FP 420 Connection Cryostat Design

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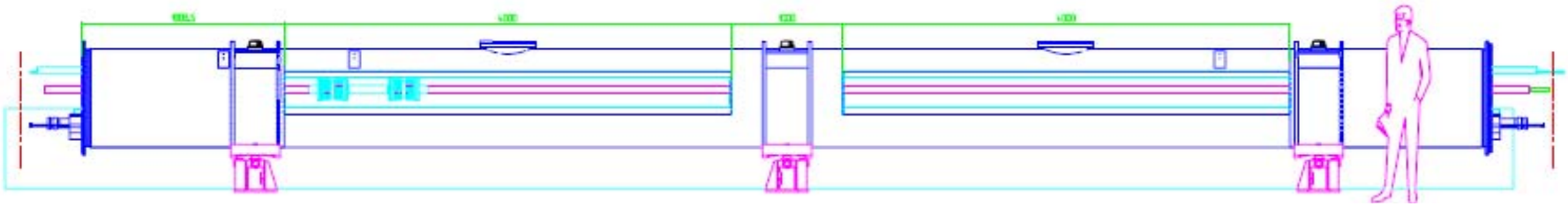
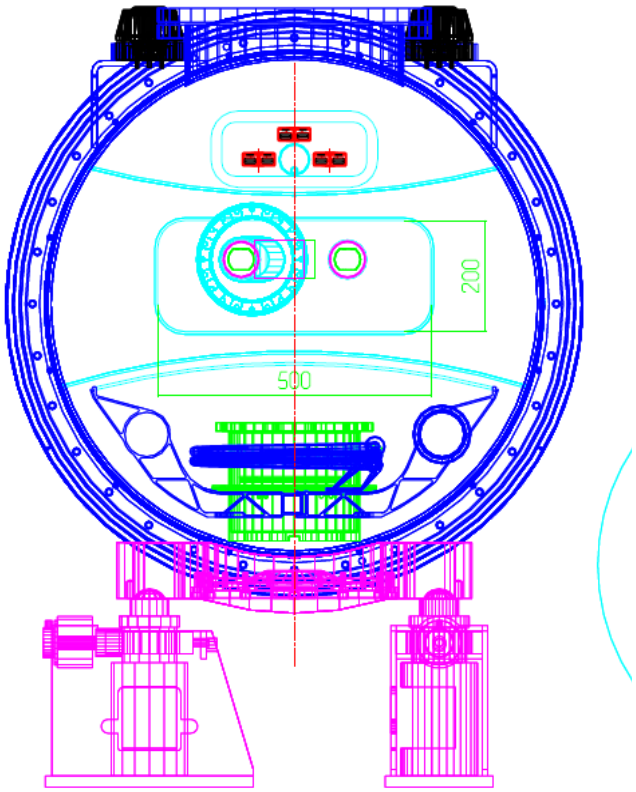
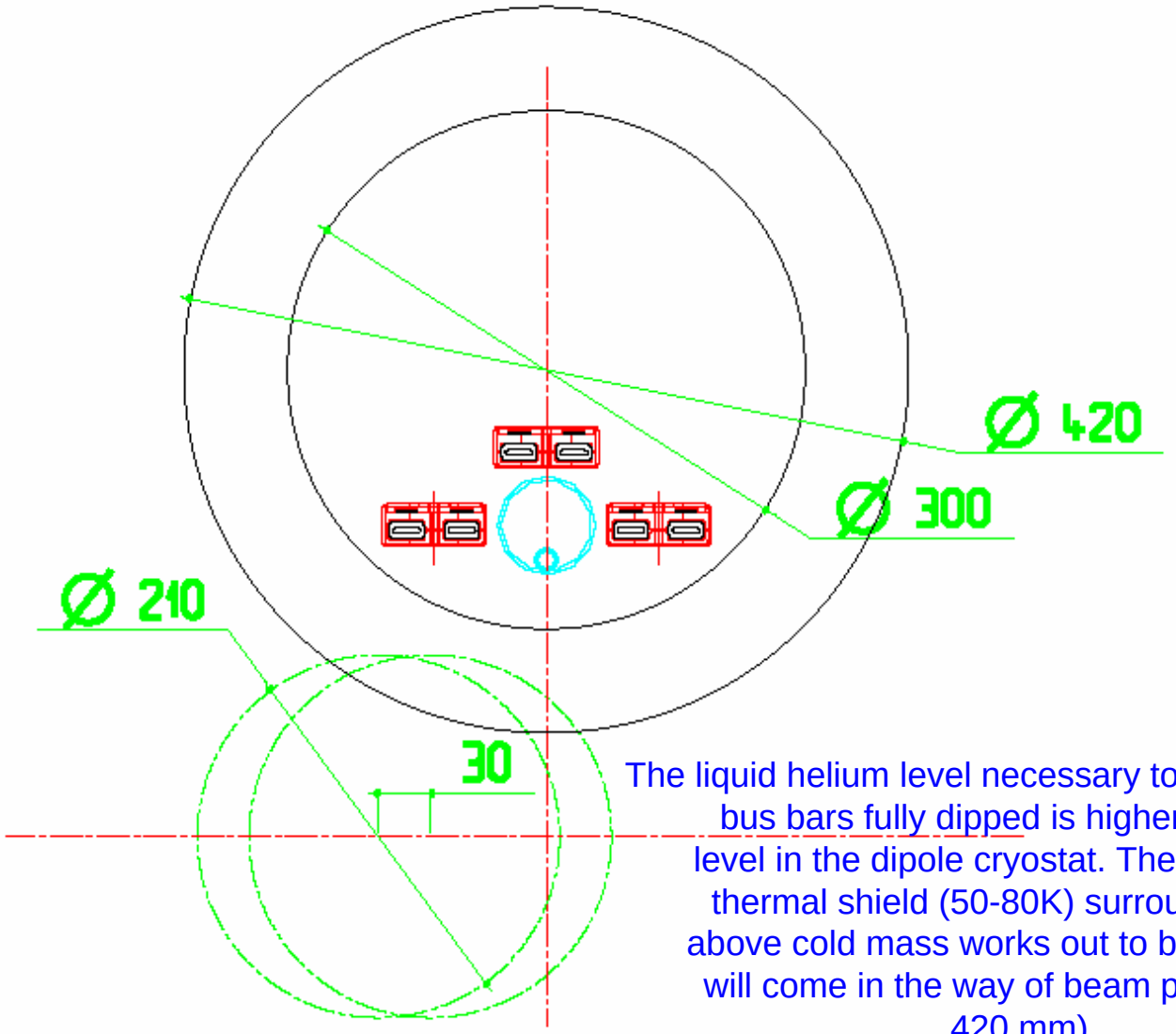
Connection Cryostat V4.





