

DS-20k Calibration Meeting, 14 Jan 2021

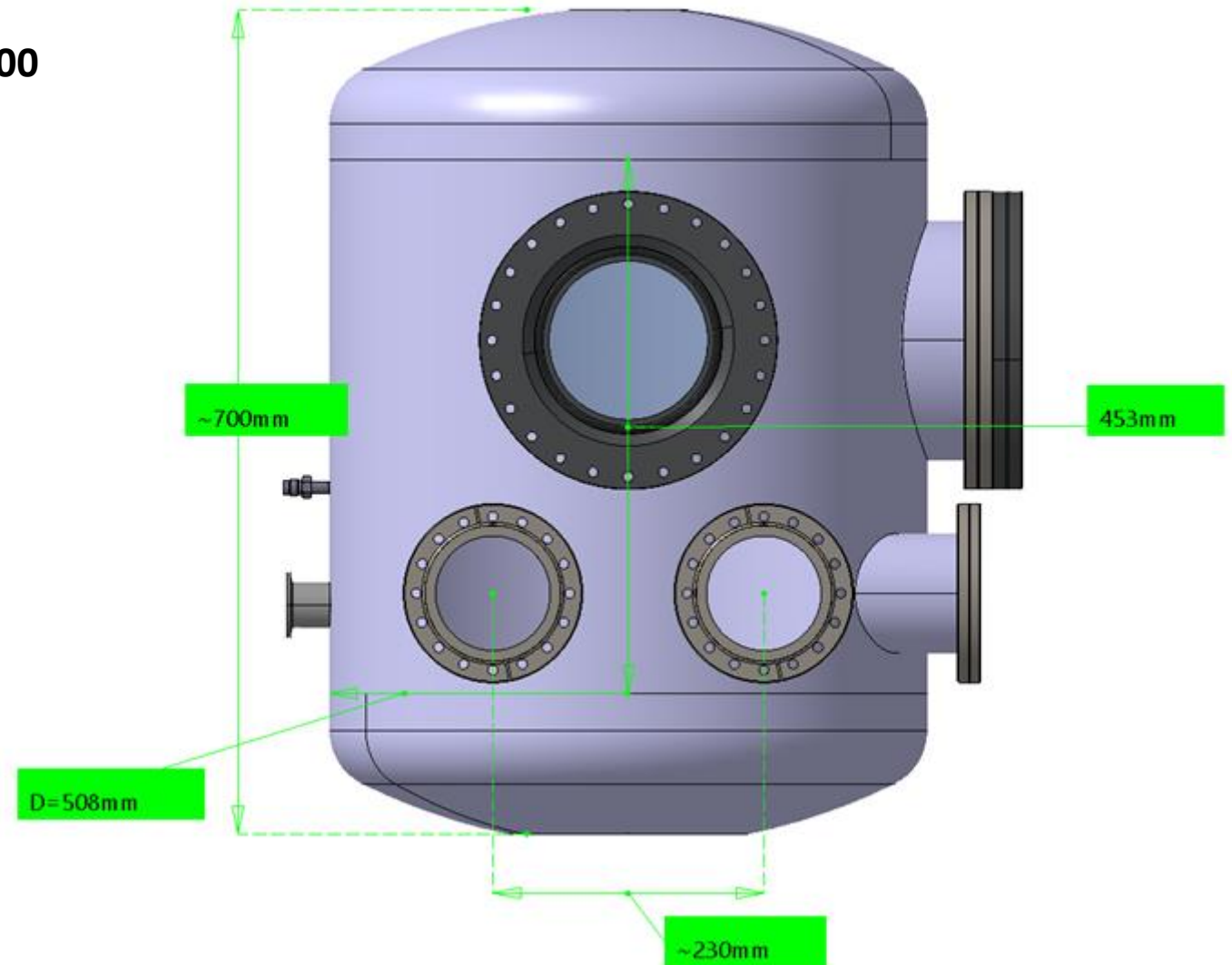
