



Update on Integration checks and possible concept revisions

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Vertical DFX with DFB type “box” (2)

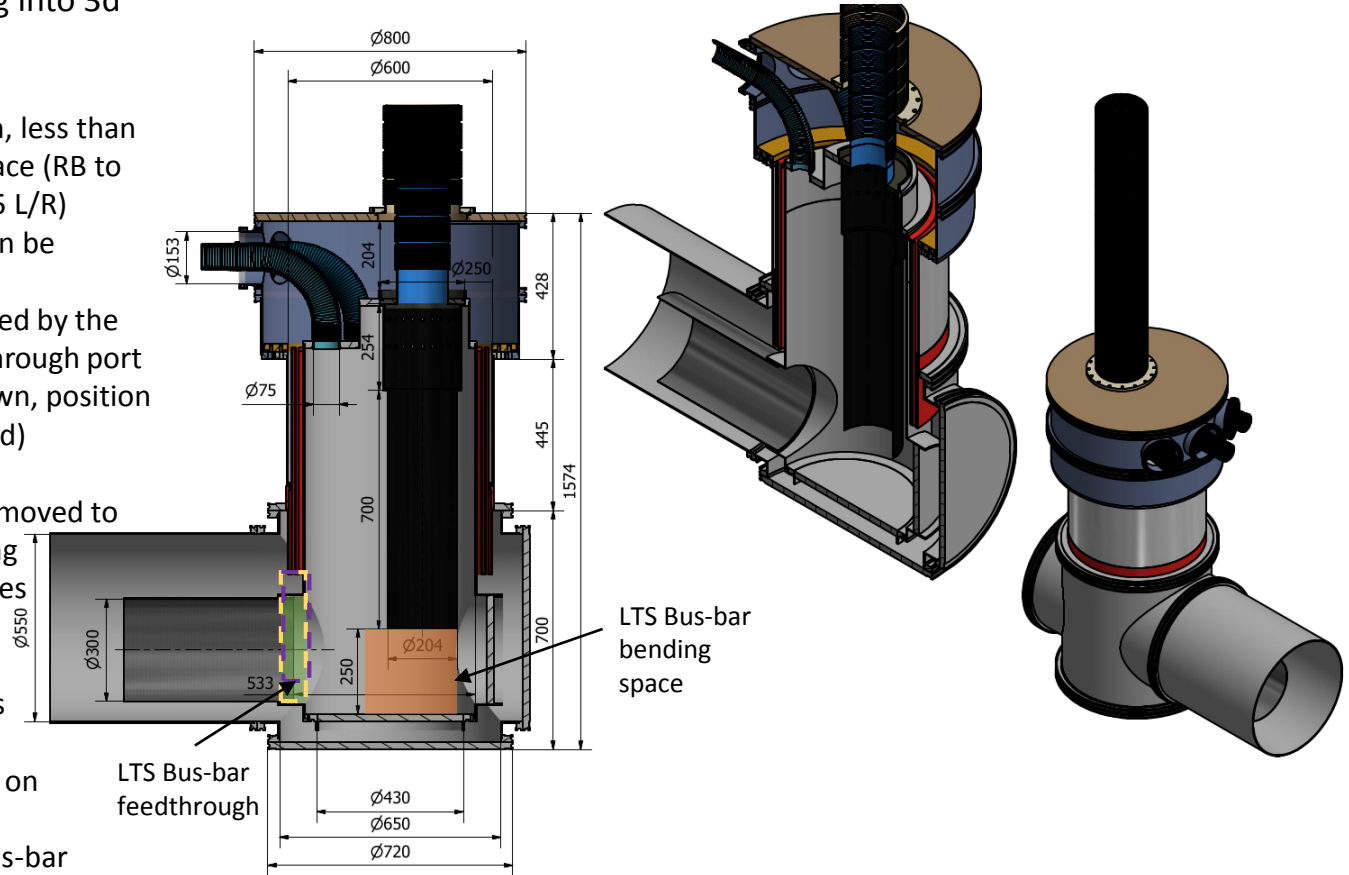
A cylindrical box section can be achieved with the advantages of the “box” format fully realized (many thanks for Wendell Bailey at SOTON for quickly turning into 3d models)

A. Implemented:

1. Overall height reduced to 1600mm, less than the nominal 1700mm available space (RB to show integration variations at P1/5 L/R)
2. A LTS bending height of 250mm can be afforded (JF to confirm/discuss)
3. Liquid level to horizontal determined by the diameter/positioning of the feedthrough port for the LTS bus-bar. ($\phi 320$ mm shown, position can be raised or diameter increased)
4. Flexible hoses for interfaces cryogenic/safety/instrumentation moved to the side and more accessible during installation using double outer tubes (thanks to RB for the suggestions)

B. Further detailing

1. Top LHe filling as requested, excess GHe return to Line D also allowed (to be determined with cryogenics on implementation)
2. Up to three access ports for LTS bus-bar handling, 5 possible (\$\$\$). Optimization with JF



Vertical DFX with DFB type “box” (3)

Installation:

