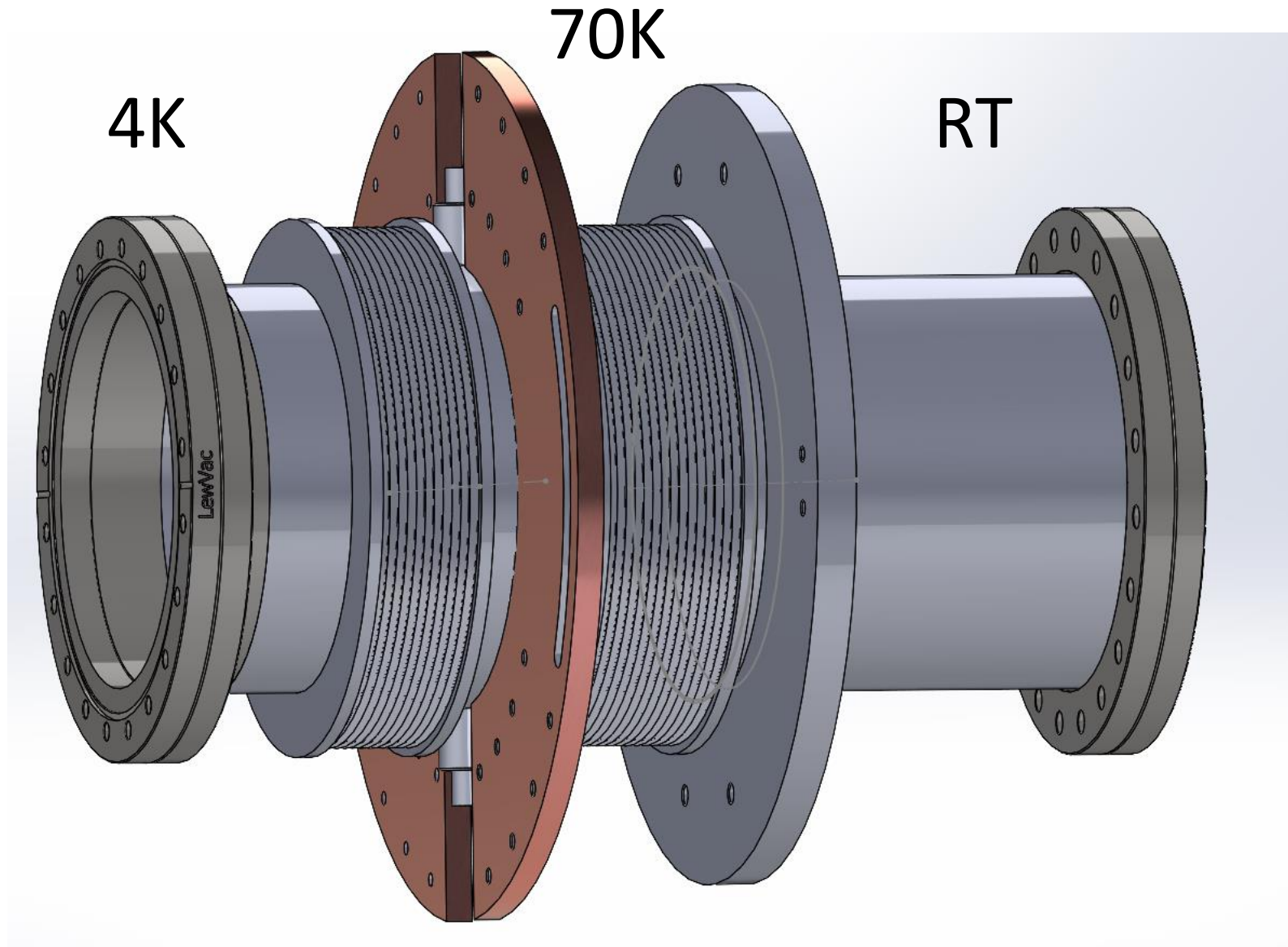


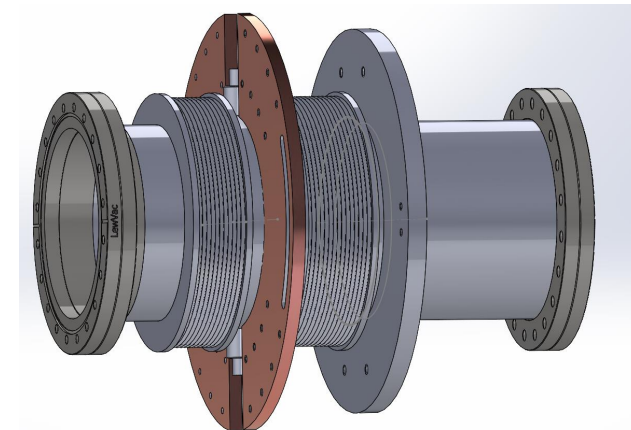
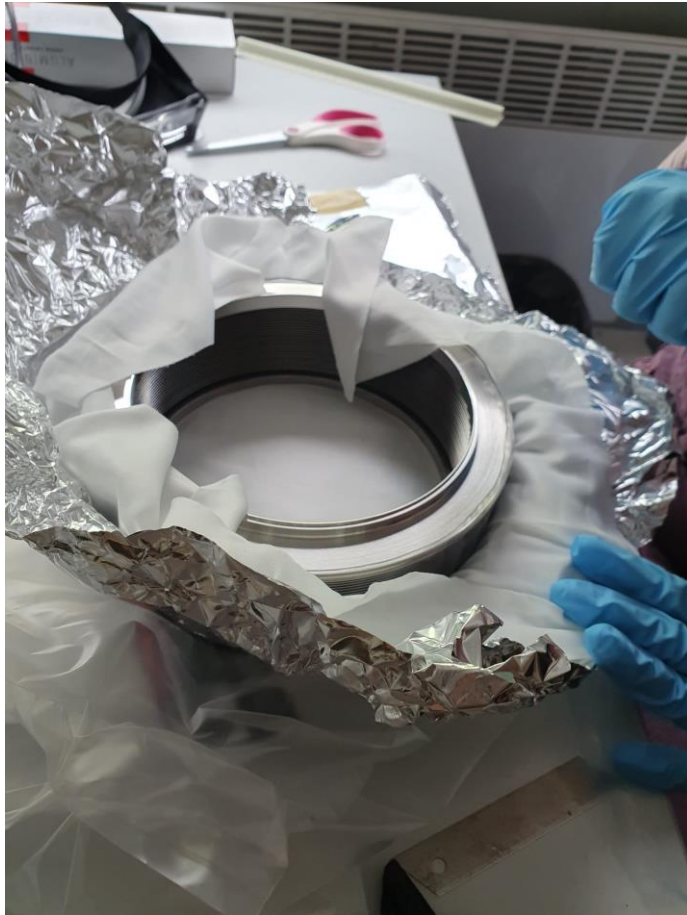
1T region redesign: bellows assembly progress and August opening timeline

05.2024

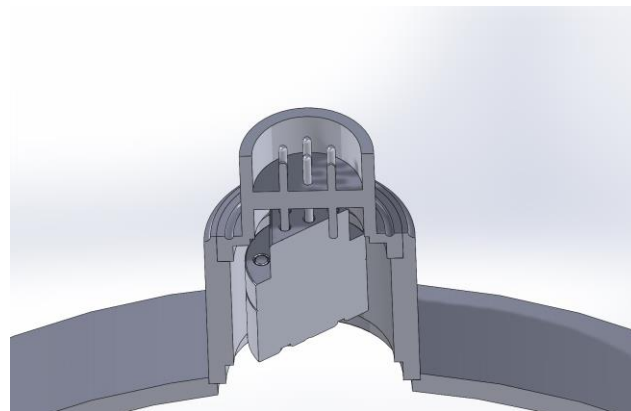
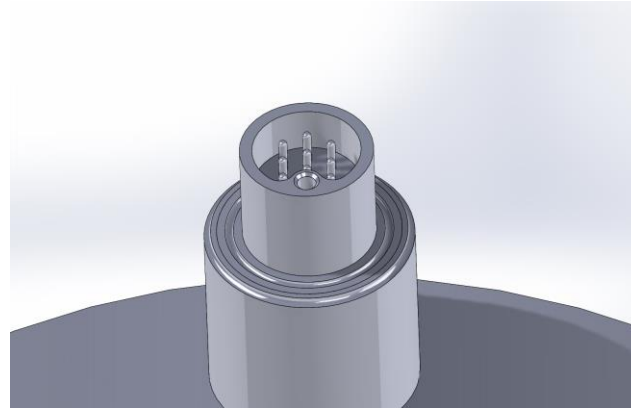
Bellows assembly for the 1T



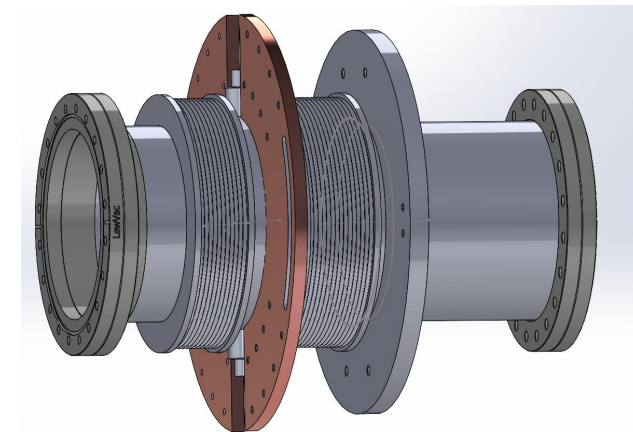
Bellows assembly for the 1T



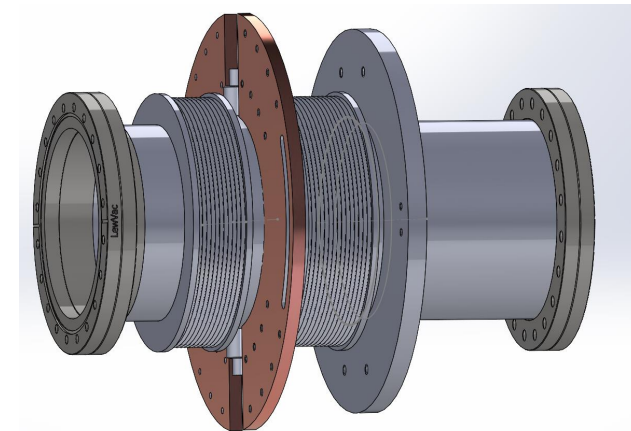
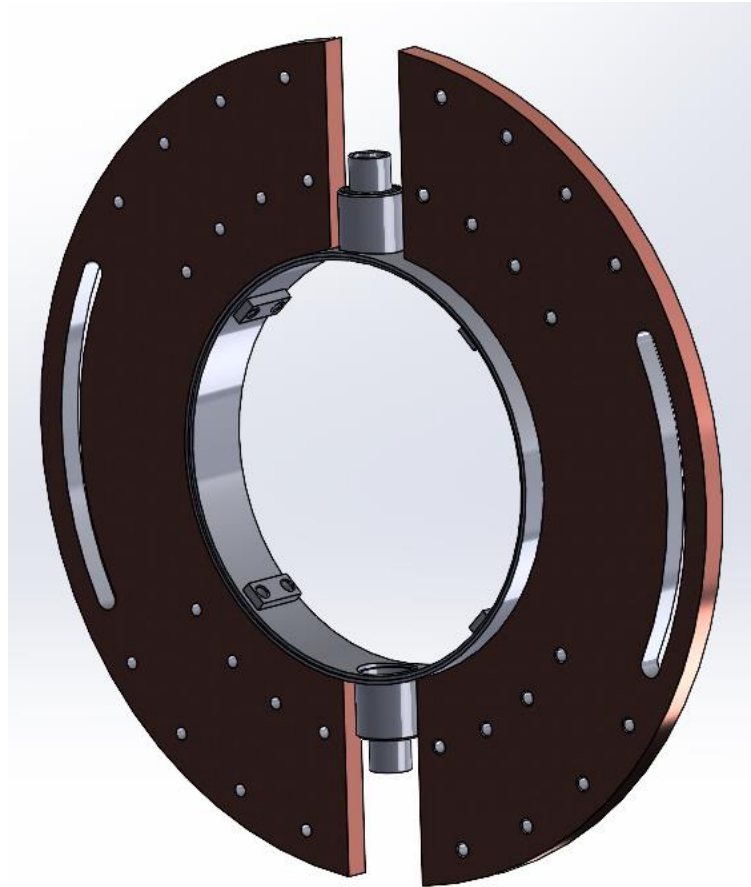
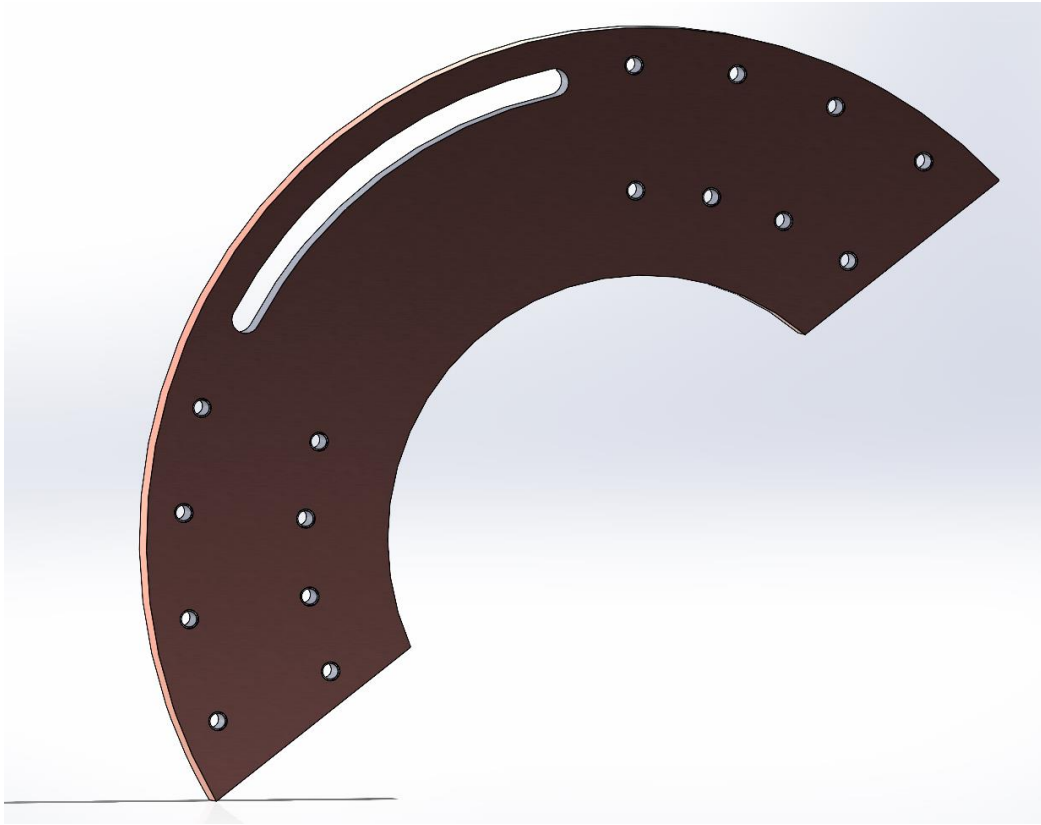
Bellows assembly for the 1T



