



# Target complex introduction

HI-ECN3 BDF target & target complex initial review

Jean-Louis GRENARD – WP4

Acknowledgement: J. M. Martin Ruiz, C. Ahdida, M. Calviani, R. F. Ximenes , M. Fraser, R. Jacobsson, L. Krzempek, G. Mazzola, C. Mucher

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# Target Complex presentations - goal

- **Set the scene with the current design**
- **Highlight the key challenges**
- **Detail ongoing and foreseen studies during the TDR phase**
- **Identification of missing or unclear areas**
- **Needs of technologies development**

# Target complex agenda

11:35	→ 12:00	<b>Target complex introduction</b> Orateur: Jean-Louis Grenard (CERN)	🕒 25m 📍 774/R-013 📄
12:00	→ 14:00	<b>Lunch break</b>	🕒 2h
14:00	→ 14:05	<b>Session 2 introduction</b> Orateurs: Jean-Louis Grenard (CERN), Rui Franqueira Ximenes (CERN)	🕒 5m 📍 774/R-013 📄
14:05	→ 14:25	<b>Target and Target complex - Radioprotection challenges</b> Orateur: Claudia Ahdida	🕒 20m 📍 774/R-013 📄
14:25	→ 14:55	<b>Target complex futur development</b> Orateur: Jean-Louis Grenard (CERN)	🕒 30m 📍 774/R-013 📄
14:55	→ 15:15	<b>Irradiation stations possibilities</b> Orateur: Jean-Louis Grenard (CERN)	🕒 20m 📍 774/R-013 📄
15:15	→ 15:35	<b>Coffee break</b>	🕒 20m 📍 774/R-013
15:35	→ 15:55	<b>Dismantling work prior to target complex implementation</b> Orateur: Jean-Louis Grenard (CERN)	🕒 20m 📍 774/R-013 📄
15:55	→ 16:10	<b>TDR threads &amp; project timeline for the Target WP</b> Orateur: Rui Franqueira Ximenes (CERN)	🕒 15m 📍 774/R-013 📄
16:10	→ 16:30	<b>Target complex WP implementation milestones &amp; timeline</b> Orateur: Jean-Louis Grenard (CERN)	🕒 20m 📍 774/R-013 📄
16:30	→ 16:40	<b>Concluding words</b> Orateurs: Jean-Louis Grenard (CERN), Rui Franqueira Ximenes (CERN)	🕒 10m 📍 774/R-013 📄



# What do we call Target Complex?

- **The target area**

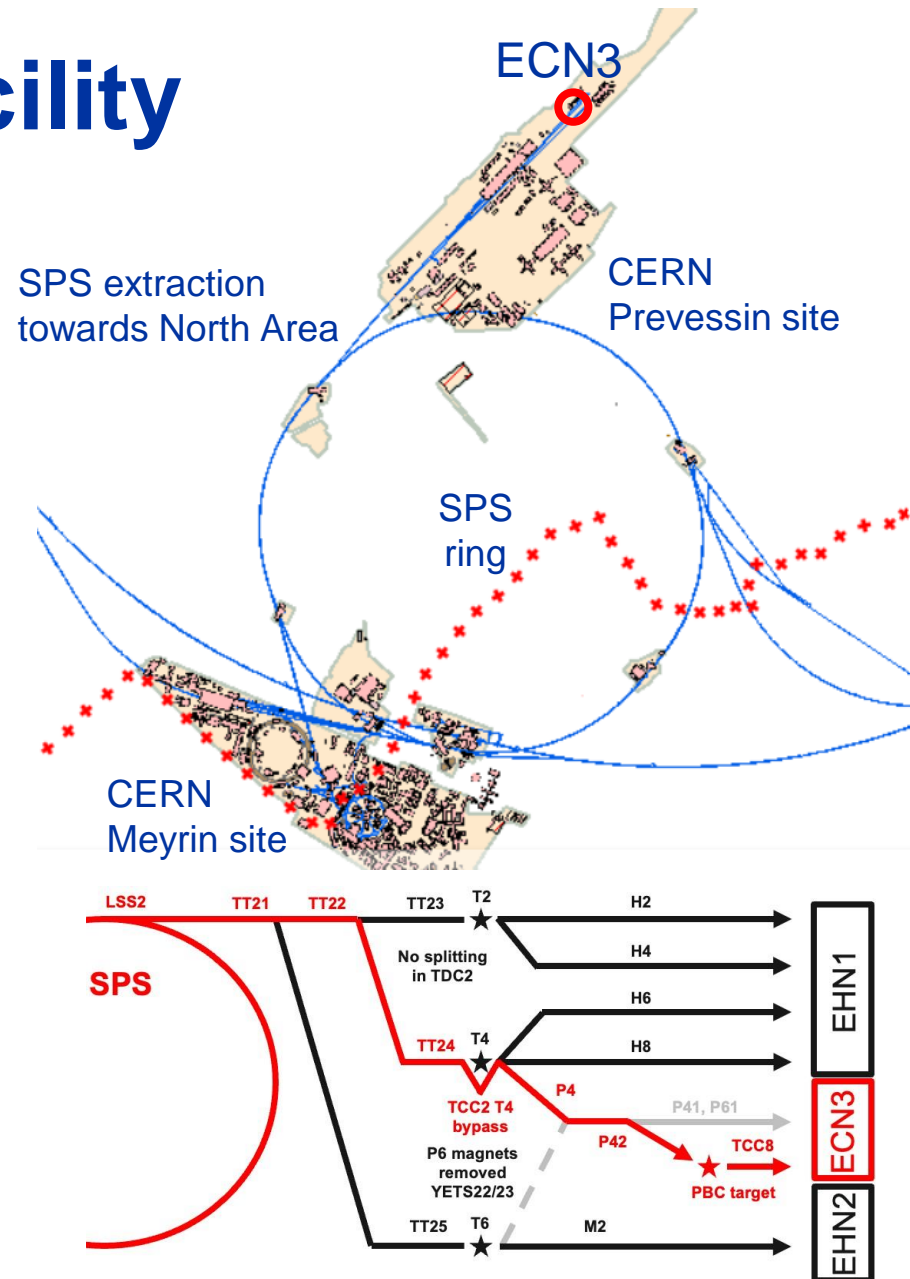
- Target station which contain the target
- Associated shielding
- The space to perform target maintenance activities (inspections, replacement, repair...)
- Remote handling equipment (crane, spreaders, mobile robots)
- Confinement(s)

- **The target service building**

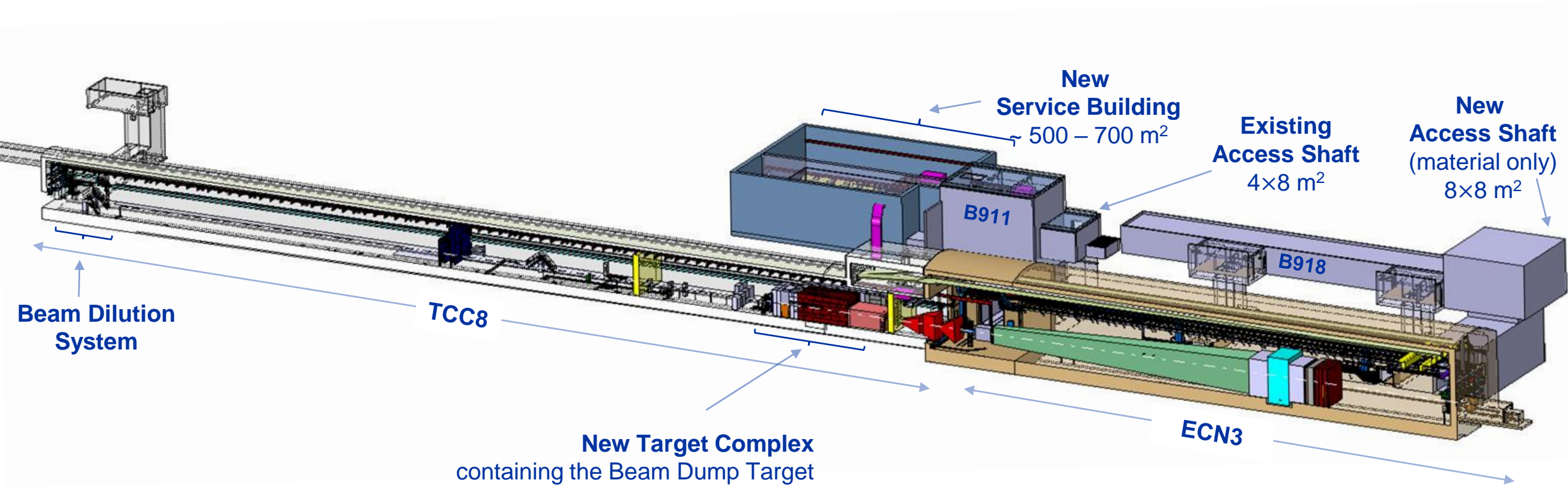
- Air handling units
- Cooling stations
- Controls systems
- The space to perform post irradiation examination and preparation for target (and other activated components) final disposal