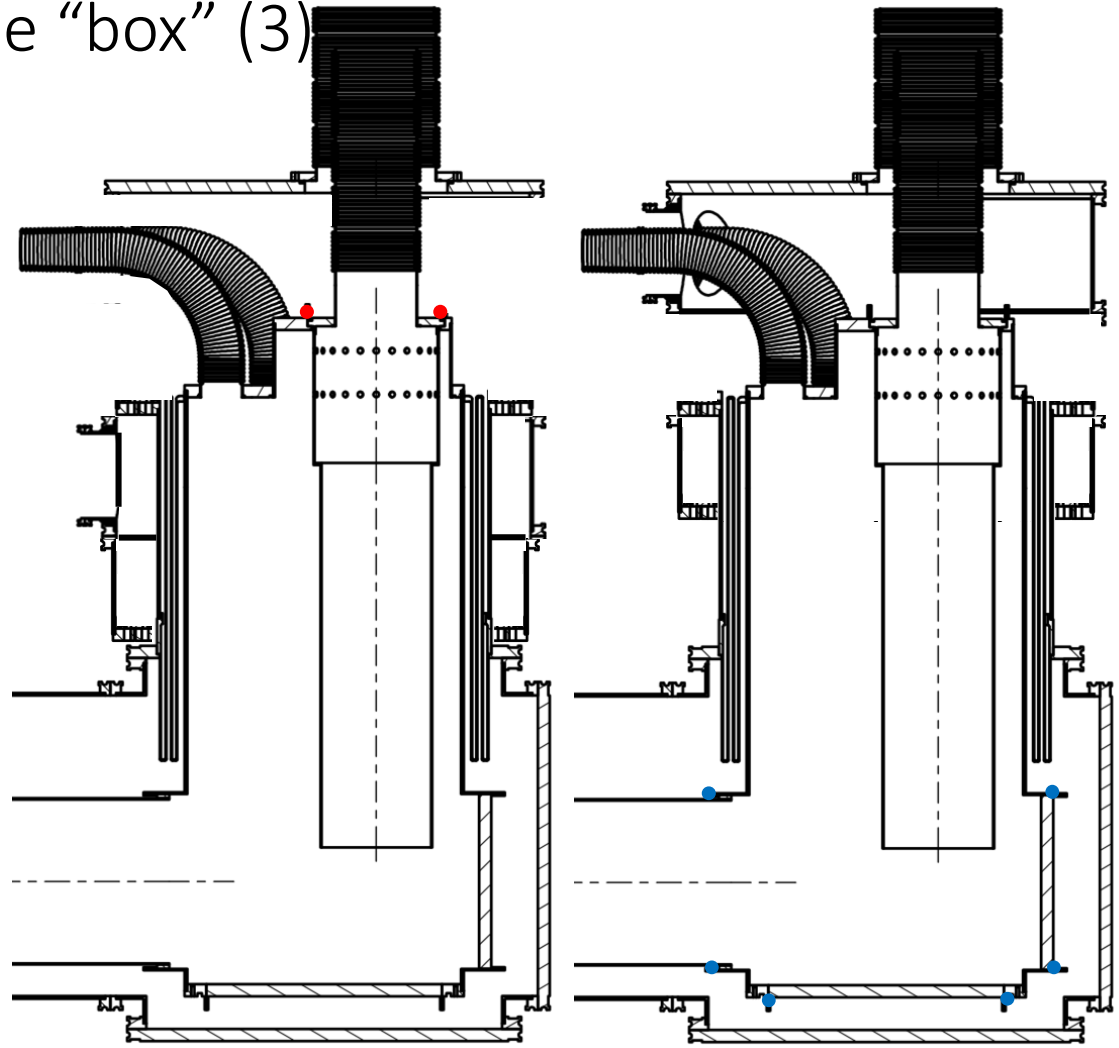
1. Top outer tubes (double sections) down for inserting the SC-Link: LTS bus-bars and MgB₂/LTS splice section are guided in. LTS bus-bars are bent to horizontal and fed through the port continuously.
2. Weld (1: red dots) the MgB₂/LTS section to the DFX inner top
3. Raise the first outer tube to position while feeding through the flexible interface hoses. The second outer tube stays down to give access
4. Connecting interfaces (instrumentations)
5. Weld (2: blue dots) the inner ports

Maintainability:

1. Aiming for retrofitting of heaters and level sensors within $\phi 75$ mm flexible hose. Optimized heater size/shape or cut the inner flexibles.
2. After cutting weld (1), the DFX can be lowered to expose the MgB₂/LTS splice section if the beamline is moved. Otherwise SC-Link shall be raised.

Safety Devices

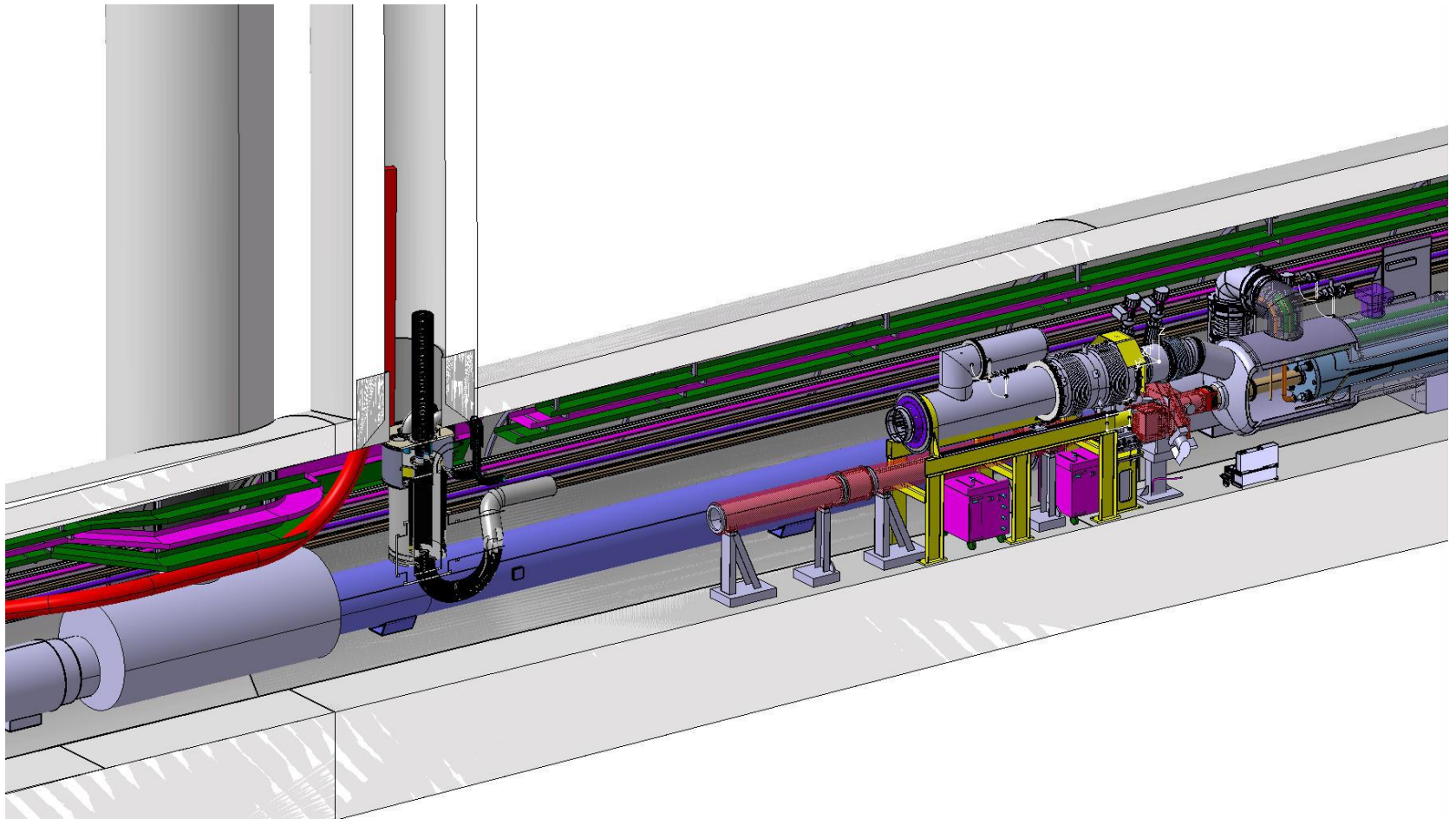
LHe blow-off built-in at the end of a flexible hose.