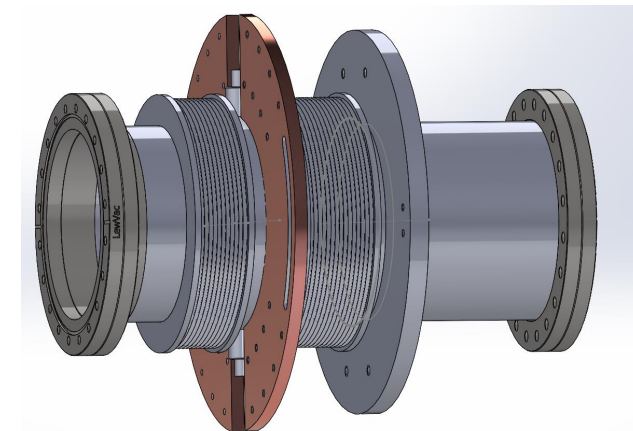
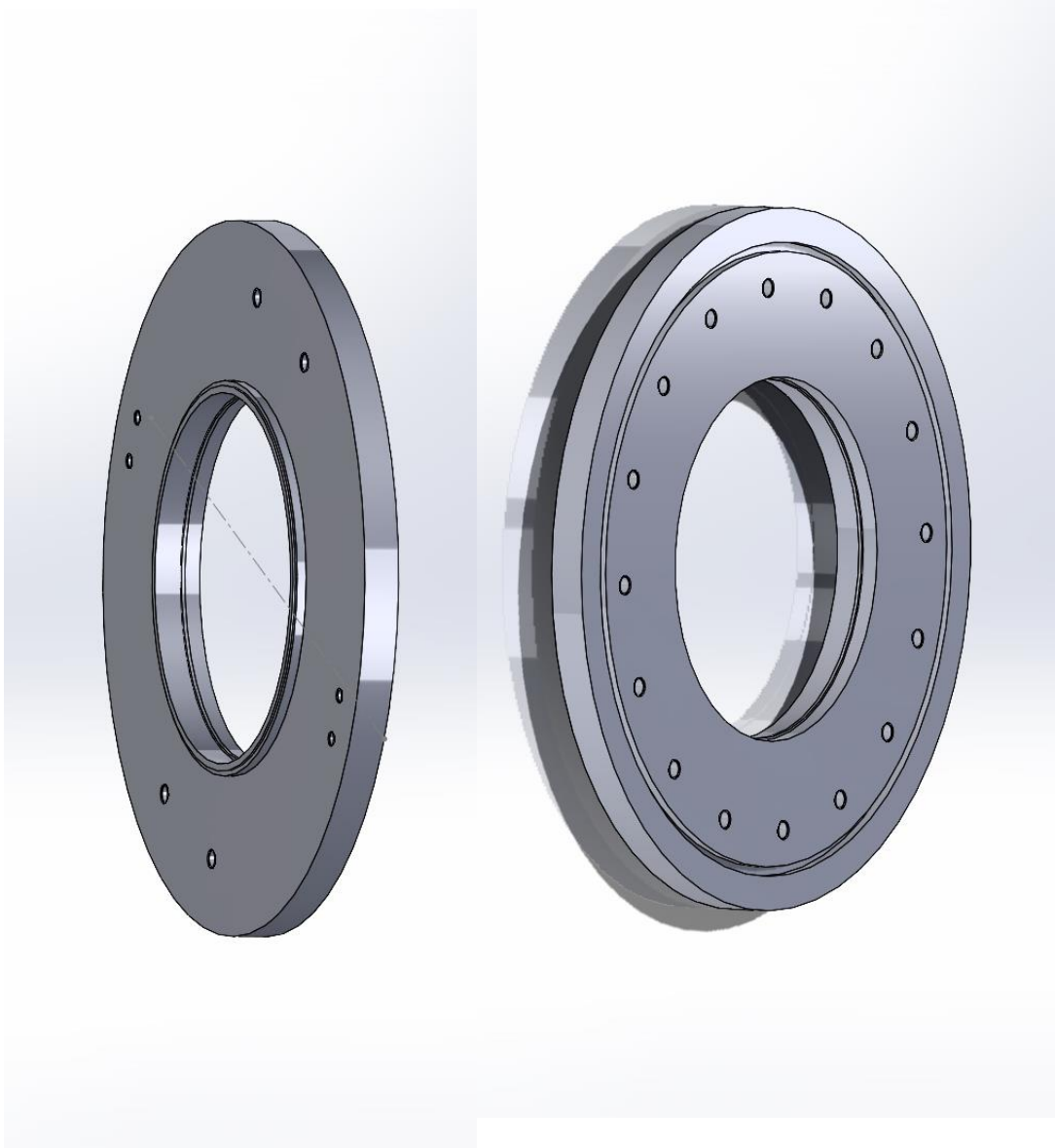
Electric elements already at
CERN



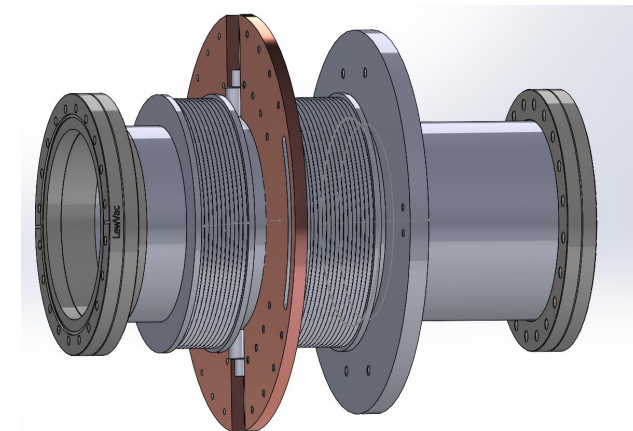
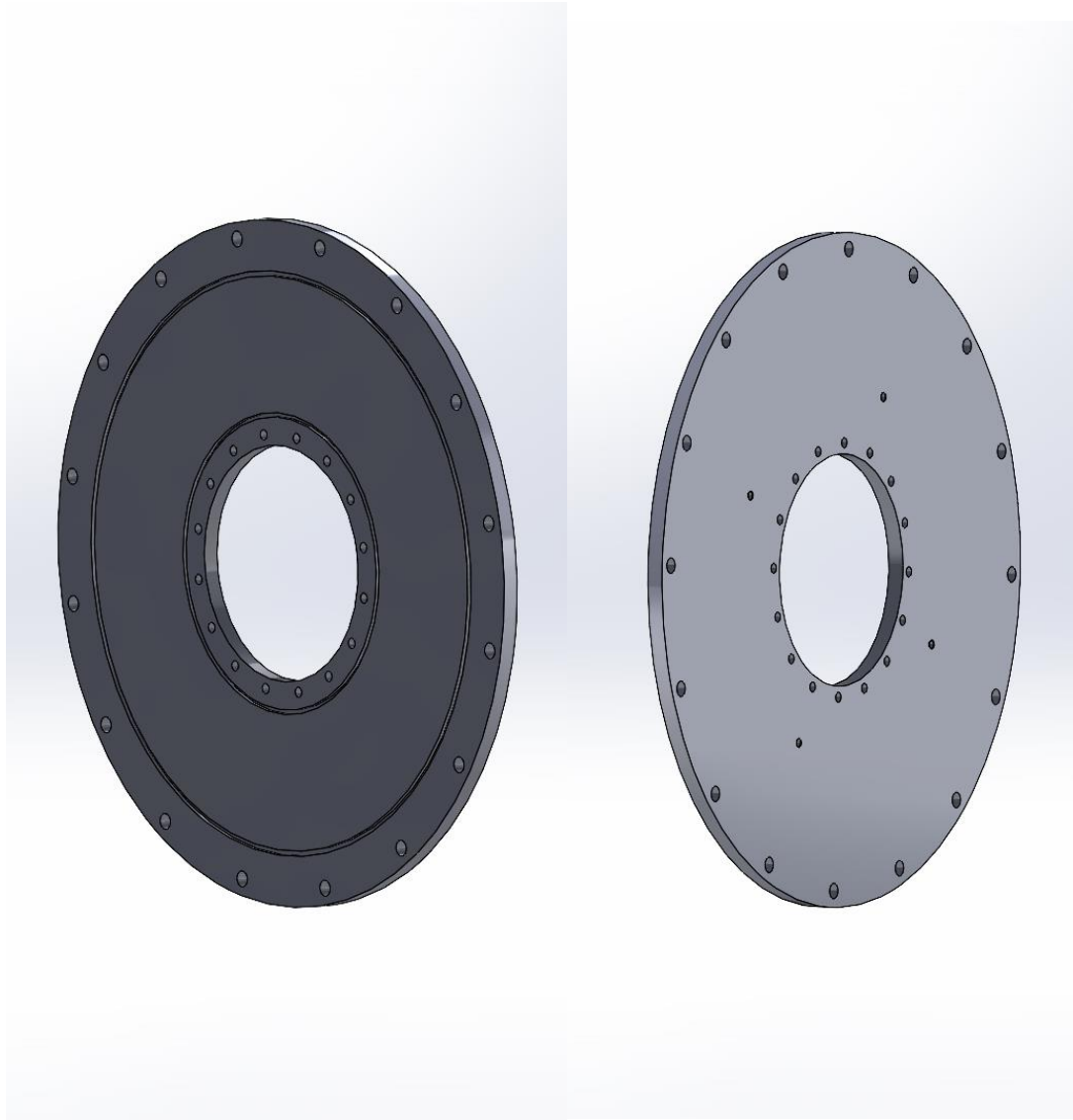
Bellows assembly for the 1T



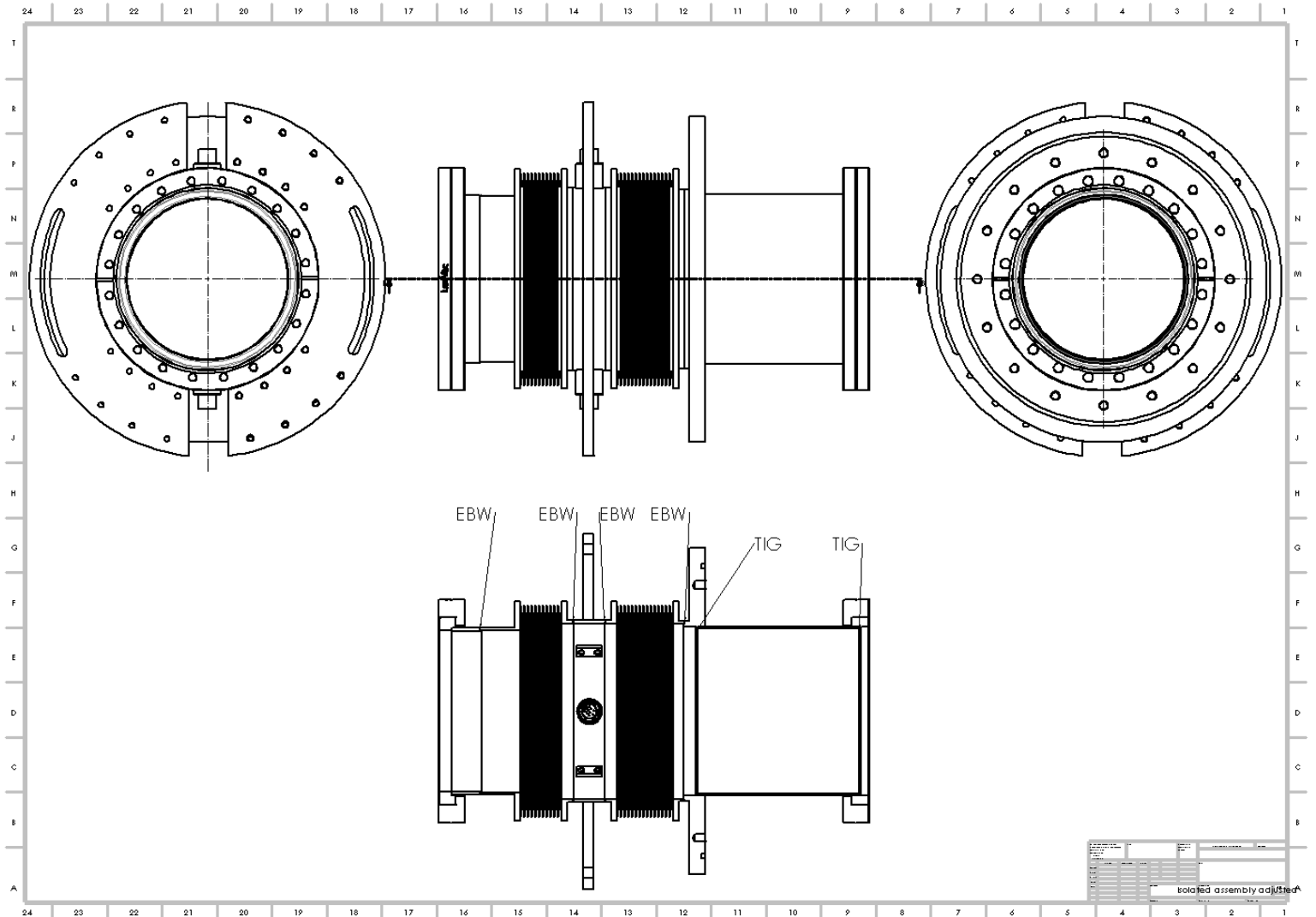
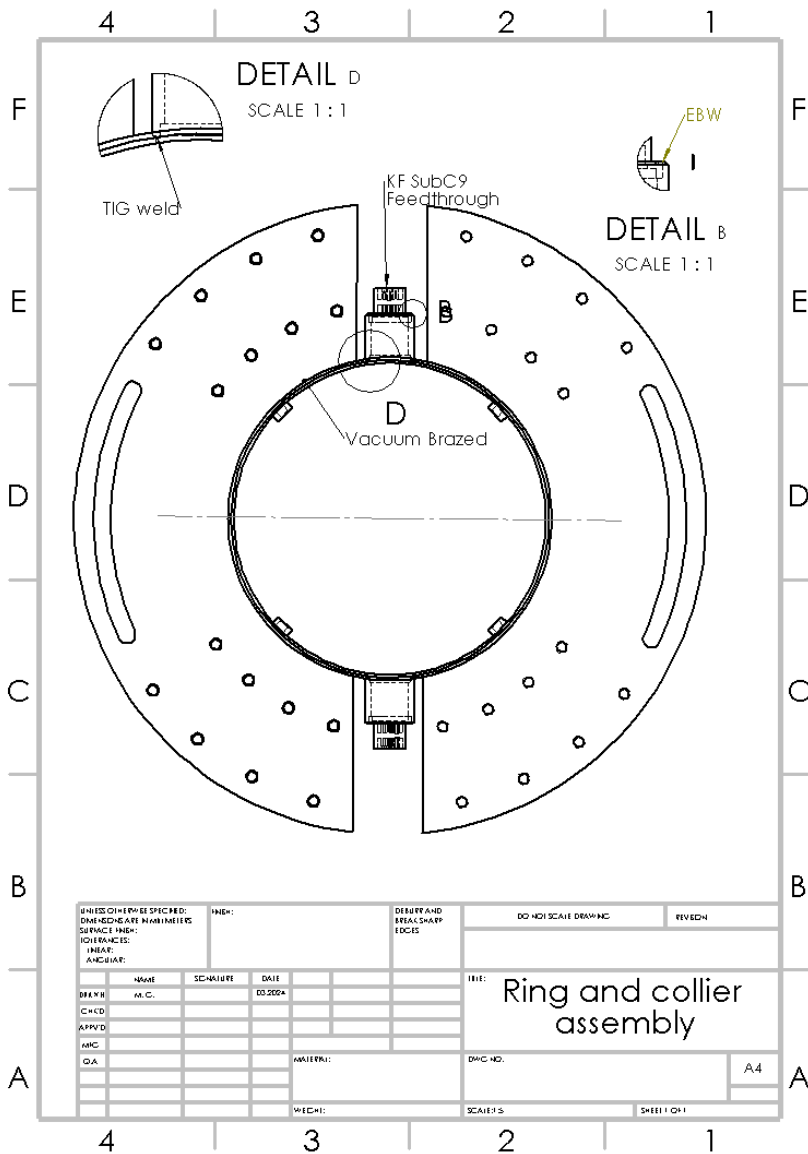
Bellows assembly for the 1T