# Target Complex in an existing facility

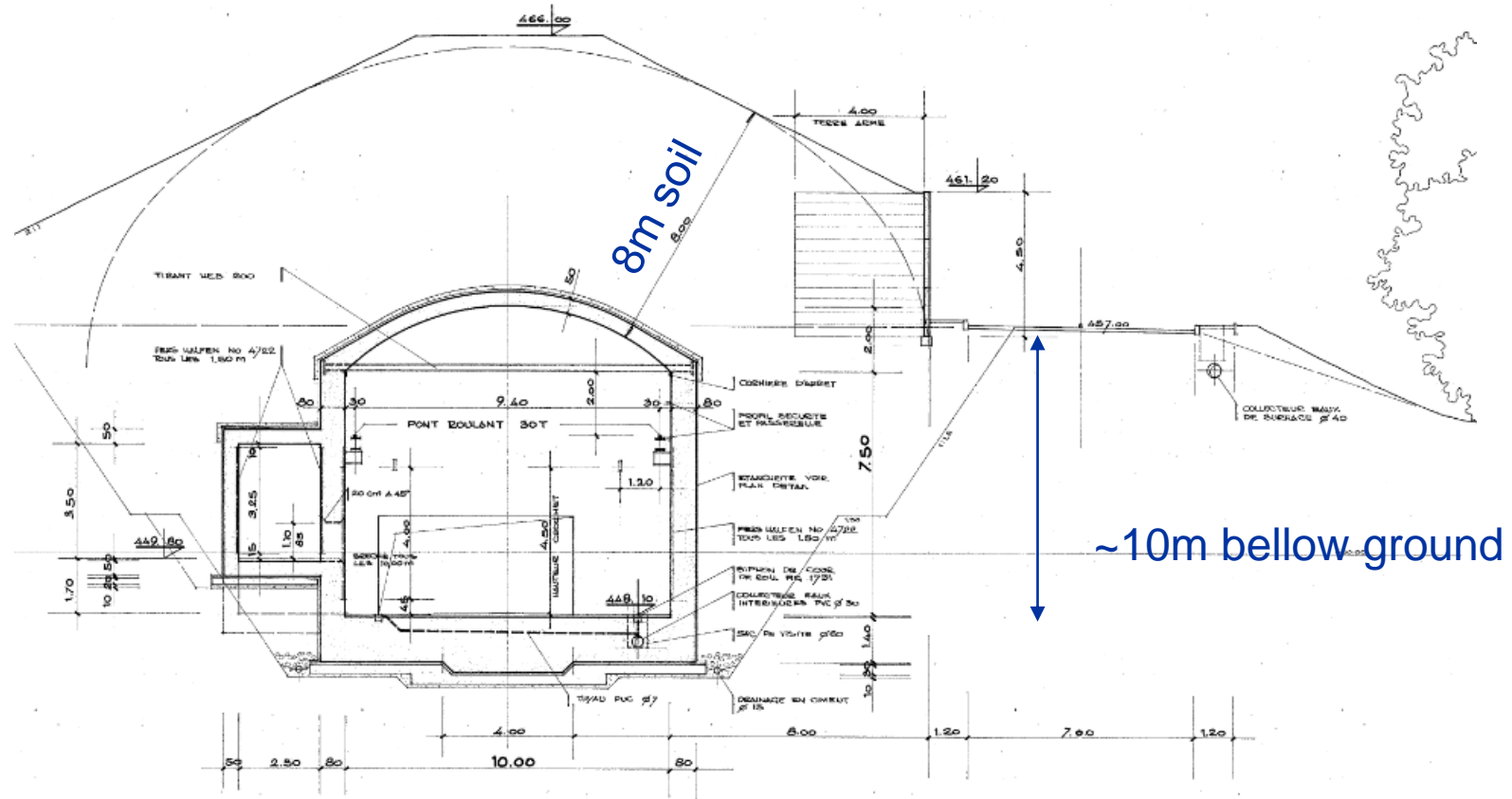
- Implementation in the SPS North Area ECN3 designed at construction in 70's for a High Intensity (NAHIF)
- Currently used by NA62 experiment
- SPS North Area beam lines and associated infrastructure being currently consolidated
- Would require the dismantling fraction of current beam line, target station, the experiment
- Only one target station can be accommodated in the cavern



# BDF/SHiP Target & Complex

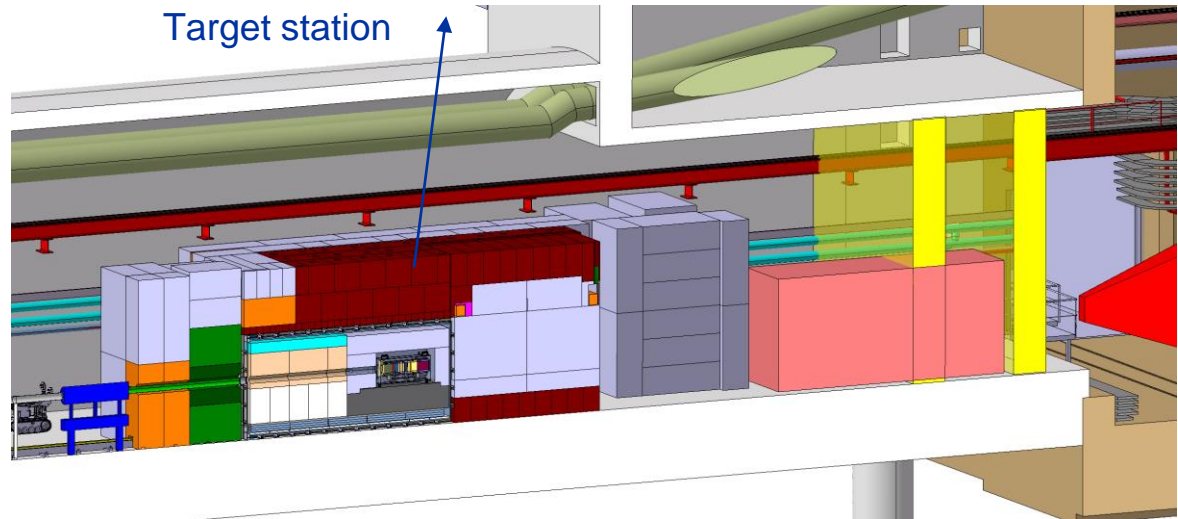
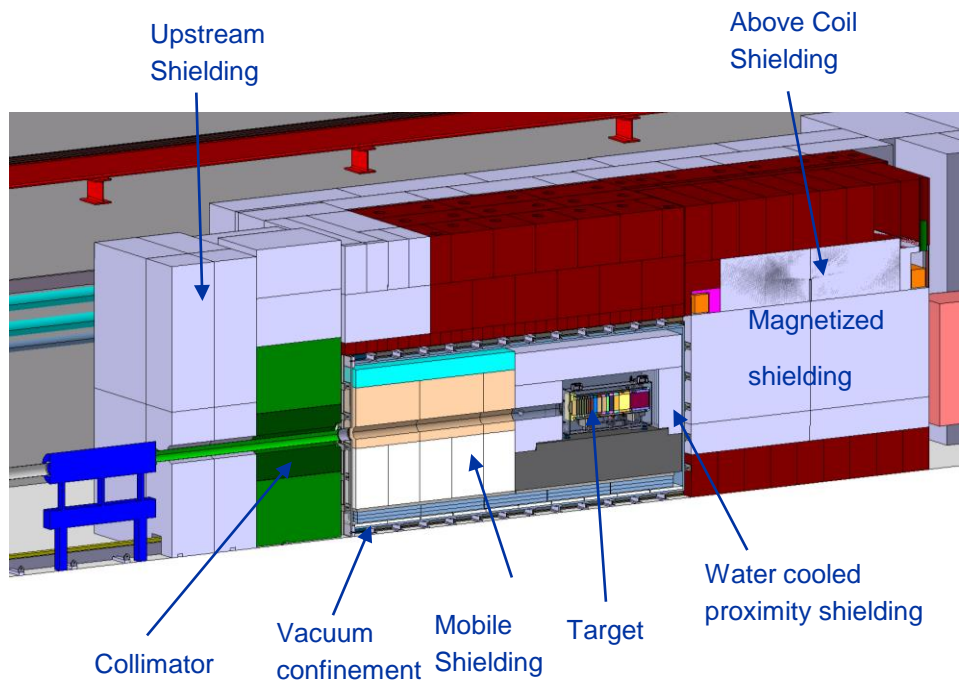
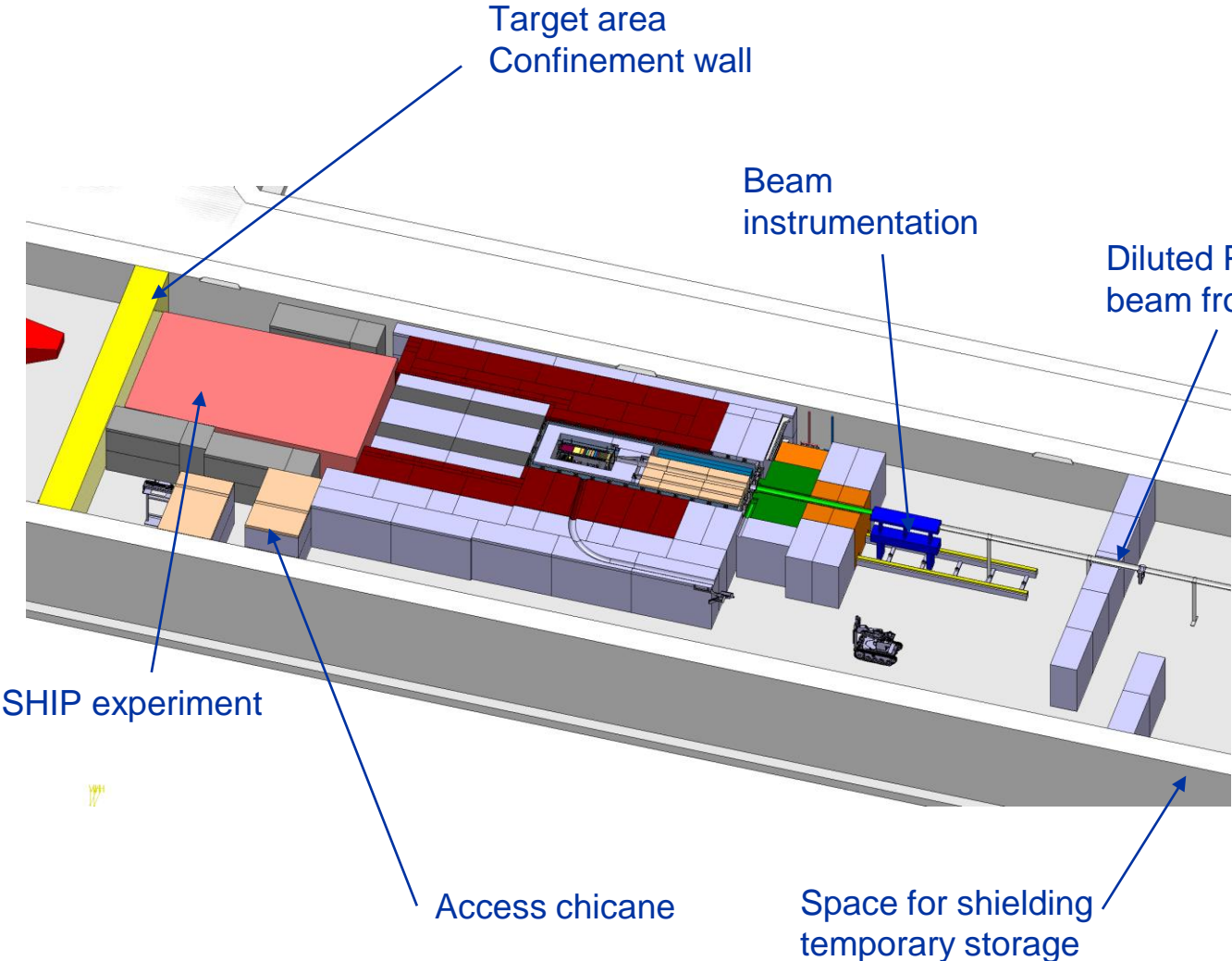