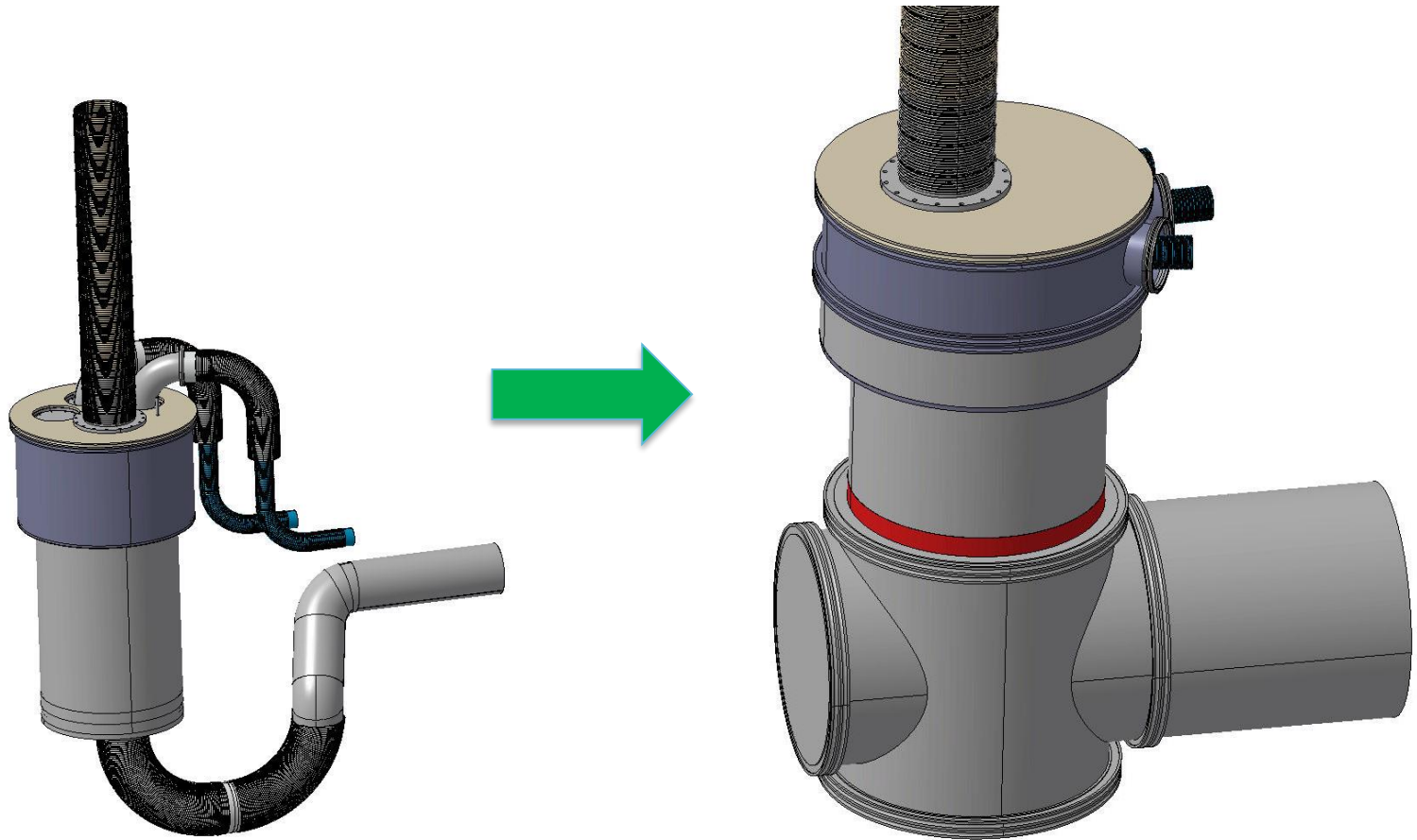
Integration situation

- Reference : IP 5R & IP5L EDMS 1991506
ST0999873_01 & ST1001705_01
- Integration of the last version of the DFX design
(2018/11/23)
- Integration last version Cold diode (ST0997561_01)