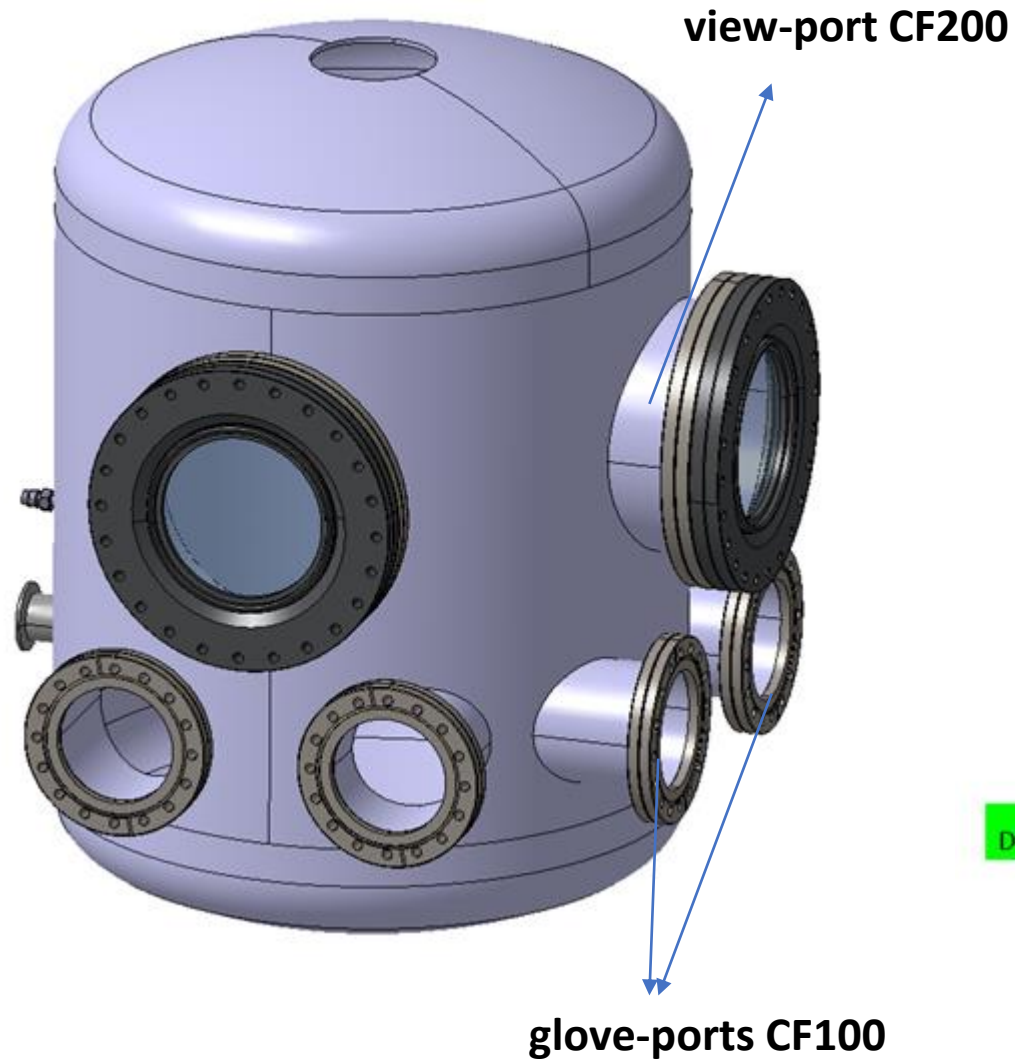
Calibration system – cylindrical glovebox proposal