# The TCC8 area



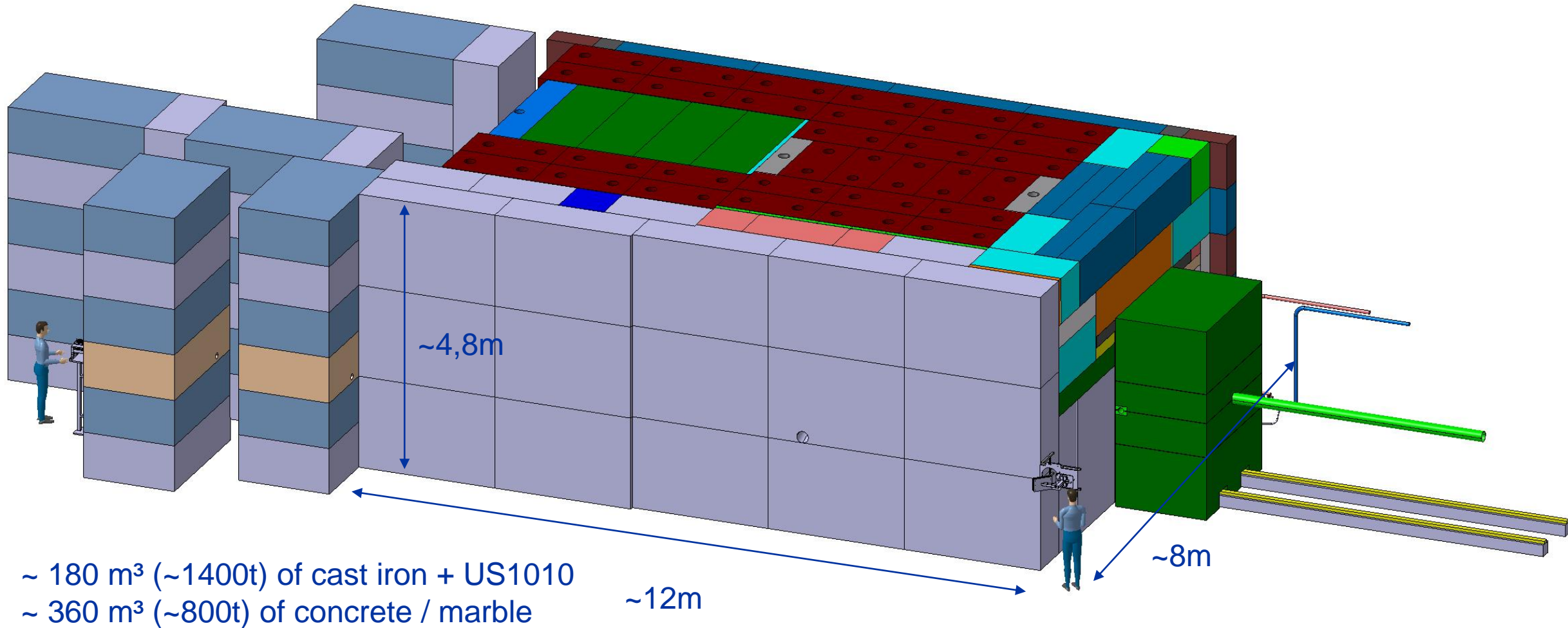
TCC8 cross section (length 170m)

