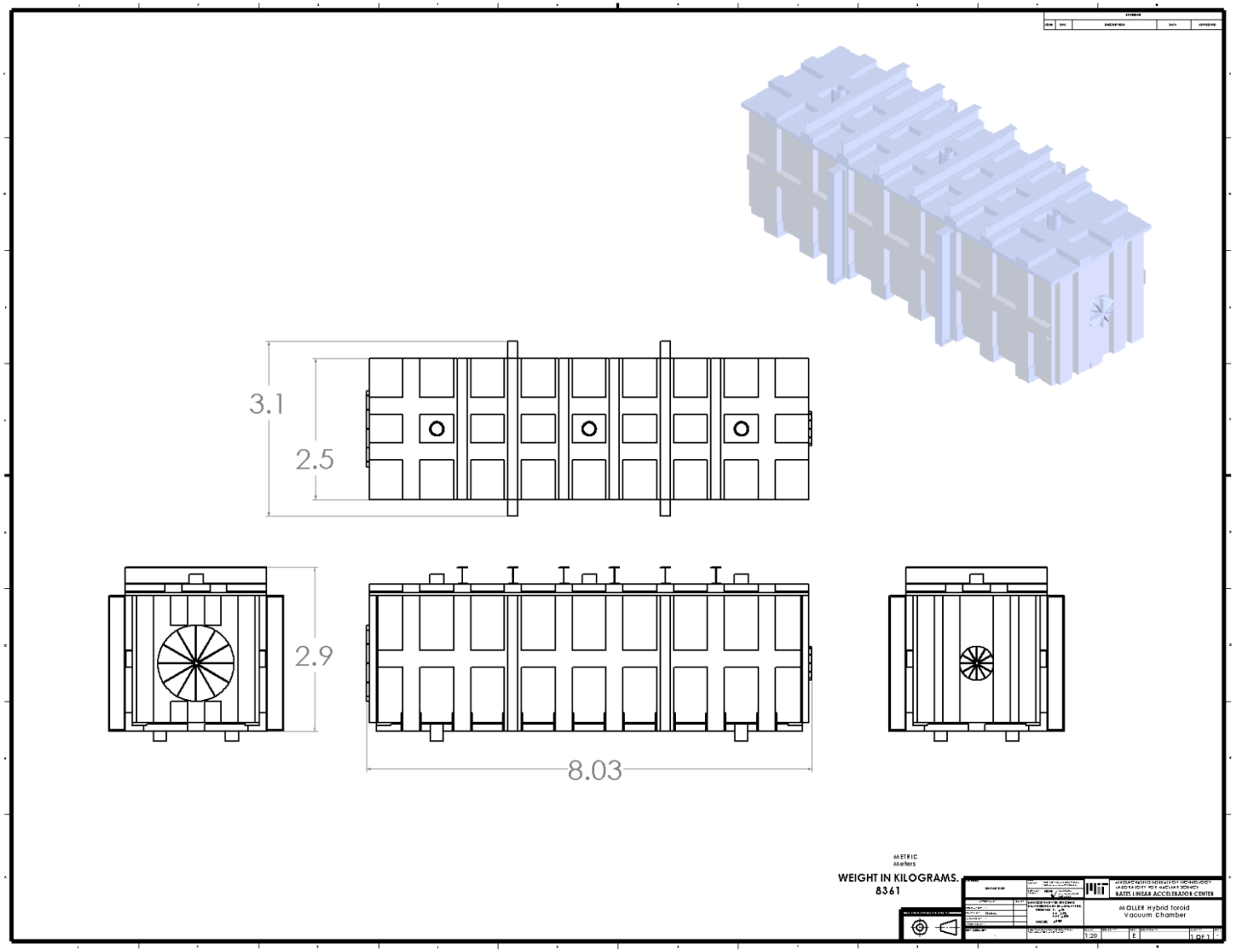


Model	
File Name	Moller Vacuum Chamber.SLDASM
File Configuration	FEA Deflection
Model Type	Solid, Static
Loads	Gravity + Toroid and Support (20,000 lb) + Vacuum load on all walls (14.7 psi)
Restraints	Flanges on bottom of chamber
Contacts	Bonded

- Toroid support from top plate. Maximum deflection on top plate is 0.044” (1.12 mm)



Model	
File Name	Moller Hybrid Vacuum Chamber Drawing



Conclusions

- Stress has a safety factor of 2 and deflection on top plate is approx. 1mm.
- Probably will require cryo-pumps due to outgassing volume. Large seals will be differentially pumped viton o-rings.
- Services for the toroid will all come through the top plate.