Marco Carlini

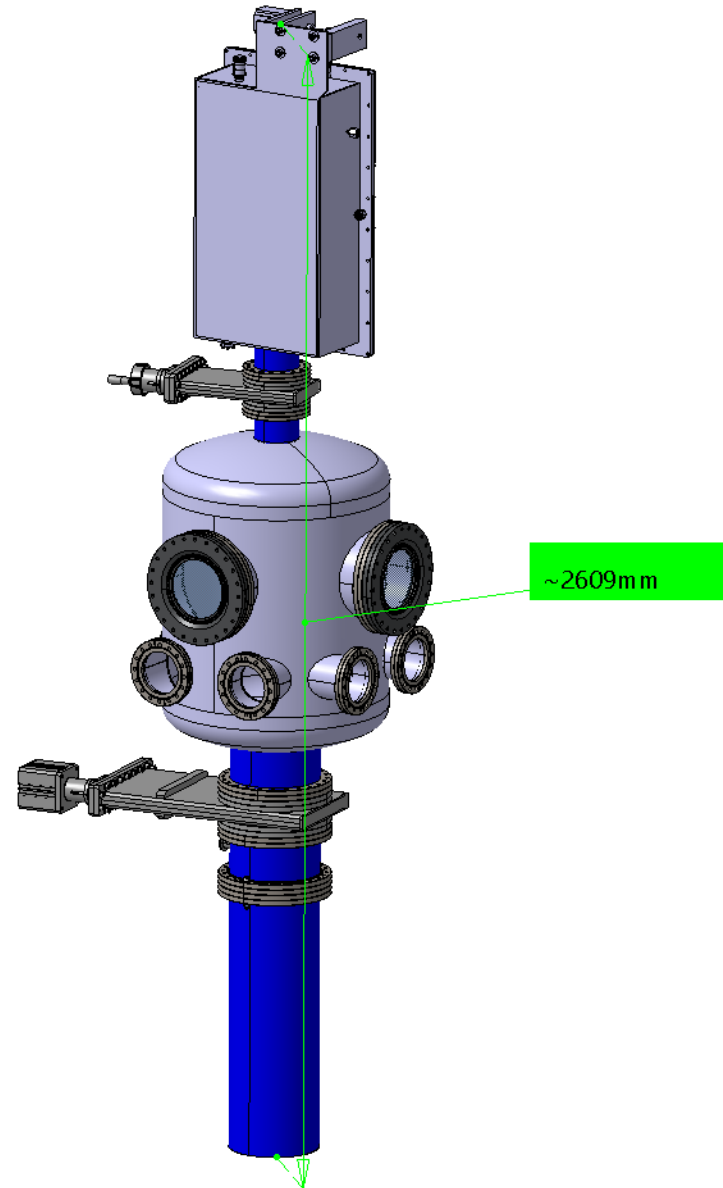
darkside
two-phase argon TPC for Dark Matter Direct Detection