# BDF Target complex integration

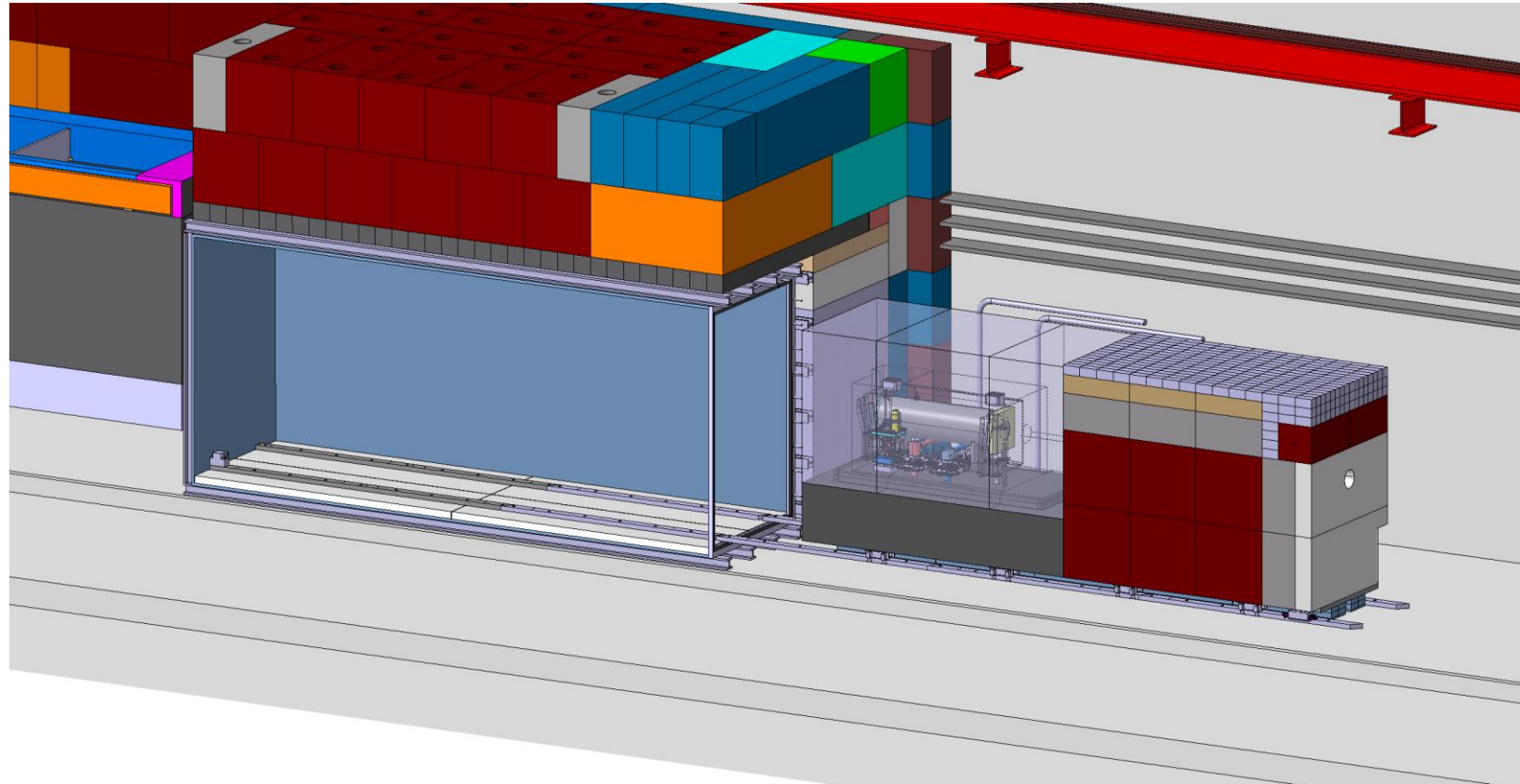


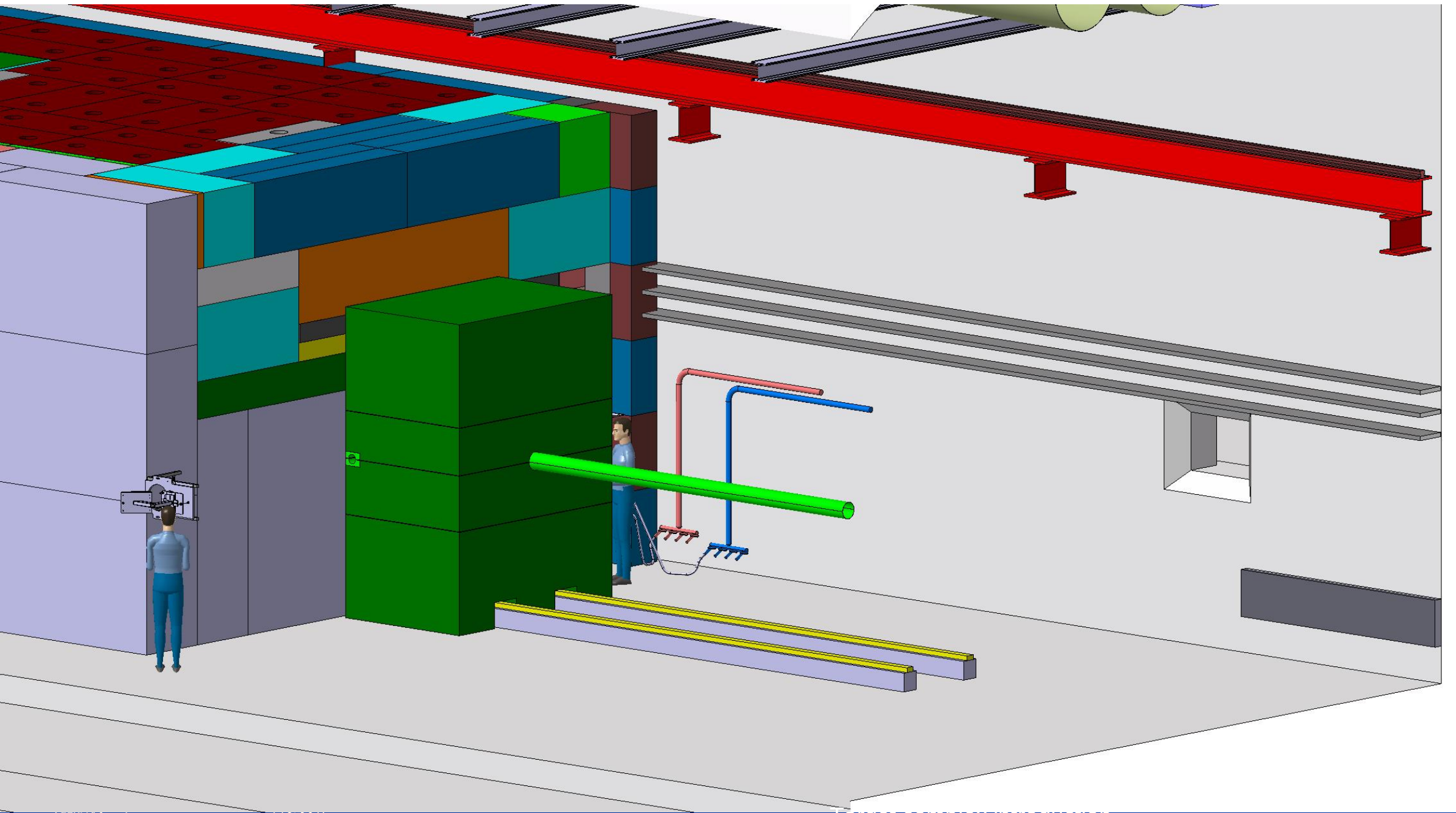


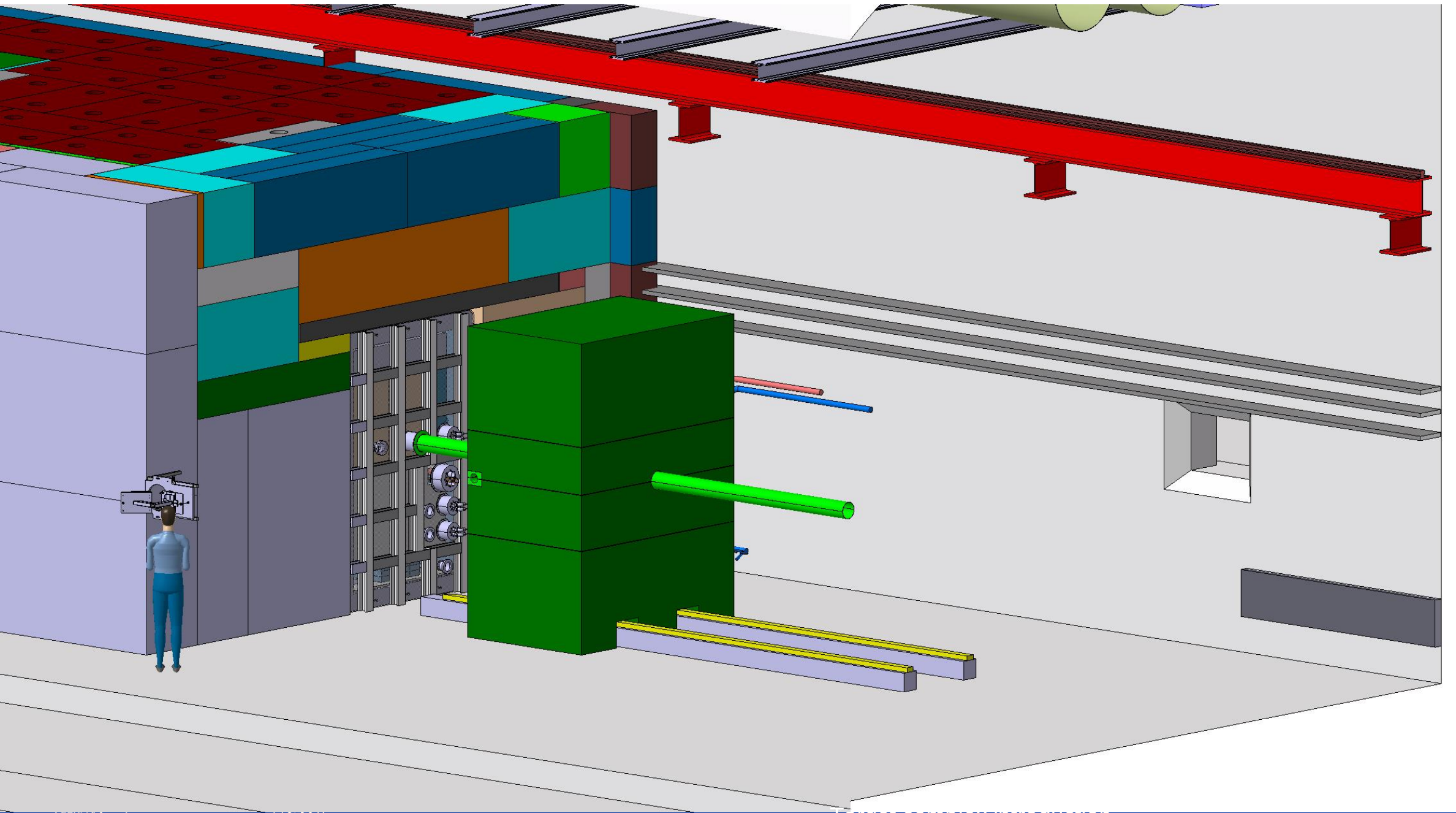