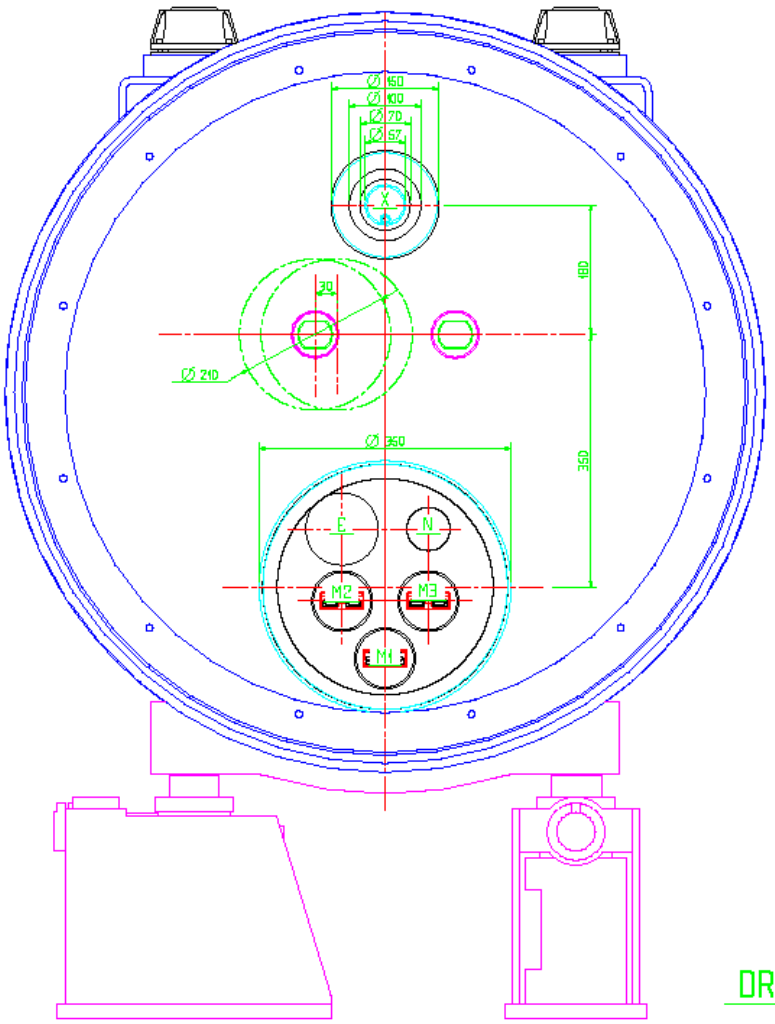
With respect to the previous version presented during the past meeting, the dimension of slots has been increased; only 2 slots of 4 m each one ,connected together by a passage of 500x 250 in the central region.

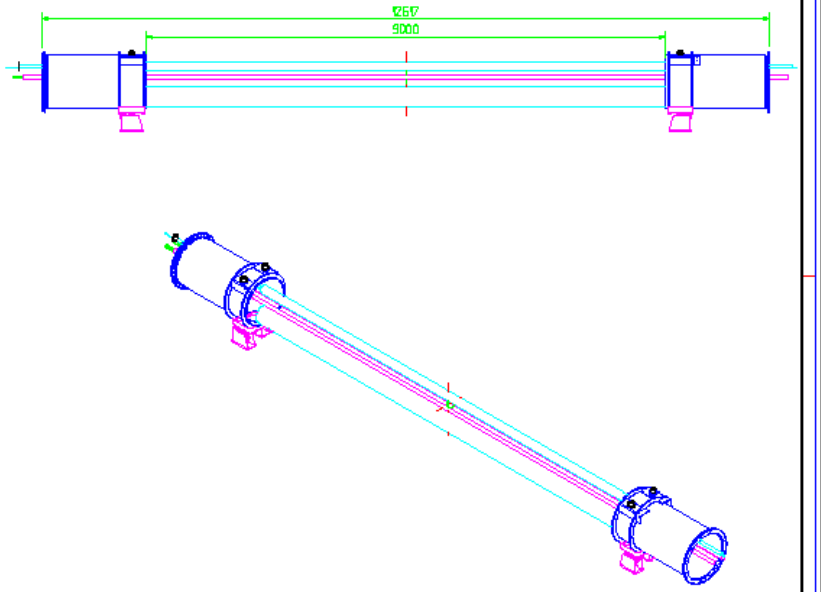
Collecting all continuity line on top of beam pipe. (option 4)



The liquid helium level necessary to keep the bus bars fully dipped is higher than the level in the dipole cryostat. The size of the thermal shield (50-80K) surrounding the above cold mass works out to be large and will come in the way of beam pipe. (dia ~ 420 mm)

Move all on bottom side except line X (option 5)





This option appears to be enough space for detector mounting, is confined within the boundaries of the existing interconnection cryostat and meets all the cryogenic requirement defined by the CERN design criteria.

DRAFT

Interconnection cryostat. 5th option.