Bellows assembly for the 1T



Bellows assembly for the 1T



Bellows assembly for the 1T

Status:

- Bellows at CERN
- Feedthroughs, rotary flanges... at CERN
- Materials in the CERN workshop
- Machining of the central ring components is ongoing
- Price: ~20K CHF (with leak testing and UHV cleaning)
- Lead time: mid-June

To-do

- Plastic support for the bellows
- Aluminum frame for installation

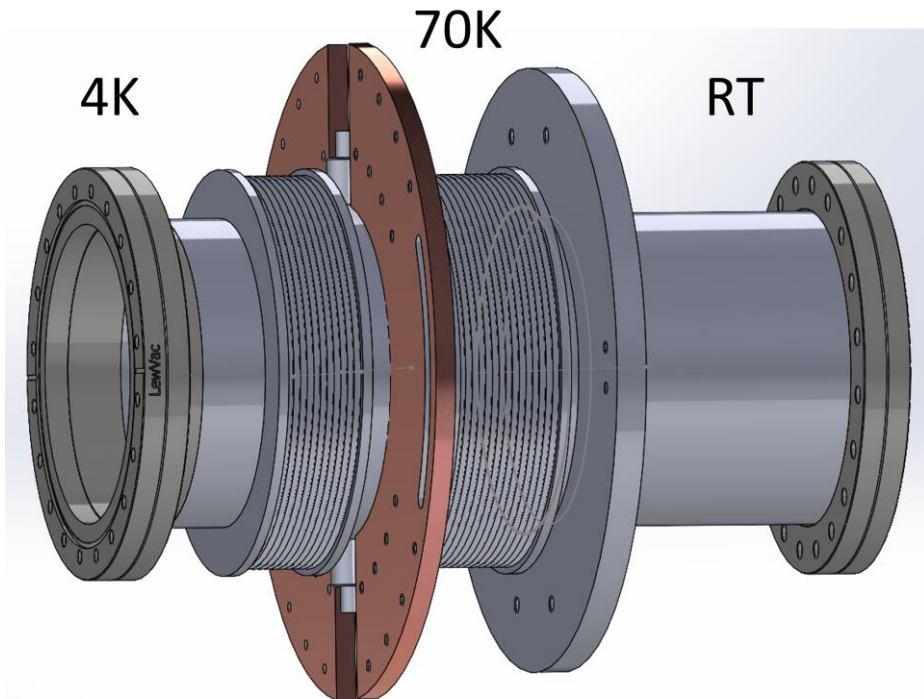
Bellows assembly for the 1T

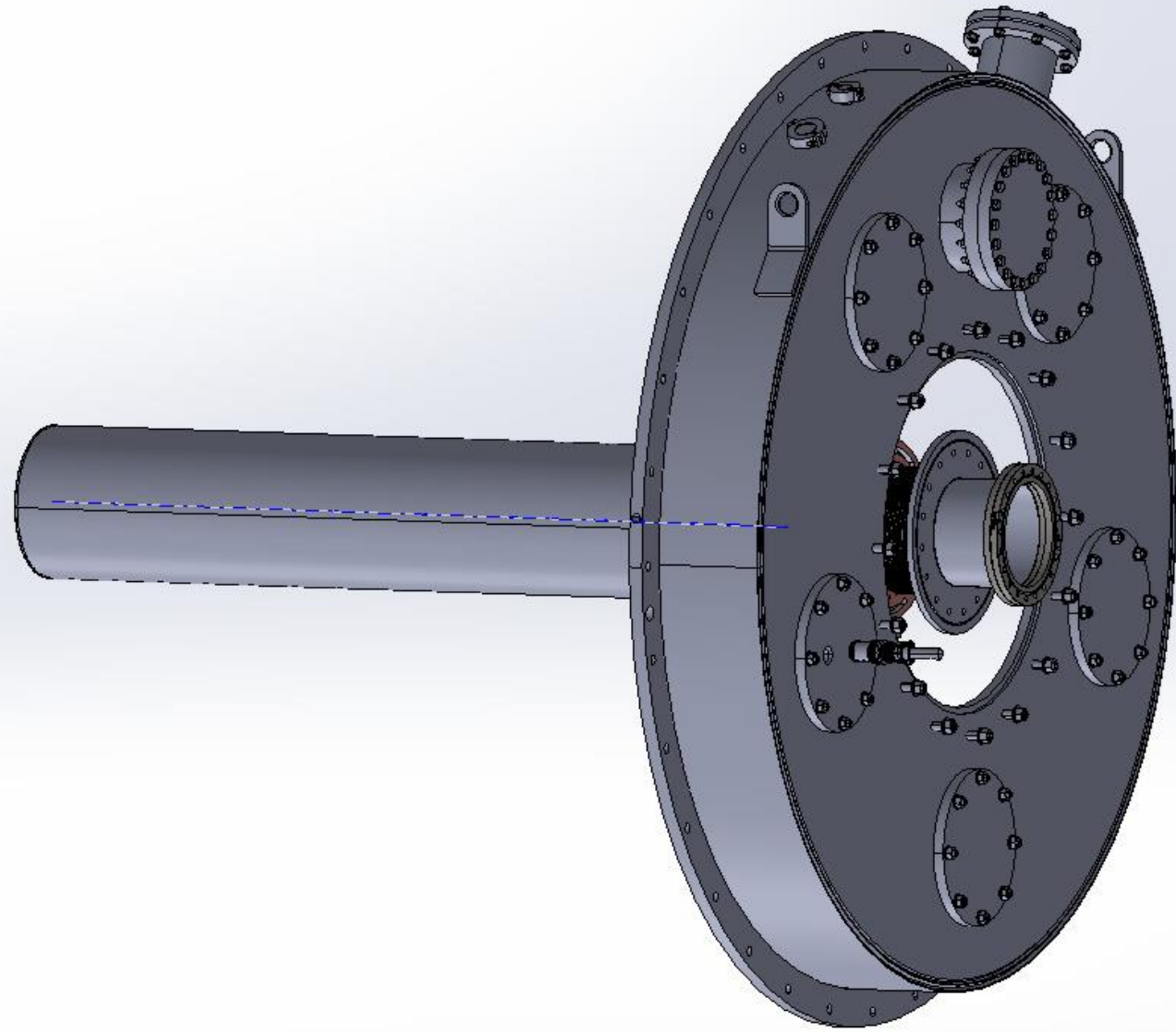
Issues: Getter pumping for the bellow

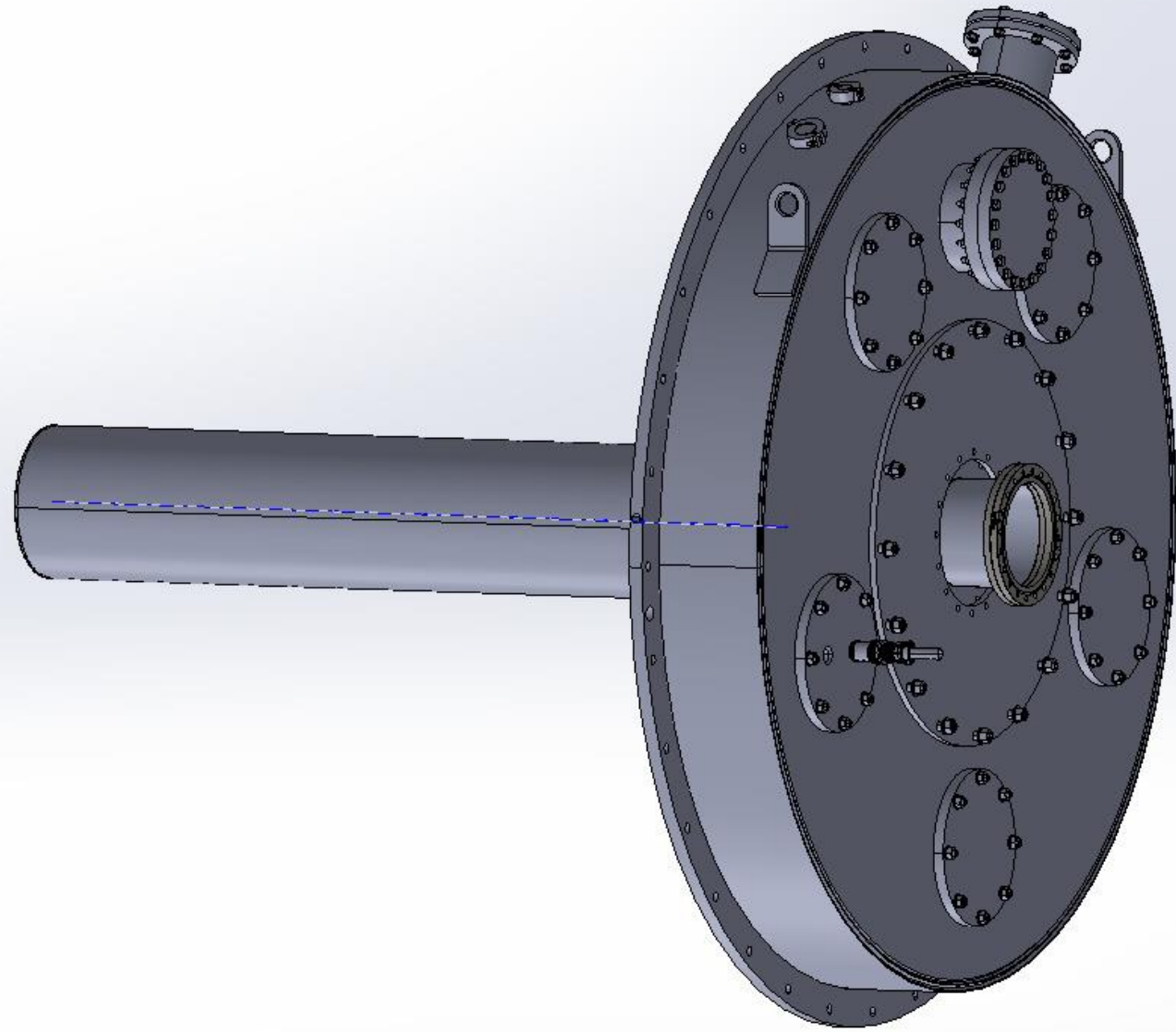
Original plan: Getter (NEG covered) stainless steel foil inside of the bellow

Heating element, temp sensor, junction module attached/welded to the foil

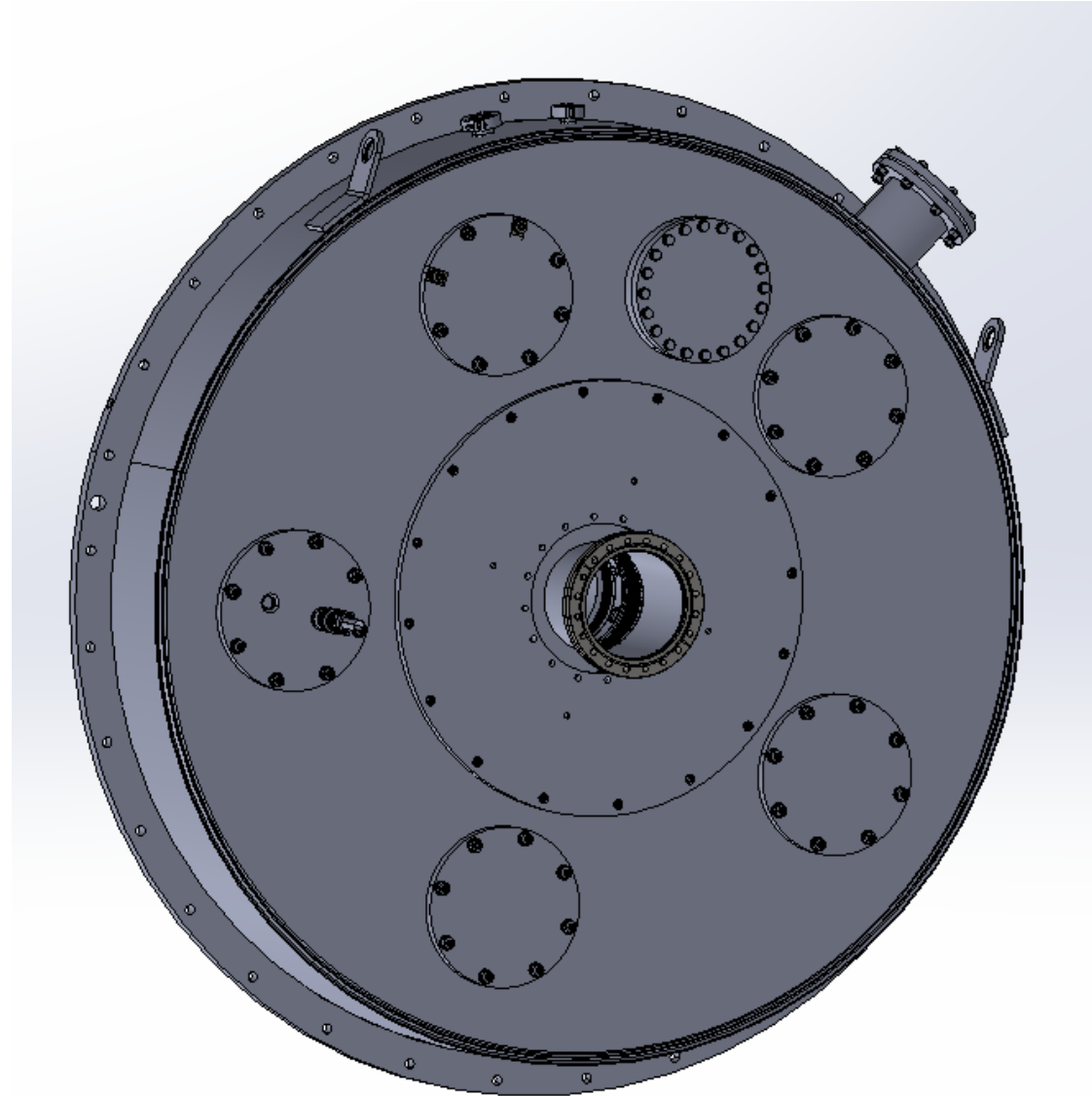
Heating element compatible with UHV and cryo conditions very difficult to find