# BDF Target complex integration - shielding

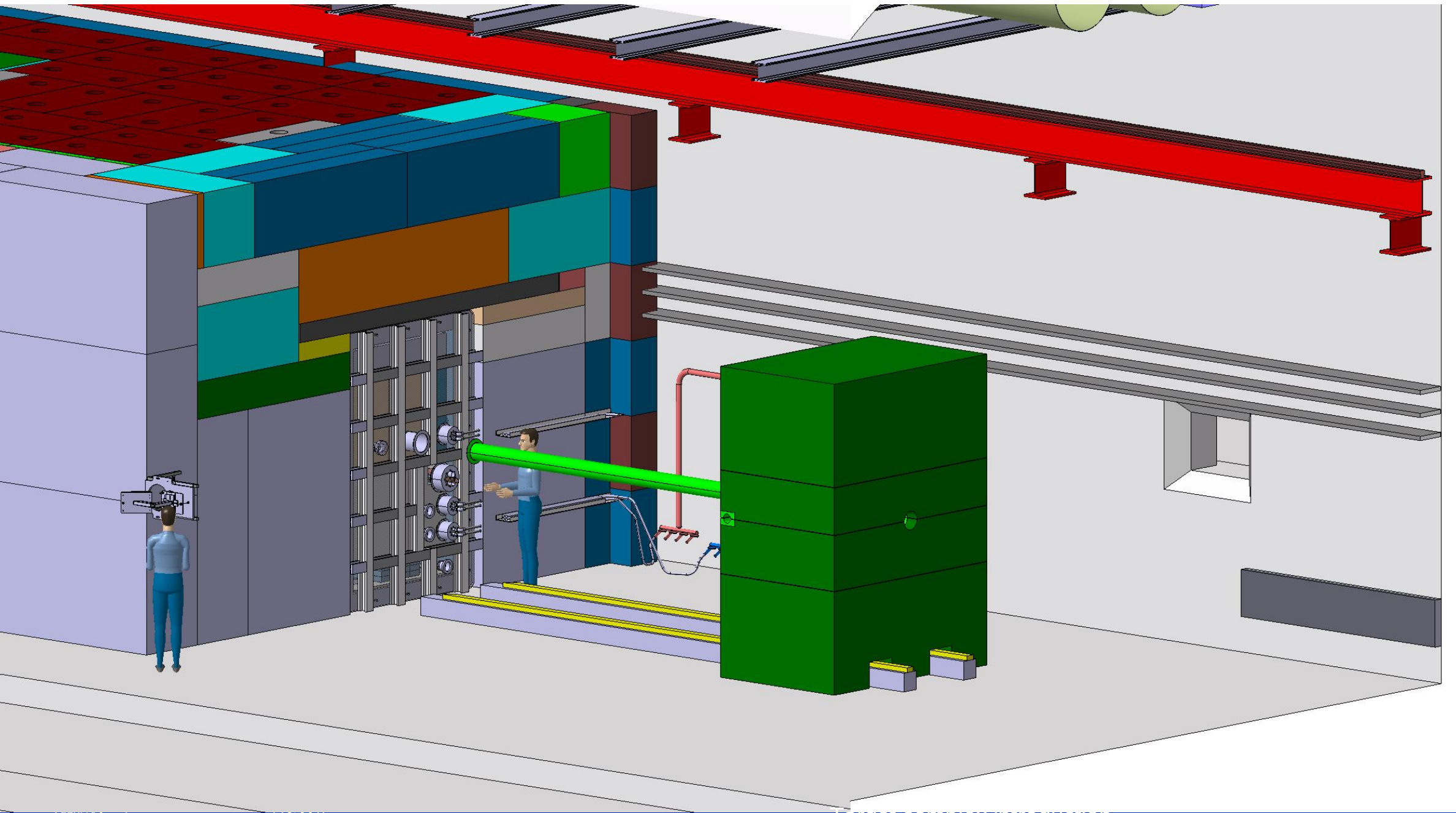


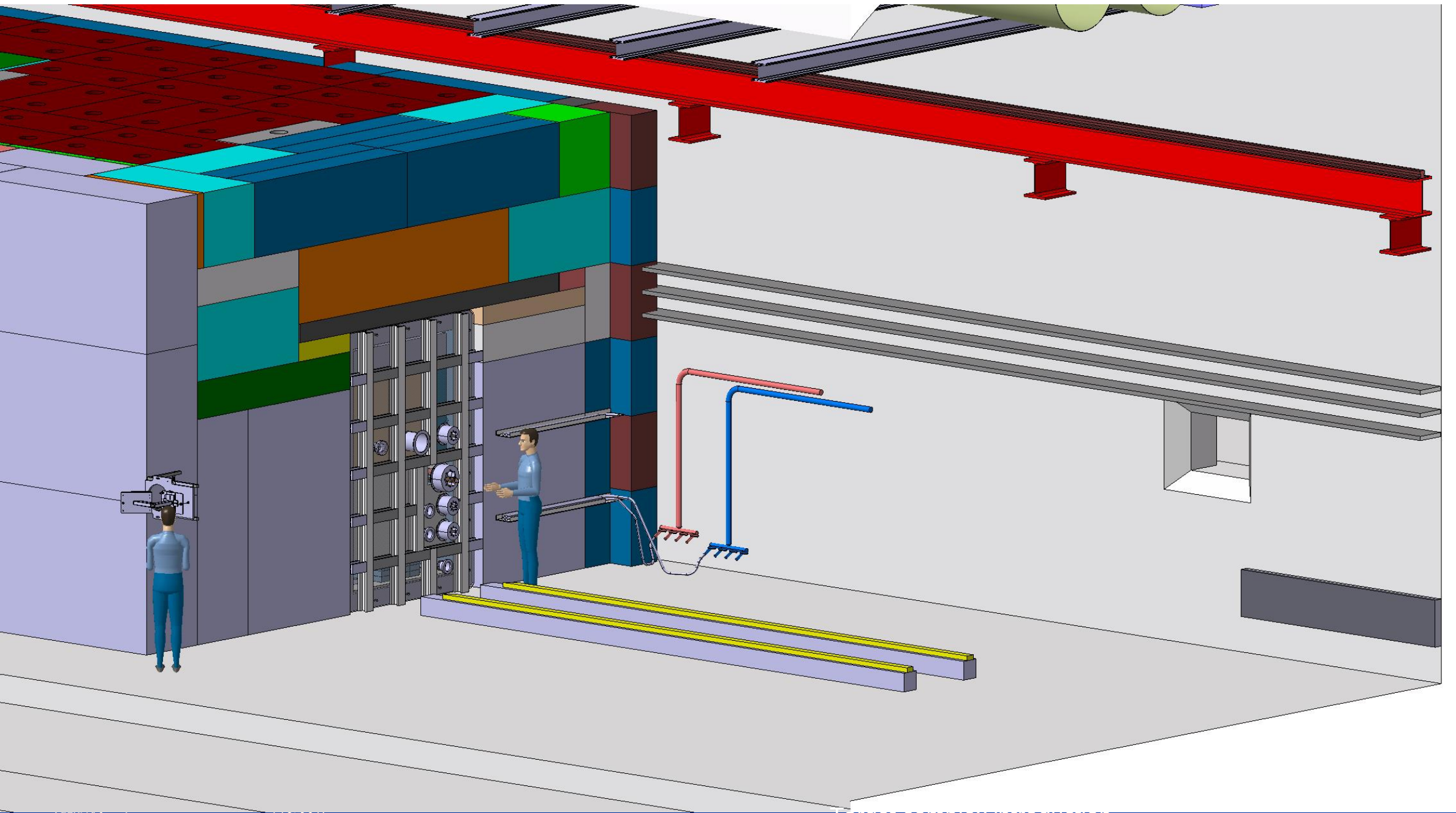
# BDF Target complex integration extraction

