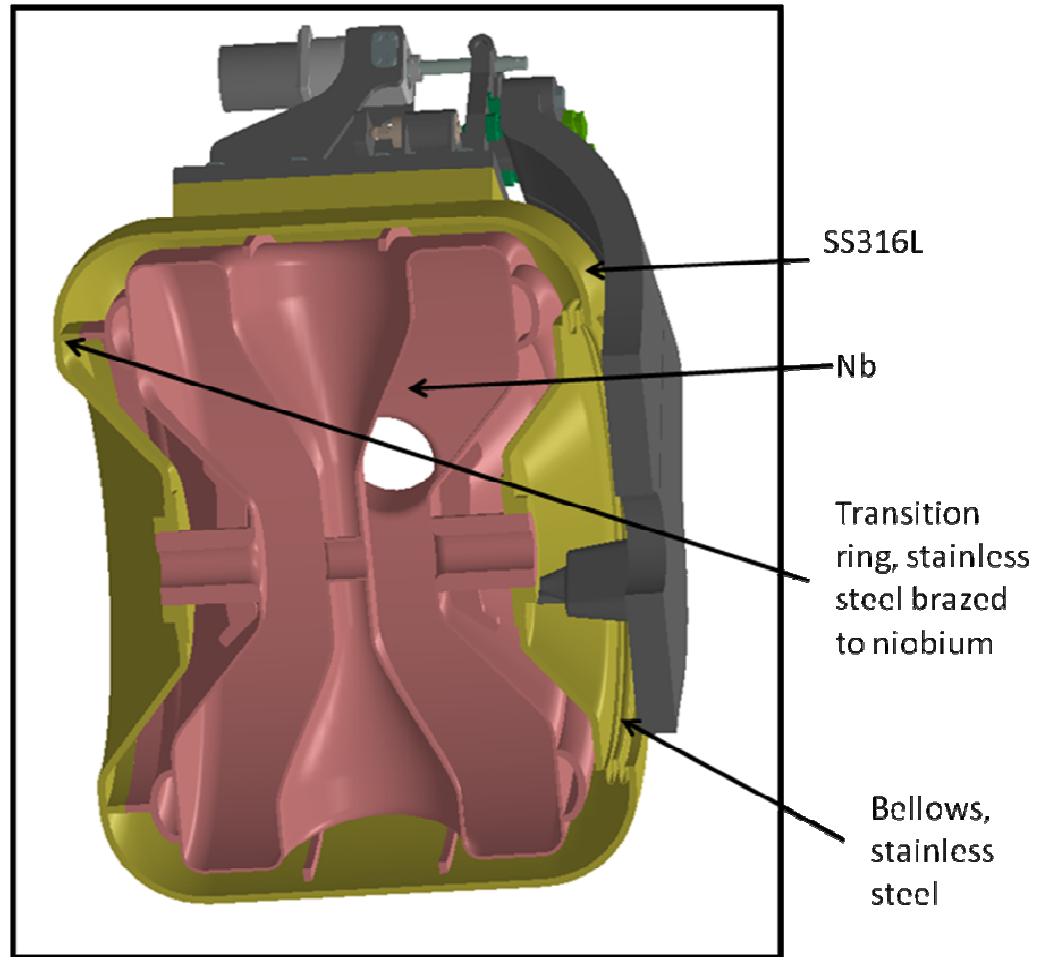


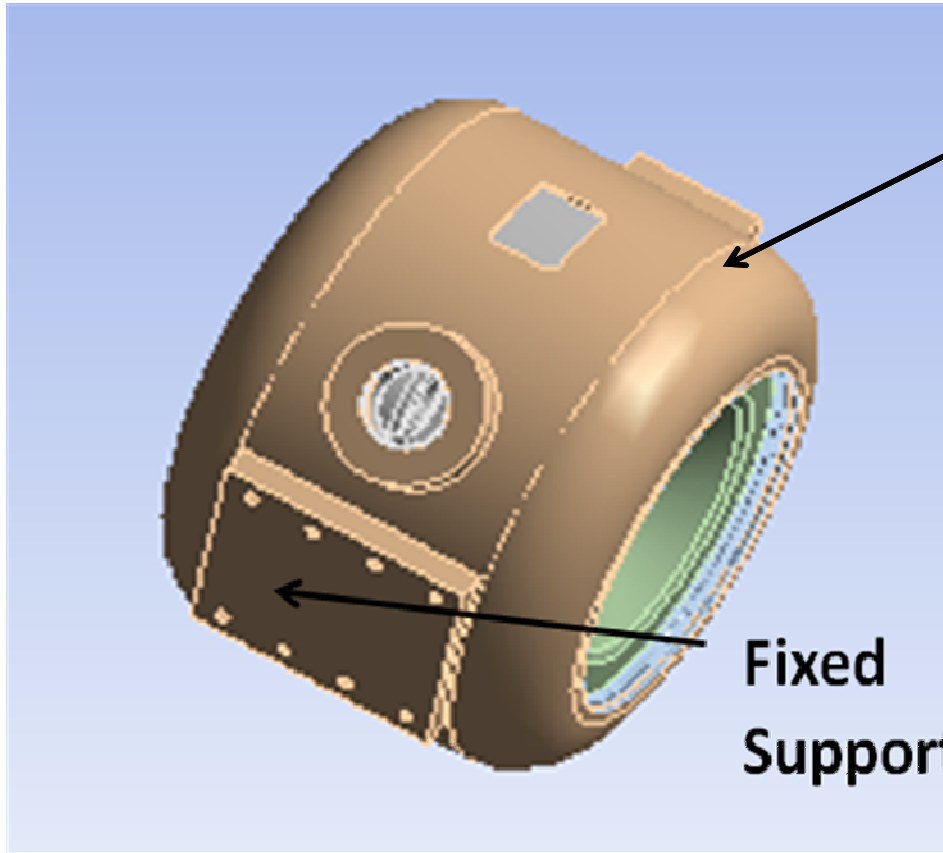
Helium vessel stress analysis

For SSR-1
VECC team

Vessel construction



Boundary conditions