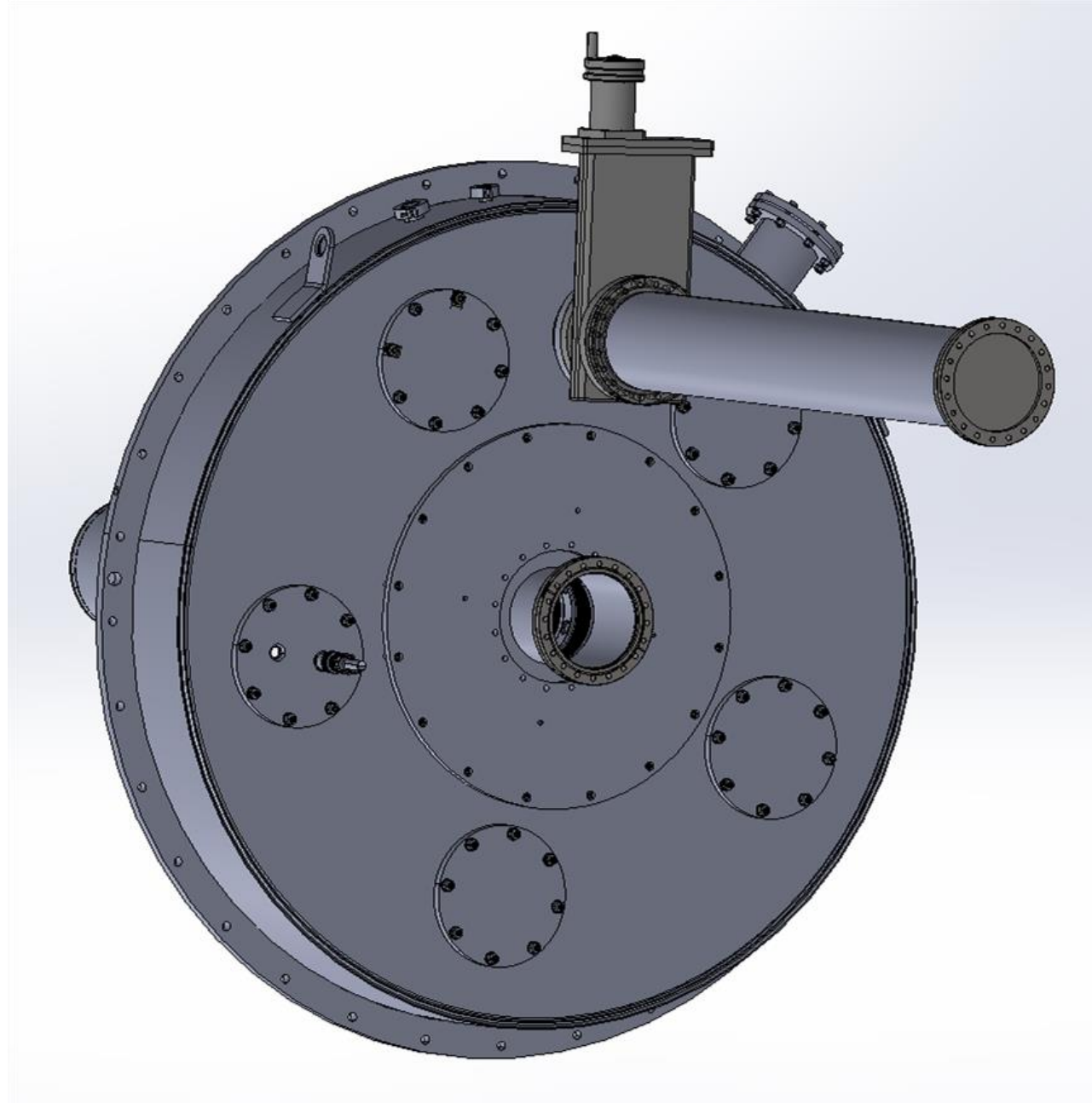




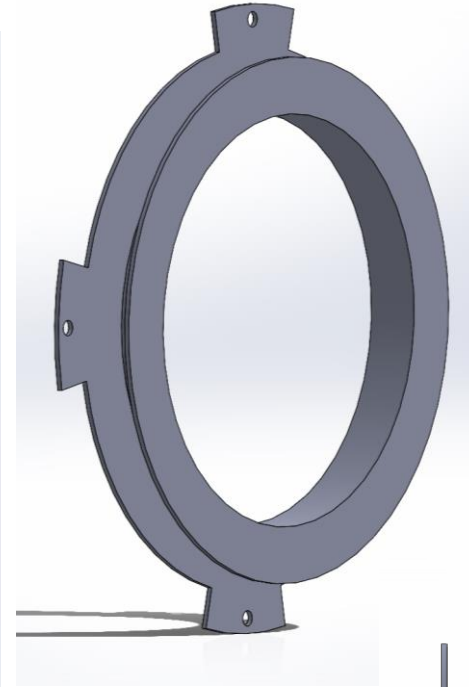
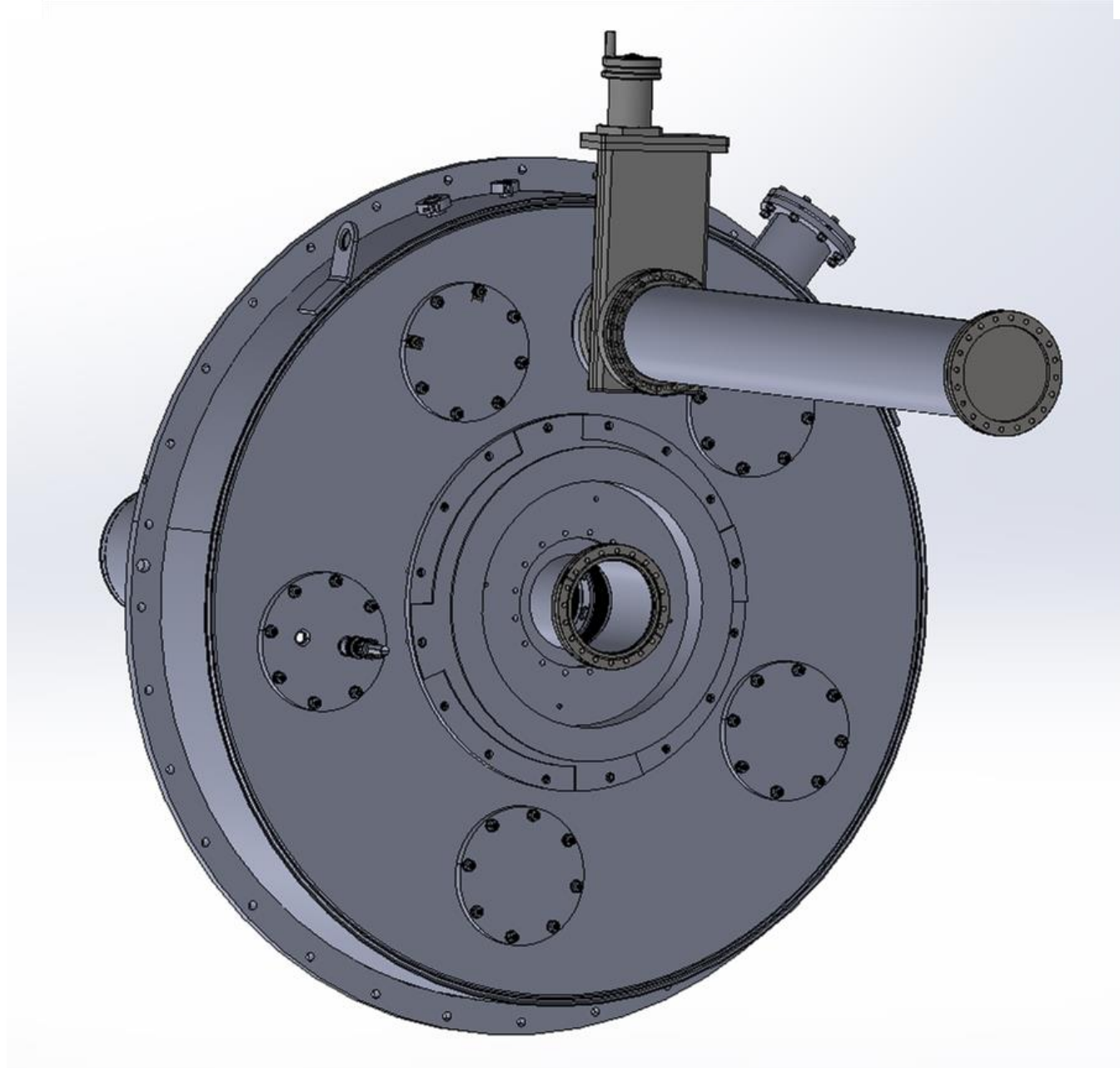
1T cryostat face modifications



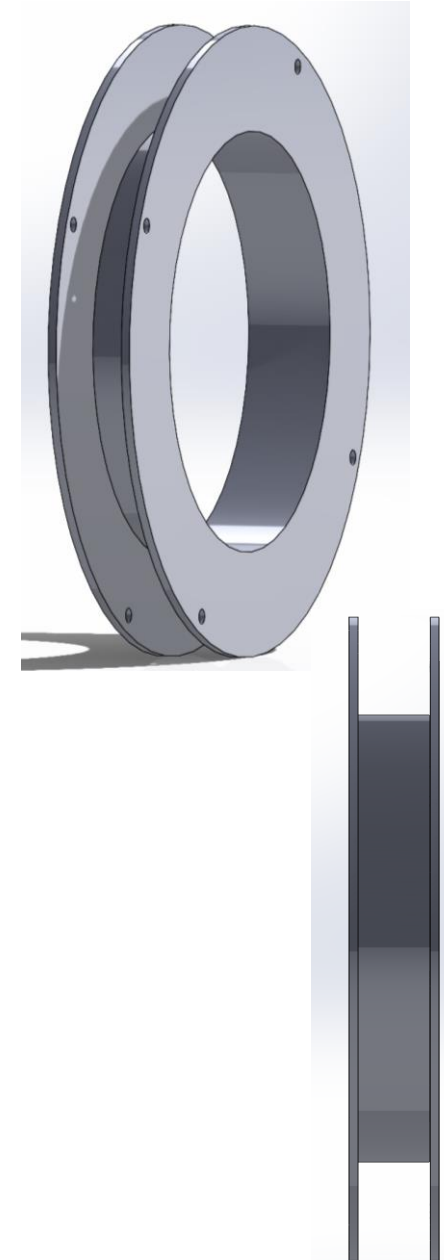
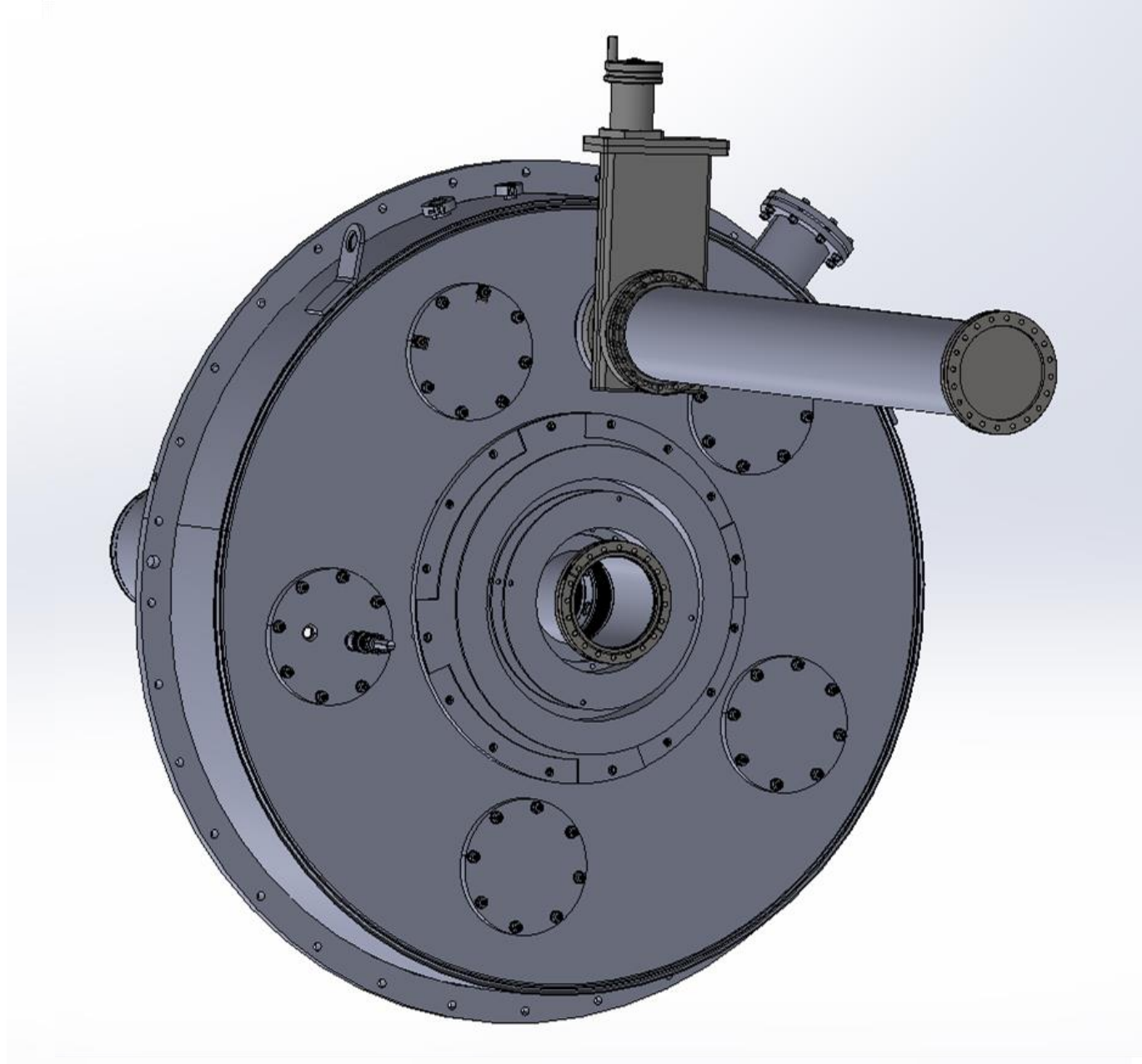
1T cryostat face modifications