Cylindrical glovebox: design



Cylindrical glovebox: full assembly



Cylindrical glovebox: loads

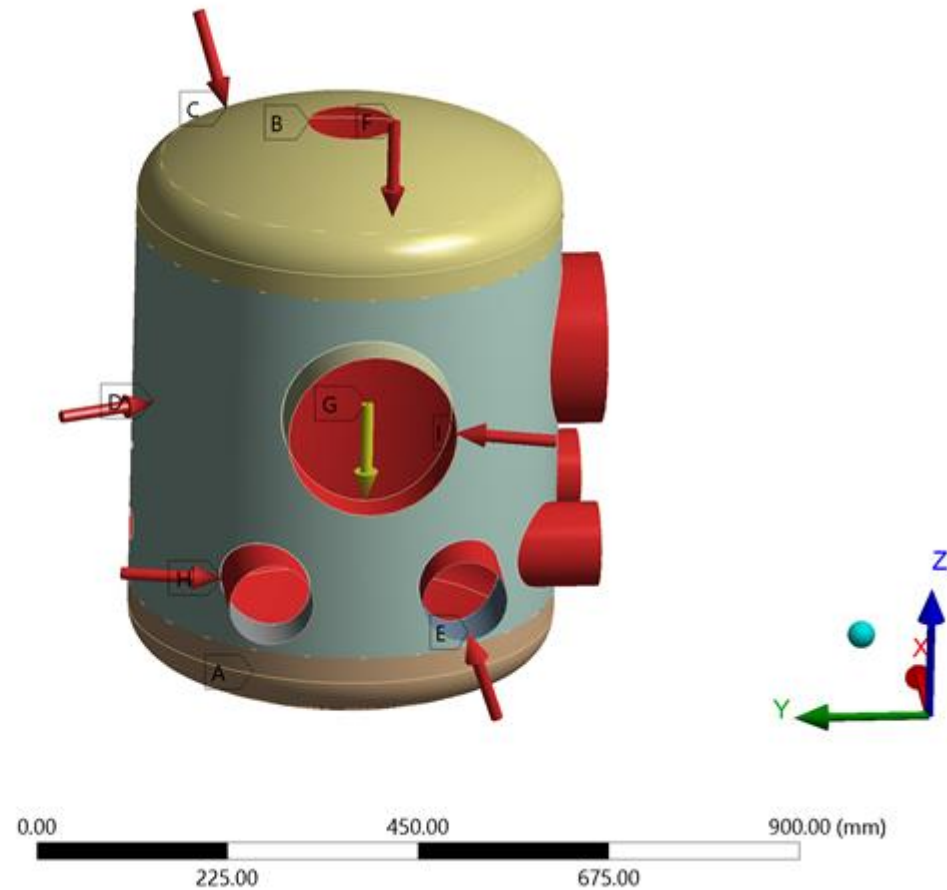
A: Static Structural

Static Structural

Time: 1. s

14/01/2021 11:37

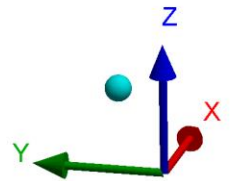
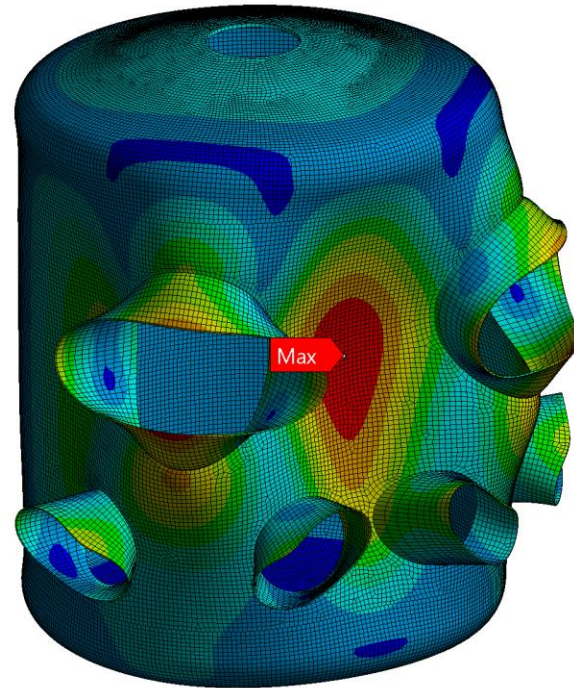
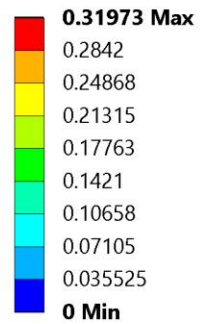
- A** Fixed Support
- B** Displacement
- C** Pressure: -0.1 MPa
- D** Pressure 2: -0.1 MPa
- E** Pressure 3: -0.1 MPa
- F** Force: 1500. N
- G** Standard Earth Gravity: 9806.6 mm/s²
- H** Pressure 4: 0.1 MPa
- I** Pressure 5: -0.1 MPa



- **Vacuum** acting on the vessel surface
- **150 kg** acting on the top nozzle
- **Self-weight**

Cylindrical glovebox: deformation

A: Static Structural
Total Deformation
Type: Total Deformation
Unit: mm
Time: 1
12/01/2021 14:43



Cylindrical glovebox: stress

A: Static Structural

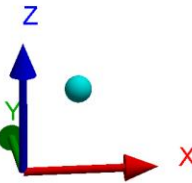
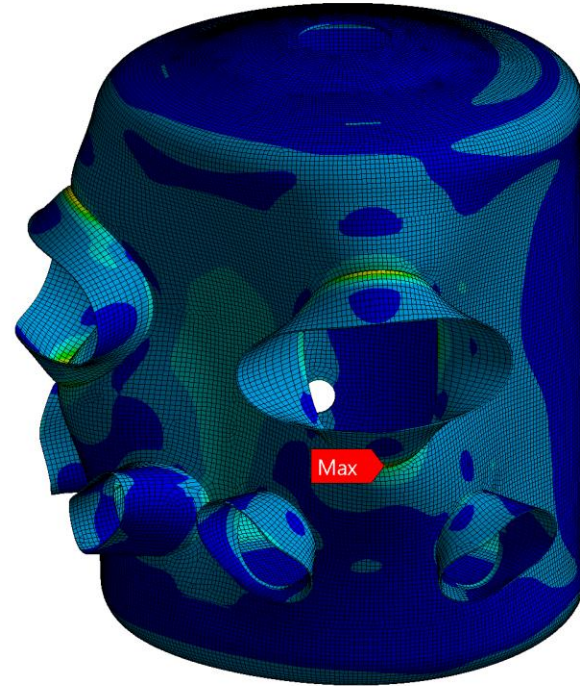
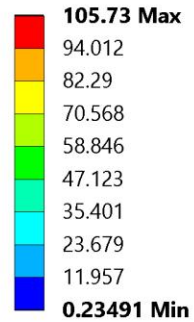
Equivalent Stress