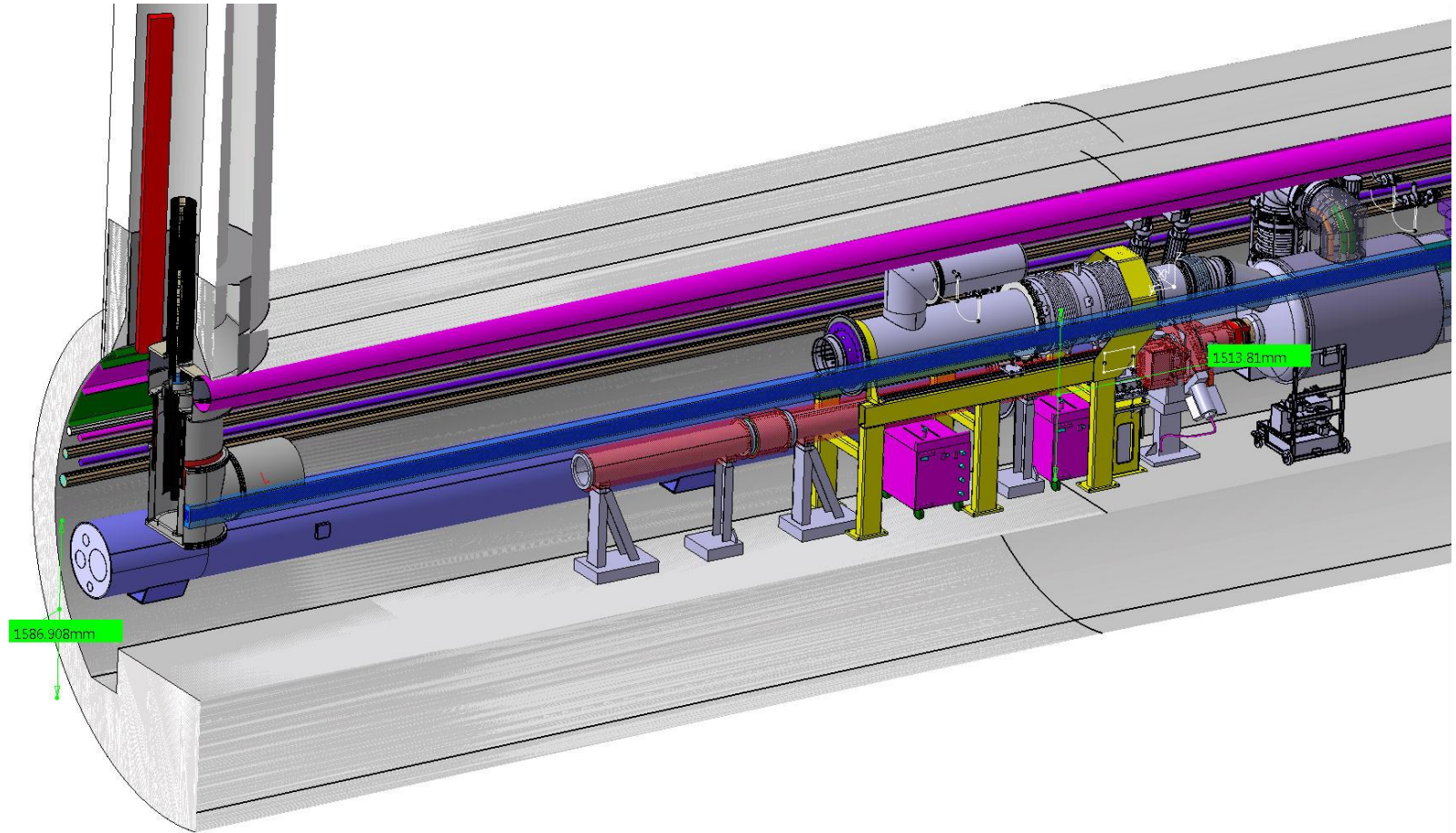
Starting Point



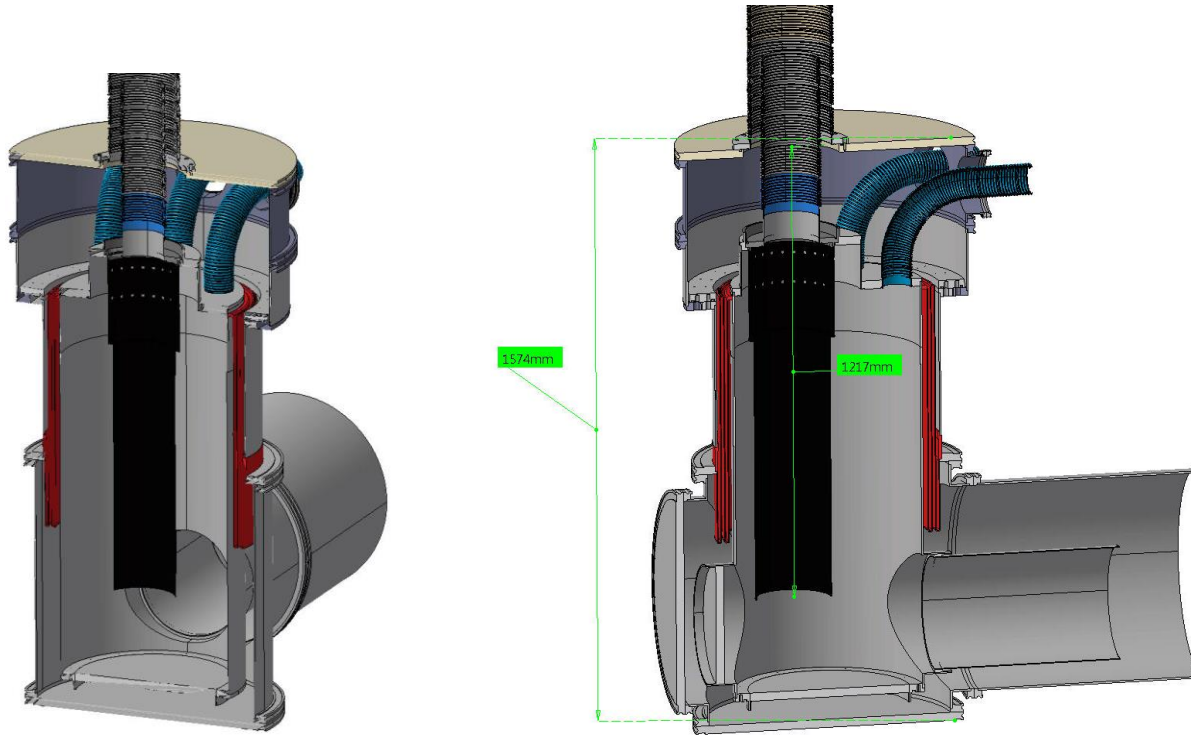