Dis. D. Delicato	Note		
Data 05-05-06	Visto	Denominazione	
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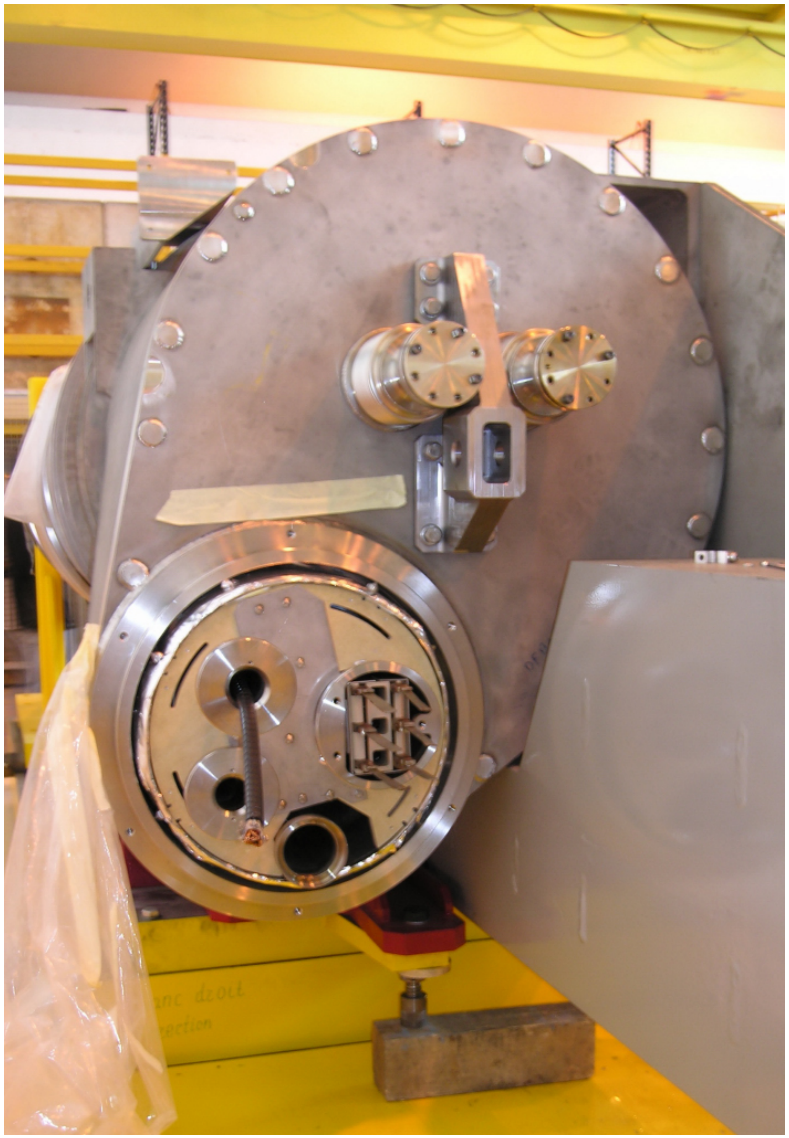
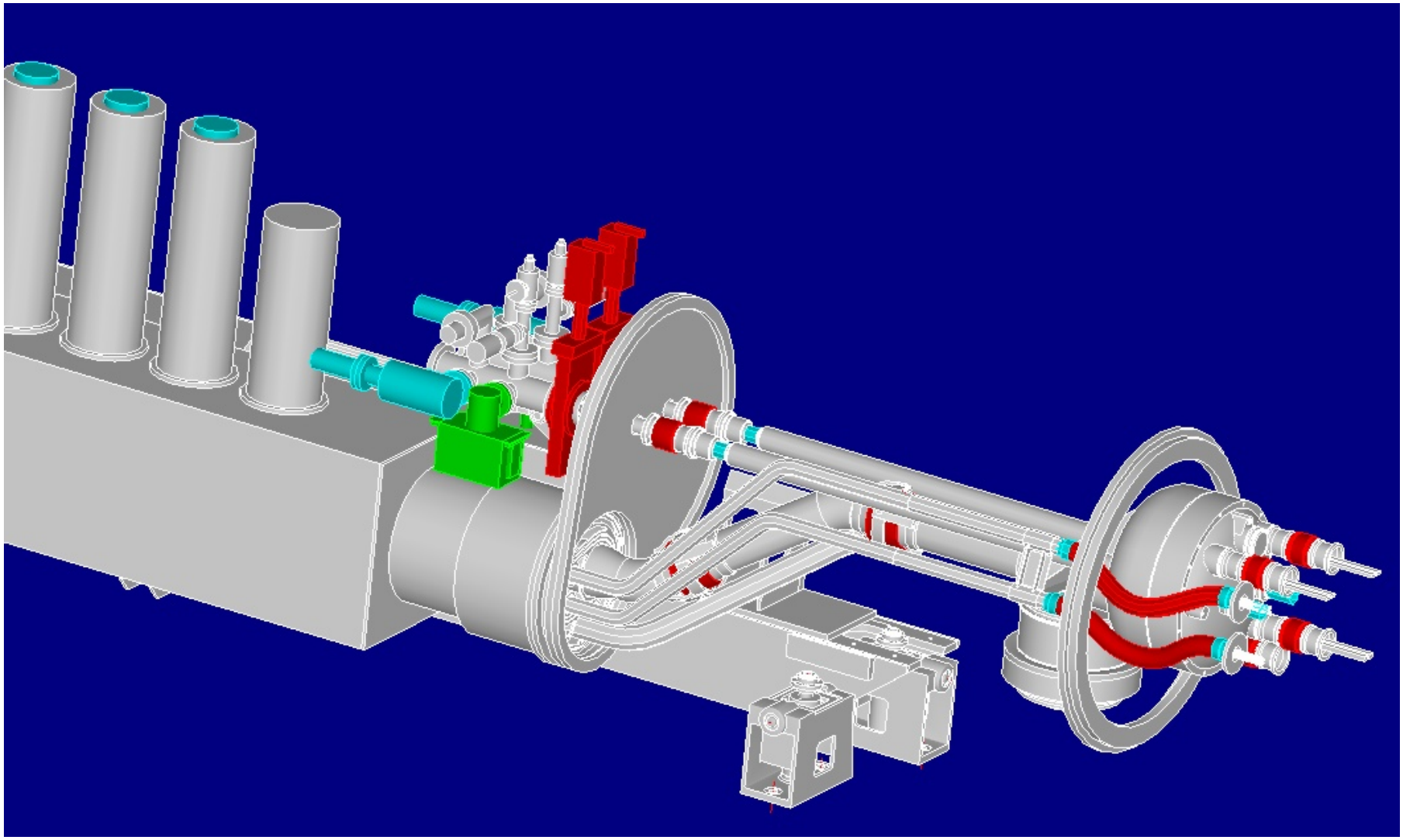
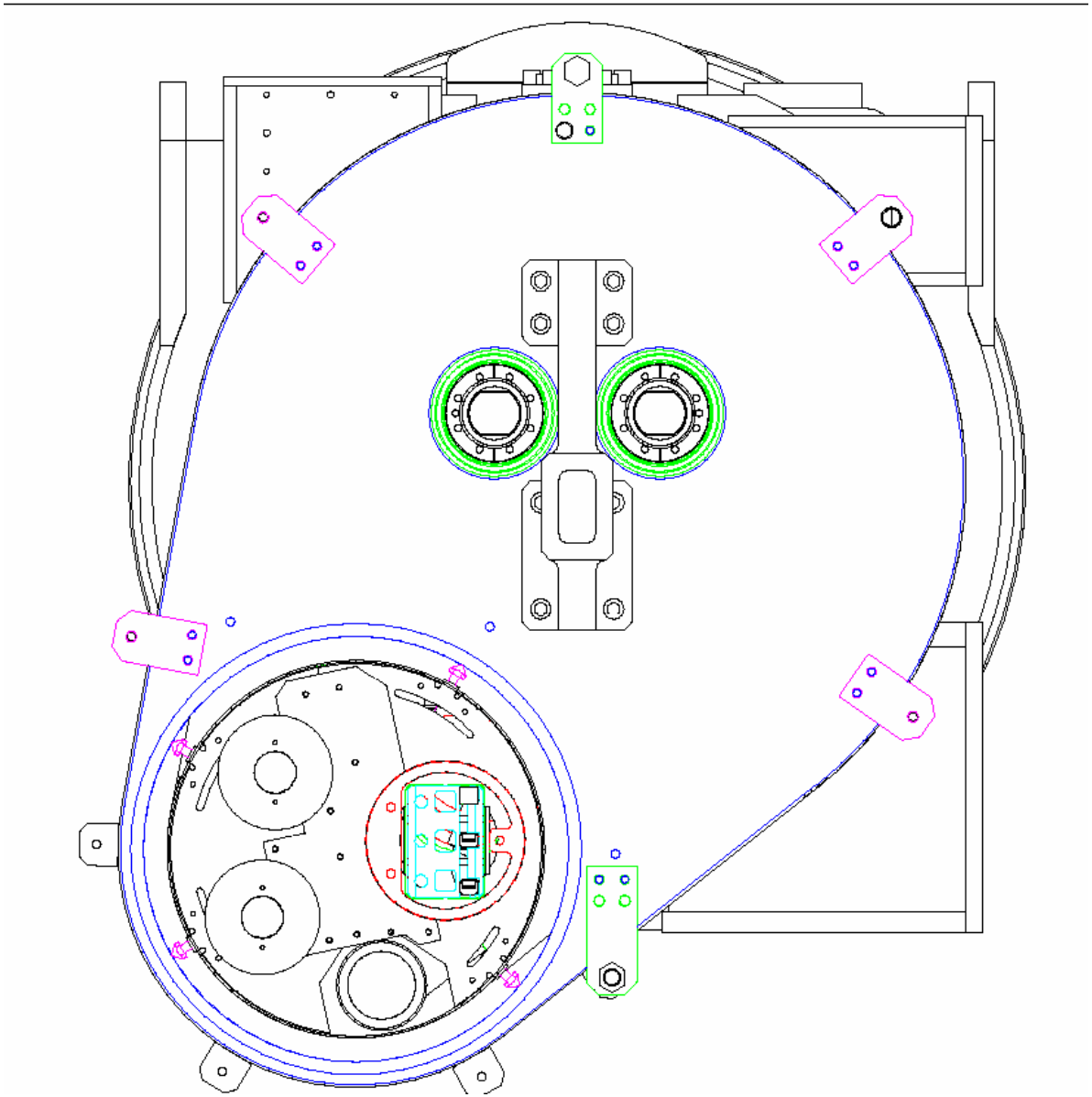
DFP Arc Termination Module (ATM) in LHC