Type: Equivalent (von-Mises) Stress - Top/Bottom

Unit: MPa

Time: 1

12/01/2021 14:44



Cylindrical glovebox: buckling

B: Eigenvalue Buckling

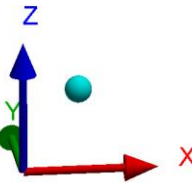
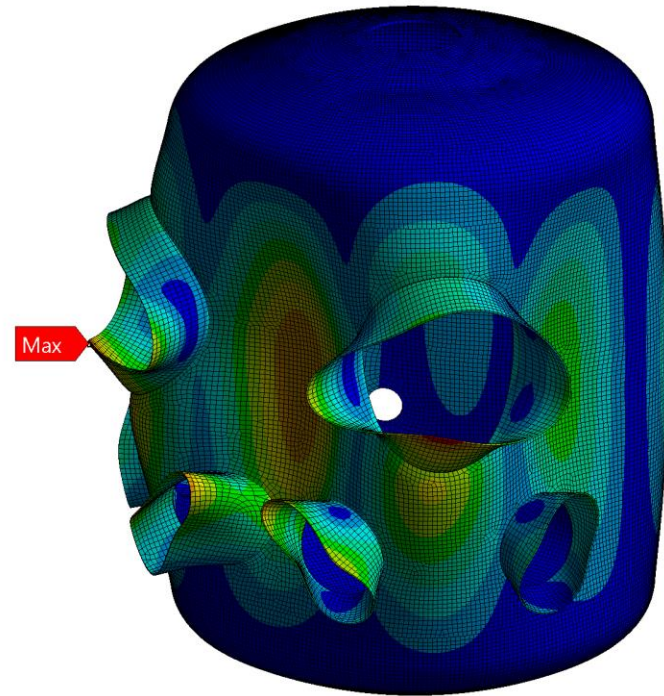
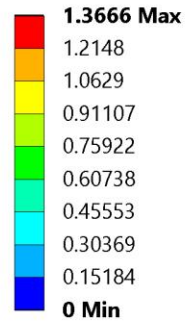
Total Deformation 2

Type: Total Deformation

Load Multiplier (linear): 25.844

Unit: mm

12/01/2021 14:45



Cylindrical glovebox: cost (raw material)



Bill Of Material Report	
ITEM Number	ST1389388 Rev a.00
Definition	cylindrical calibration glove box
Nomenclature	
Date	26 - 11 - 2020
Extracted by	Carlini Marco

This file is saved in TMP f

The generated graph corresponds to the changes to the "EBOM" structure

Graph generation

- Ascending sort
- Descending sort
- Default SmT sort

Sort ite

ITEMS						
ST number	Definition	context qty	Make or Buy	Unit cost (raw m.) EUR	Item q.ty	Cumul cost (raw m.) EUR
ST1389388	cylindrical calibration glove box	1				3216.8
ST1389408	Kohler R-365 508x4	1	Commercial Item	269.6	1.0	269.6
ST1389572	Kohler 508x4	1	Commercial Item	171.8	1.0	171.8
ST1389574	Kohler R-365 508x4 2	1	Commercial Item	269.6	1.0	269.6
ST1389621	8" tube viewport	2	Commercial Item	10.7	1.0	10.7
ST1381919	CF200 flange	2	Commercial Item	225.0	2.0	450.0
ST1389611	Vacuum viewport DN200CF	2	Commercial Item	836.0	2.0	1672.0
ST1389647	gloveport 4" tube	4	Commercial Item	10.5	1.0	10.5
ST1382071	CF 100 flange	4	Commercial Item	83.0	4.0	332.0
ST1385452	KF40 half nipple	1	Commercial Item	10.0	1.0	10.0
ST1389681	0.5 in VCR tube butt weld	1	Commercial Item	20.6	1.0	20.6