

New RF BAF3
New cooling needs
inputs for CV

LIU-SPS

20140917

New SPS RF power plants

Siemens

2 x 1100 kW peak
2 x 750 kW average

New

2 x 1800 kW peak
2 x 750 kW average

Philips

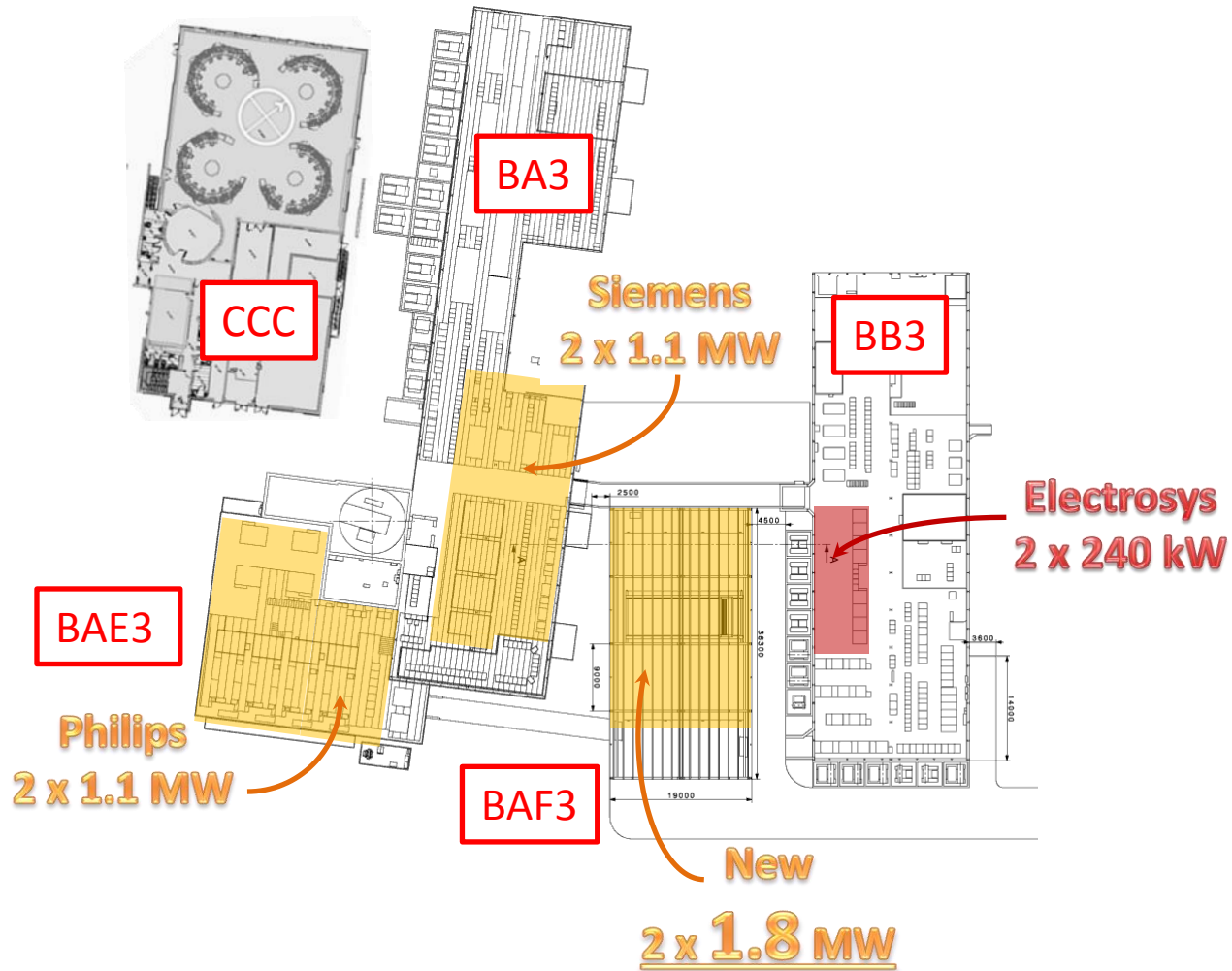
2 x 1100 kW peak
2 x 750 kW average