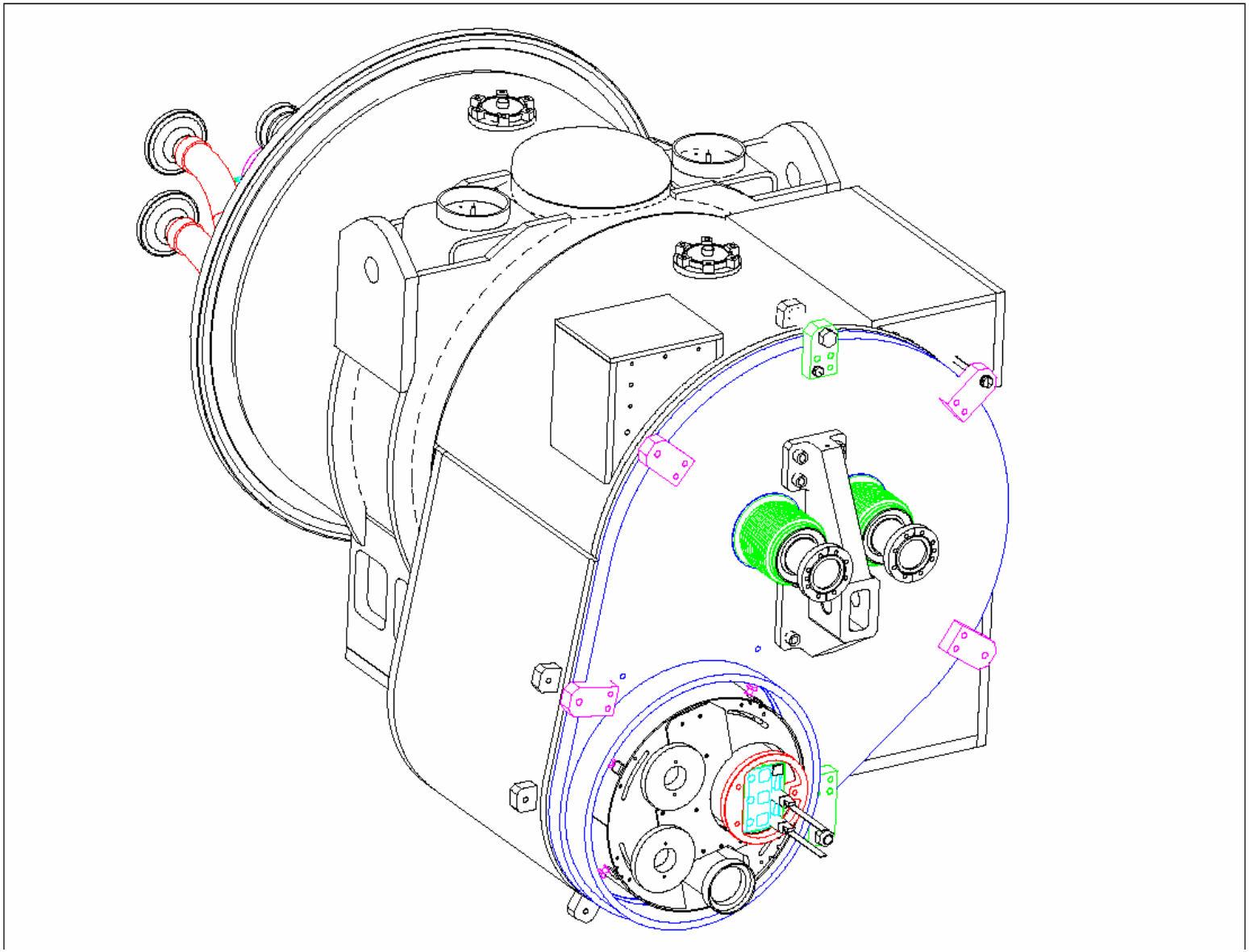
Distribution Feed Boxes (DFB) with ATM Internal layout