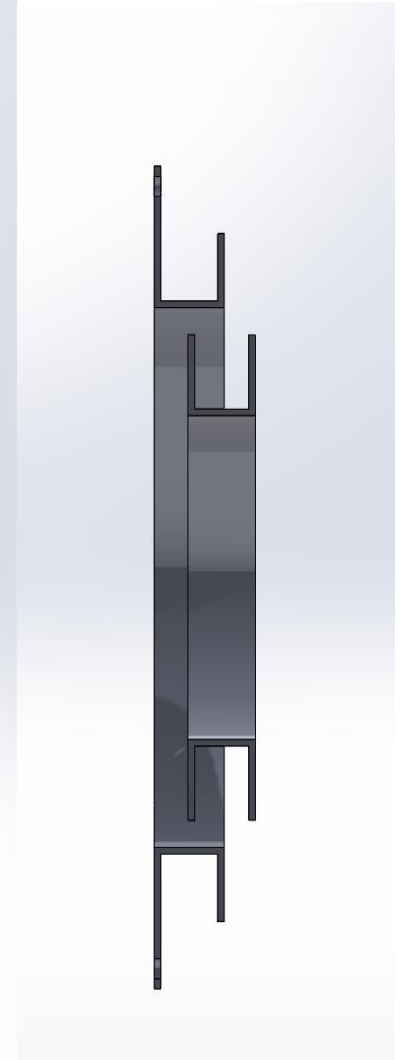
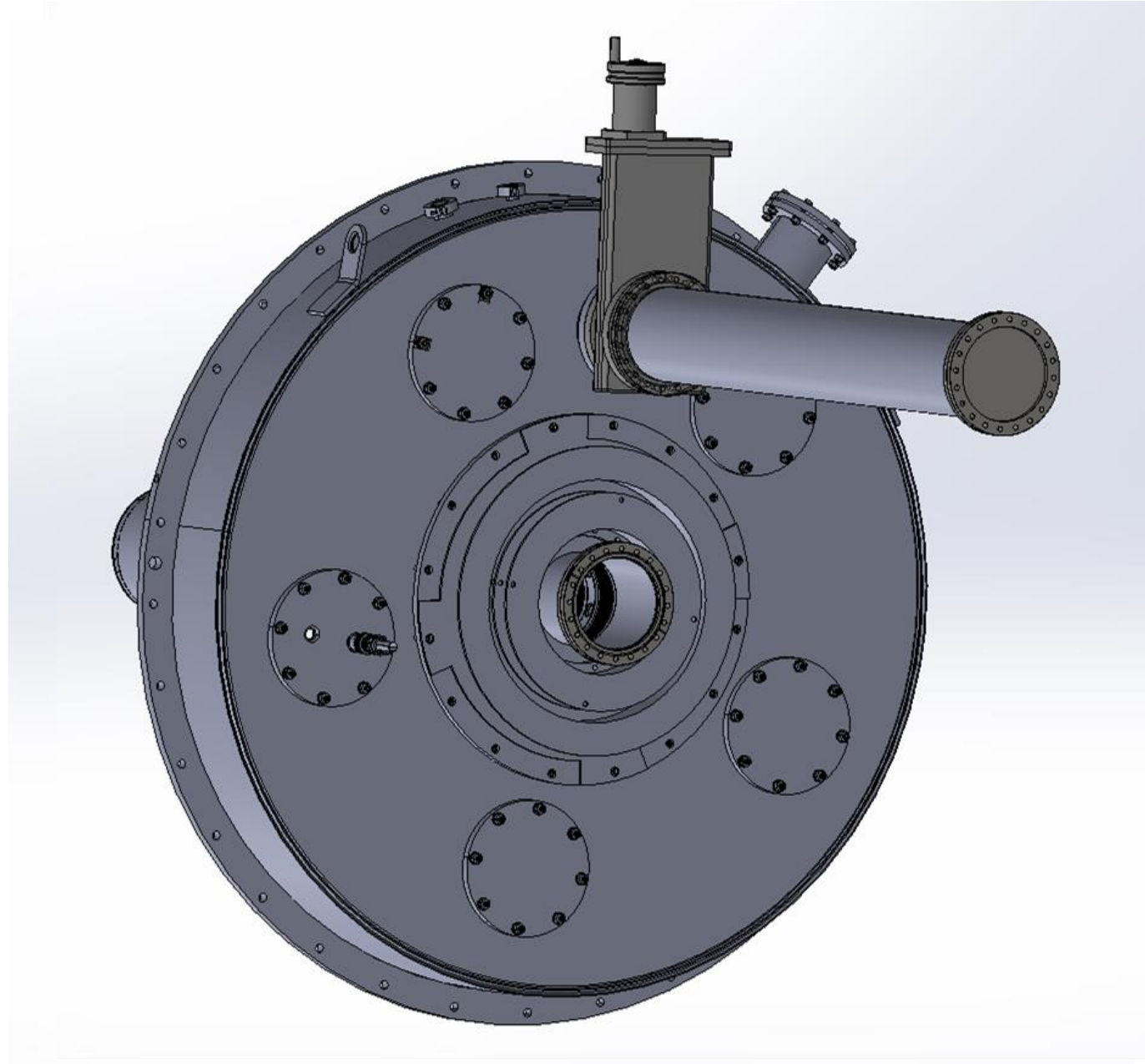
1T cryostat face modifications