Last version of the DFX



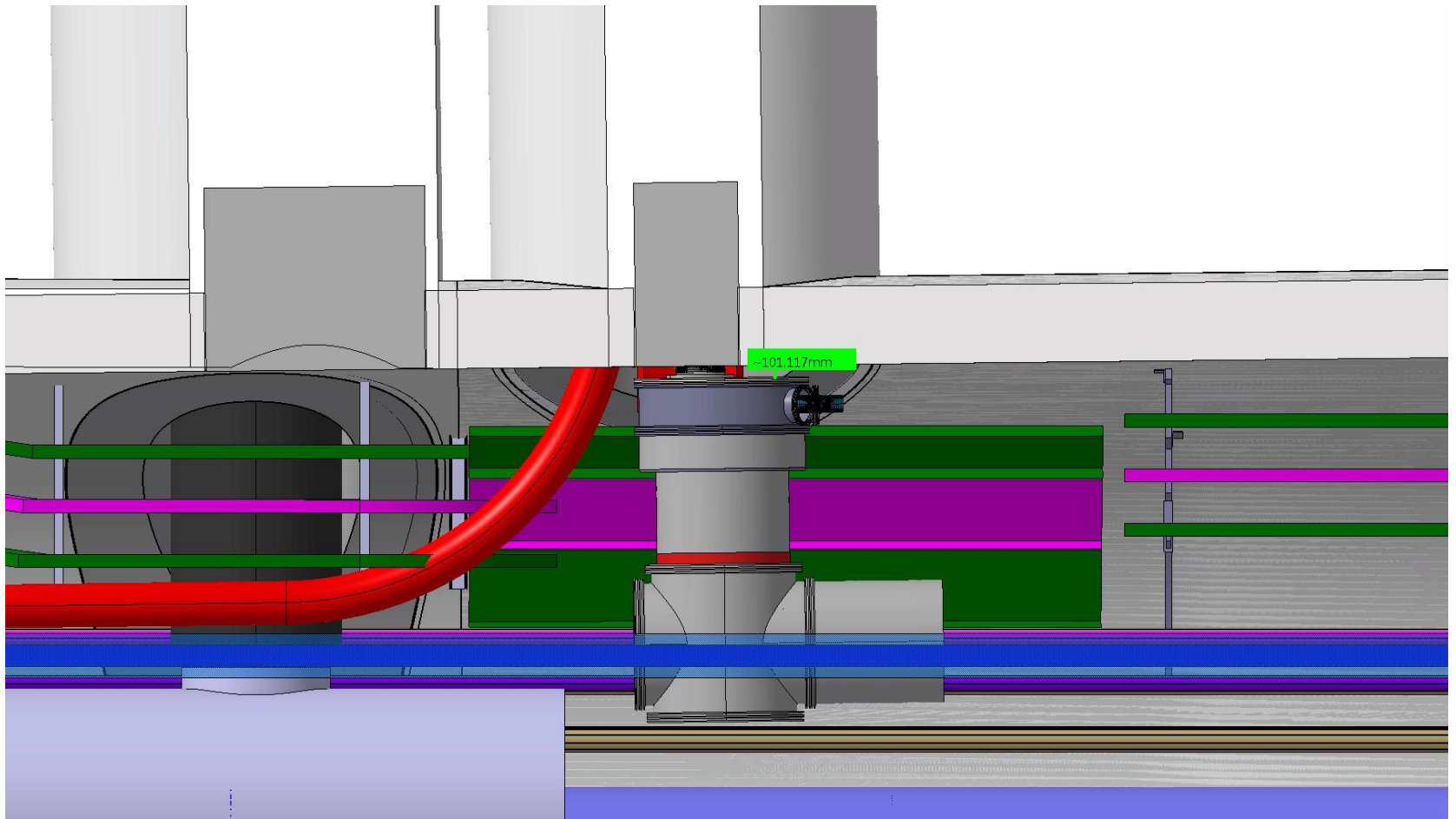
IP5 Left