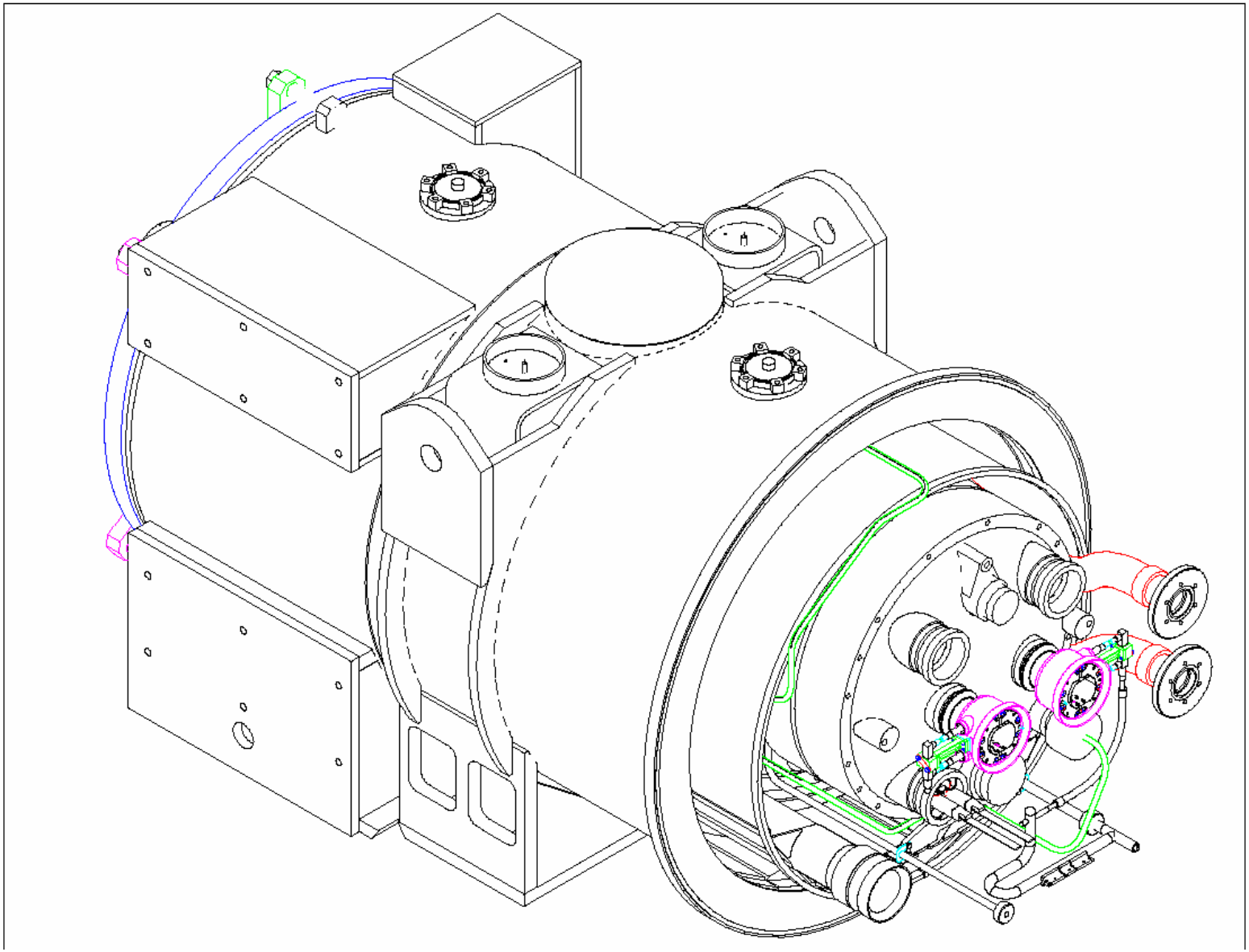
ATM DFB interface I



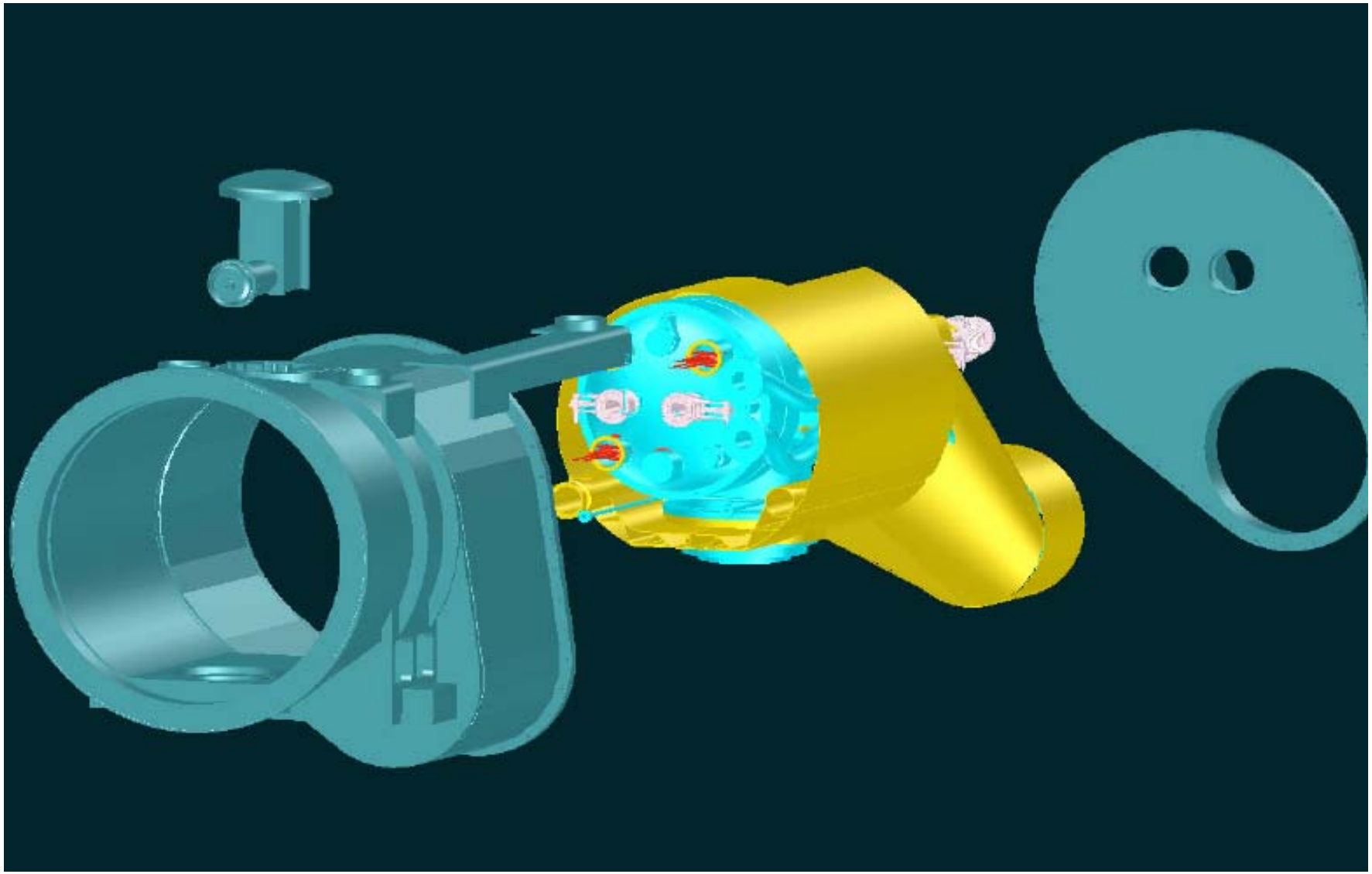
ATM DFB interface II