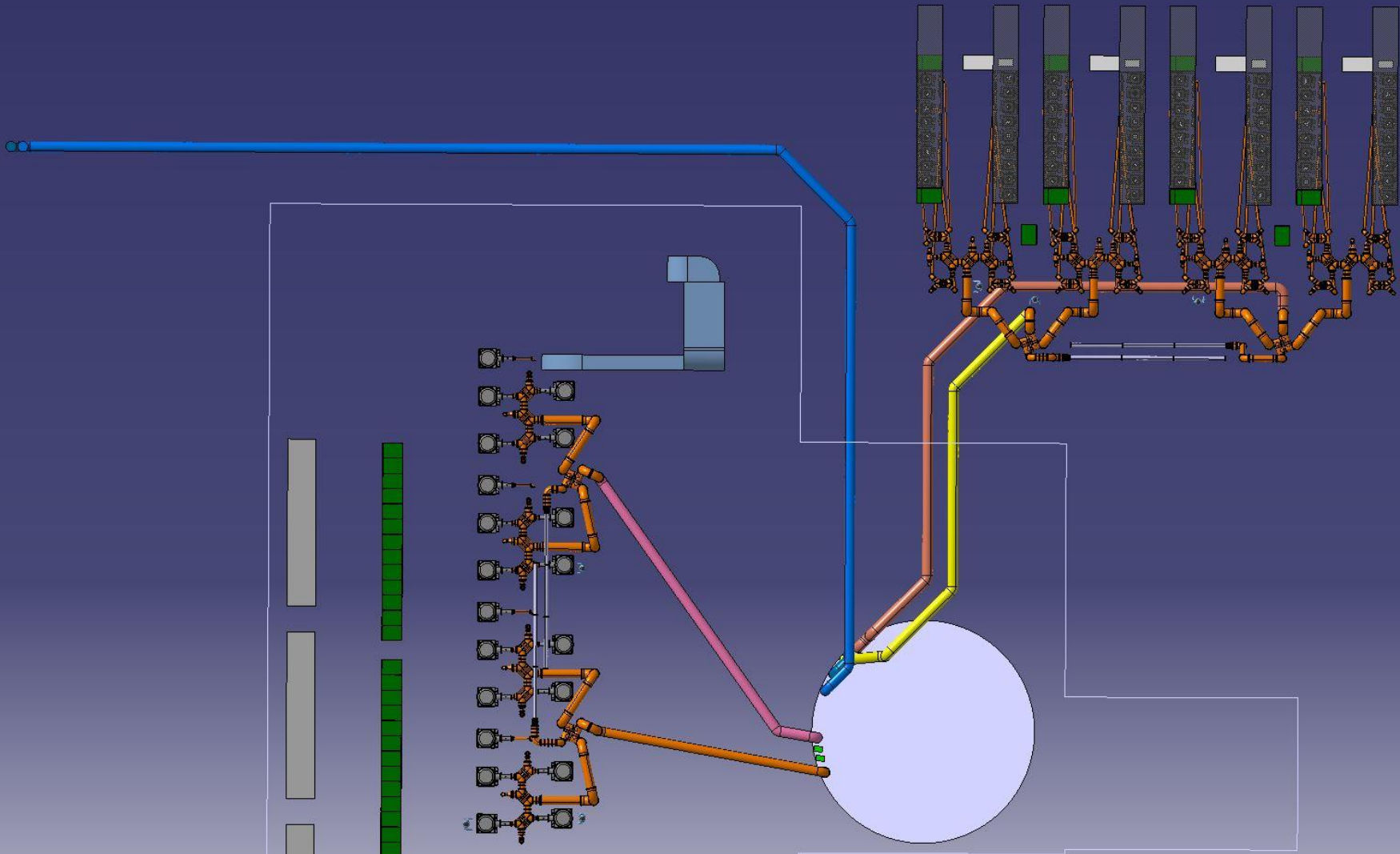
Electrosys

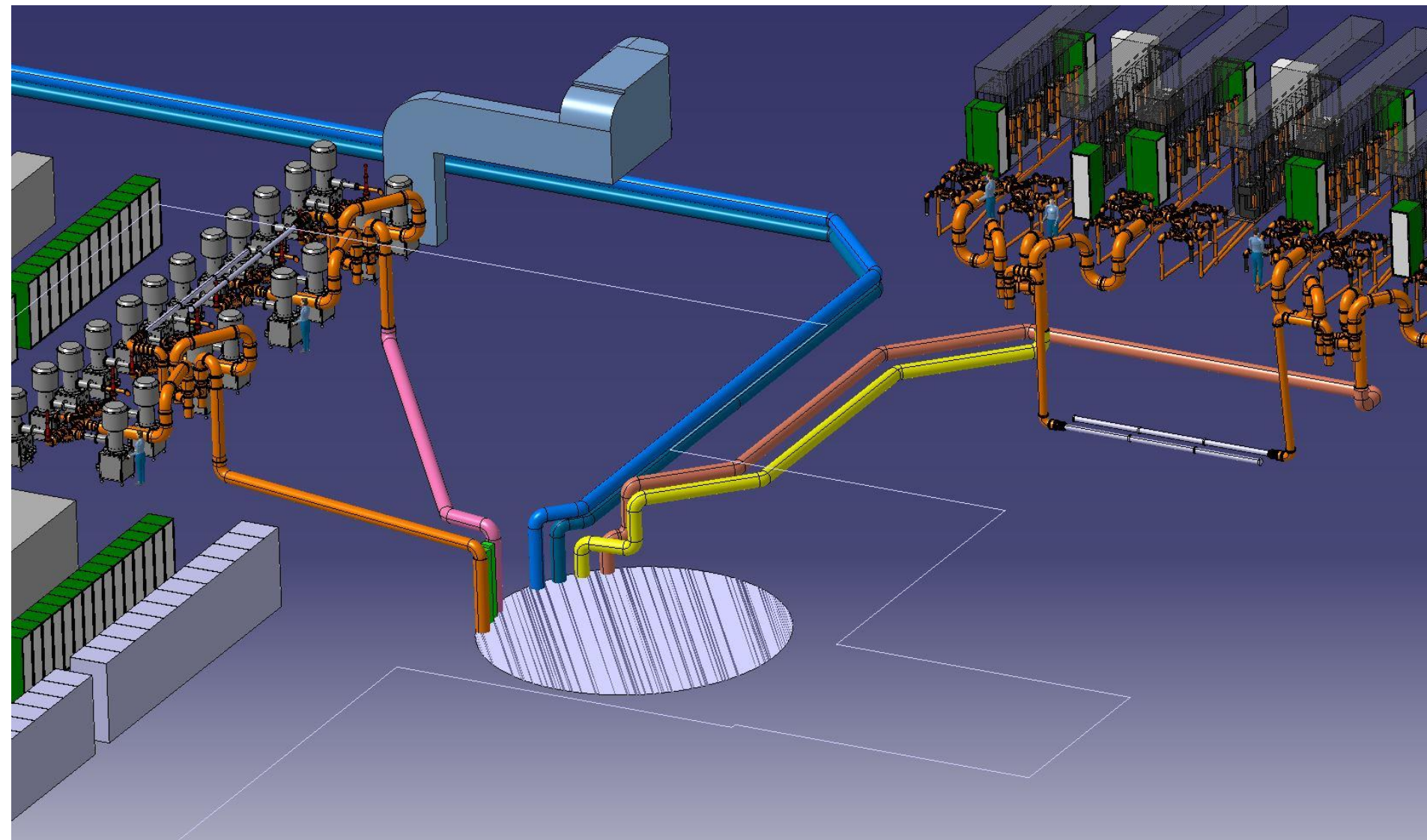
2 x 250 kW peak
2 x 250 kW average

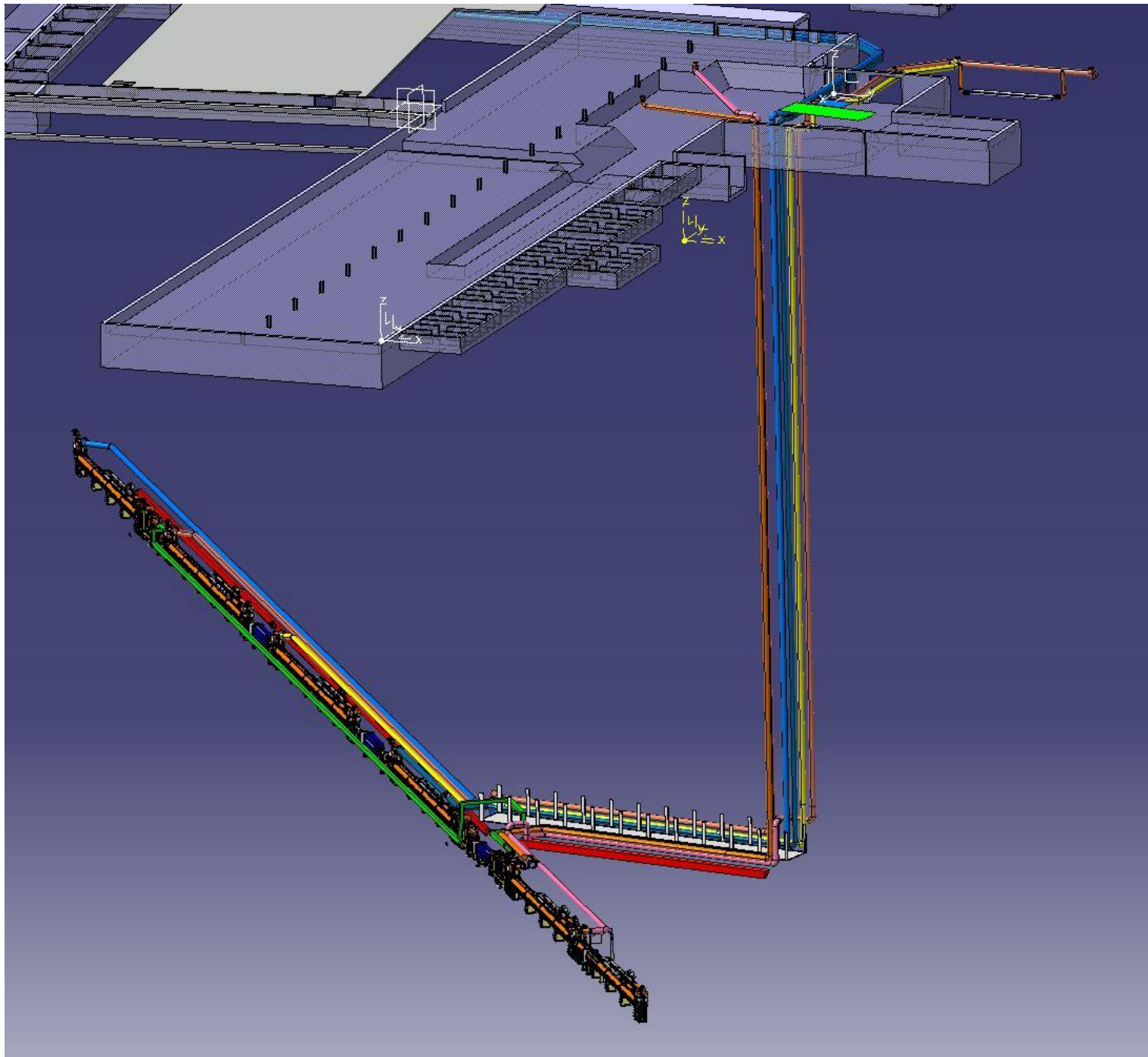
200 MHz - 800 MHz

New SPS RF power plants

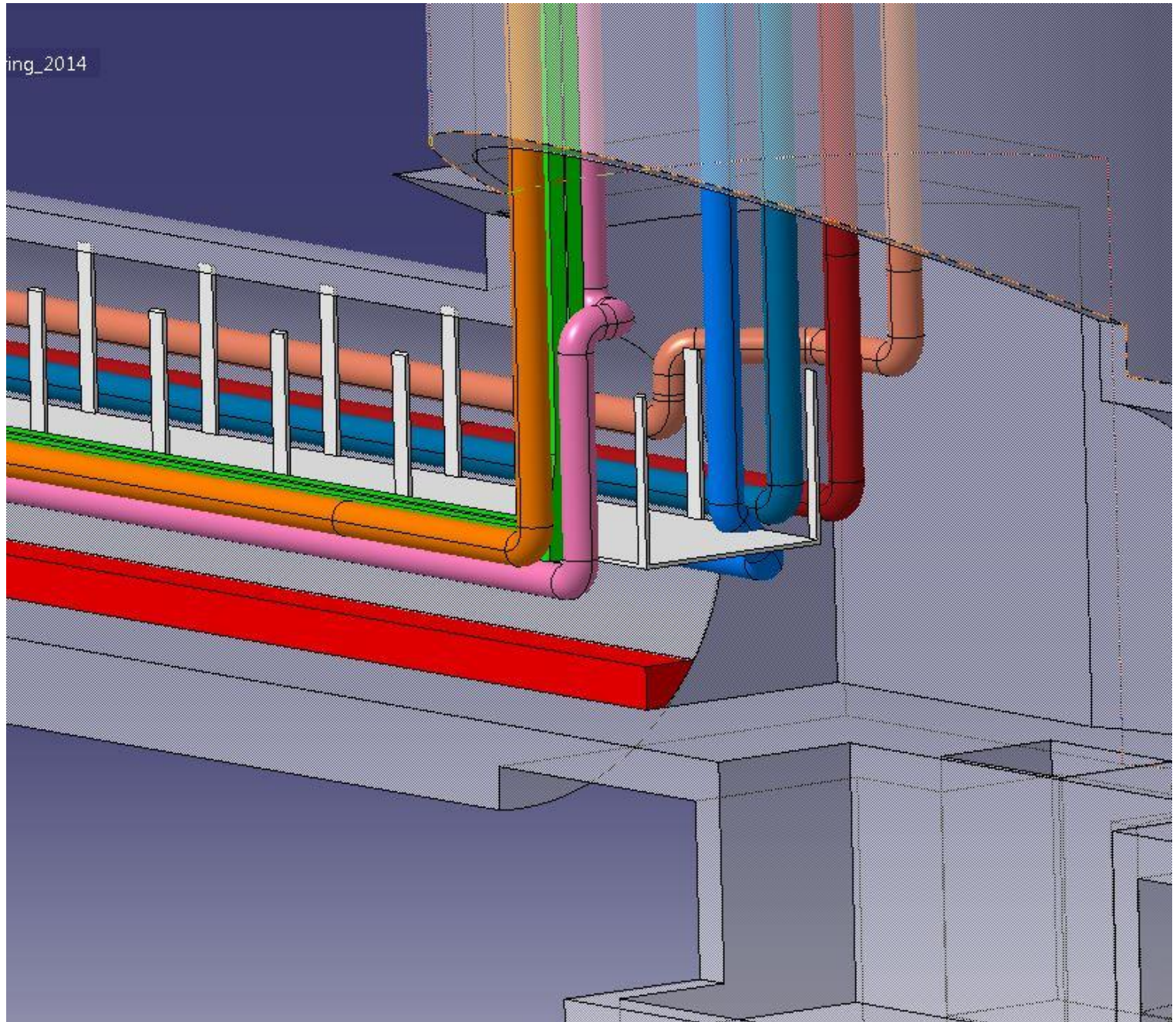