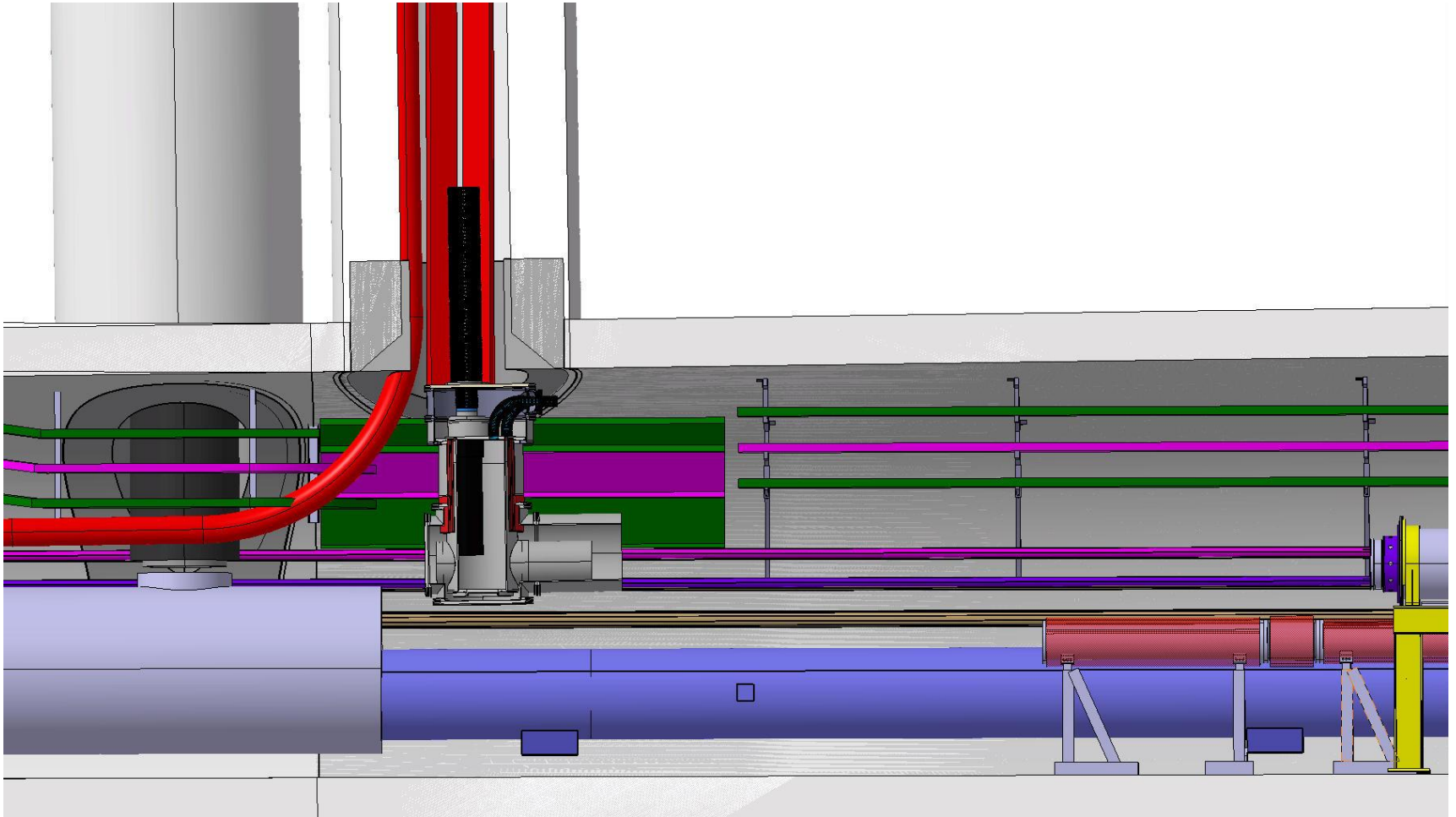
Last version of the DFX Cut



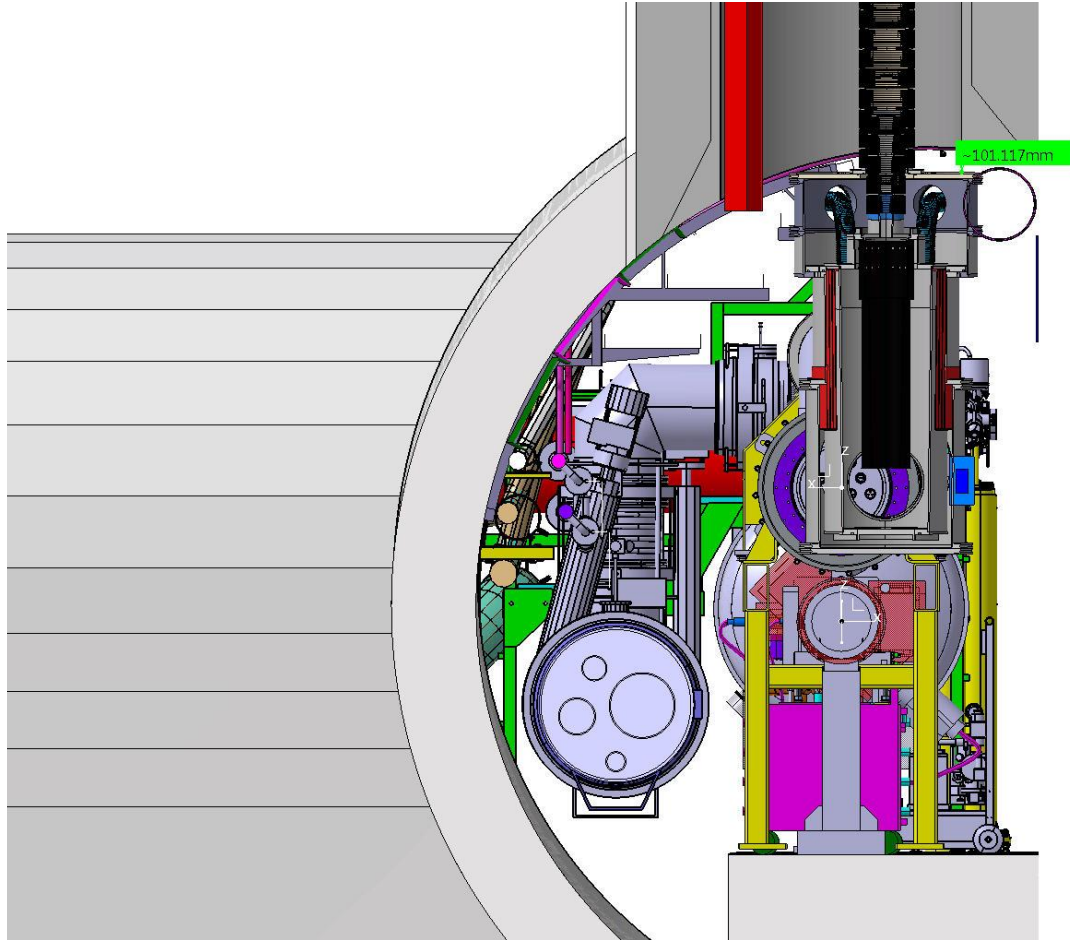