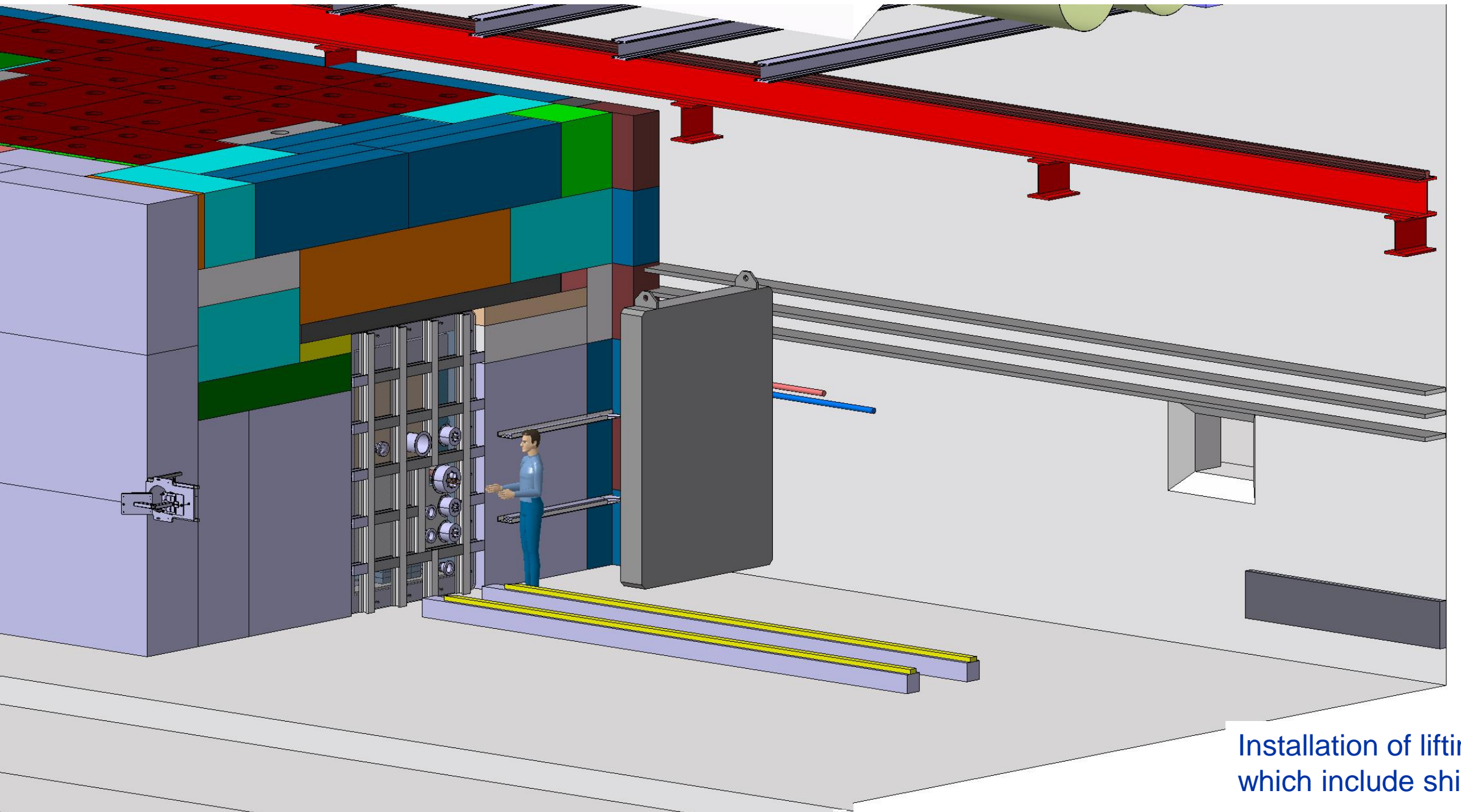




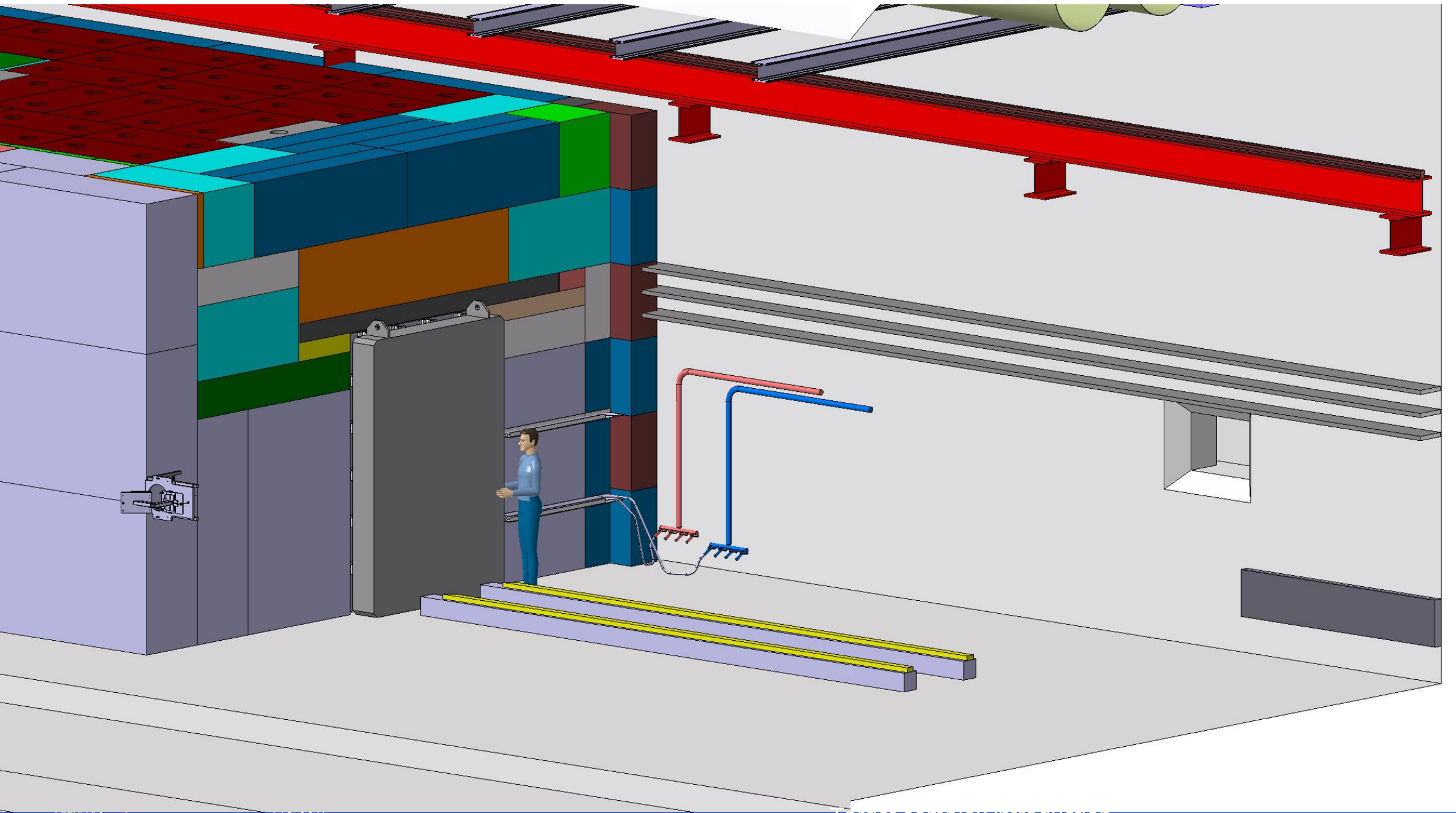




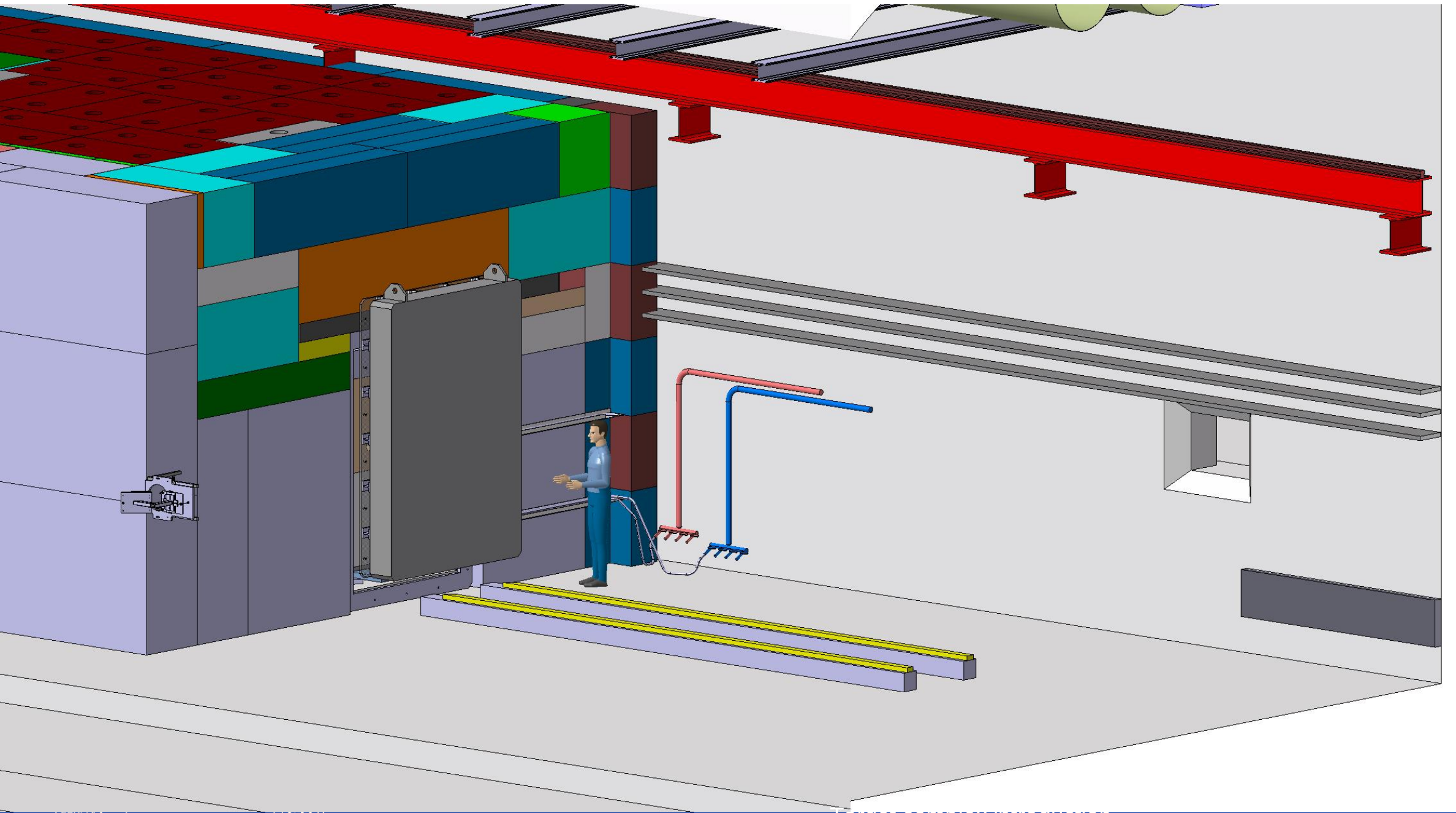


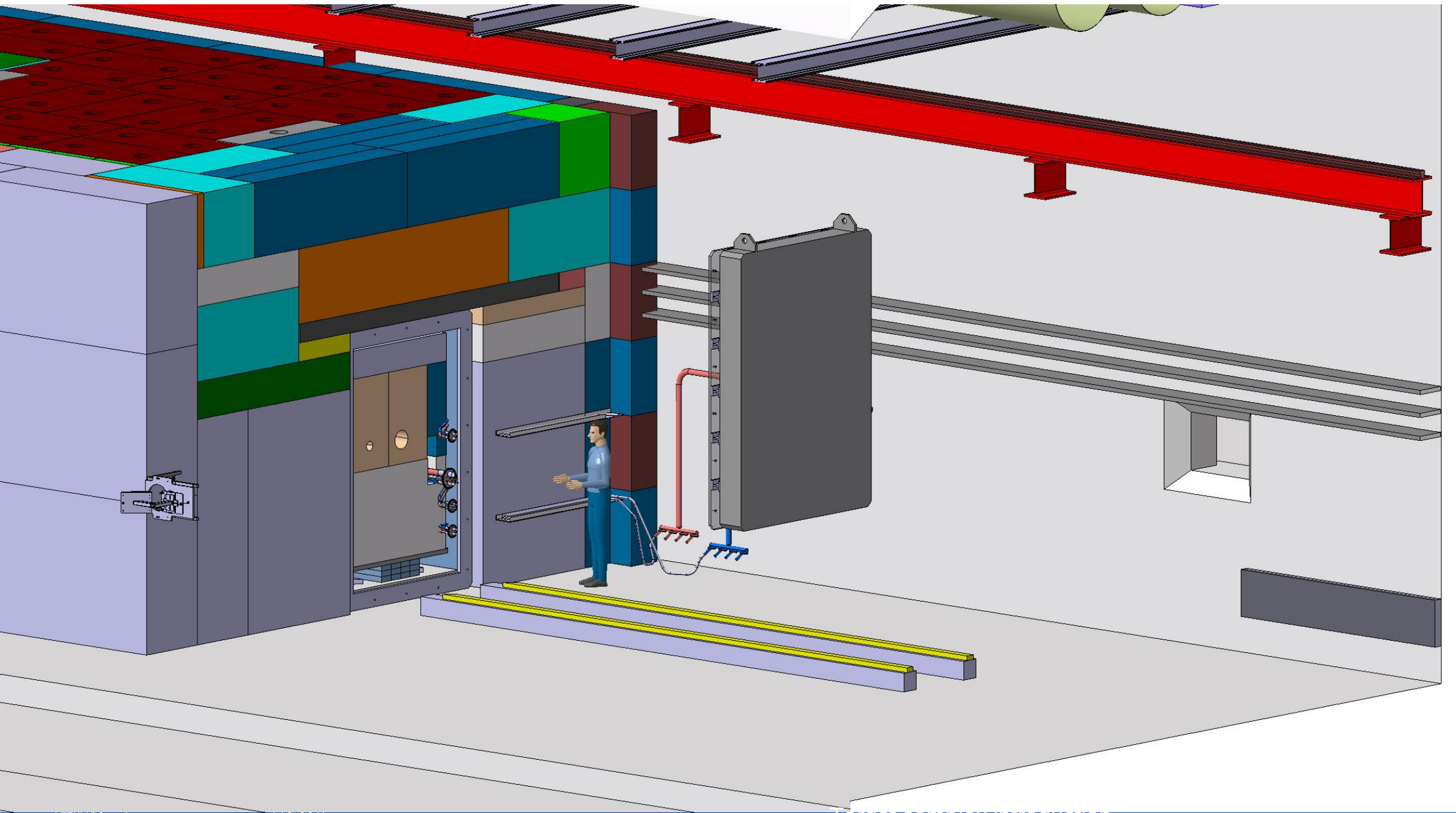


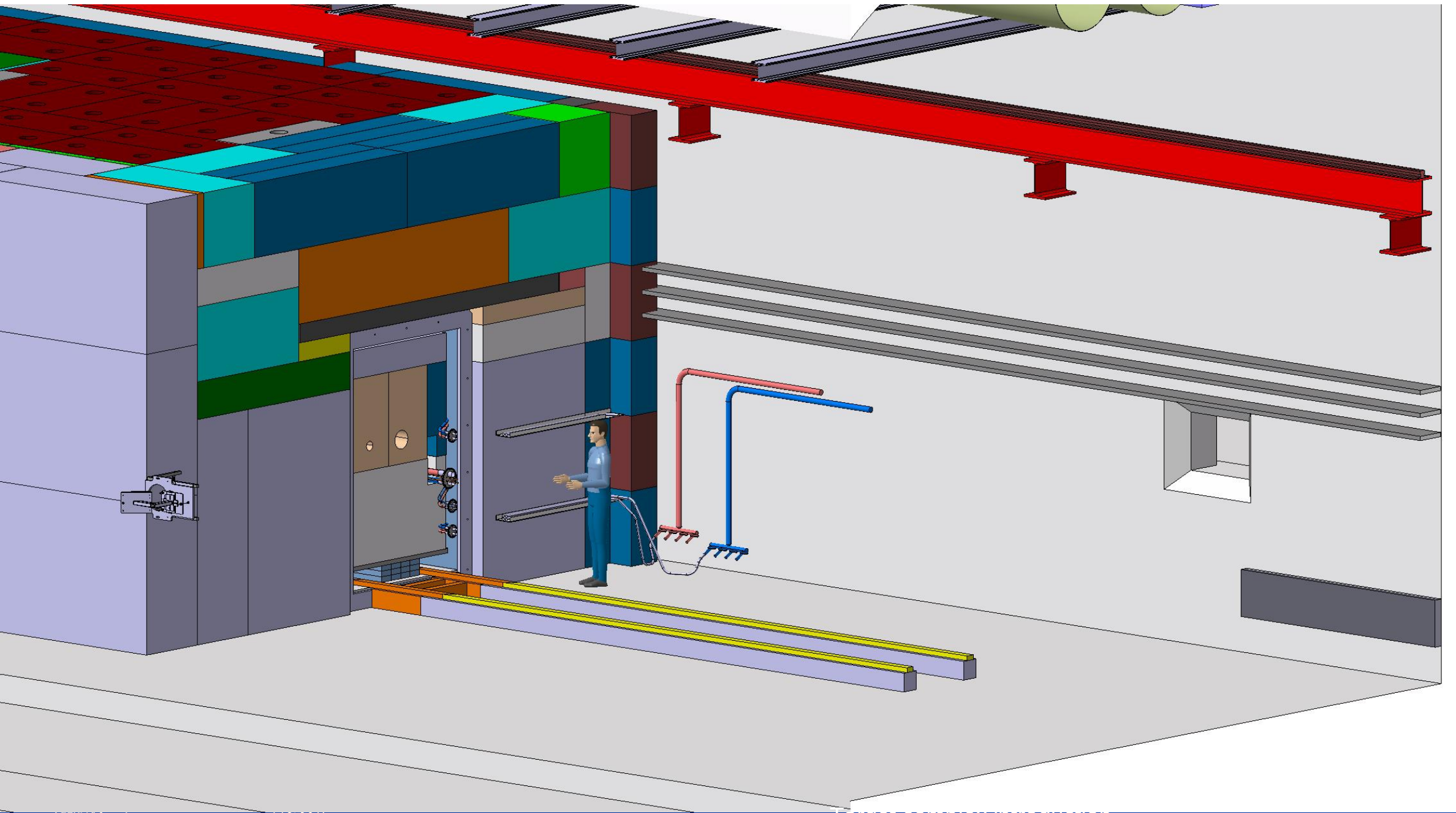
Installation of lifting tool which include shielding