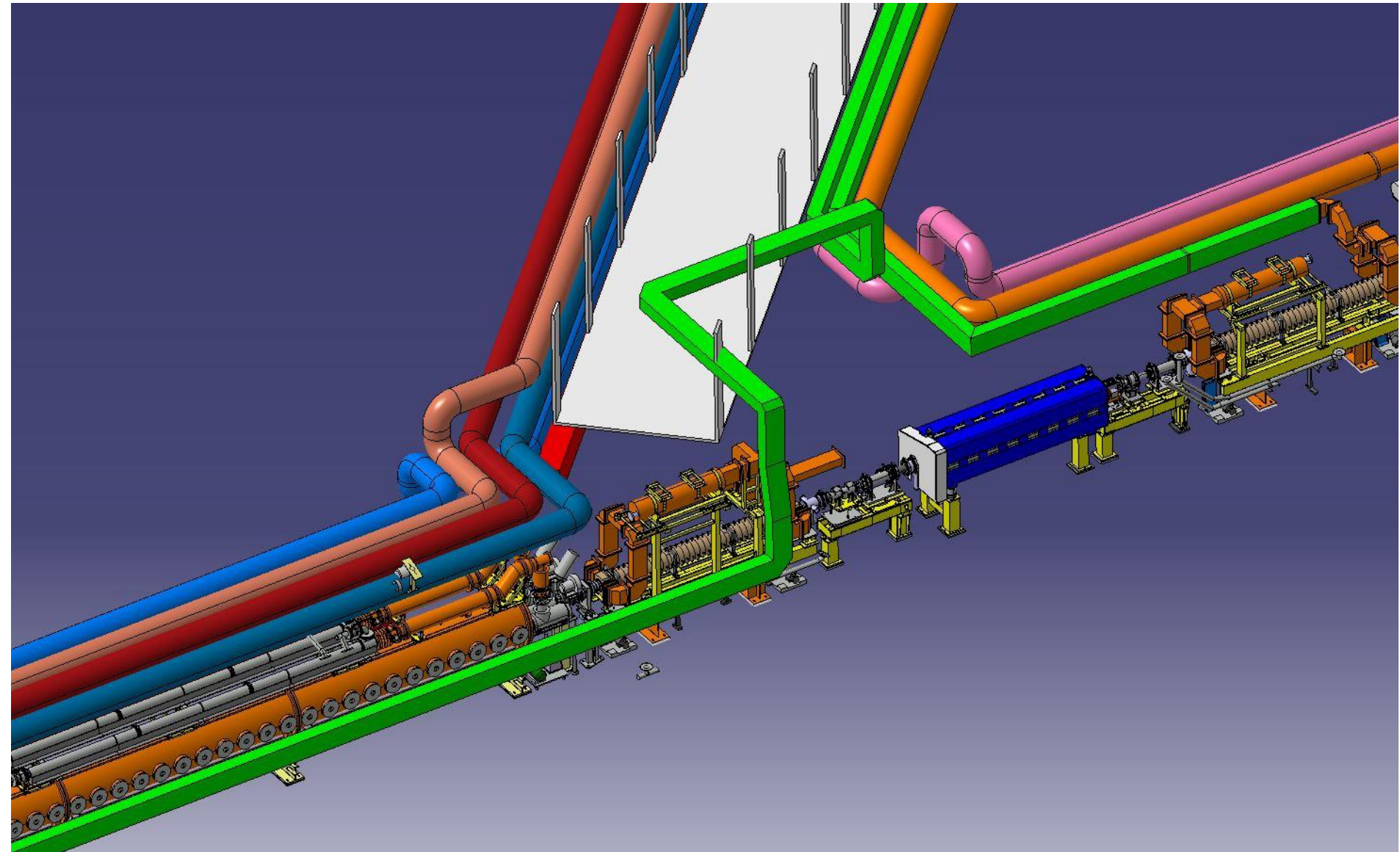


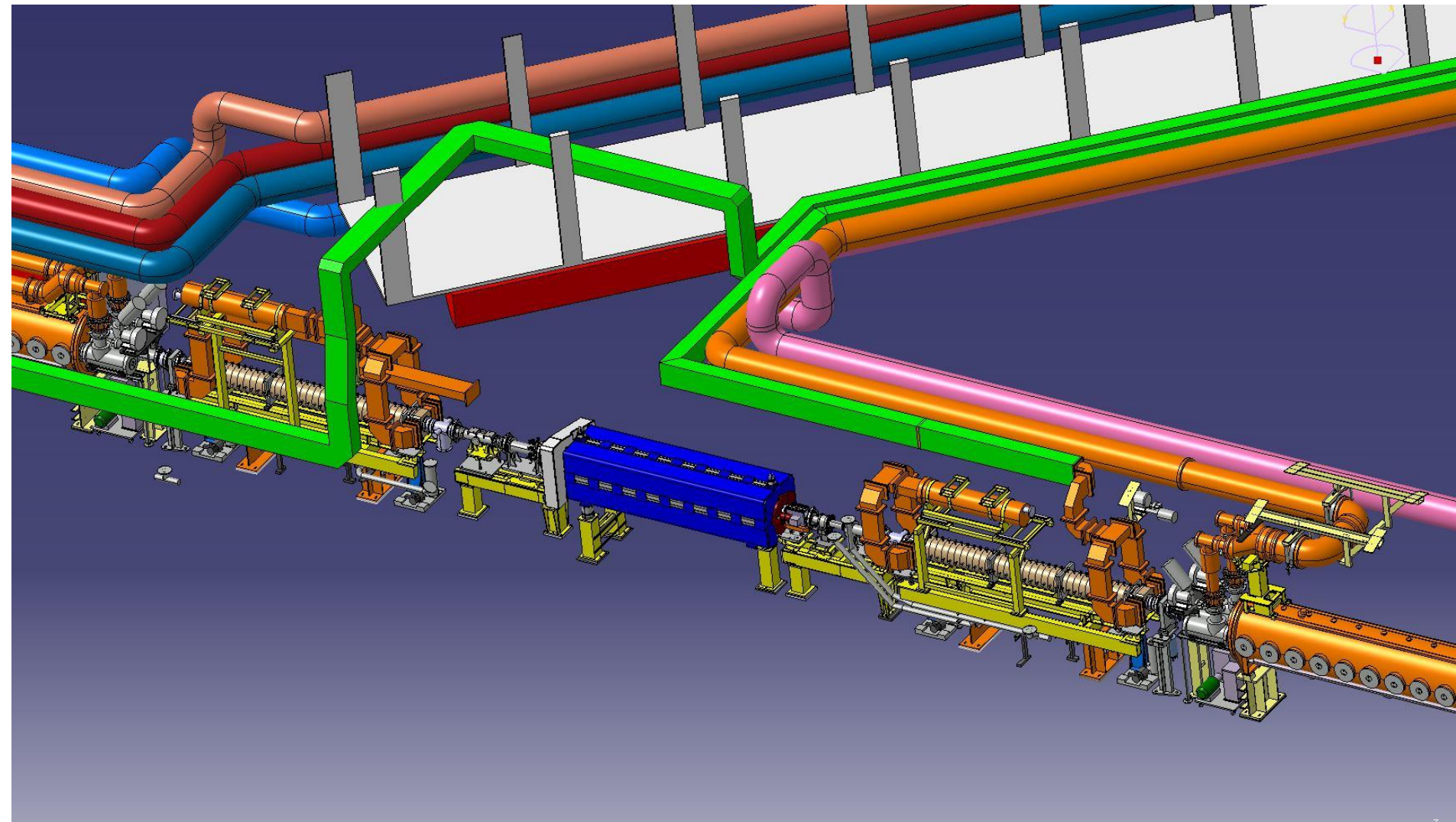


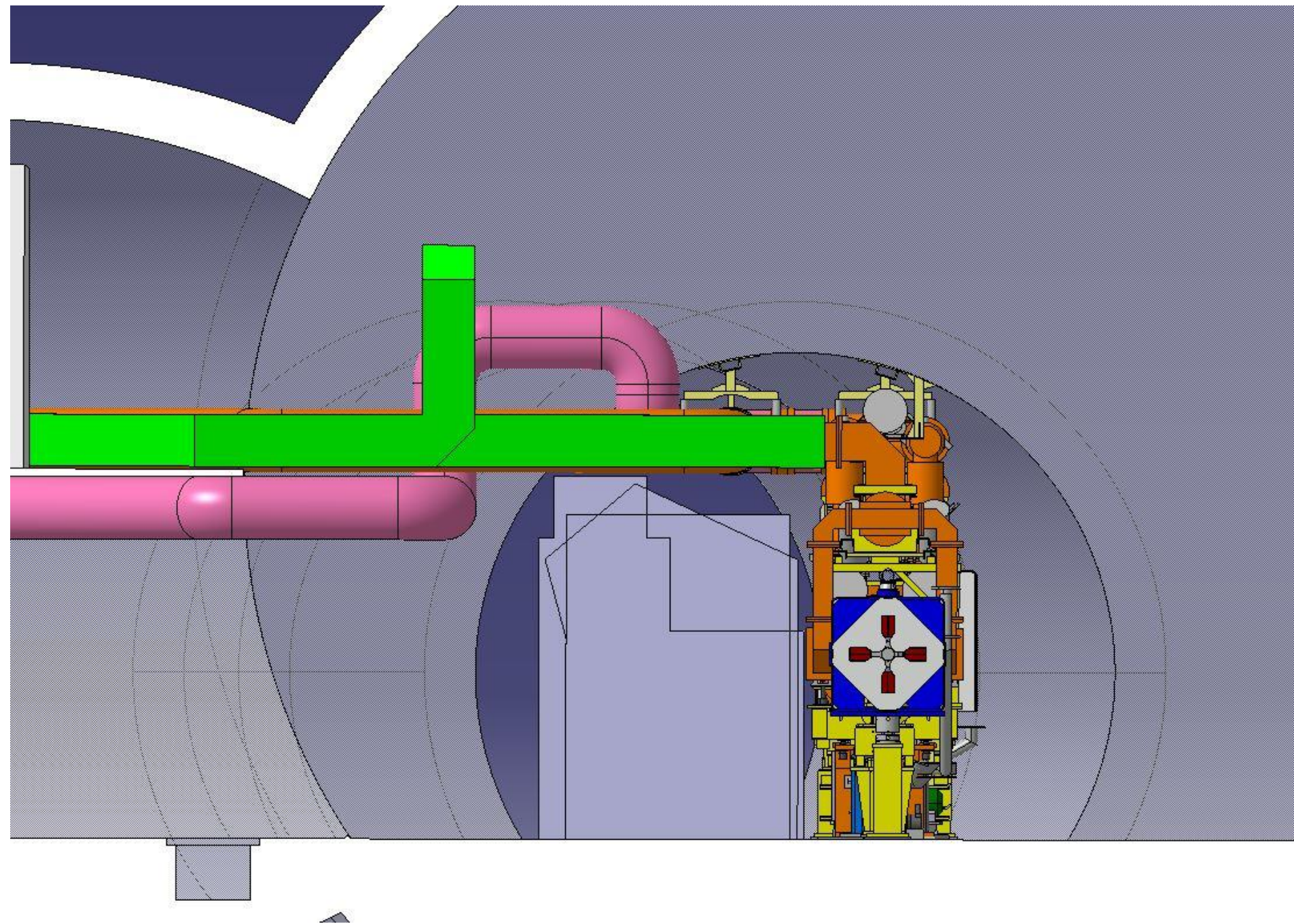


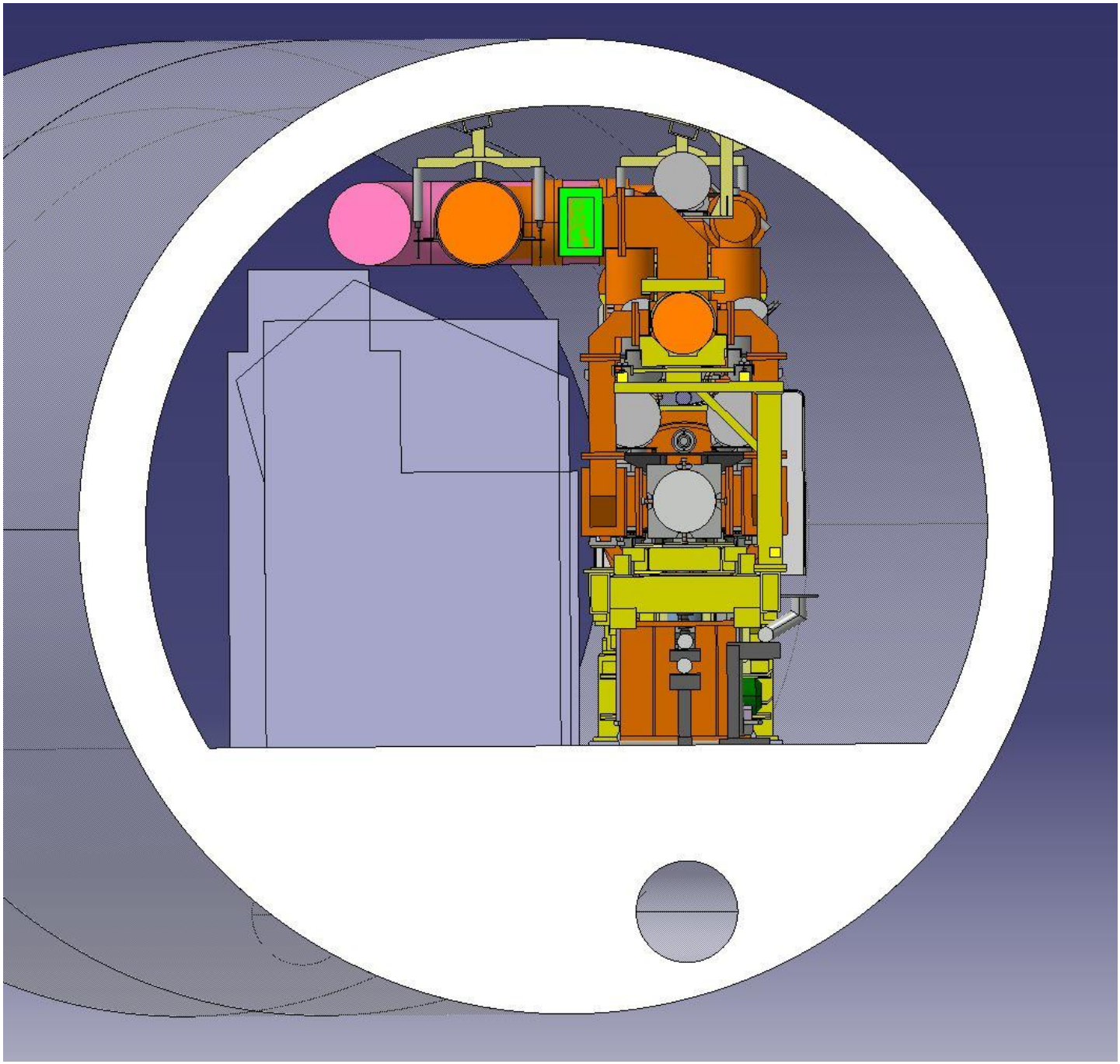
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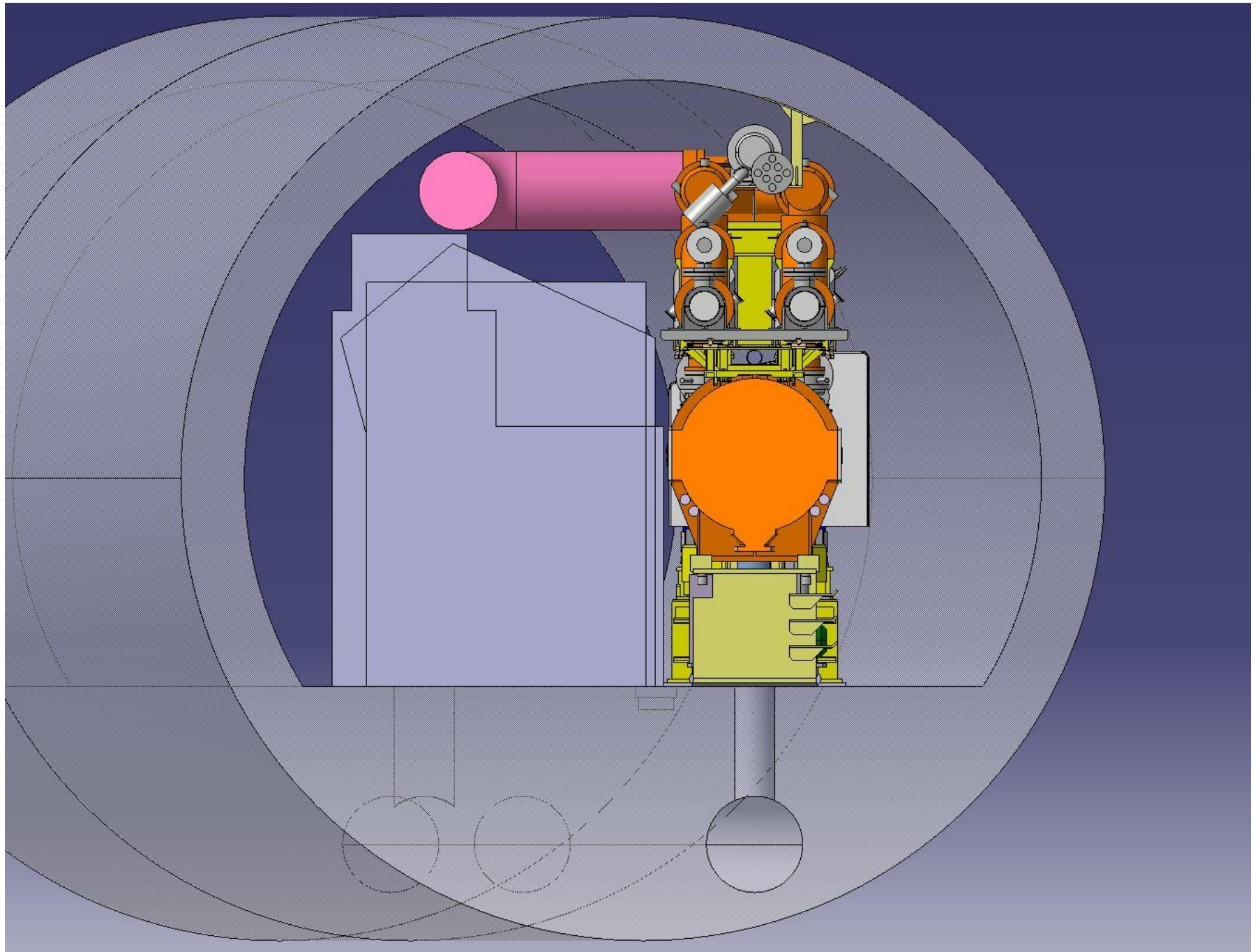