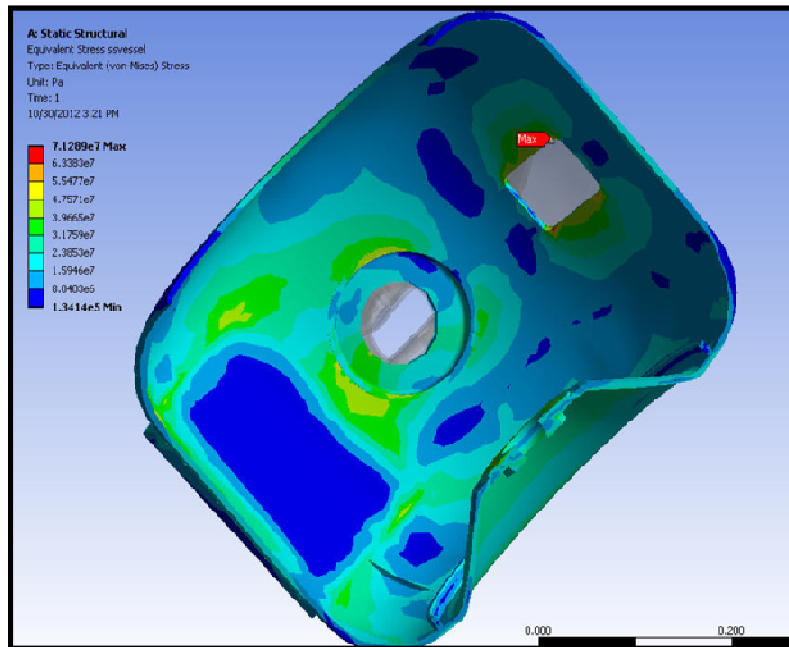


4 K

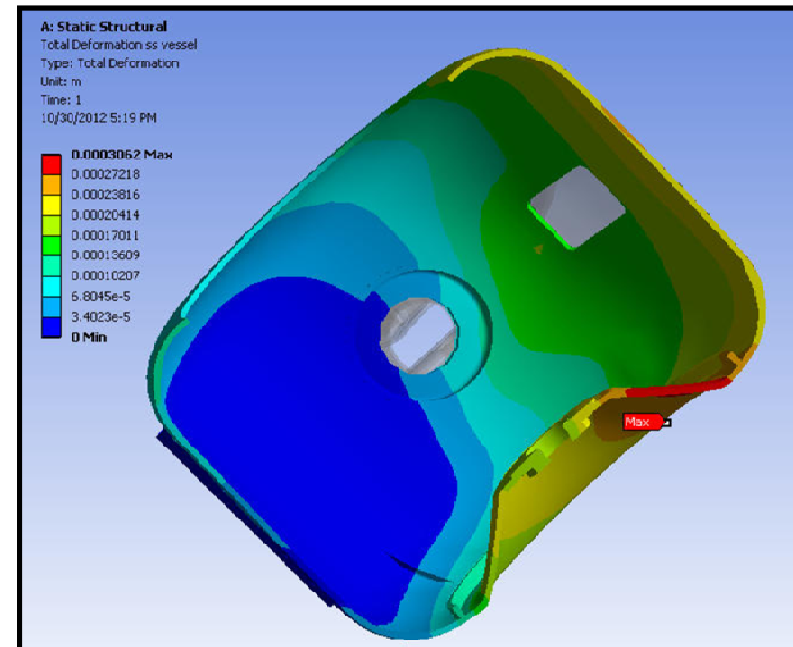
He Pressure : 2bar at 295K
During initial cool-down

Fixed
Support

Equivalent stress, deformation & FOS Helium vessel