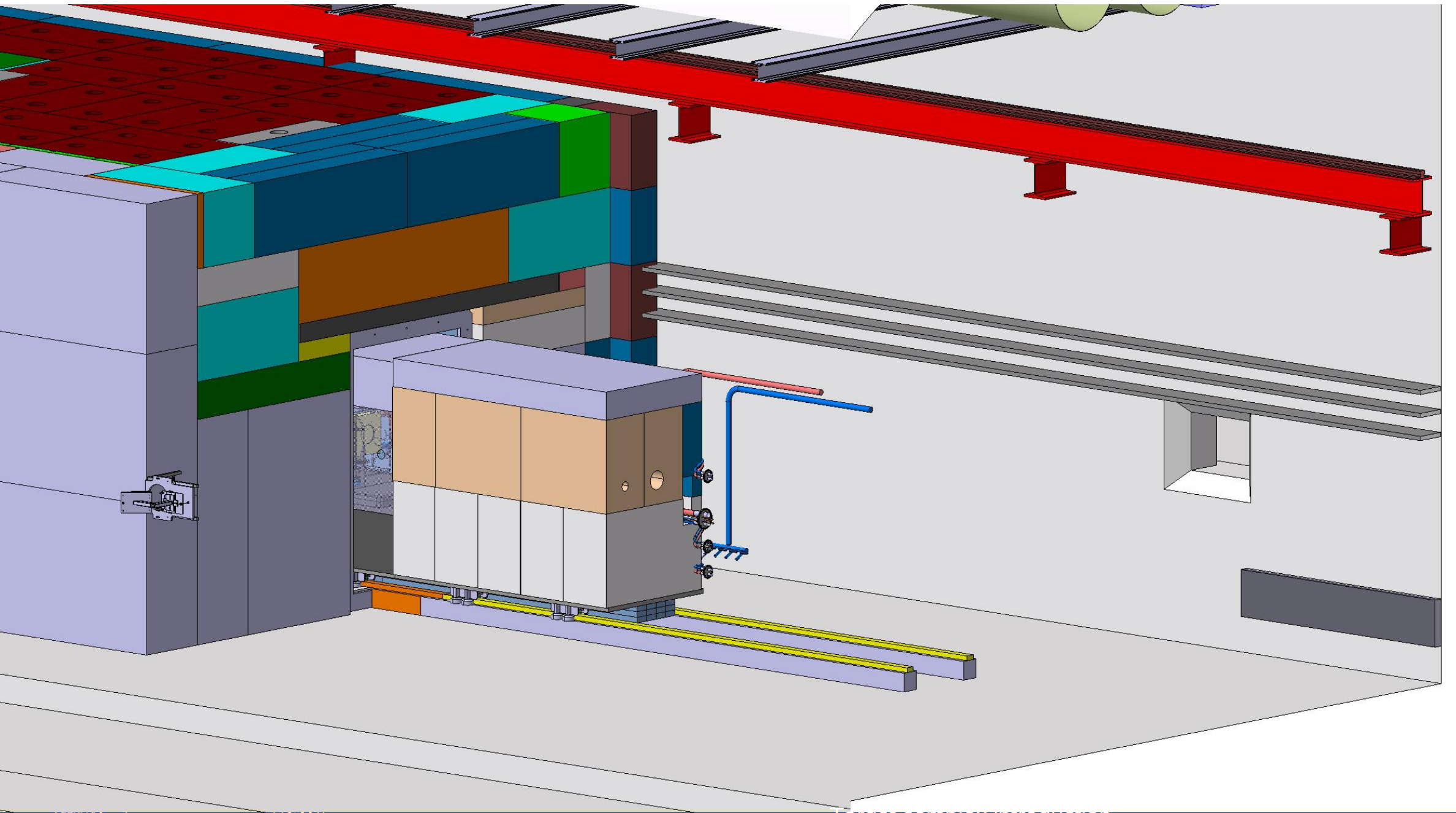


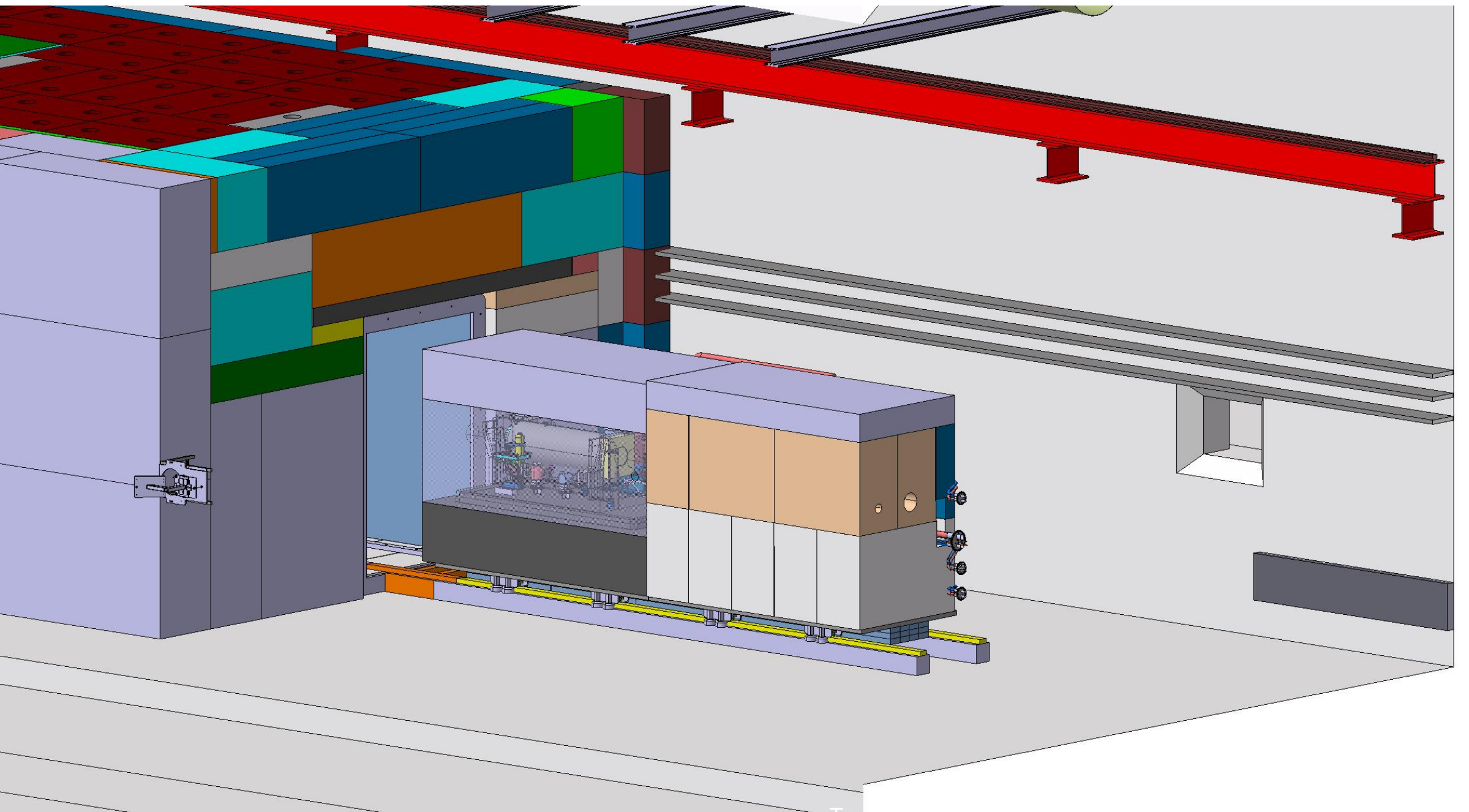


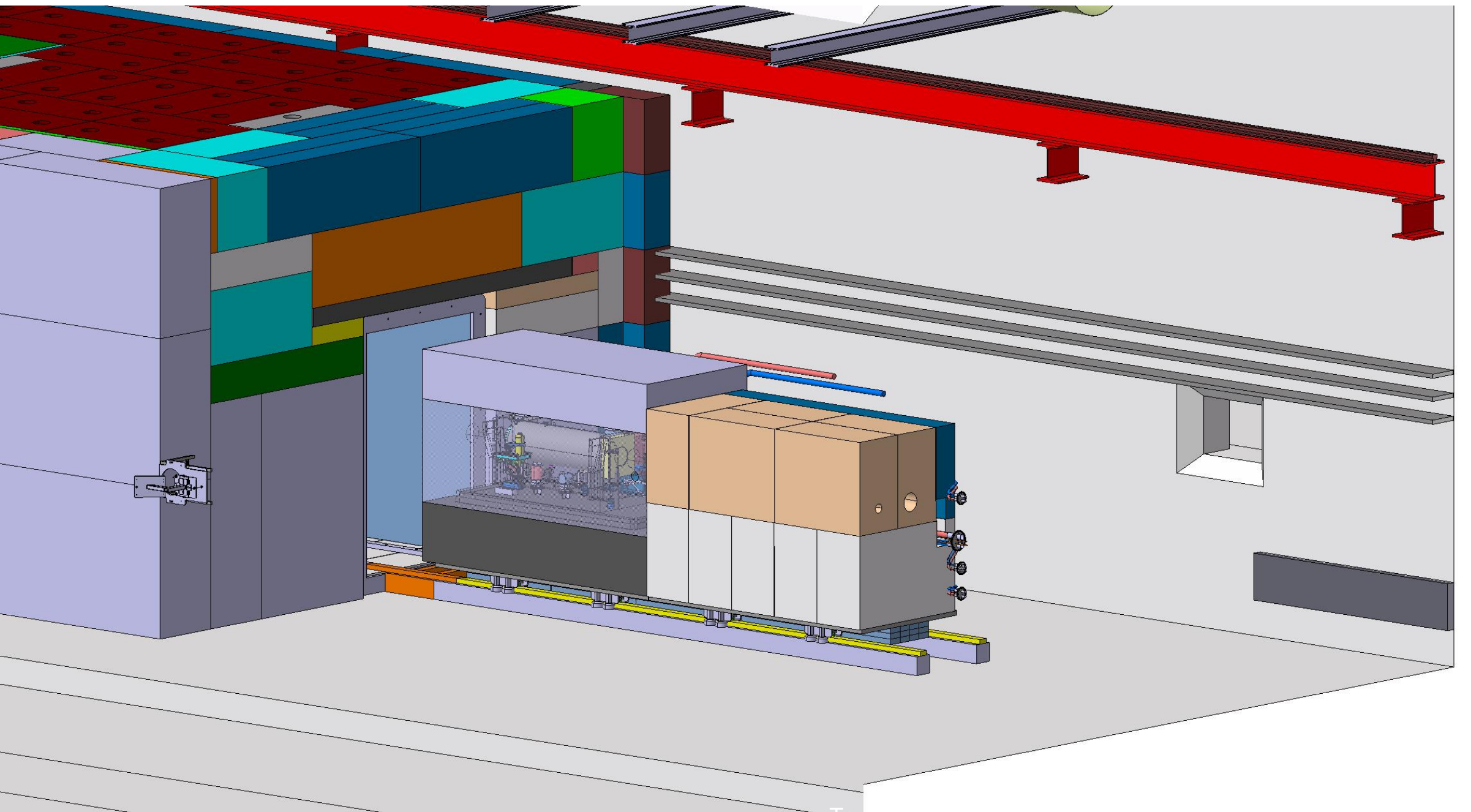