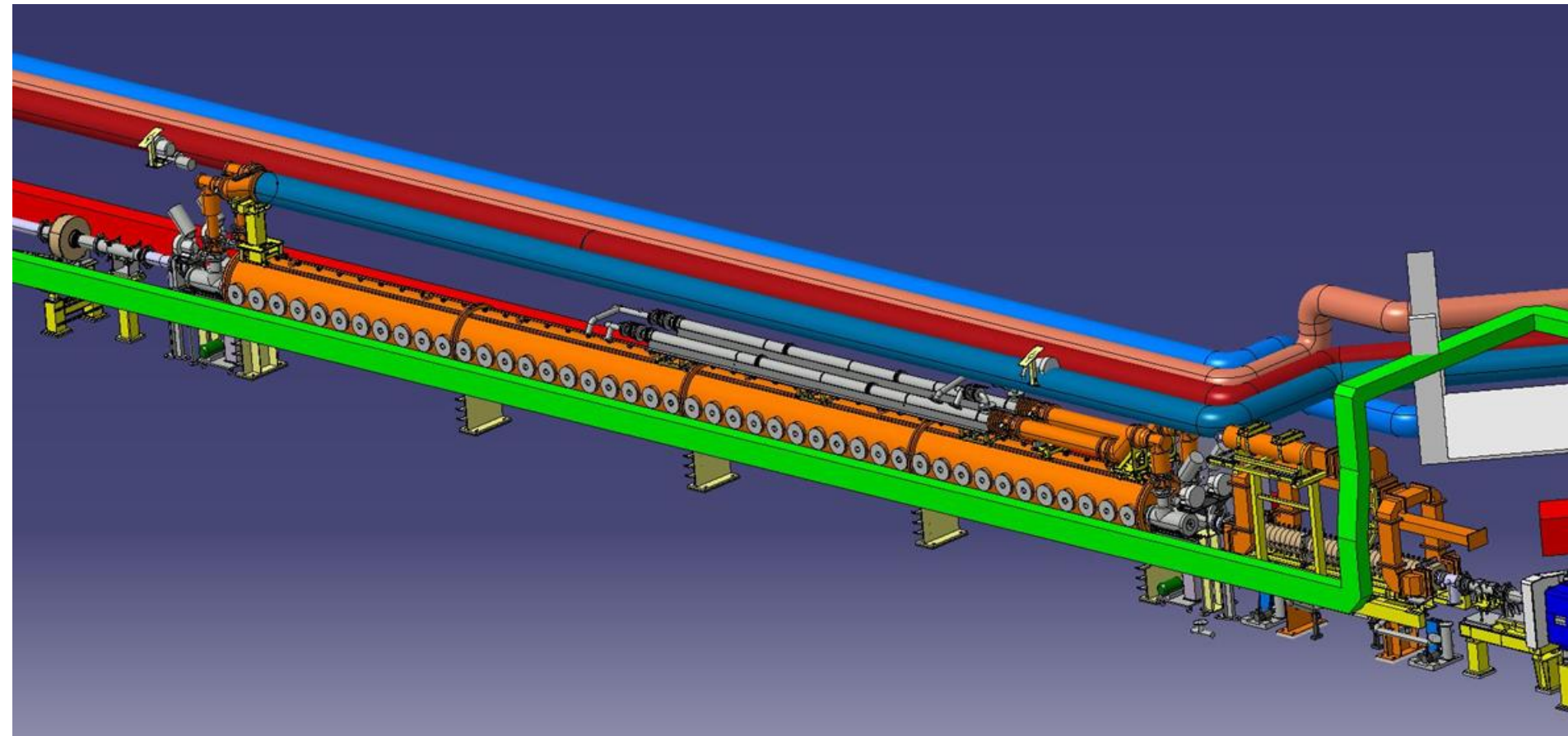


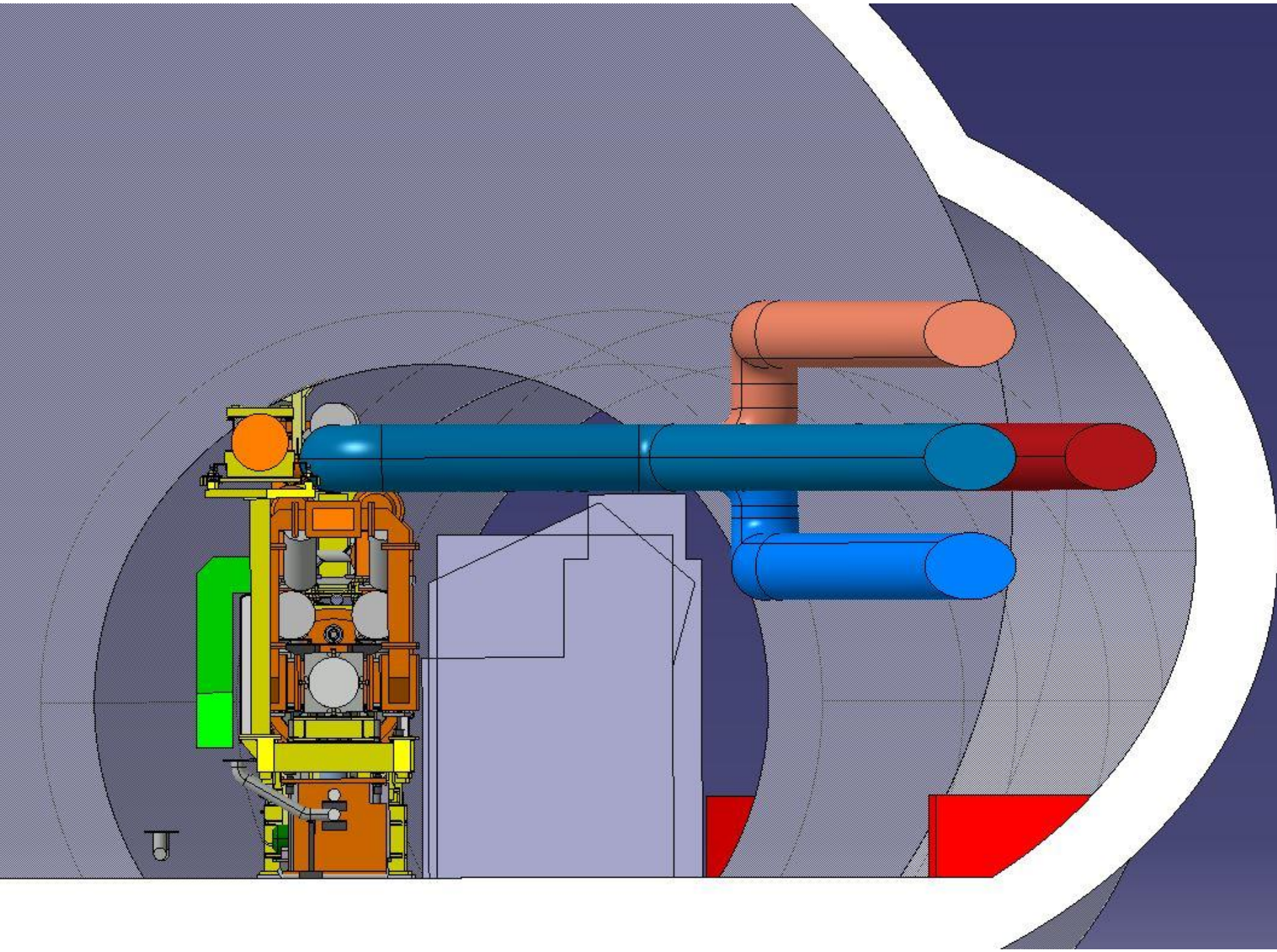


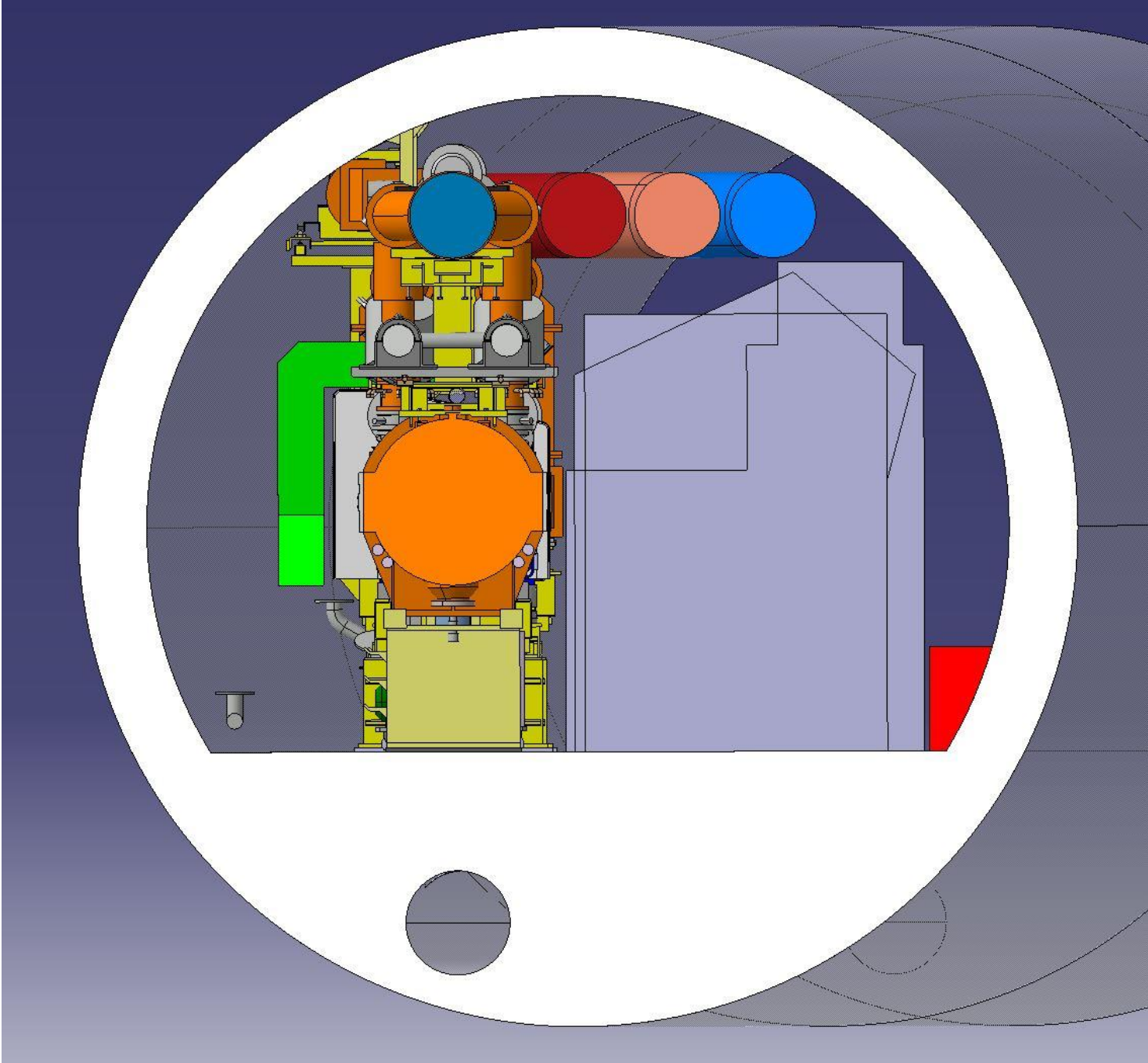


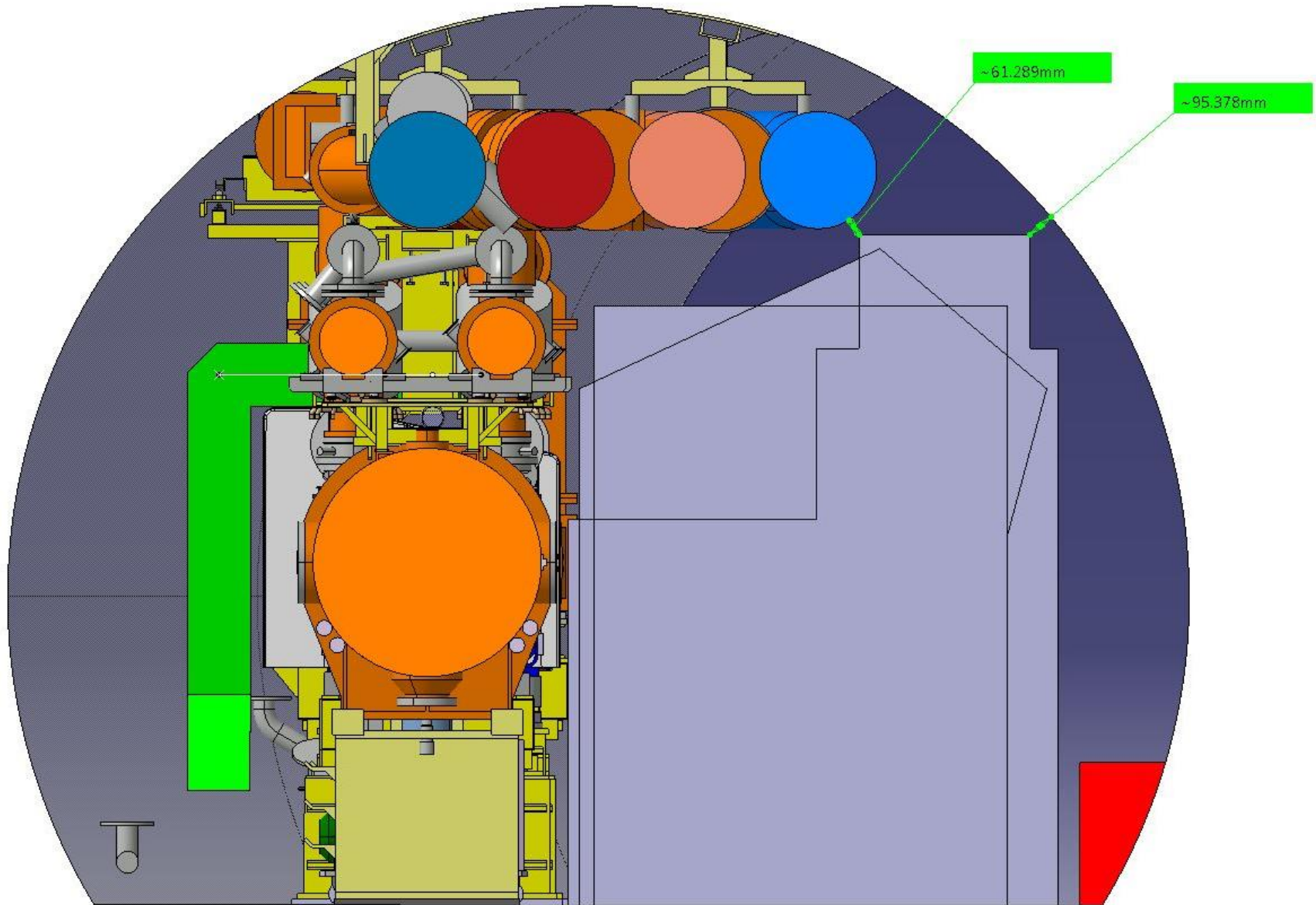


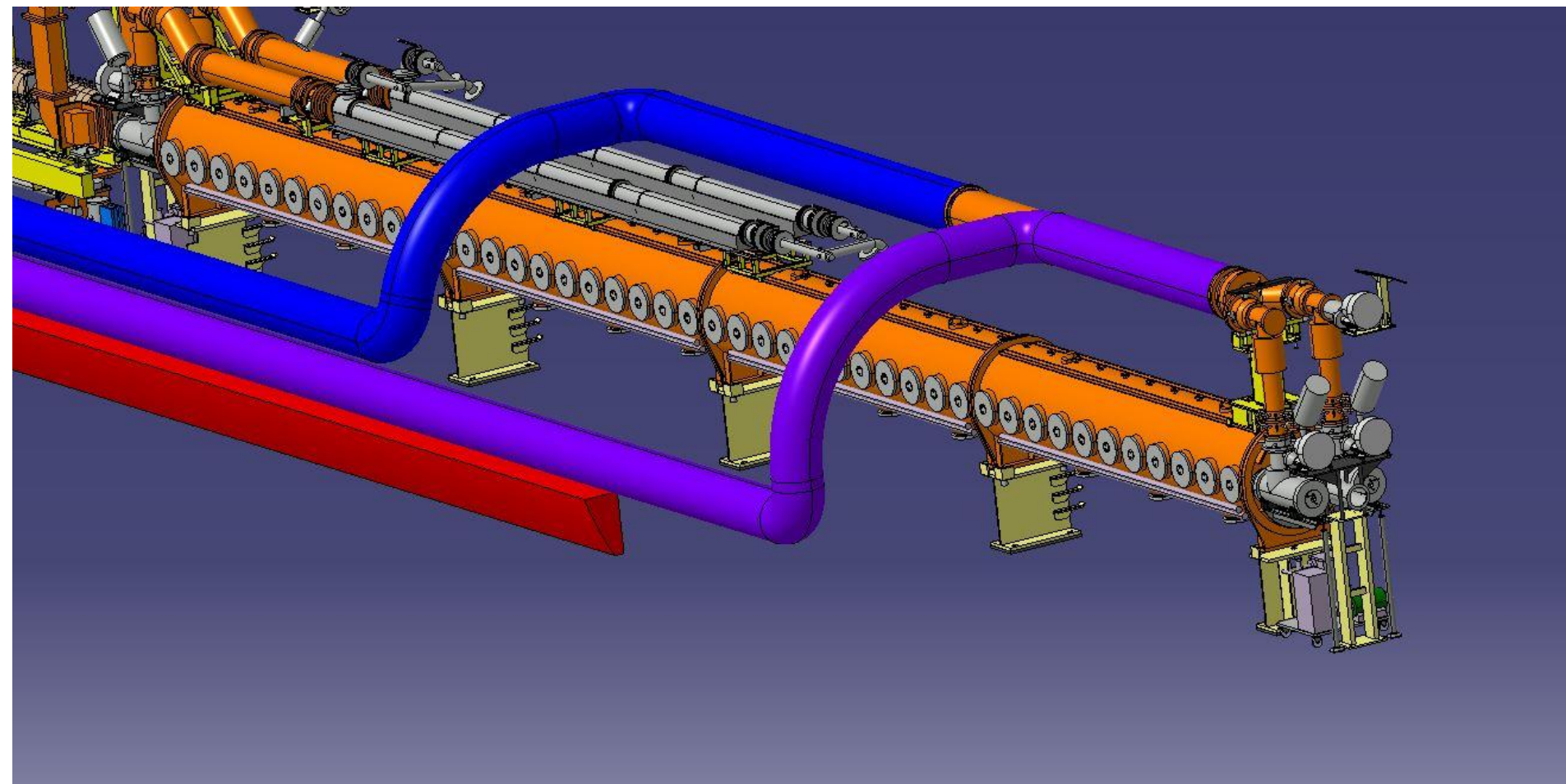


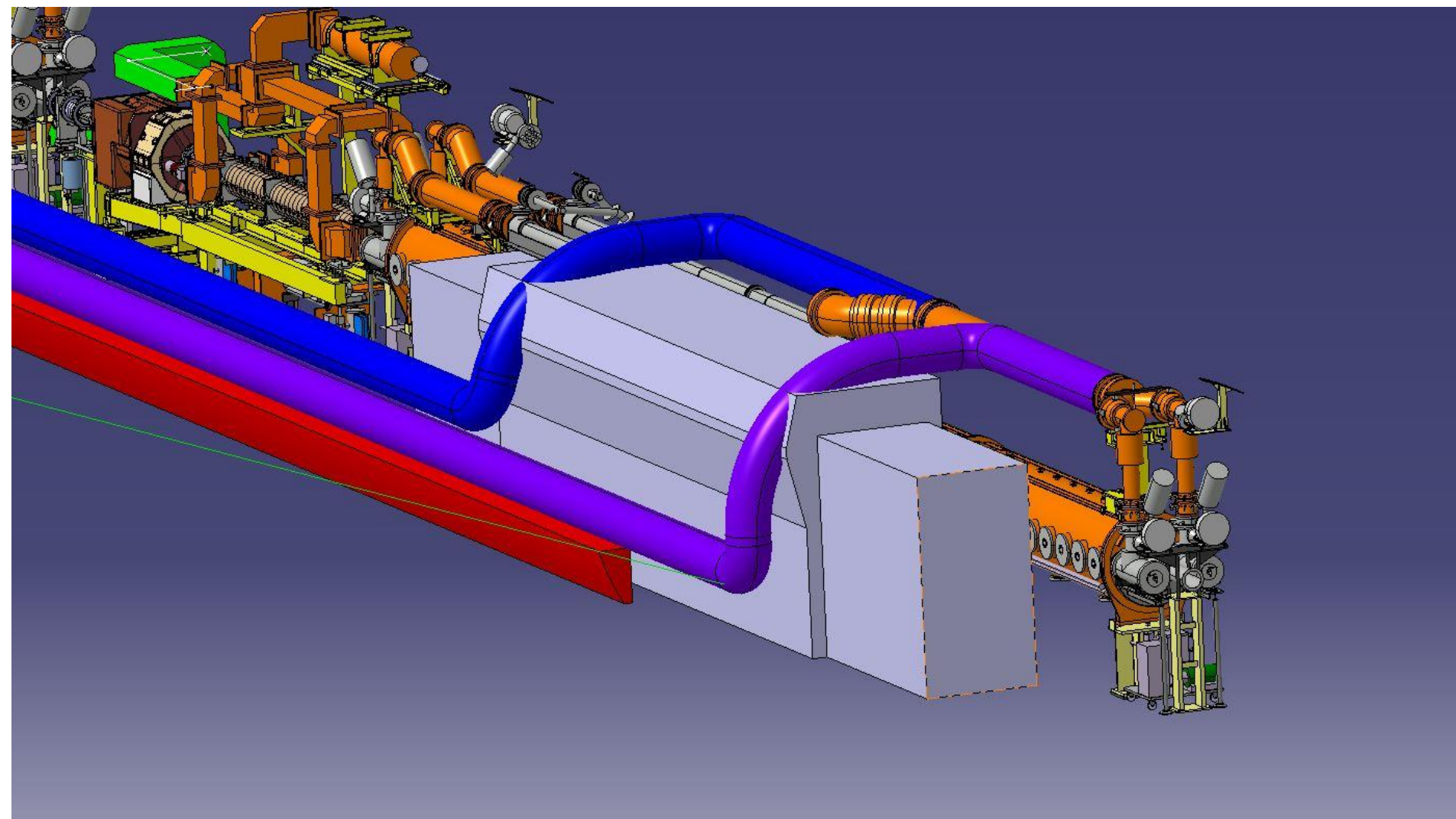


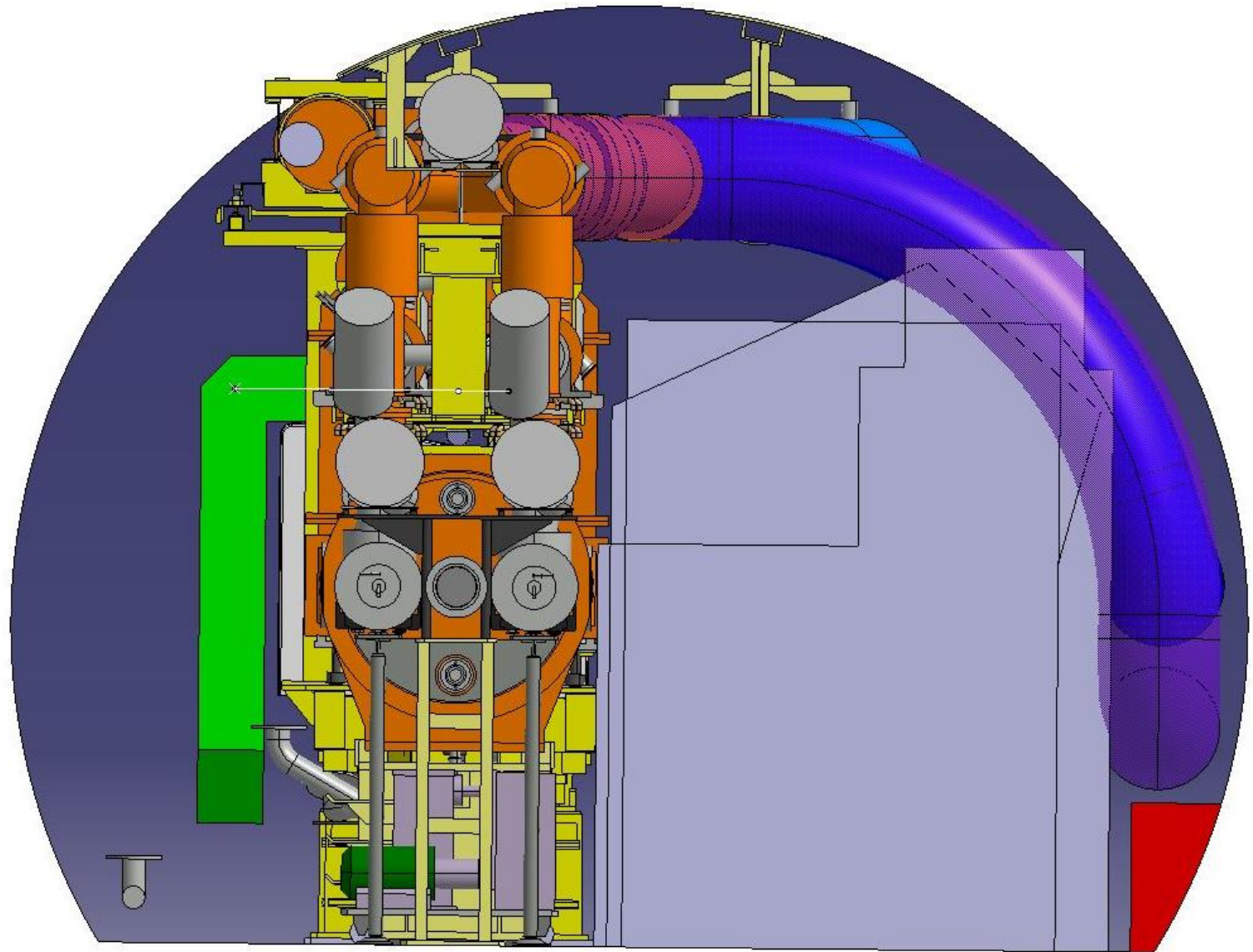


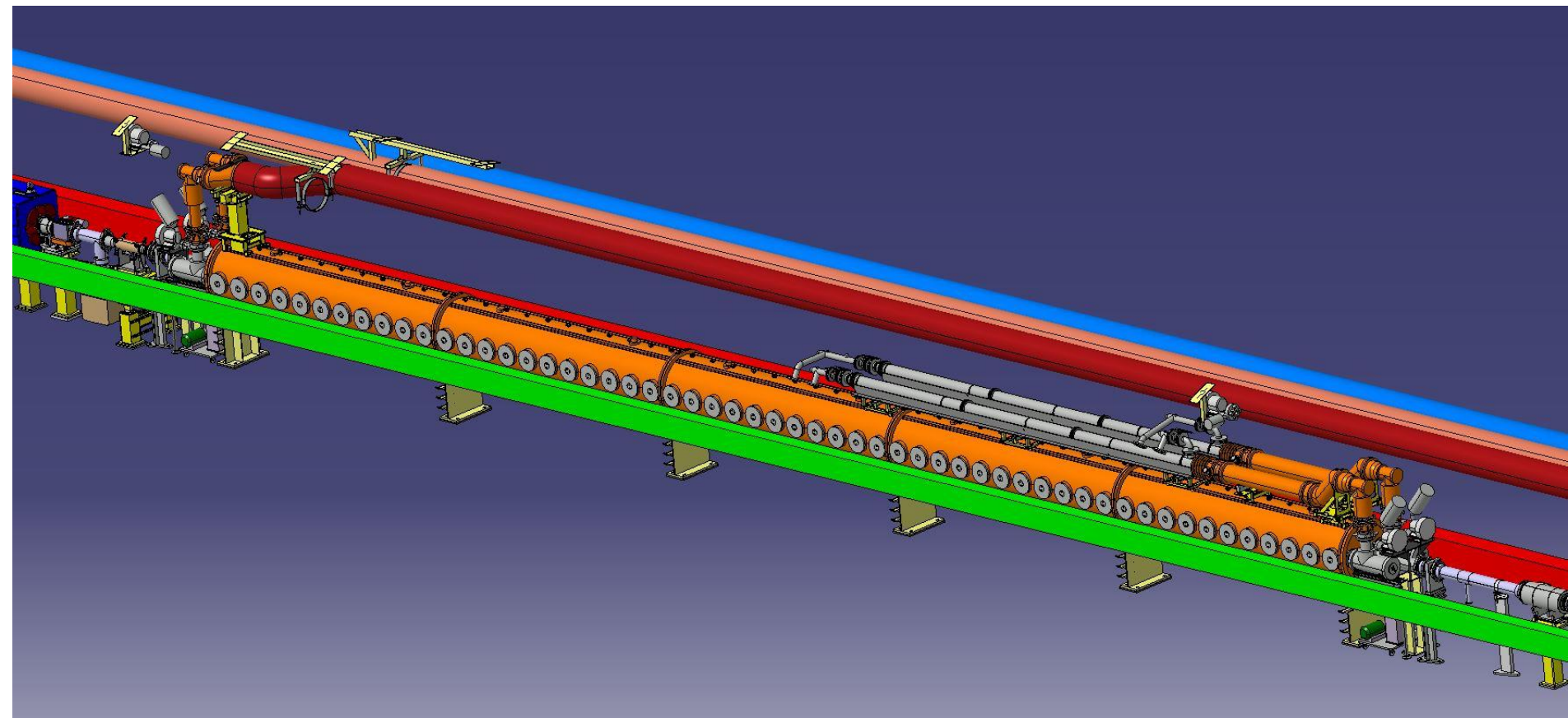


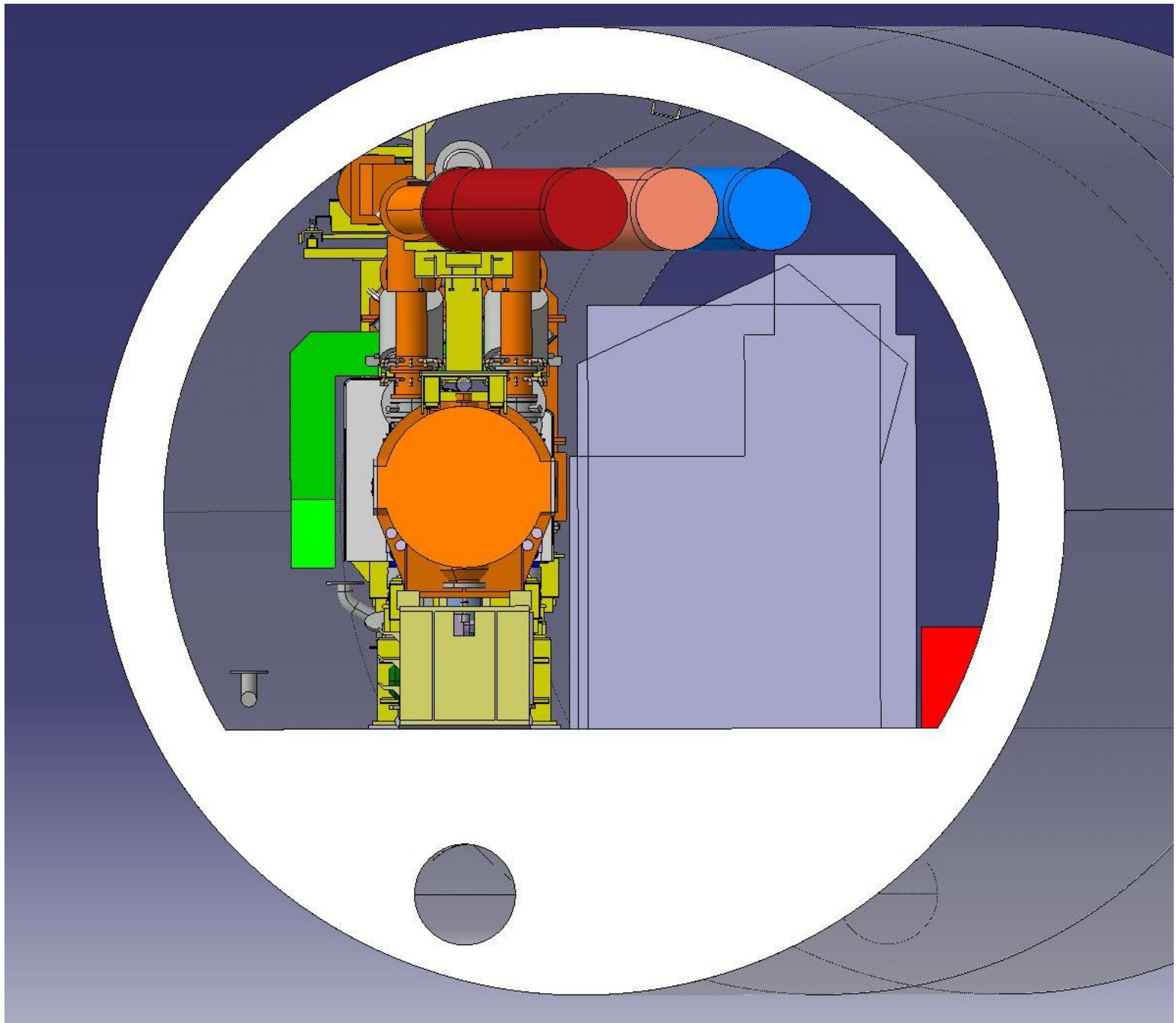


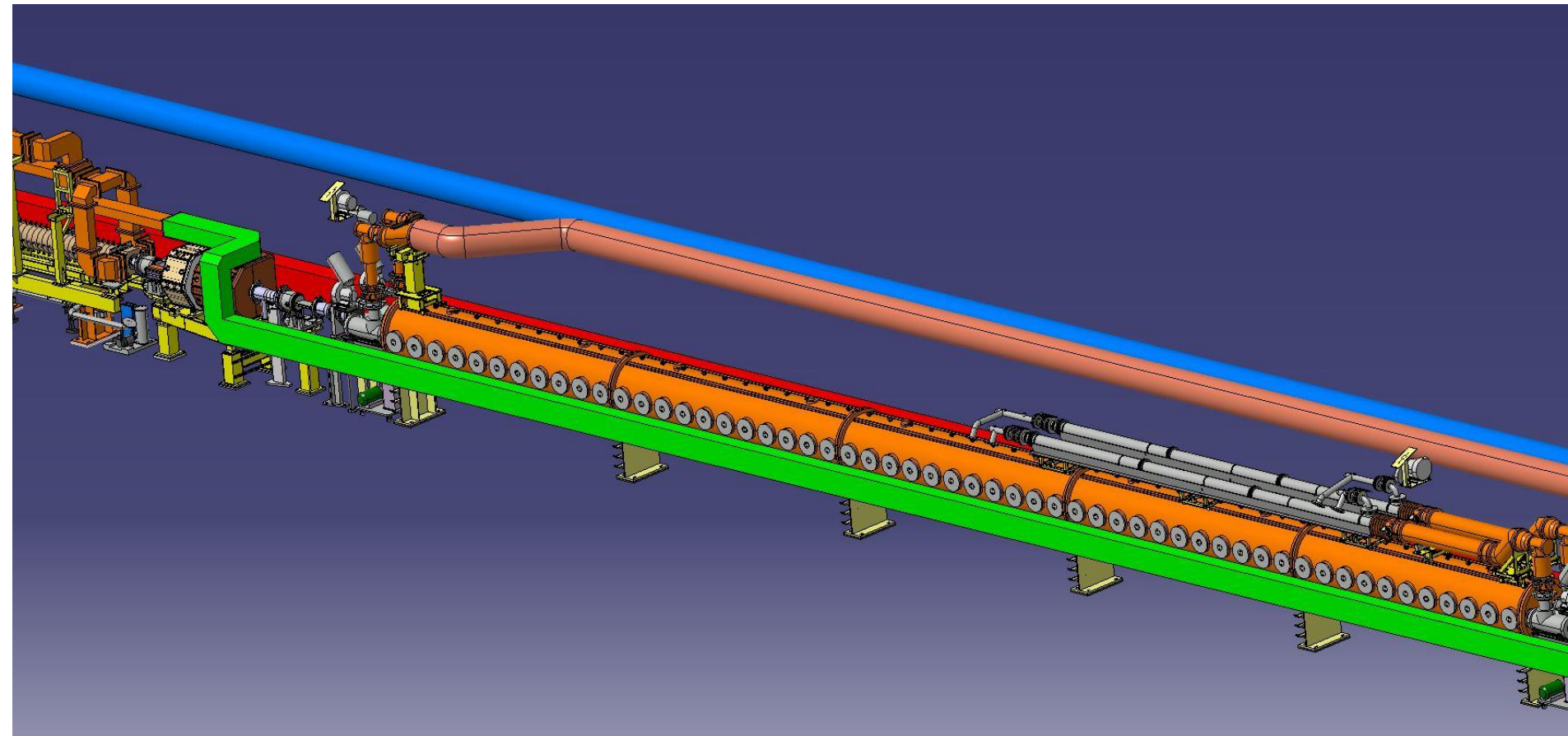


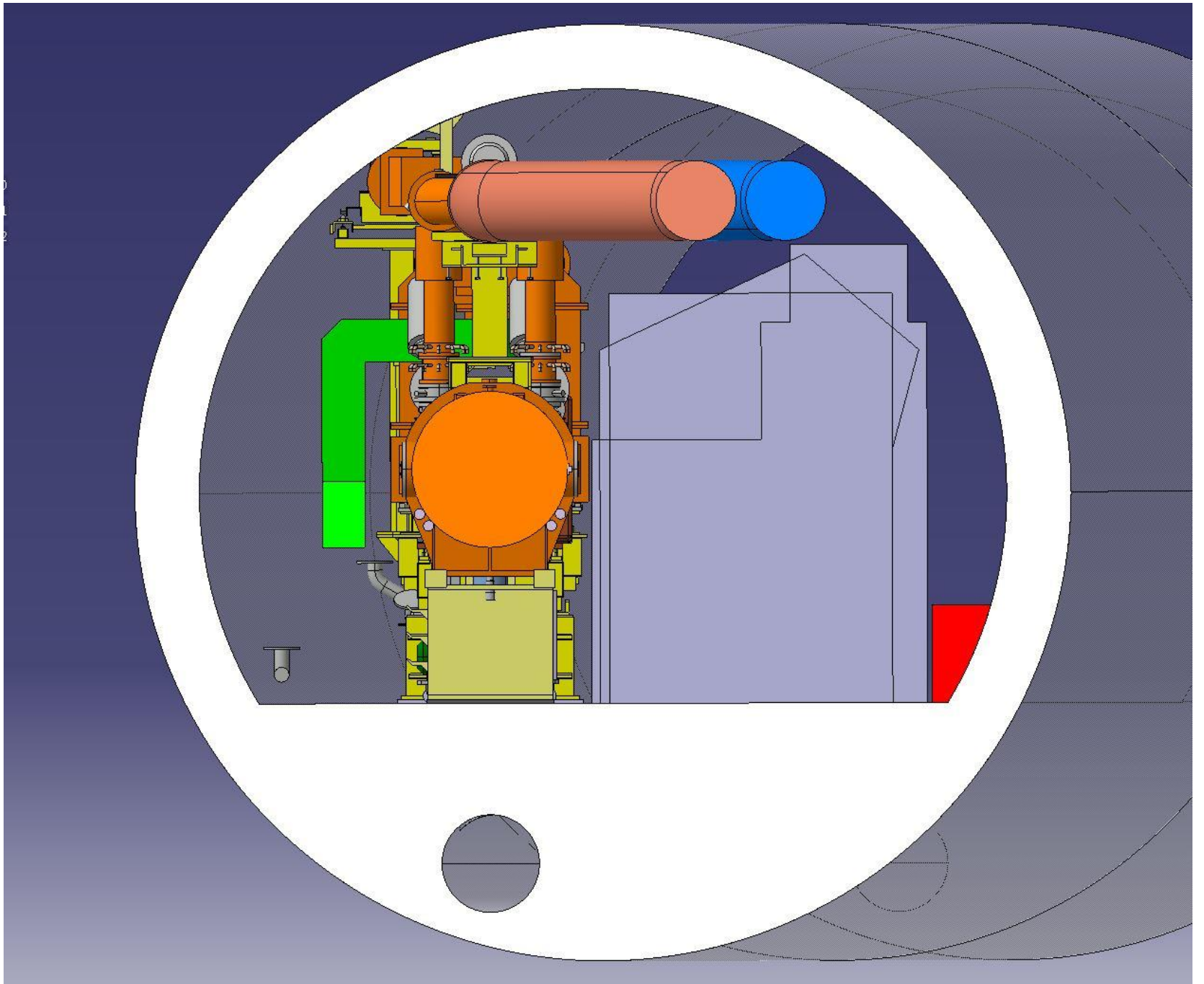


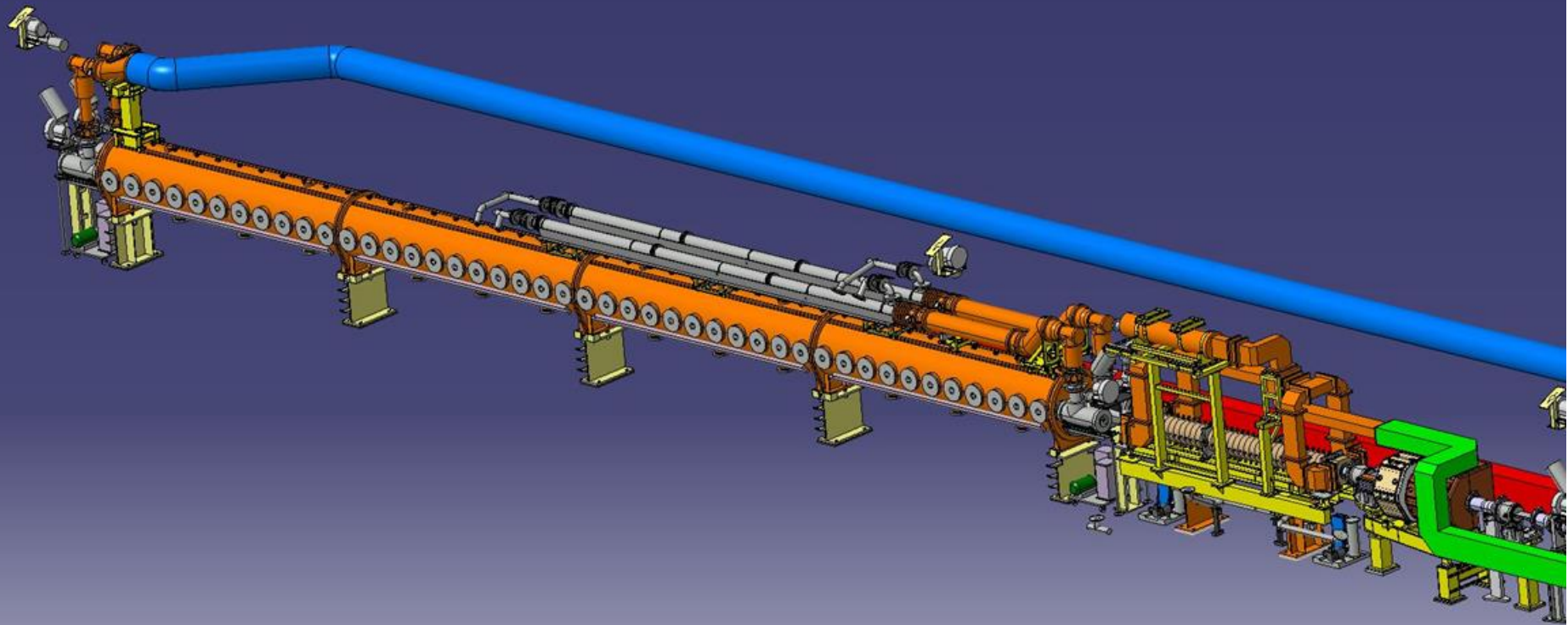


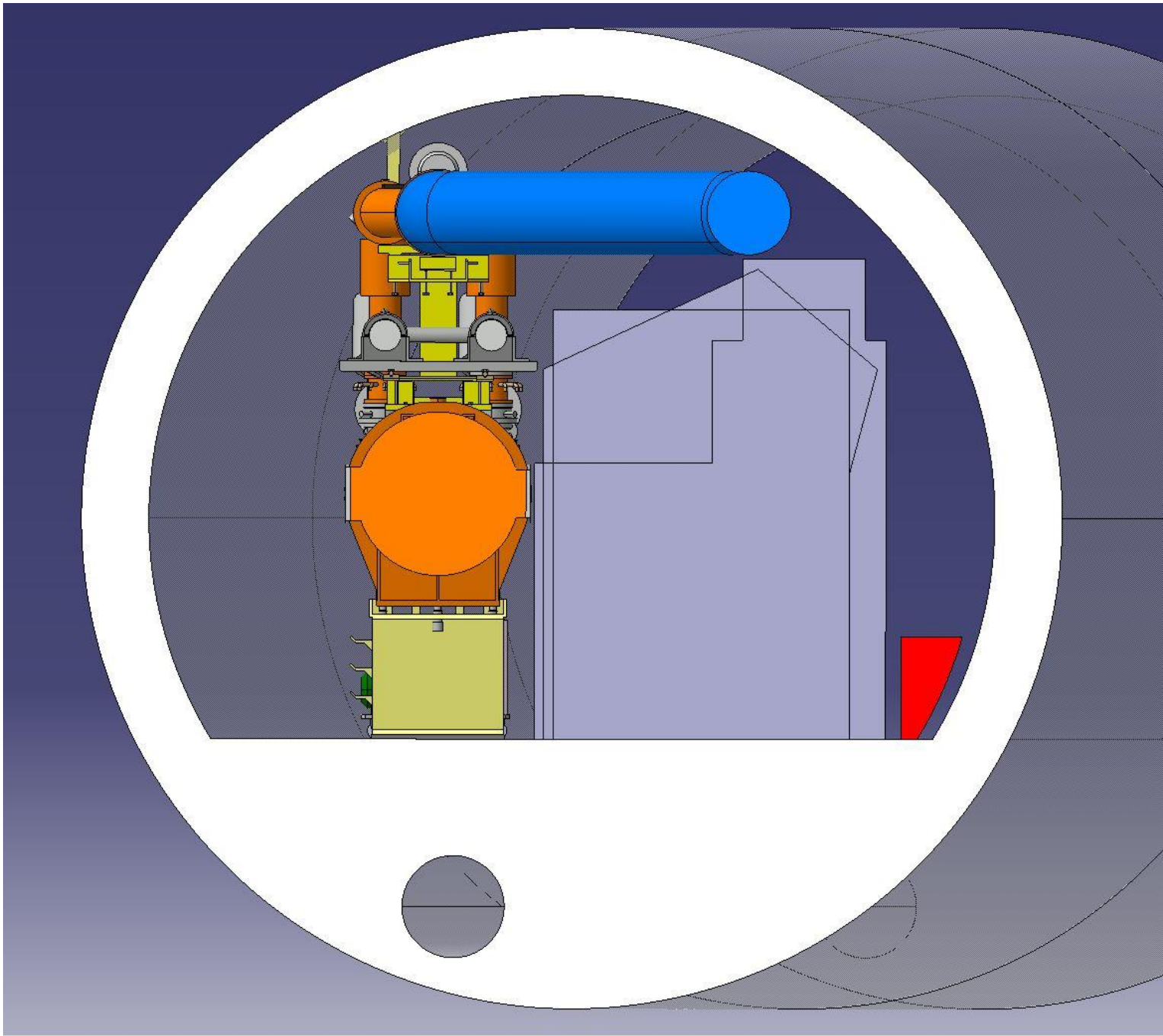










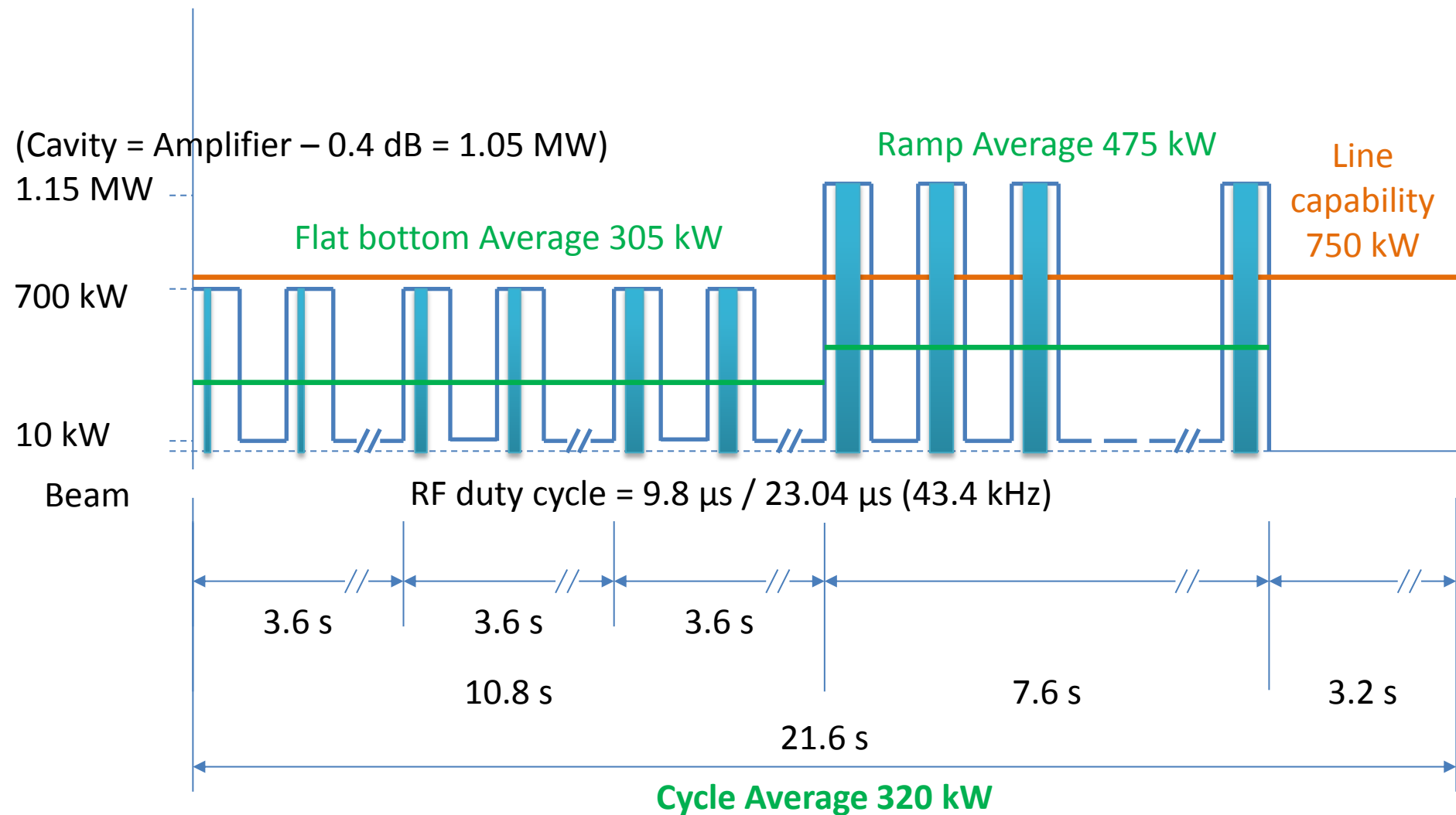