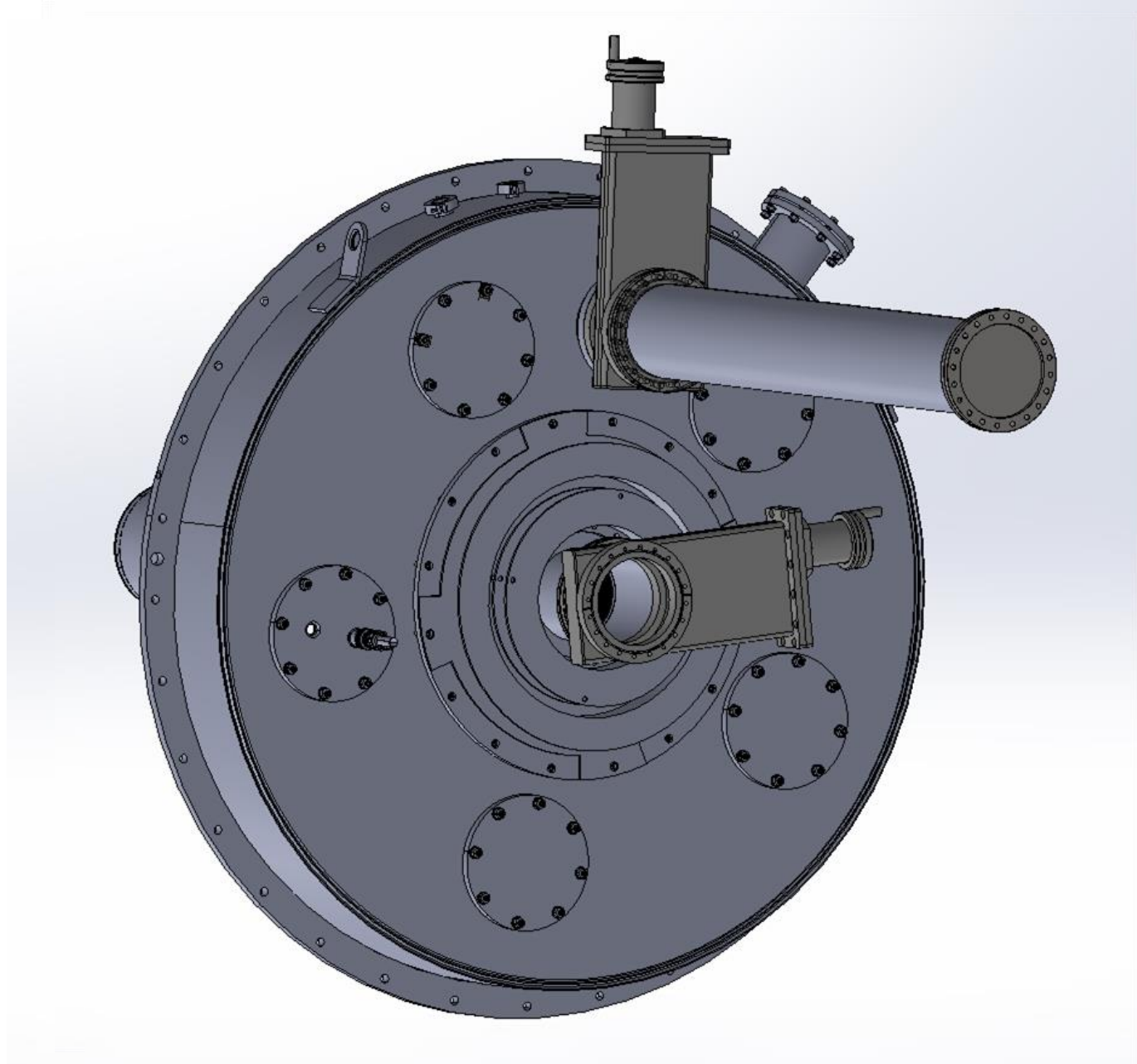
1T cryostat face modifications



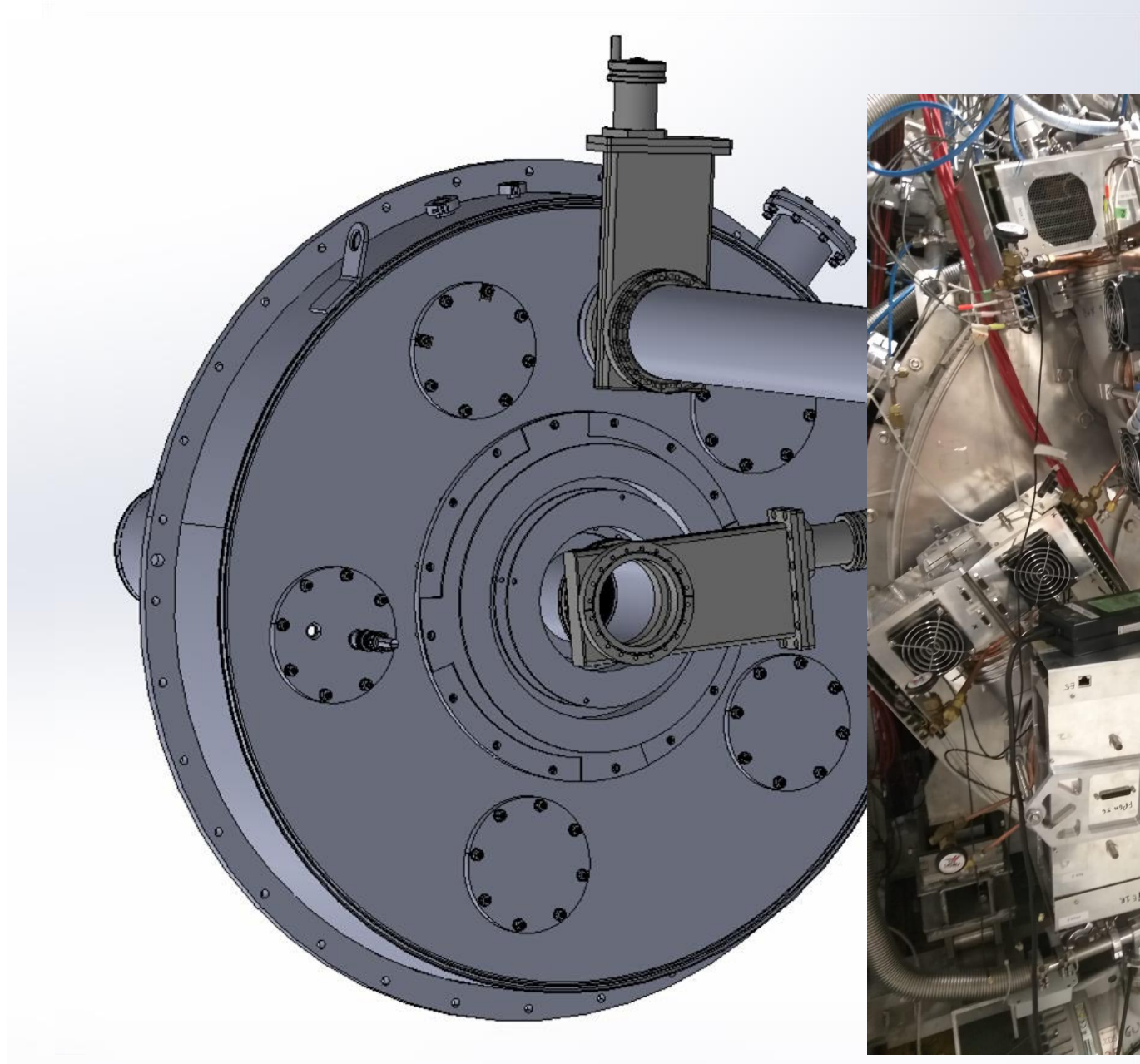
1T cryostat face modifications



1T cryostat face modifications



1T cryostat face modifications

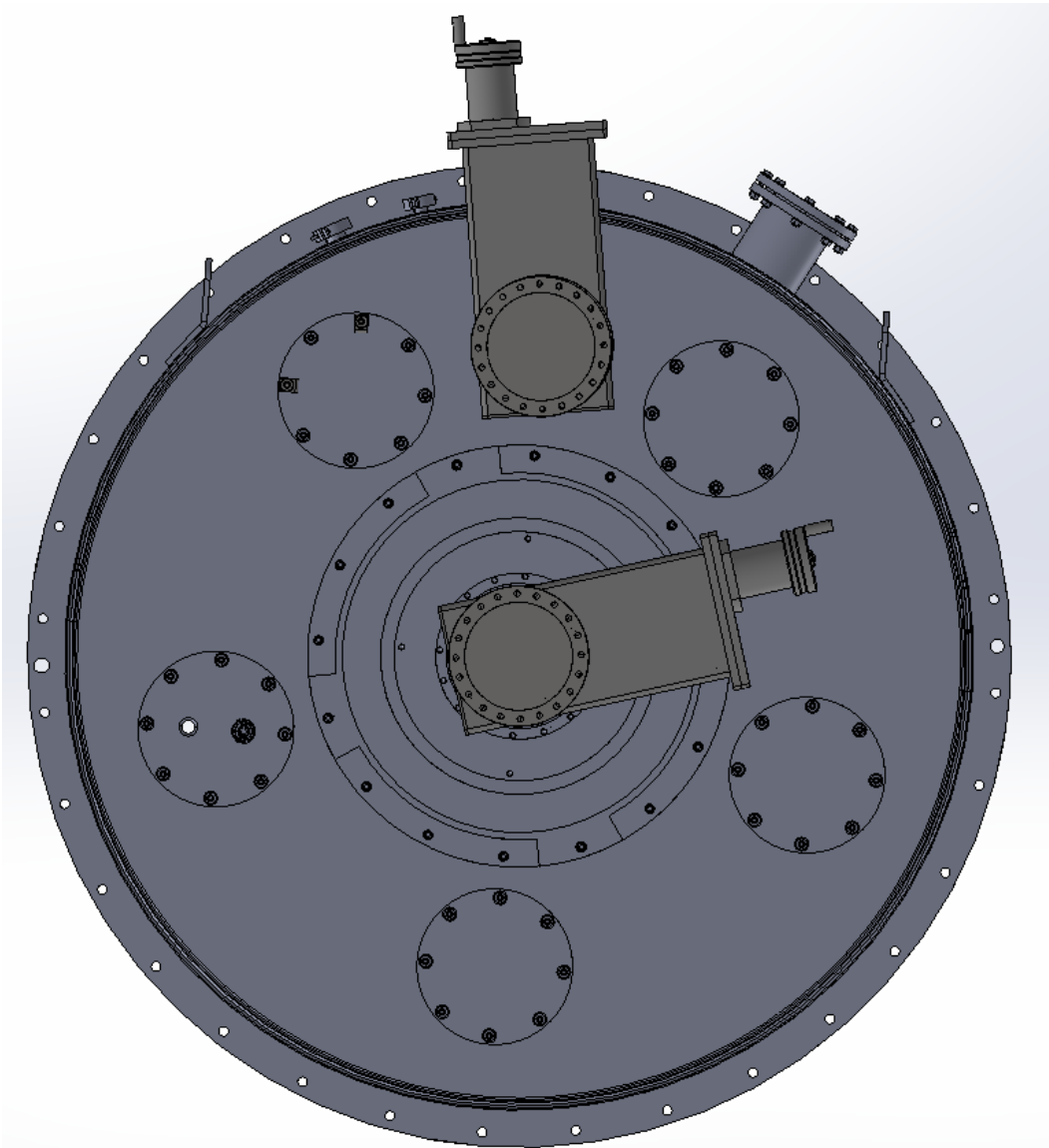


FACT module management

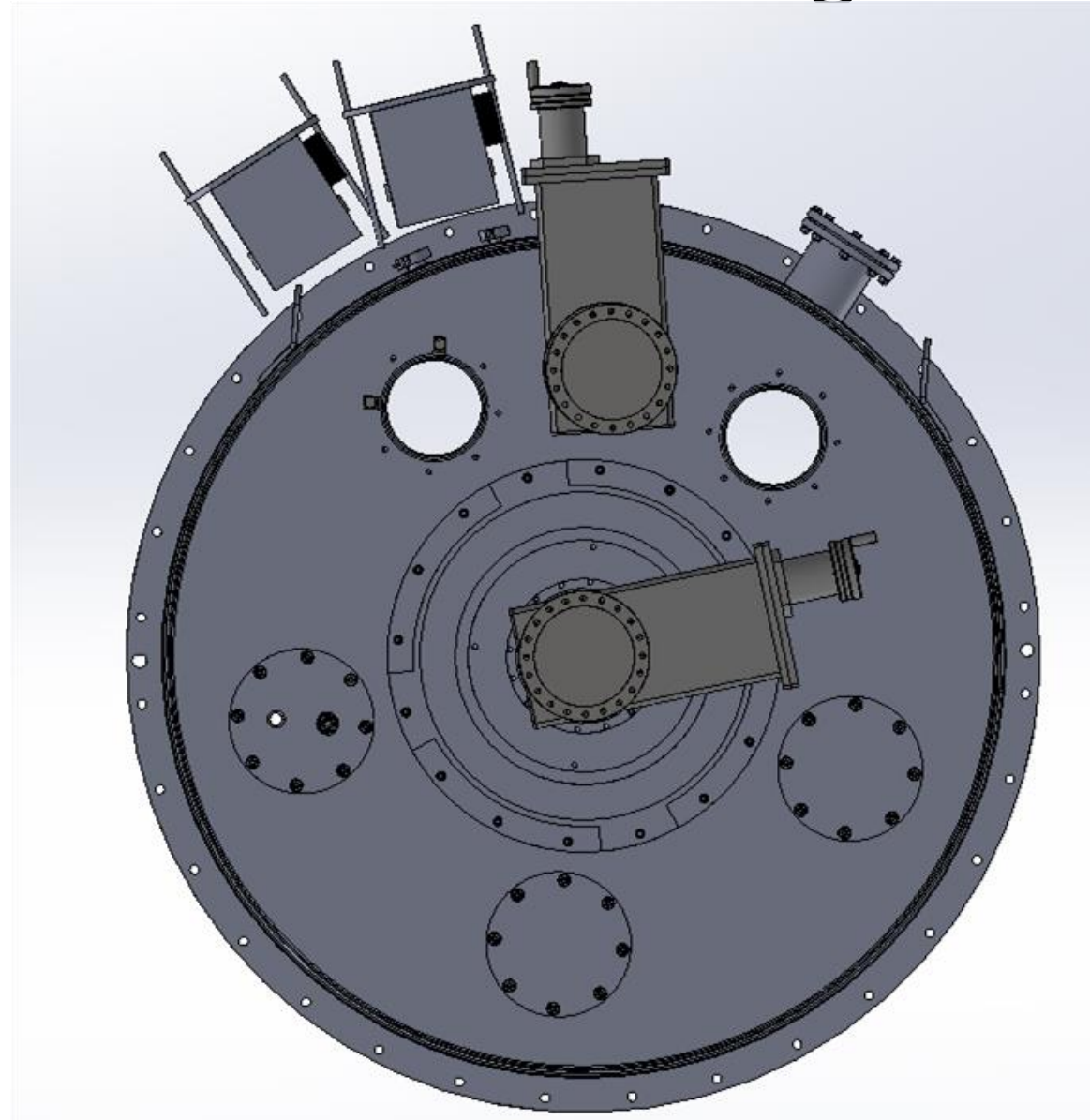
Challenges:

- Move FACT modules aside to make enough space for the GV, anti-sun and anti-sun ports (including CF63 turbo pump)
- Respect the FACT fiber lengths (~30 cm from the cryostat face)
- Properly support the weight of the modules