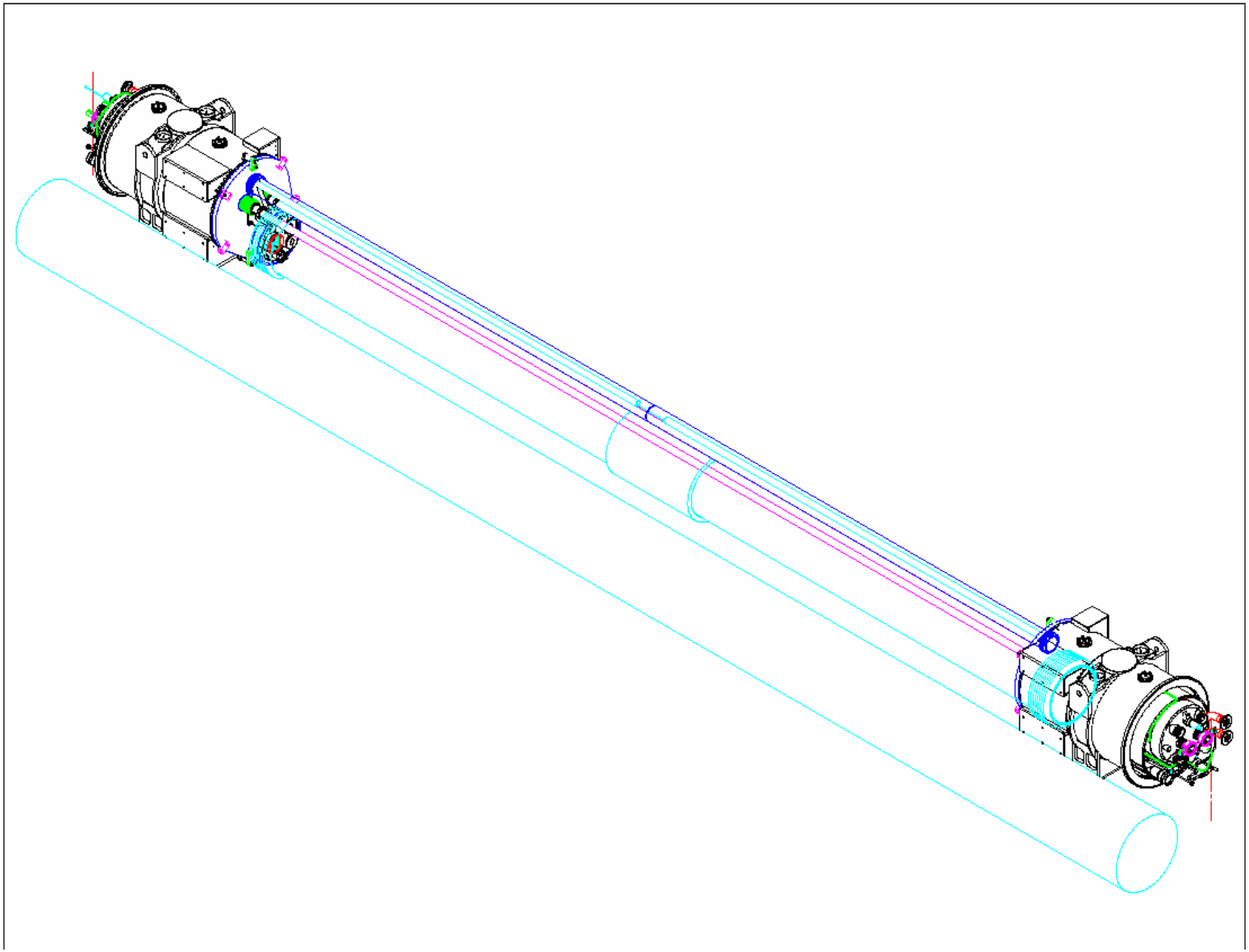
ATM DFB interface III



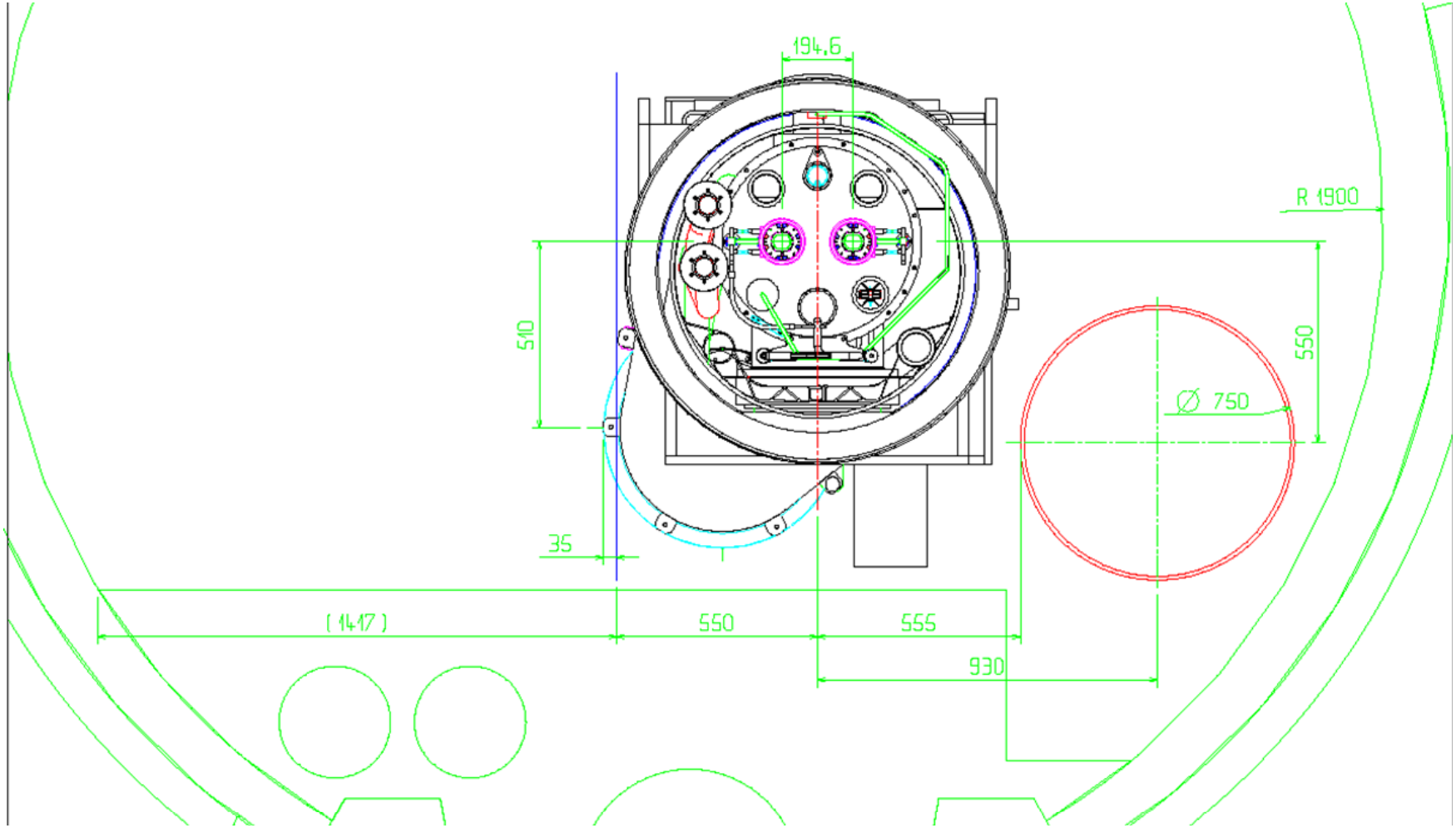