Only ONE 350 mm line per cavity

Maximum ratings 800 kW average

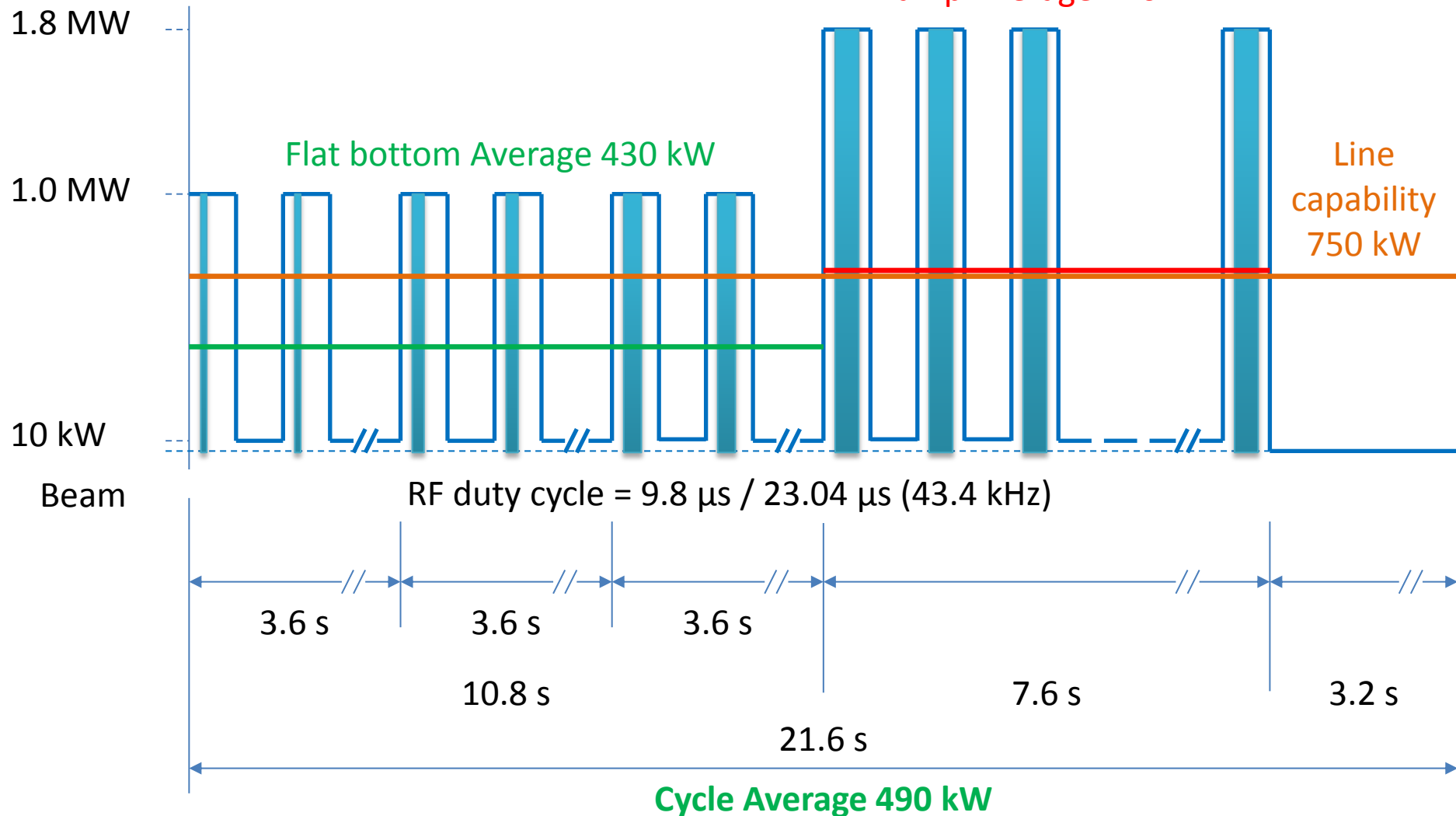
Operational ratings 750 kW average

Peak and Average power for Present power systems during LHC cycle

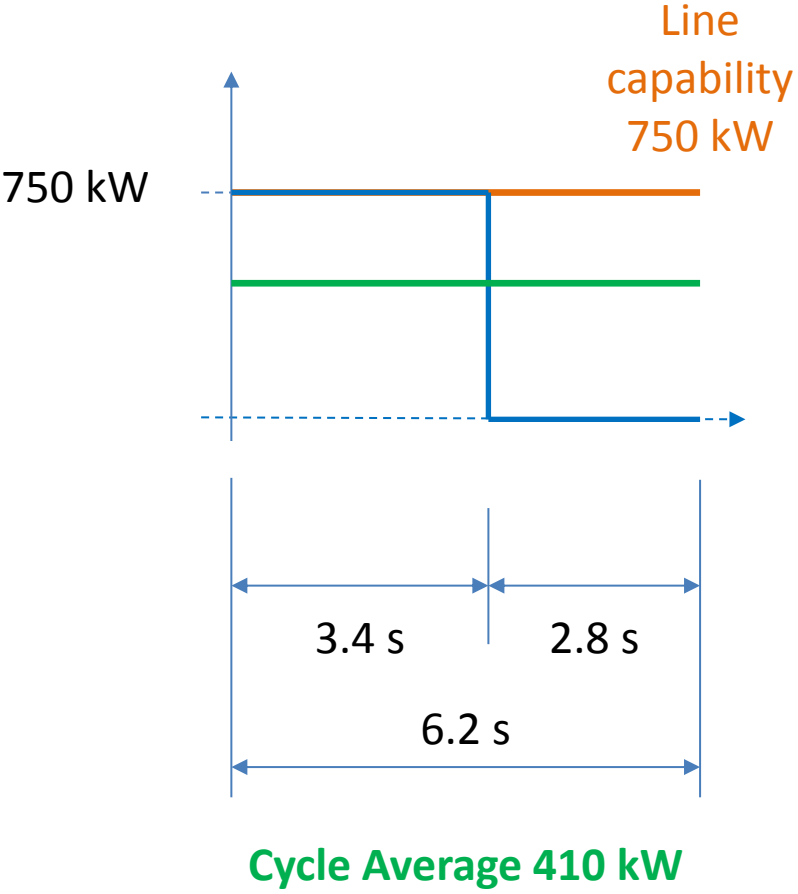


Peak and Average power for New power system during LHC cycle

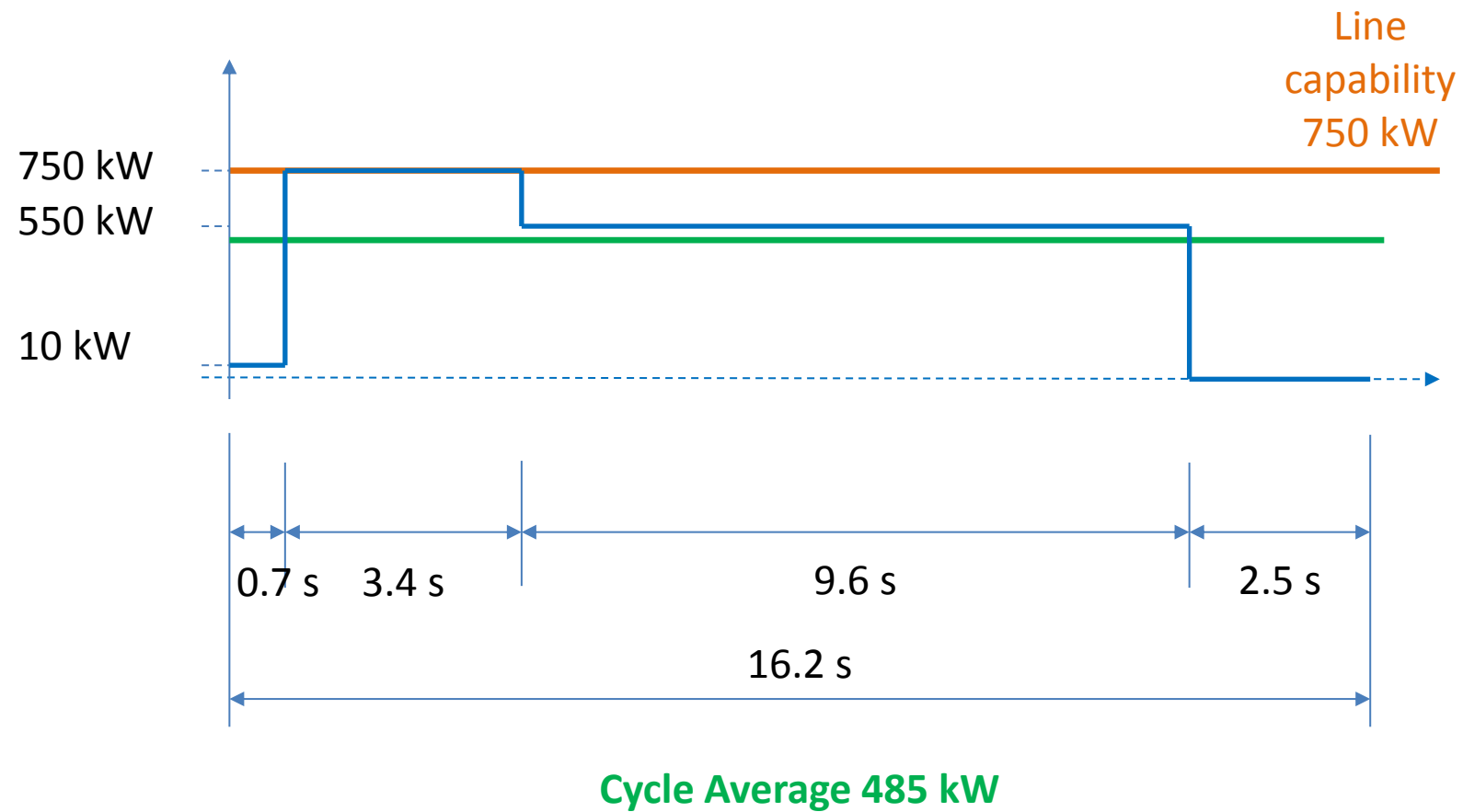
(Cavity = Amplifier - 0.5 dB = 1.6 MW)



Peak and Average power for Present & New power systems during 'CNGS' cycles



Peak and Average power for Present & New power systems during other cycles



Needed from CV

Maximum Ratings [kW]	Surface Air	Surface Water	LSS Water	LSS Chilled Water