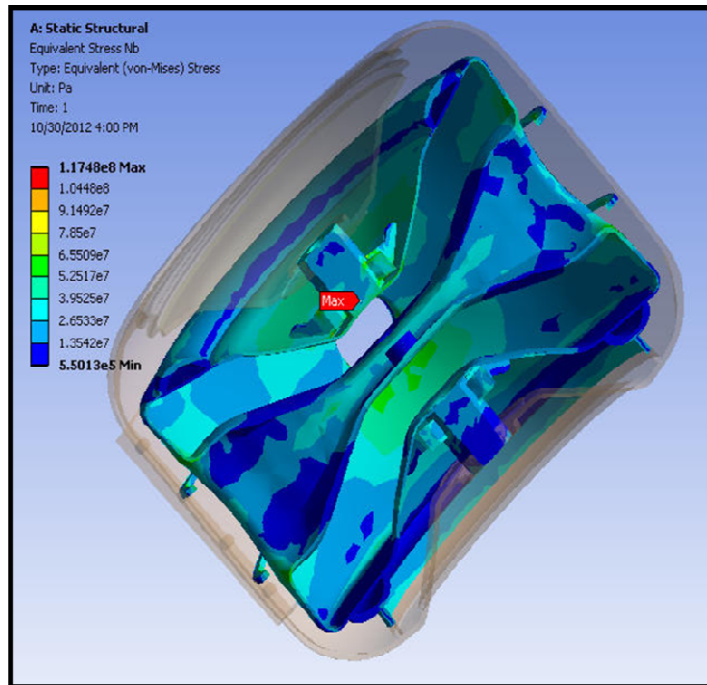
Equivalent Stress Distribution in Helium chamber (71MPa maximum)



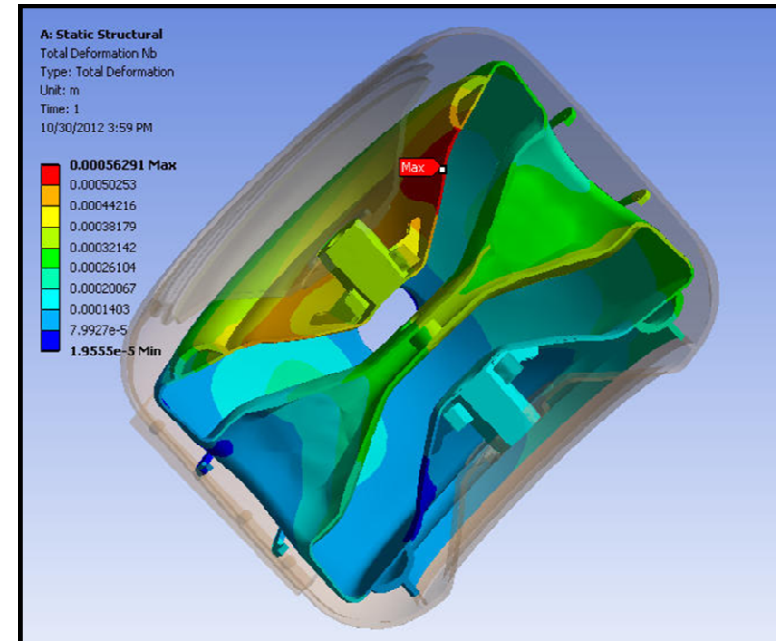
Deformation in Helium Vessel (0.3mm)