ATM Distribution Feed Boxes interface. IV



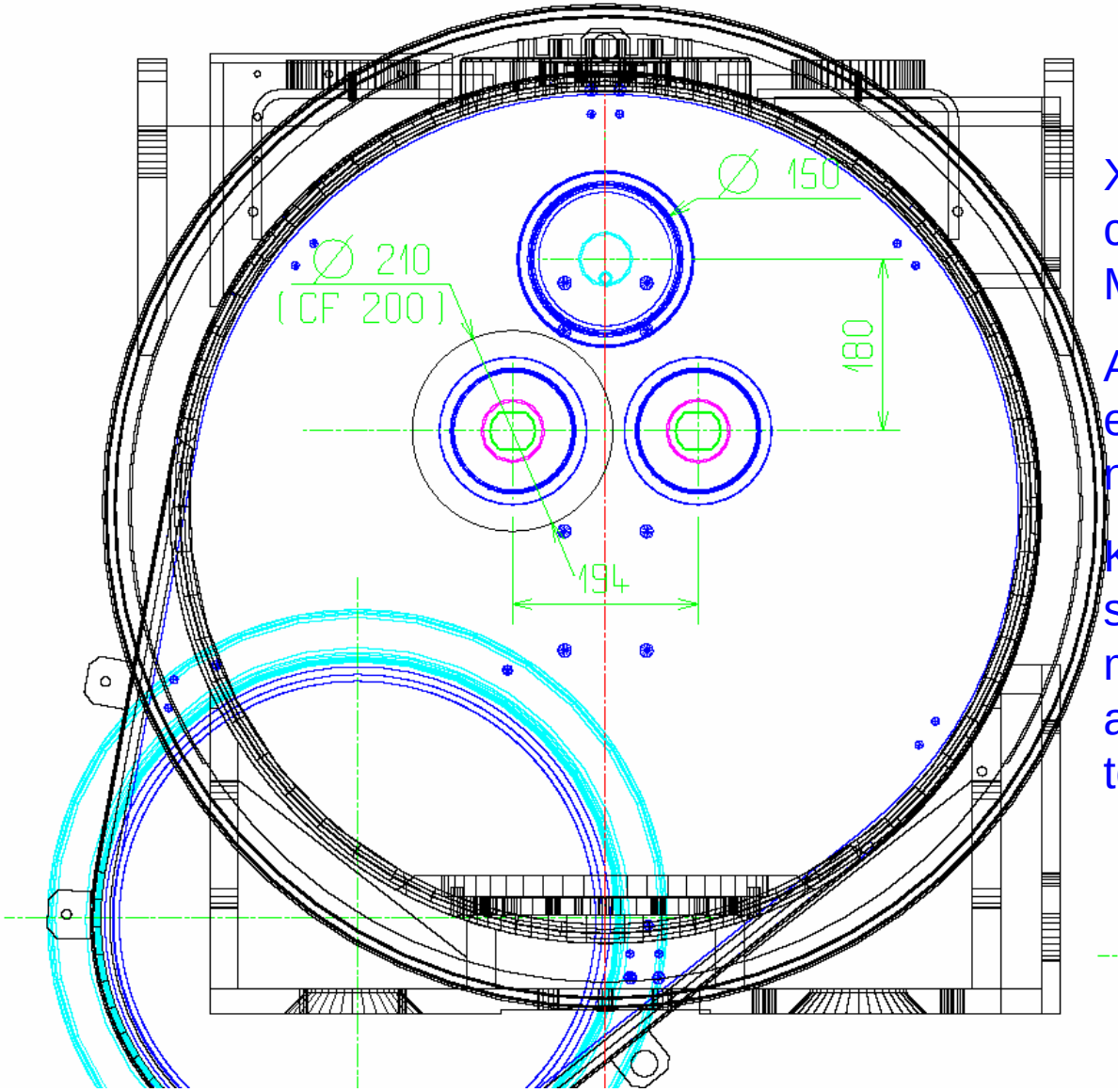
Assembly Connection Cryostat ATM, B-Bar lines, line X