Siemens	250	1500	1500	50
Philips	1550	250	1500	50
Electrosys	50	250	250	-
New 200	150	1500	1500	50
Total	2000 kW	8250 kW		150 kW

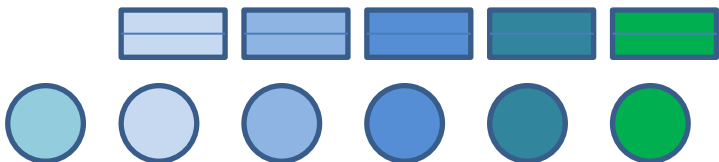
Not needed
 Maximum Power from amplifiers
 Not taking cycles constraints into account

LIU operation Ratings [kW]	Surface Air	Surface Water	LSS Water	LSS Chilled Water
Siemens	100	600	600	20
Philips	650	100	600	20
Electrosys	50	150	150	20
New	100	1000	1000	40
Total	900 kW	4200 kW		100 kW

 Cavities Chilled water, P 50 kW



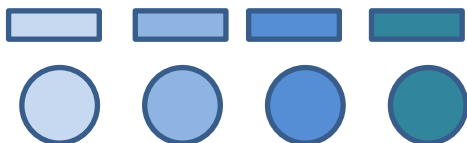
Needed from the SPS CV loop
Designed for 4.5 MW ?