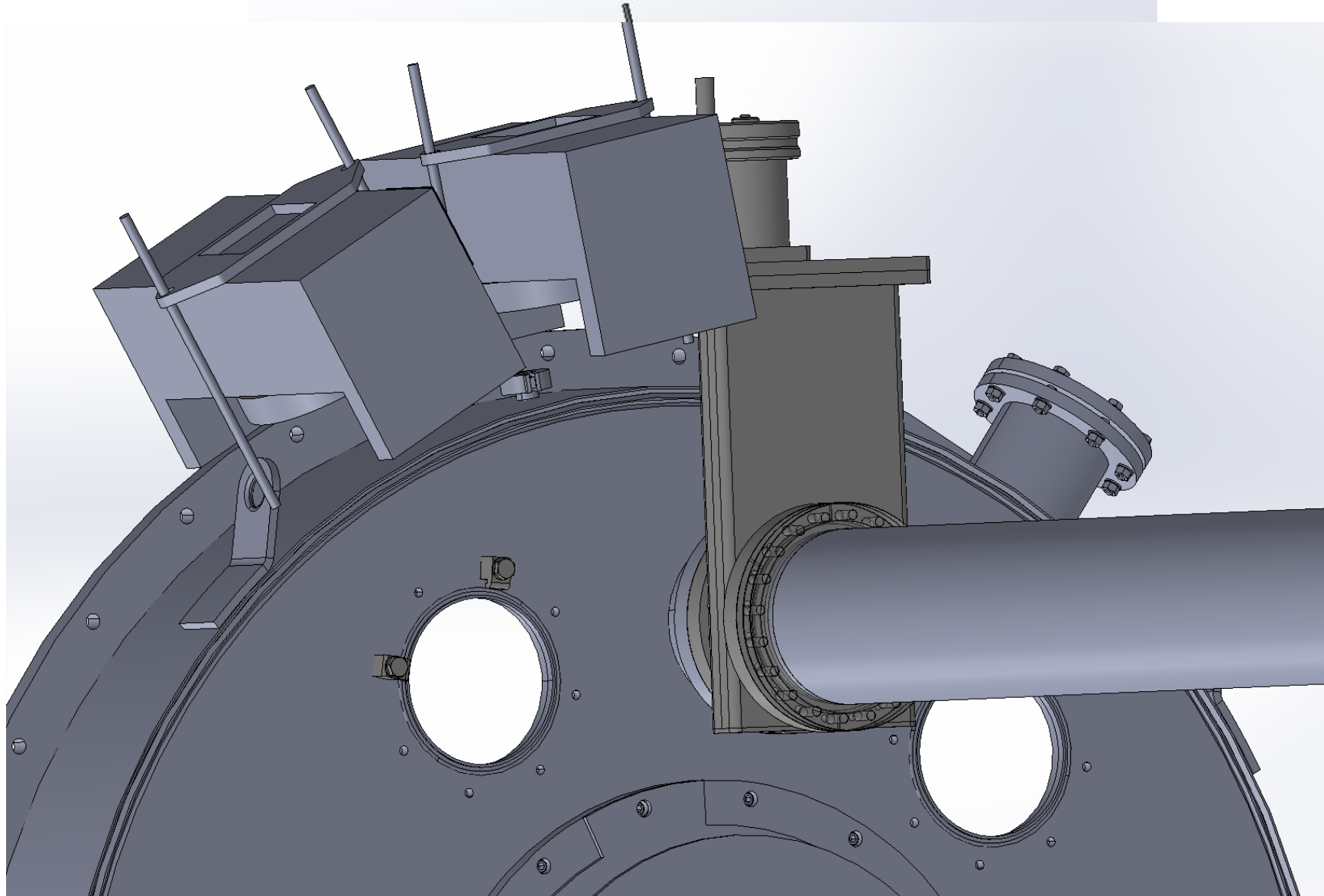
FACT module management



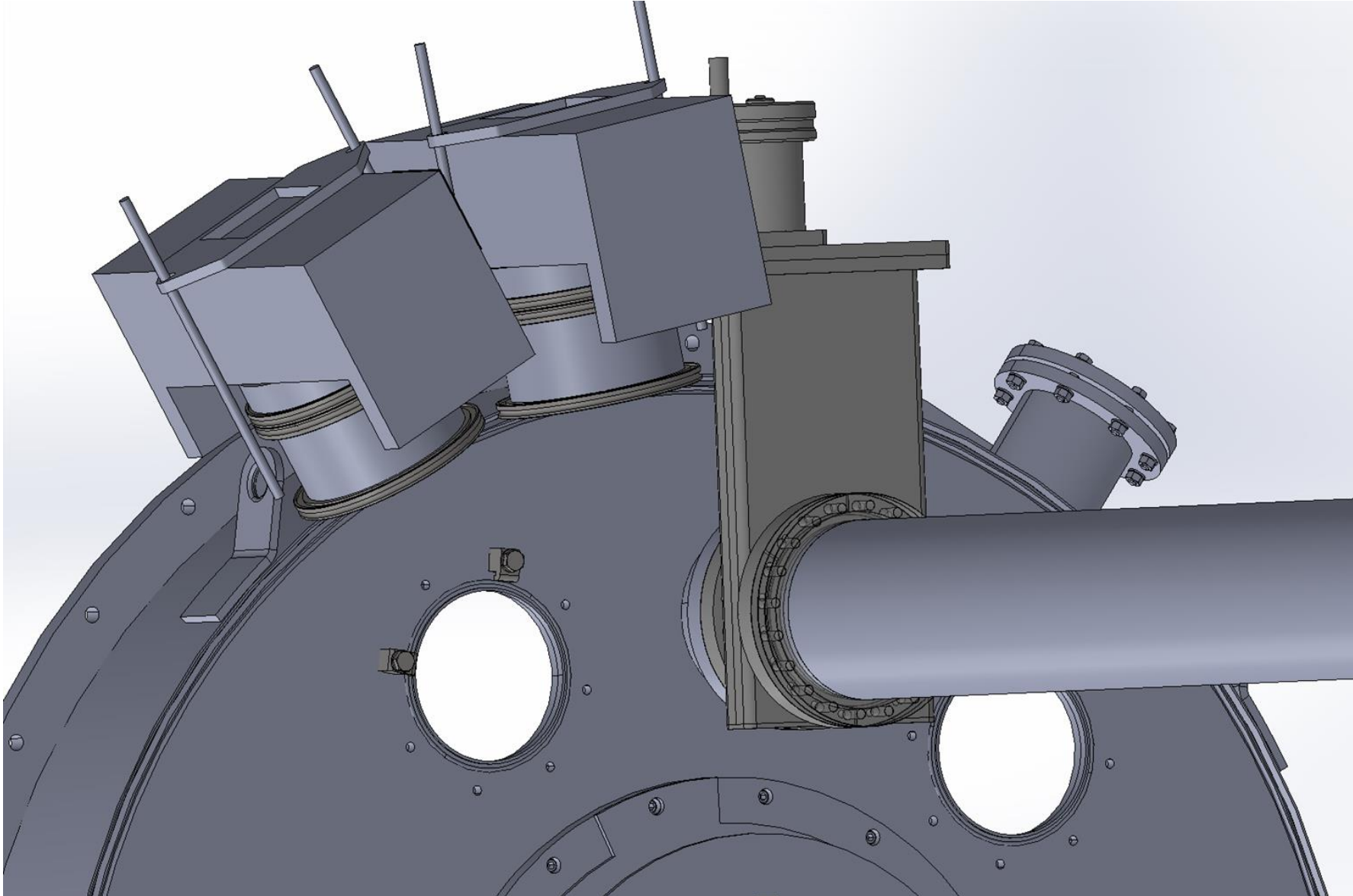
FACT module management



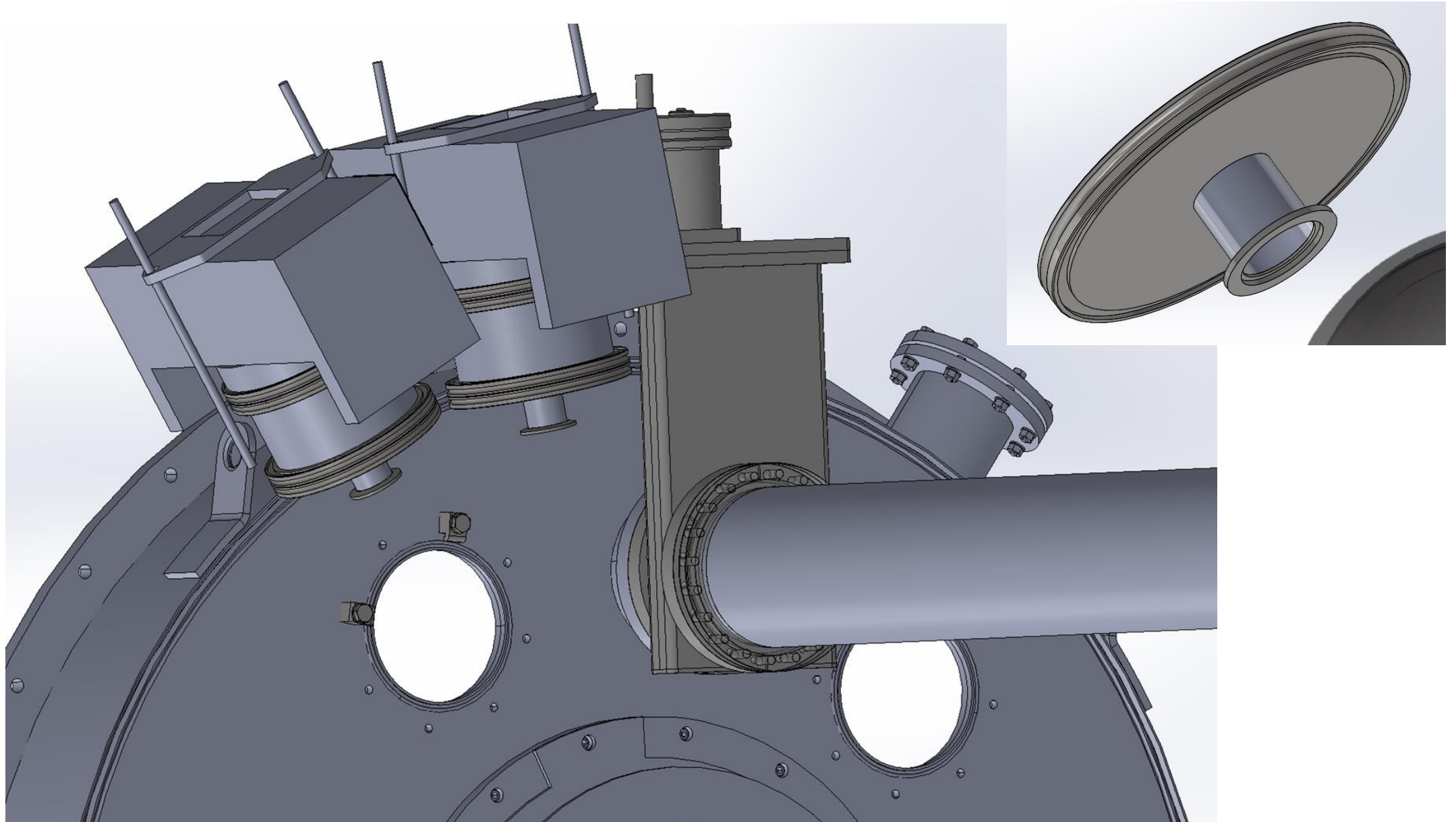
FACT module management



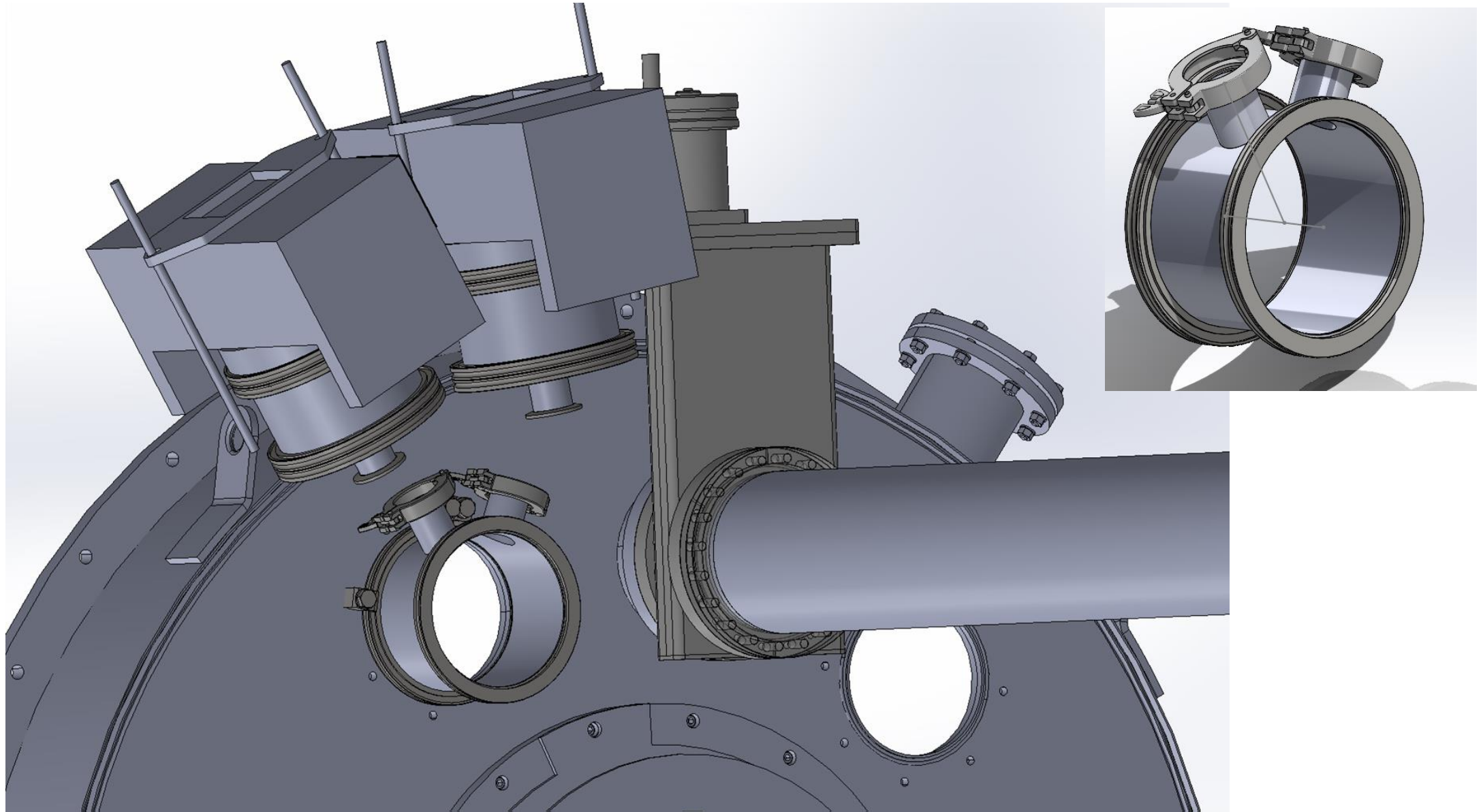
FACT module management



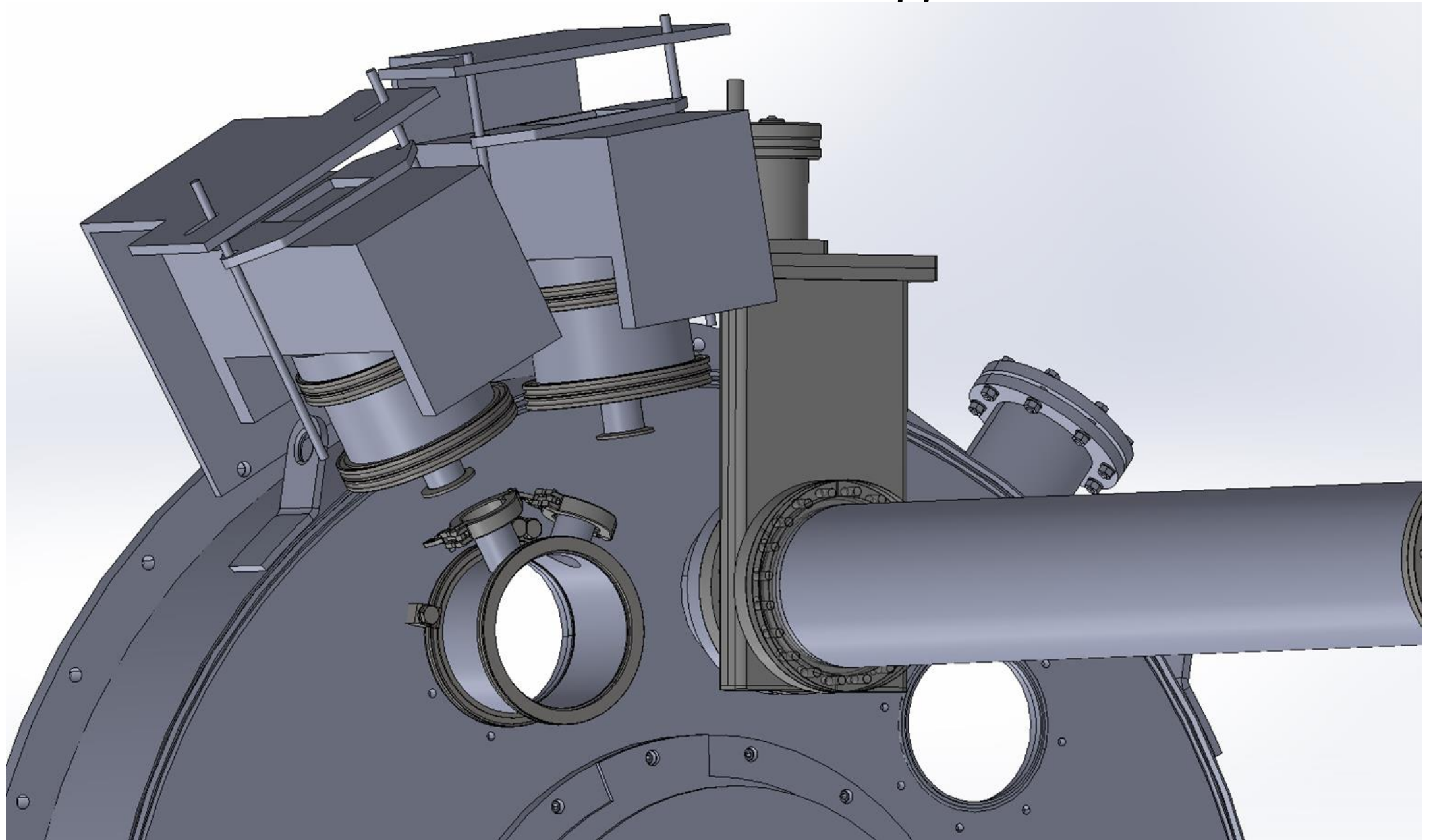
FACT module management



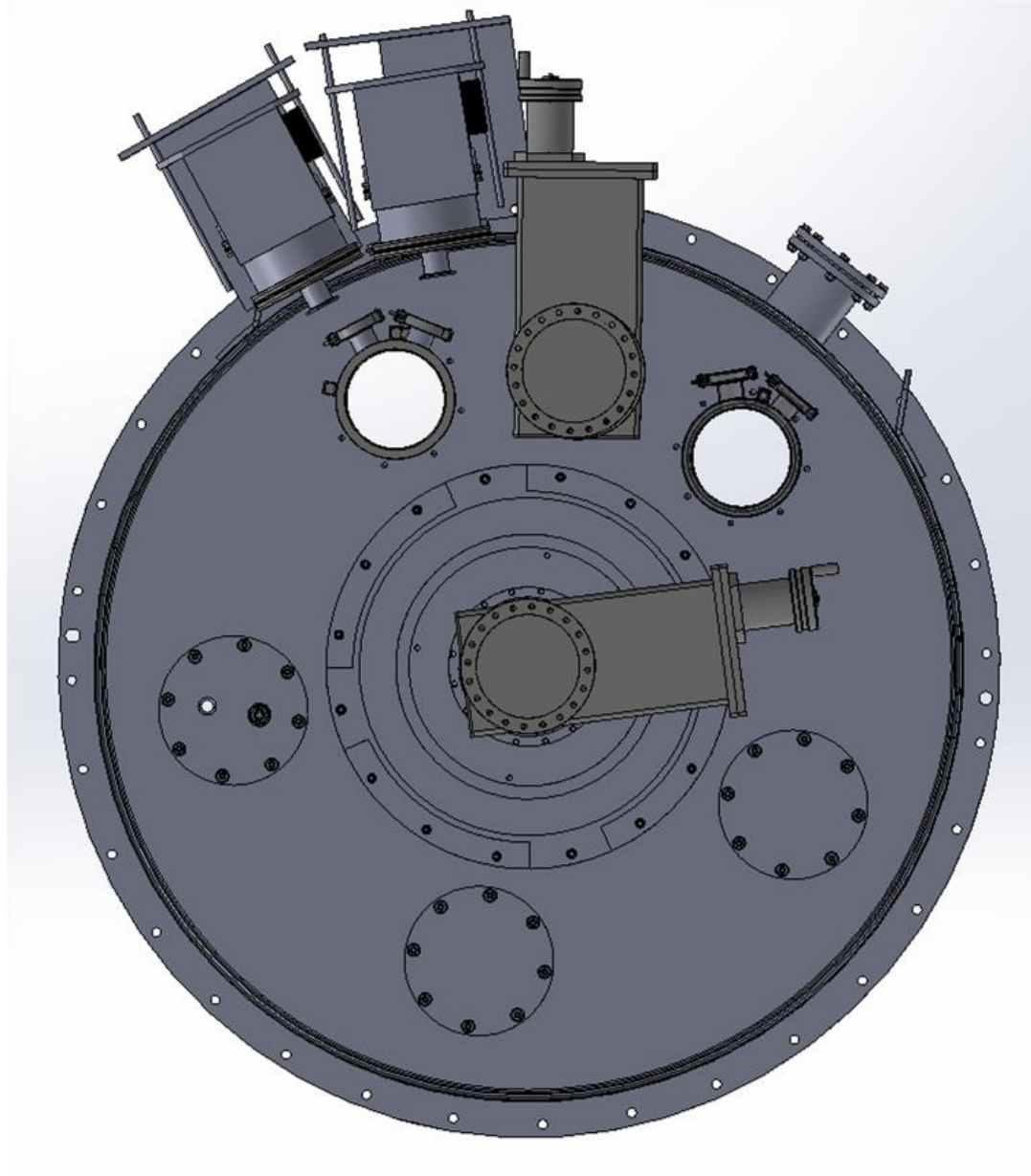
FACT module management



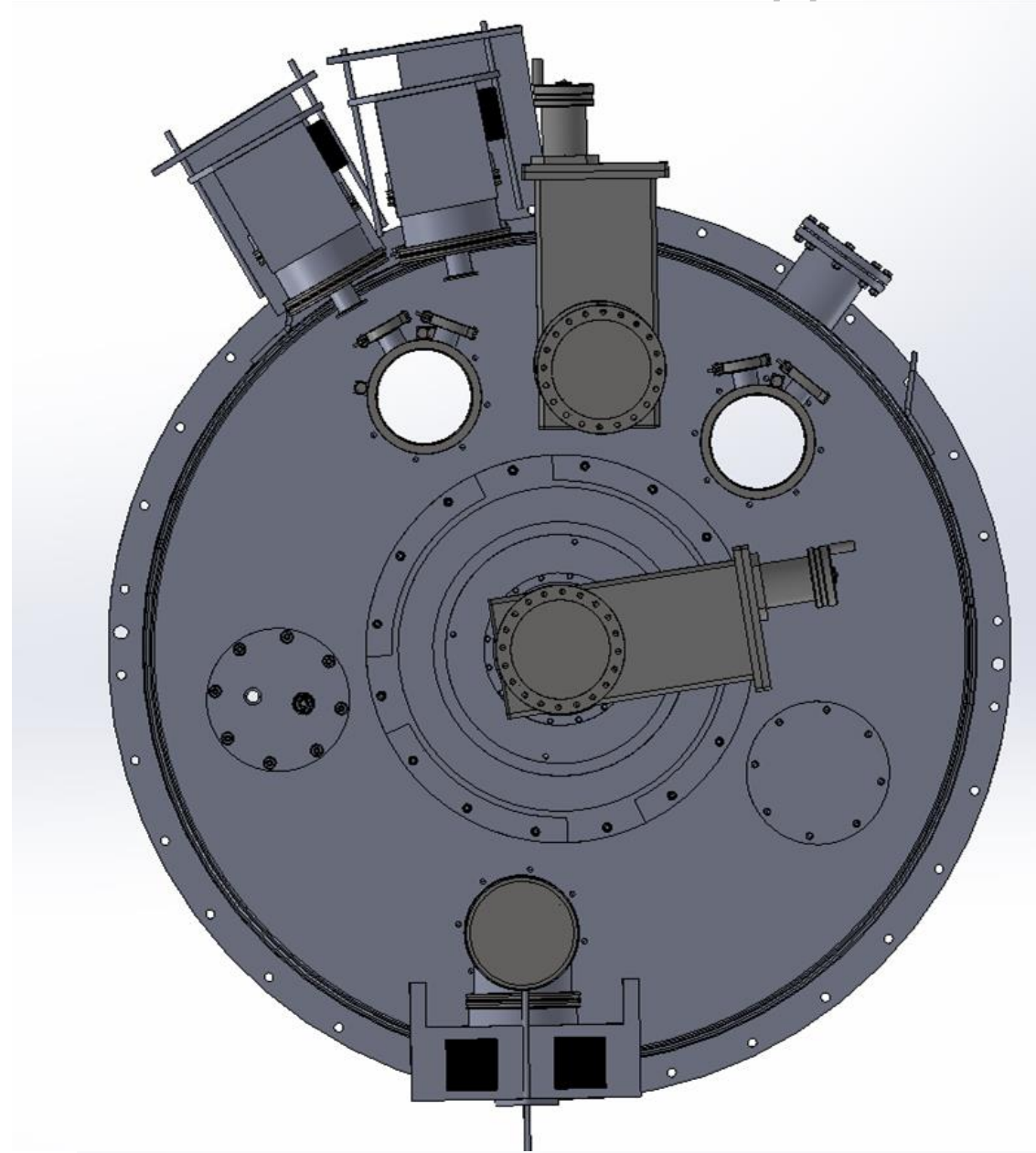
FACT module management



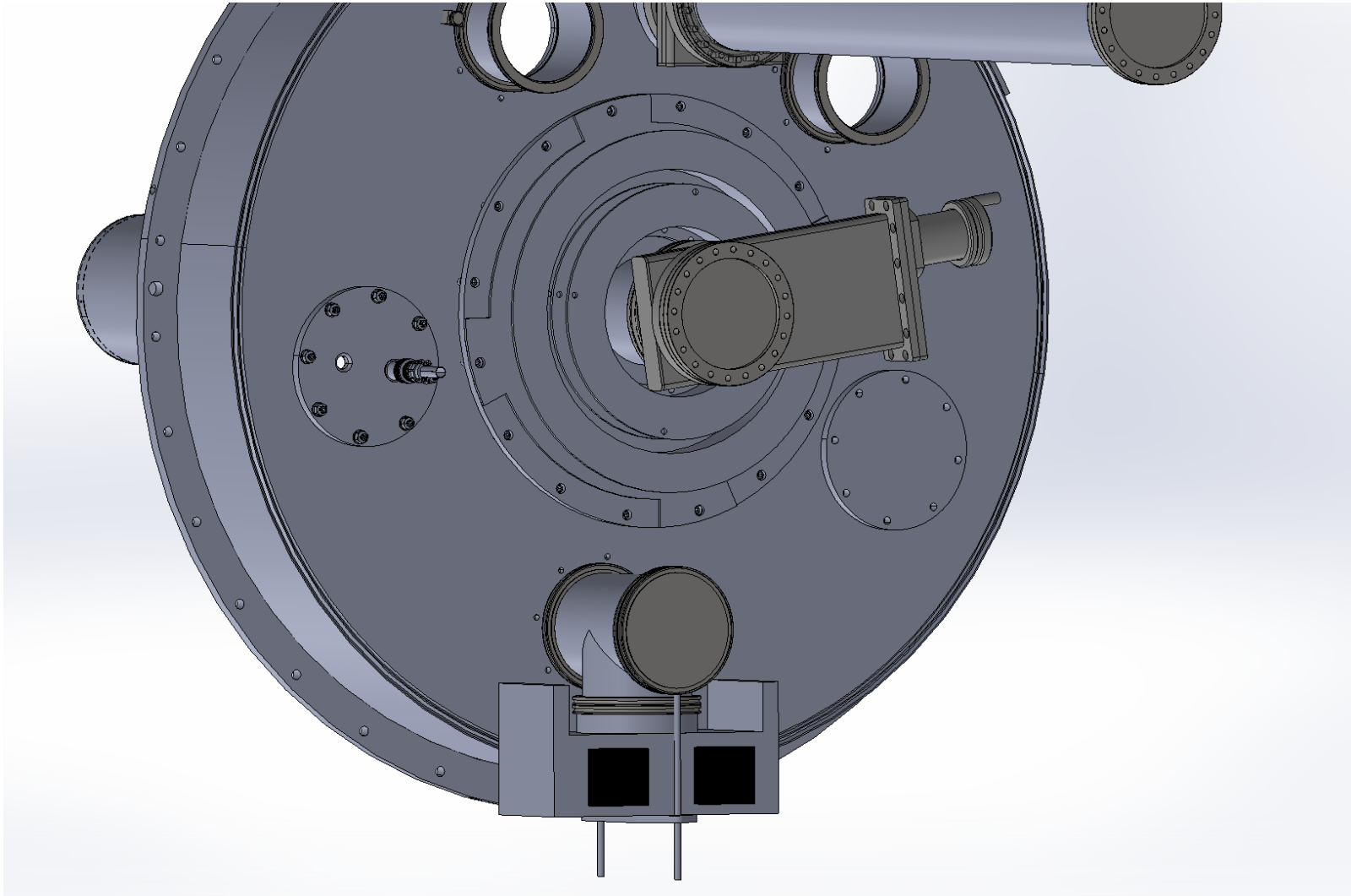
FACT module management



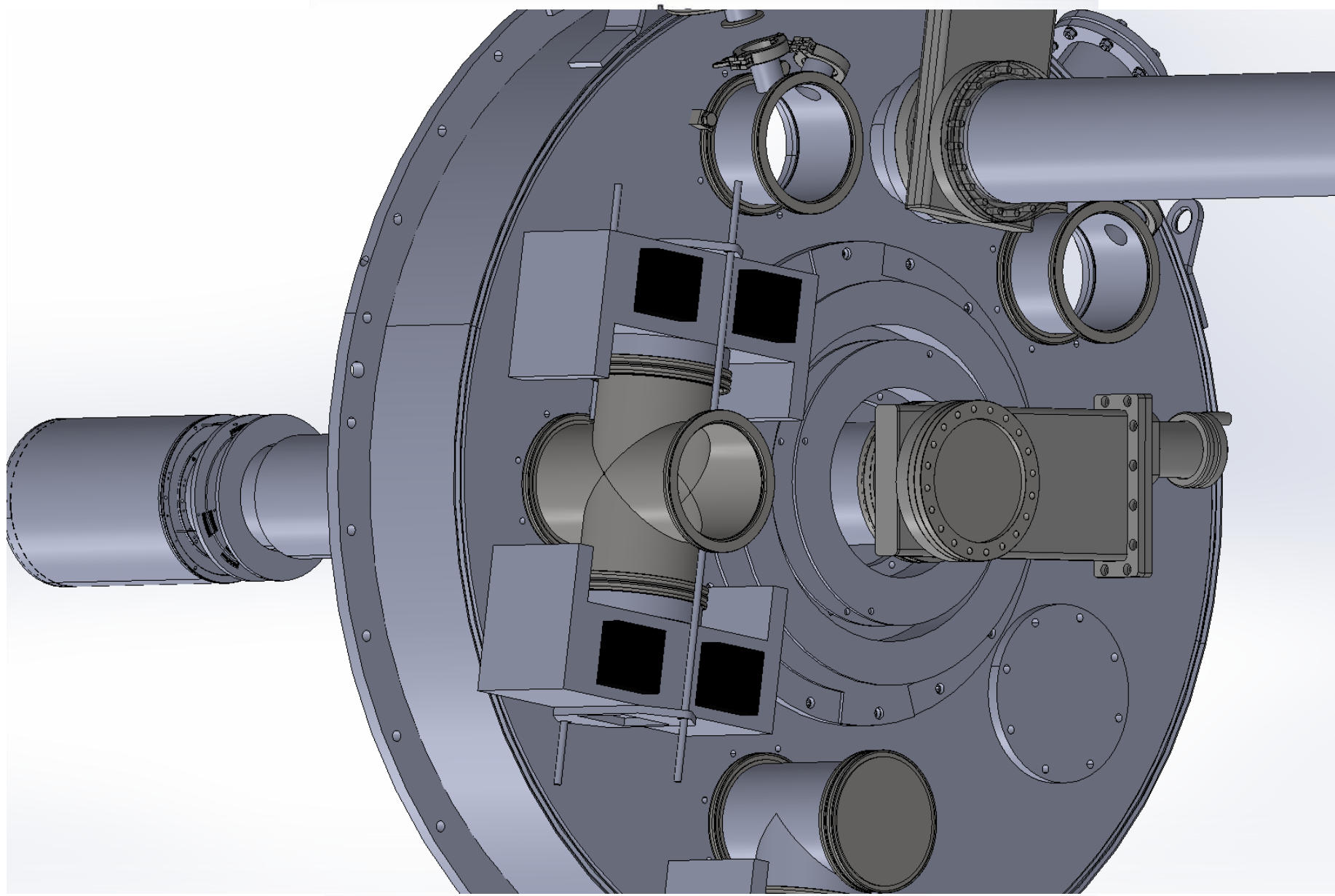
FACT module management



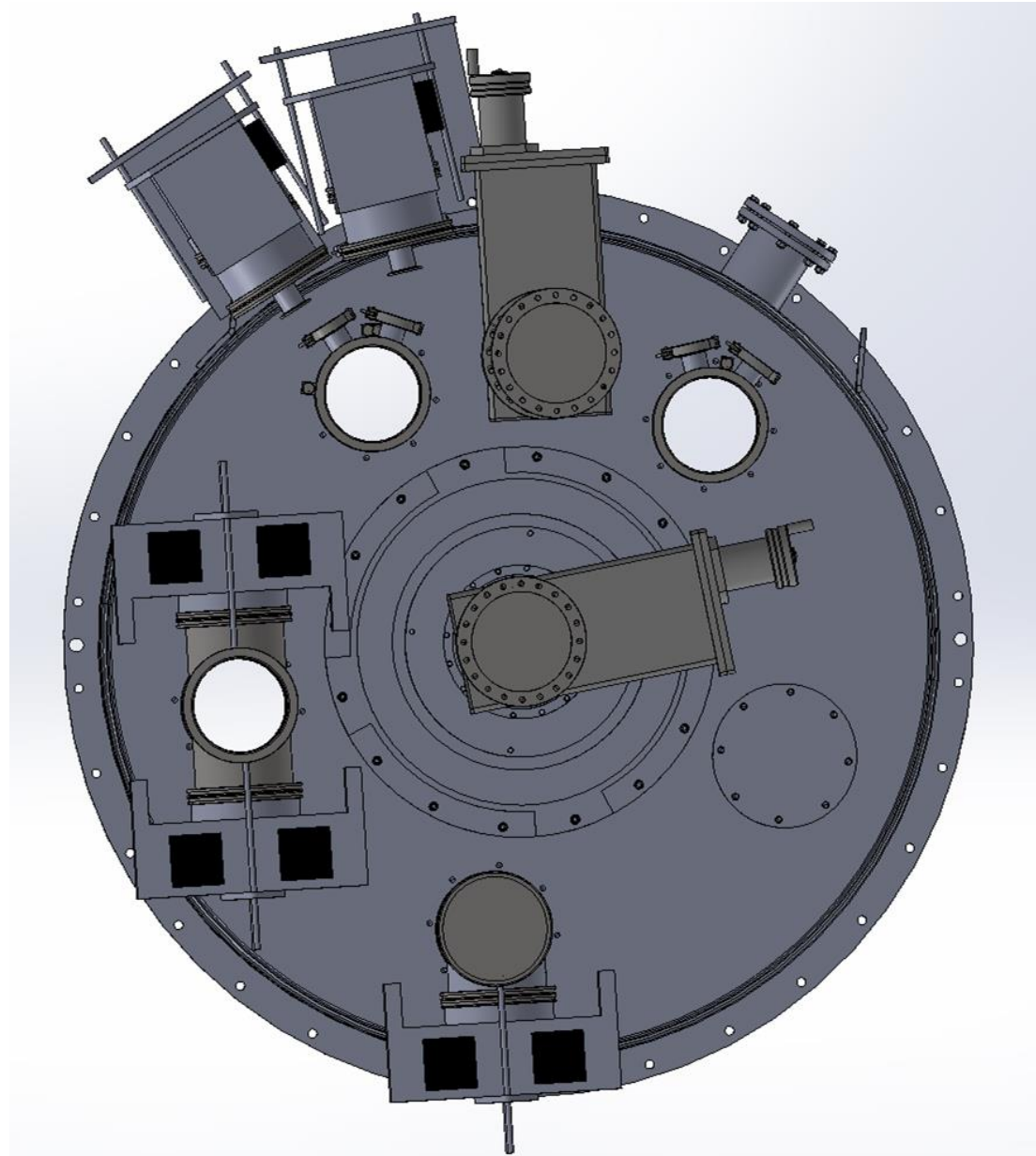
FACT module management



FACT module management



FACT module management



FACT module management

Price estimate:

- (3x) custom LF160 to 2 x KF40 reducer - 400 E
- (6x) short hydraulically formed bellow KF40 – 100 E
- (6x) LF160 to KF40 reducing flange – 250 E
- (1x) custom LF160 tee – 300 E

Total: 3600 E

Cryo schedule and August opening

AI		jxc week													
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	week		Gosia	Stefan	Theo	Benni	Valts	Fredrik	Lisa	Matthias	Bharat				
2	15	8-14 April											15	8-14 April	
3	16	15-21 April											16	15-21 April	
4	17	22-28 April							?				17	22-28 April	