Tunnel layout



X line position I

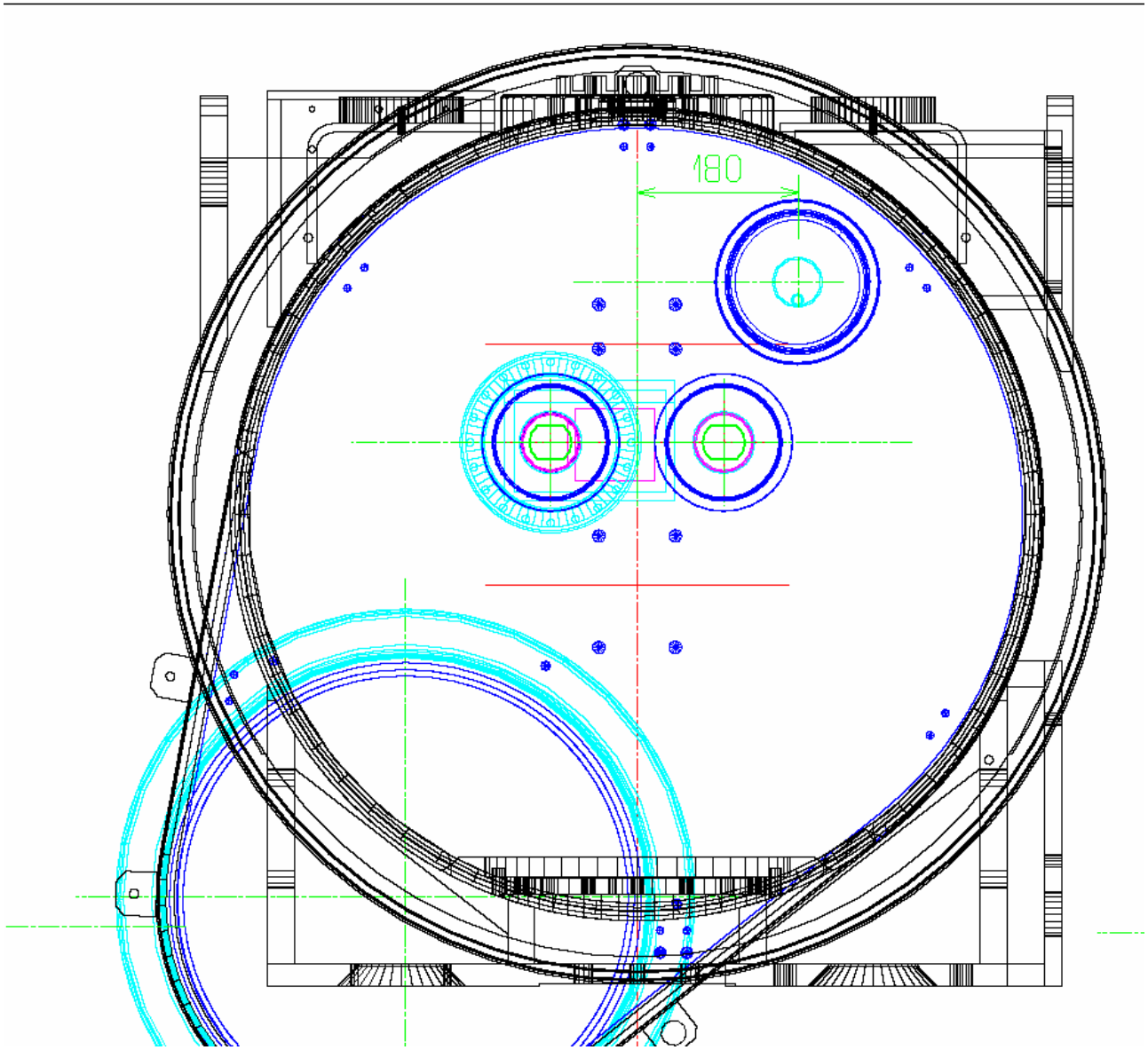


X line does not exist on the current Arc Termination Module.

Adding this line on the existing ATM design seems not problematic.

Keeping this line on the same position as on magnets, detector accessibility is limited from top side.

Xline pos II



This option allow a good detector accessibility.

Next steps (technical)

There are ***many technical*** issues to be resolved, some major once are listed below…

- Whether the system can be designed in 3-4 different parts (the two ends and the middle section) and assembled in the tunnel during installation or should be assembled as a single 12 m large unit in line with the existing assembly process.
- In either of the cases a support structure needs to be worked out.

(A single large module is preferred)

- Whether the detectors will be mounted independently of the cryostat or the cryostat will have to provide the necessary support.
- How to provide the 'cold' to the thermal shields surrounding the line X in the upper region. We will have to design some interconnections in the end sections to achieve this.
- Defining the material of various components of the new design…