Present operation 1.8 MW



BB3, 4 x Cavities Terminating Loads, 1400 kW
BB3, 1 x Valvo cavity + Loads, 250 kW
+ 1 spare pump

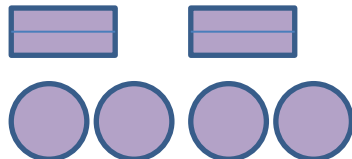


Terminating Loads



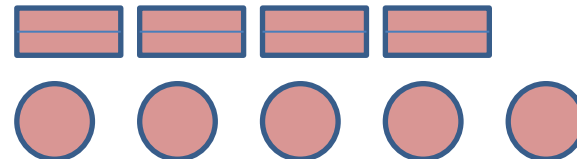
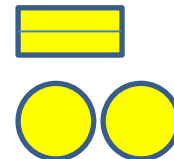
BA3-Booster pump, Amplifier
Terminating Load, 0 kW

BA3-Siemens
RF pumps, 700 kW (primary CV)
RF Air cooling, 50 kW



BA3-315,
Valvo amplifier, 250 kW

BA3-Philips
RF pumps, 50 kW (primary CV)
RF Air cooling, 700 kW



 LSS3-Cavities pump, 50 kW



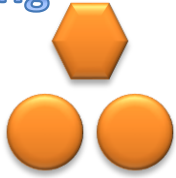
Terminating Loads



Cavities



BA3 ceiling

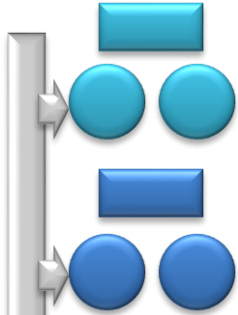


100 kW
All cavities Chilled water

New needs from the SPS CV loop

Total 4.2 MW

BB3



2350 kW
All cavities terminating Loads

1000 kW
2 x New Amplifiers
150 kW
2 x 800 MHz

1.8 MW → 2.2 MW old plants

2.0 MW for new plants

BAF3

2 x 1800 kW peak
2 x 750 kW average



Electrosys

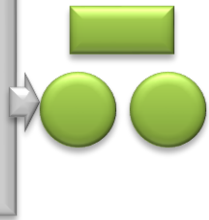


2 x 250 kW CW



150 kW
BAF3 air cooling

BA3



600 kW
2 x Siemens
100 kW
2 x Philips

Siemens



Philips



4 x 1100 kW peak
4 x 750 kW average



150 kW
BA3 air cooling



600 kW
Philips air cooling

LSS3



Regarding LIU RF

**Additional needs from SPS CV loop
2.4 MW**