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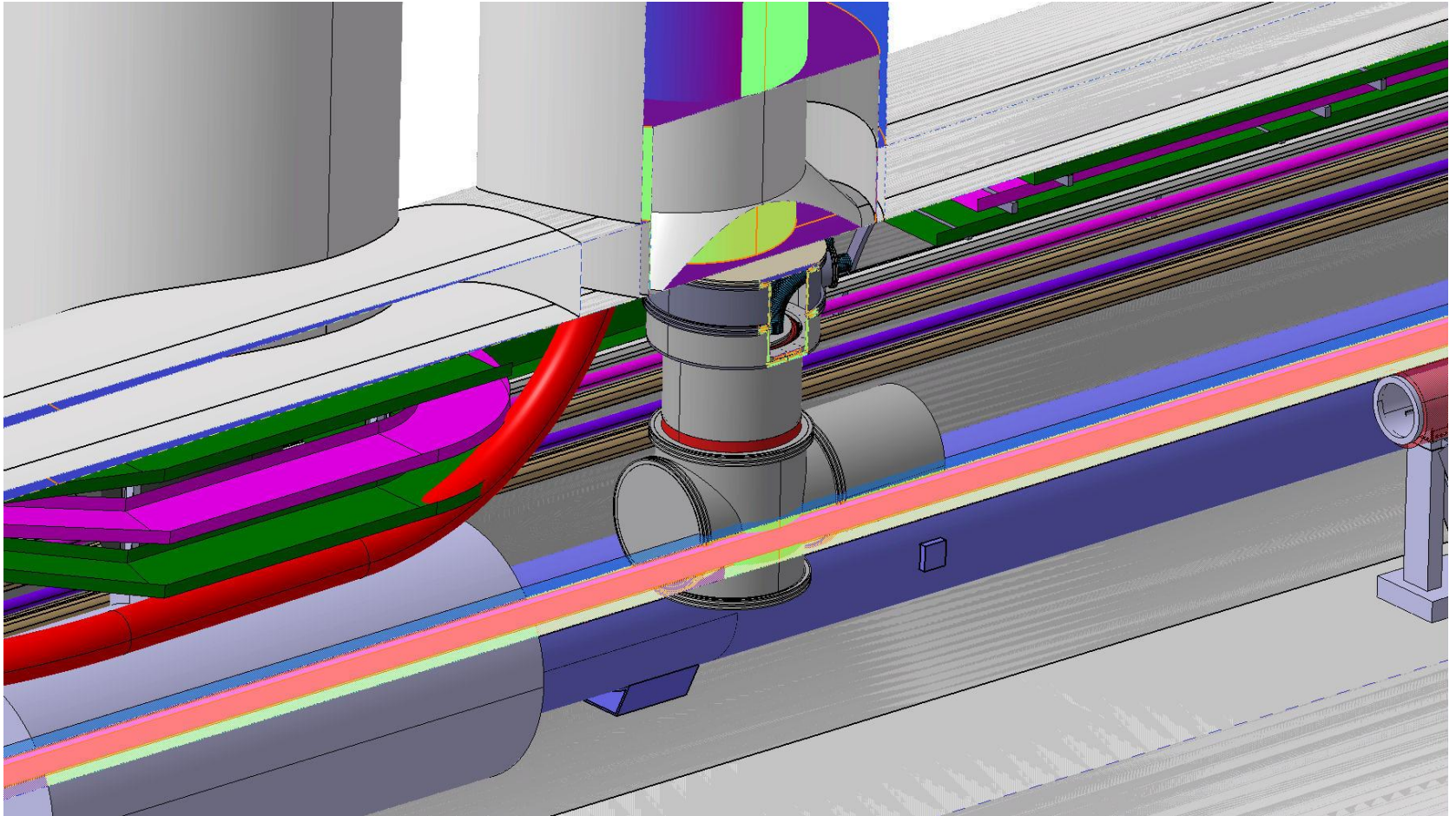
IP5 Left