5	18	29 April-5 May							?				18	29 April-5 May	Stefan
6	19	6-12 May AEGIS meeting Torun											19	6-12 May AEGIS meeting Torun	
7	20	13-19 May							?				20	13-19 May	Benni
8	21	20-26 May							?				21	20-26 May	Matthias
9	22	27 May- 2 June											22	27 May- 2 June	Gosia
10	23	3-9 June											23	3-9 June	Fredrik
11	24	10-16 June											24	10-16 June	Valts
12	25	17-23 June											25	17-23 June	Benni
13	26	24-30 June											26	24-30 June	Theo
14	27	1-7 July											27	1-7 July	Gosia
15	28	8-14 July											28	8-14 July	Fredrik
16	29	15-21 July											29	15-21 July	Valts
17	30	22-28 July											30	22-28 July	Matthias
18	31	29 July- 4 August											31	29 July- 4 August	

Cryo schedule and August opening

- Opening for the 1T bellows installation – beginning of August/end of July
- Intervention of min 4 weeks: new 1T MCP mechanism, bellows, FACT module rearrangement, GV1 cleaning, HgHg MCP installation
- We should try not to open any more before the LHC run of 2026
- We need to have the gravity module (plus the anti-sun) in place by the end of the year



Thank you for your attention

Bellows assembly for the 1T

Issues: Getter pumping for the bellow

Possible solution: Getter Wafer

Off the shelf (4-6 weeks lead time)

Price: 3-6K + 3K for the controller