Equivalent stress, deformation & FOS

Nb cavity

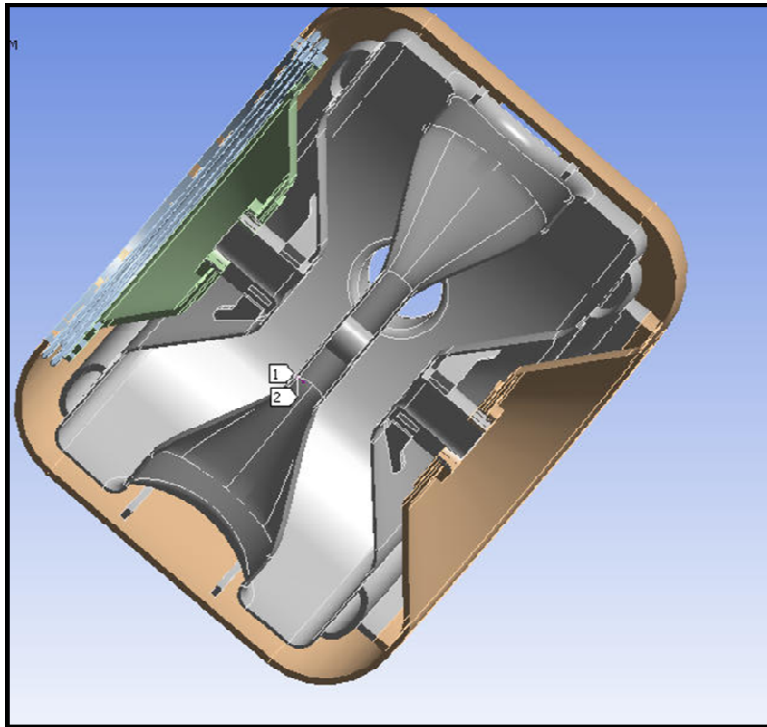


Equivalent Stress Distribution in Cavity

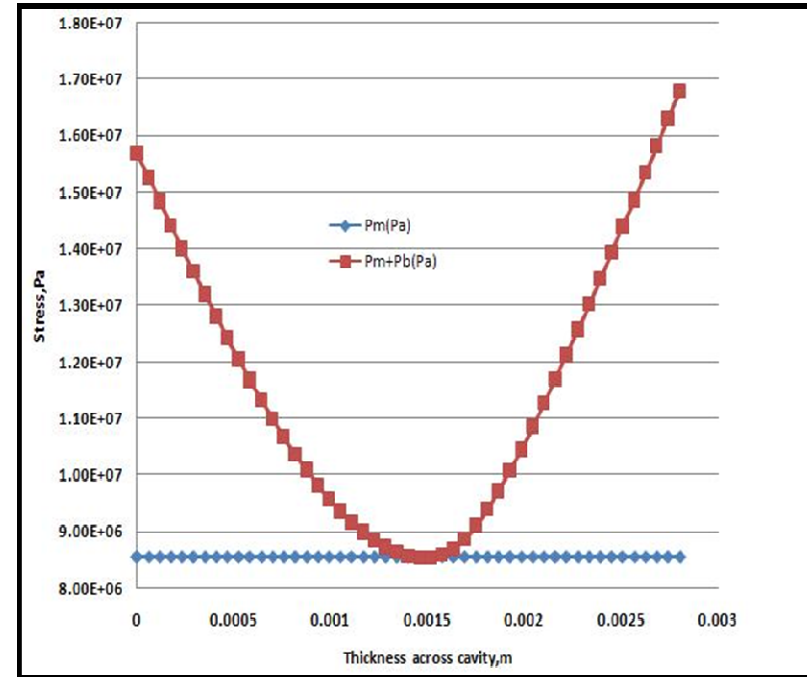


Deformation in Cavity

Stress linearisation



SCL for stress Linearisation



Stress Linearisation of primary stress

$$P_m = 8.8 \text{ MPa} < S_m = 33 \text{ MPa}$$

$$P_m + P_b = 17 \text{ MPa} < 1.5 S_m = 48 \text{ MPa}$$

THANK YOU !