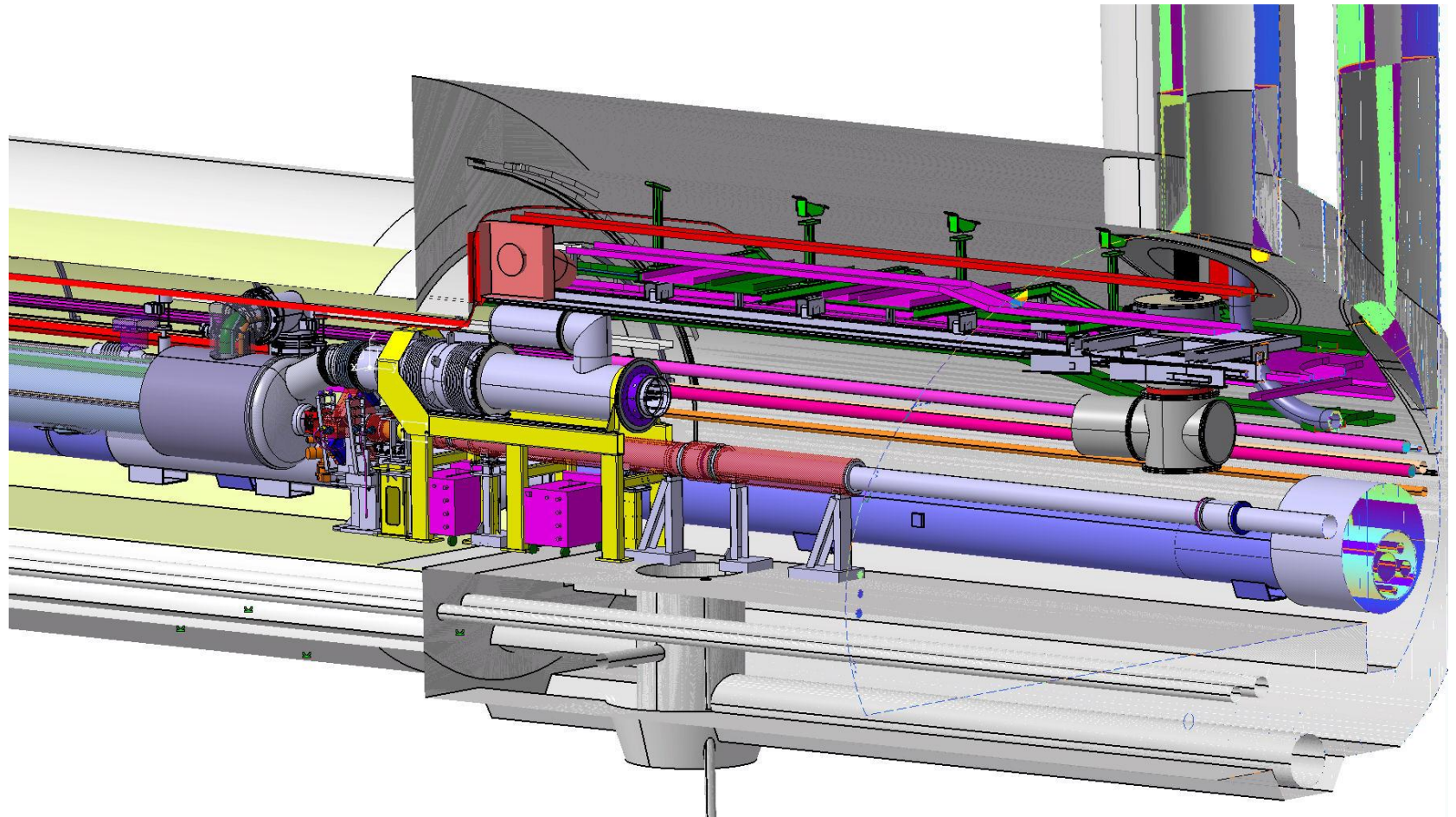
IP5 Left



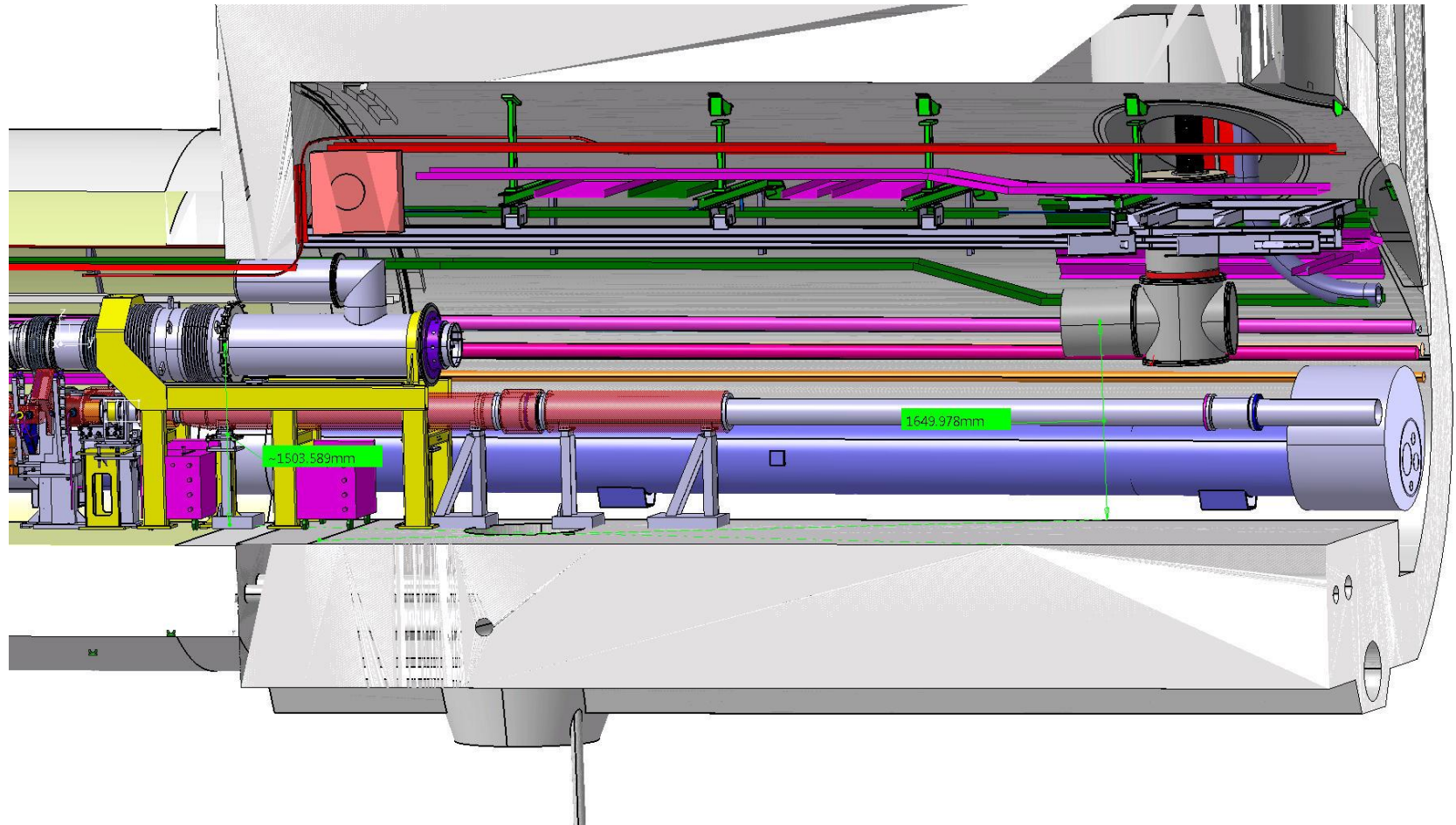
IP5 Left



Check Point IP5 RIGHT



Check Point IP5 RIGHT



Check Point IP5 RIGHT