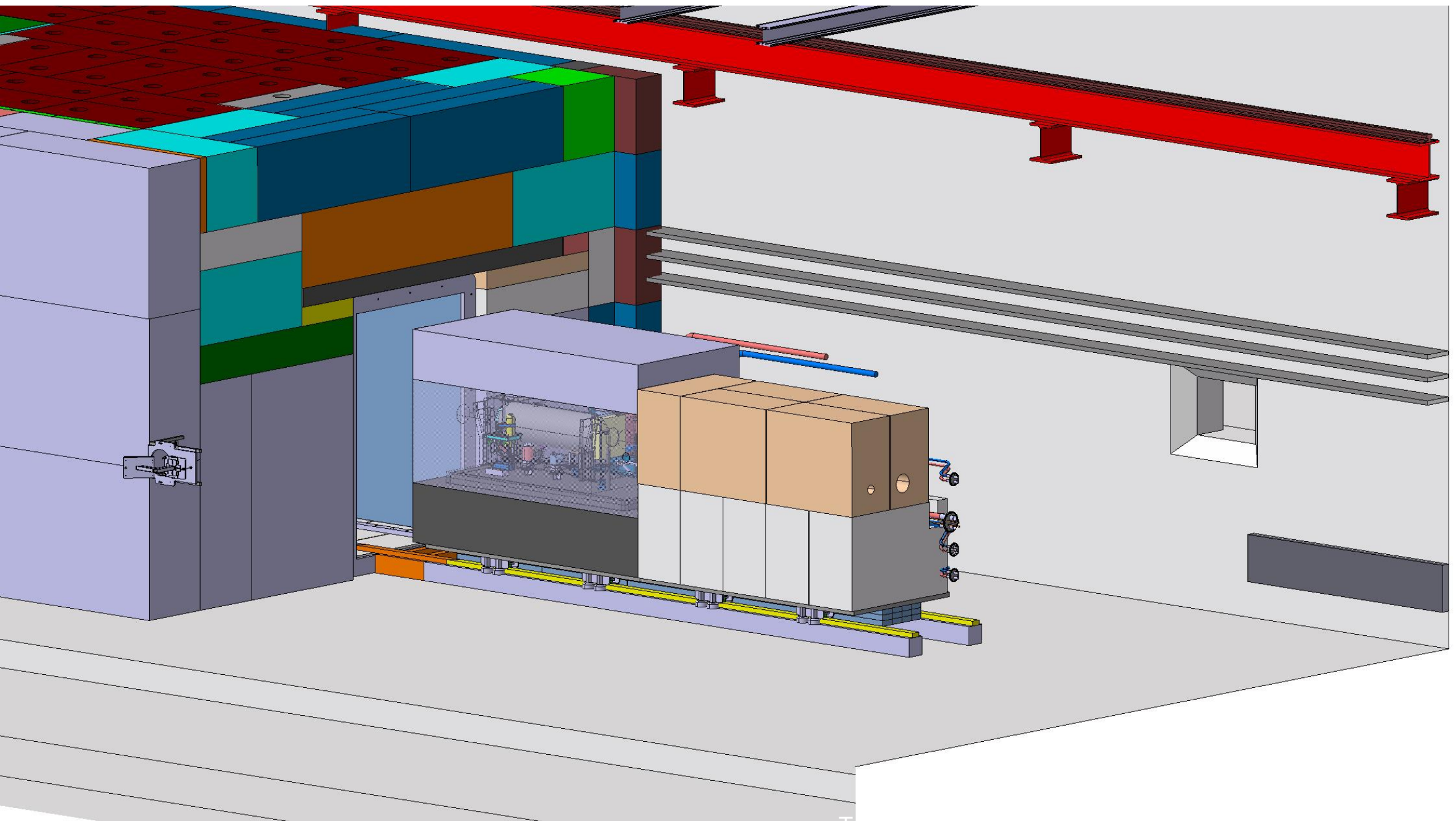


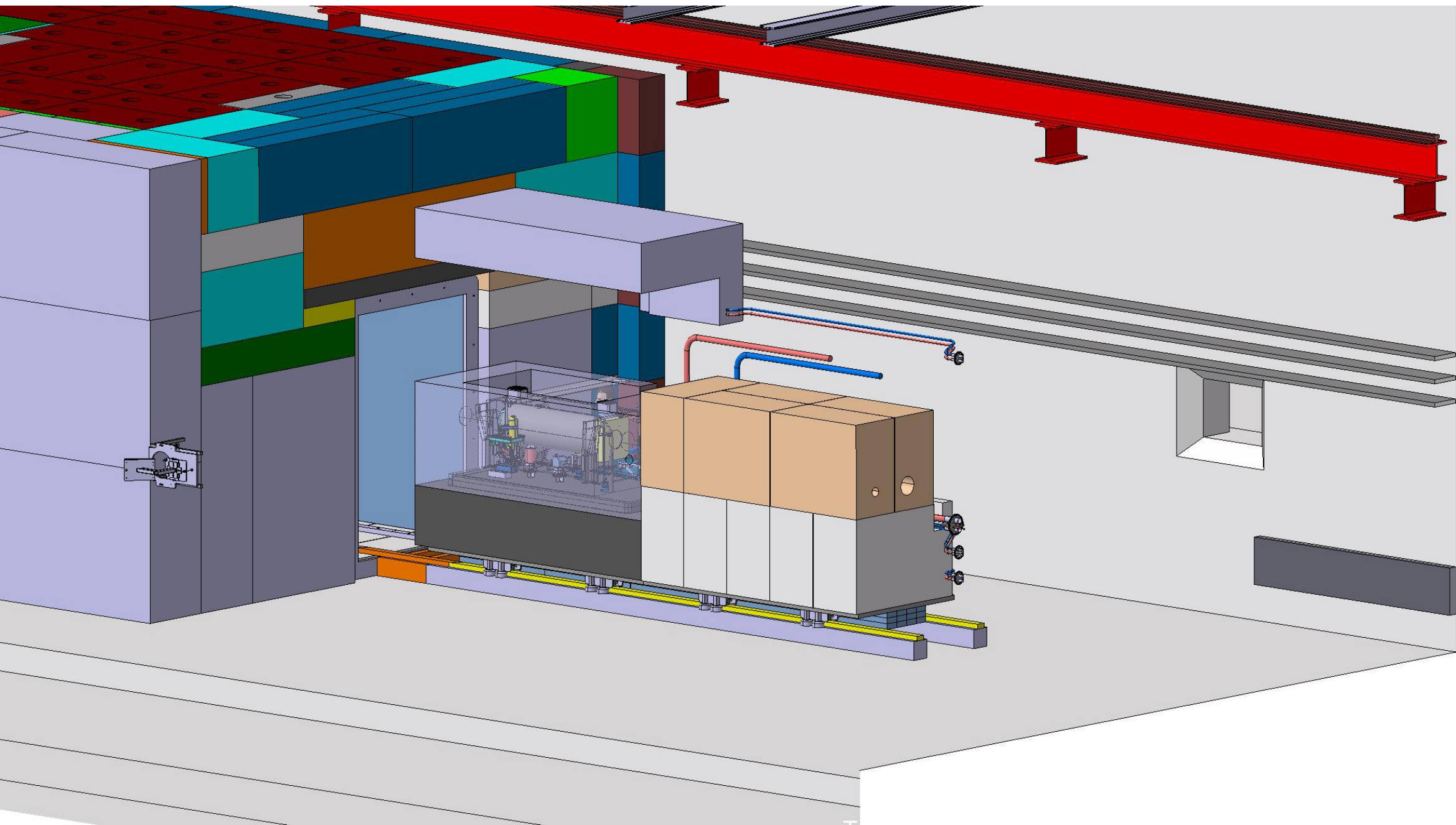




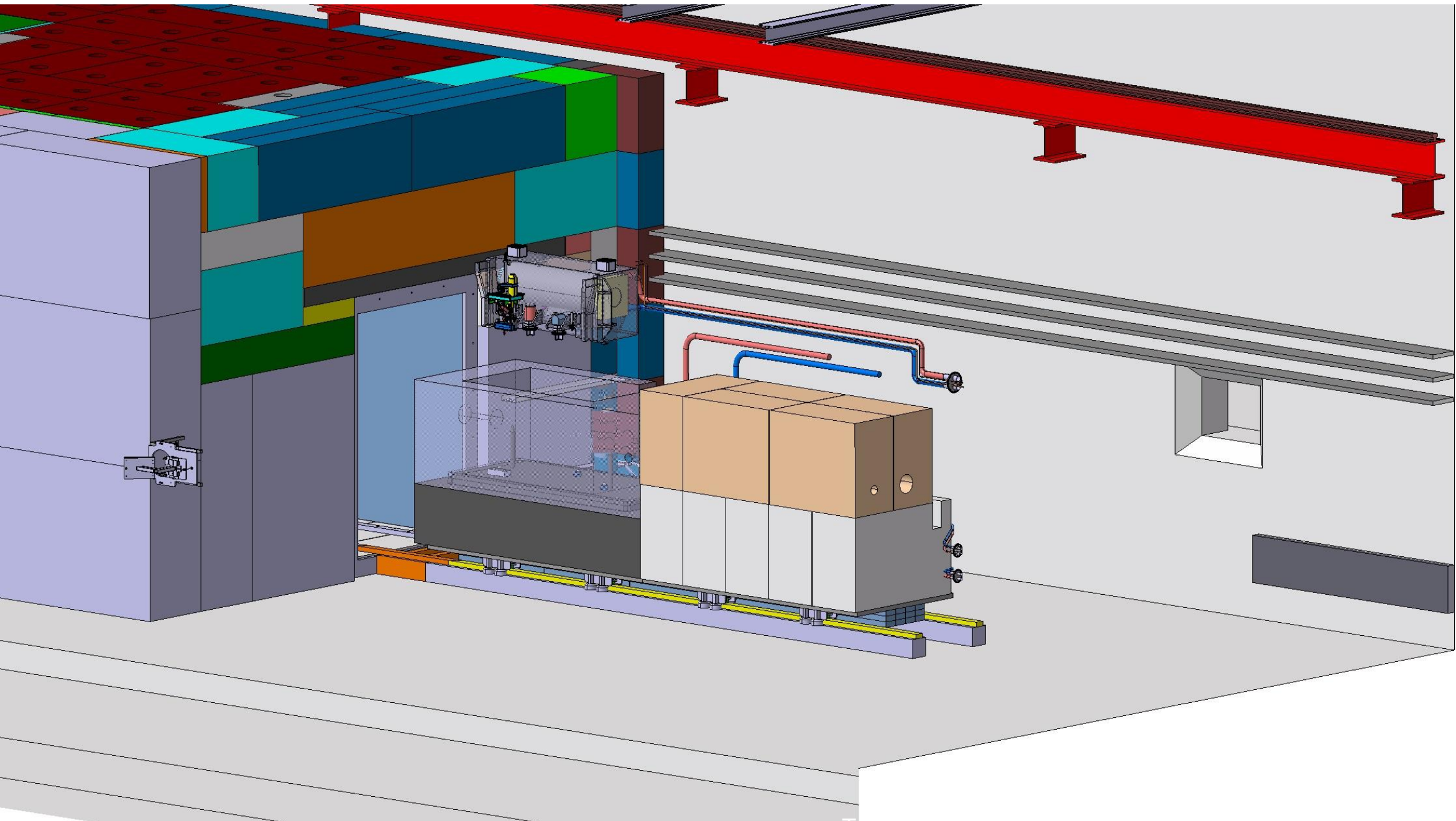




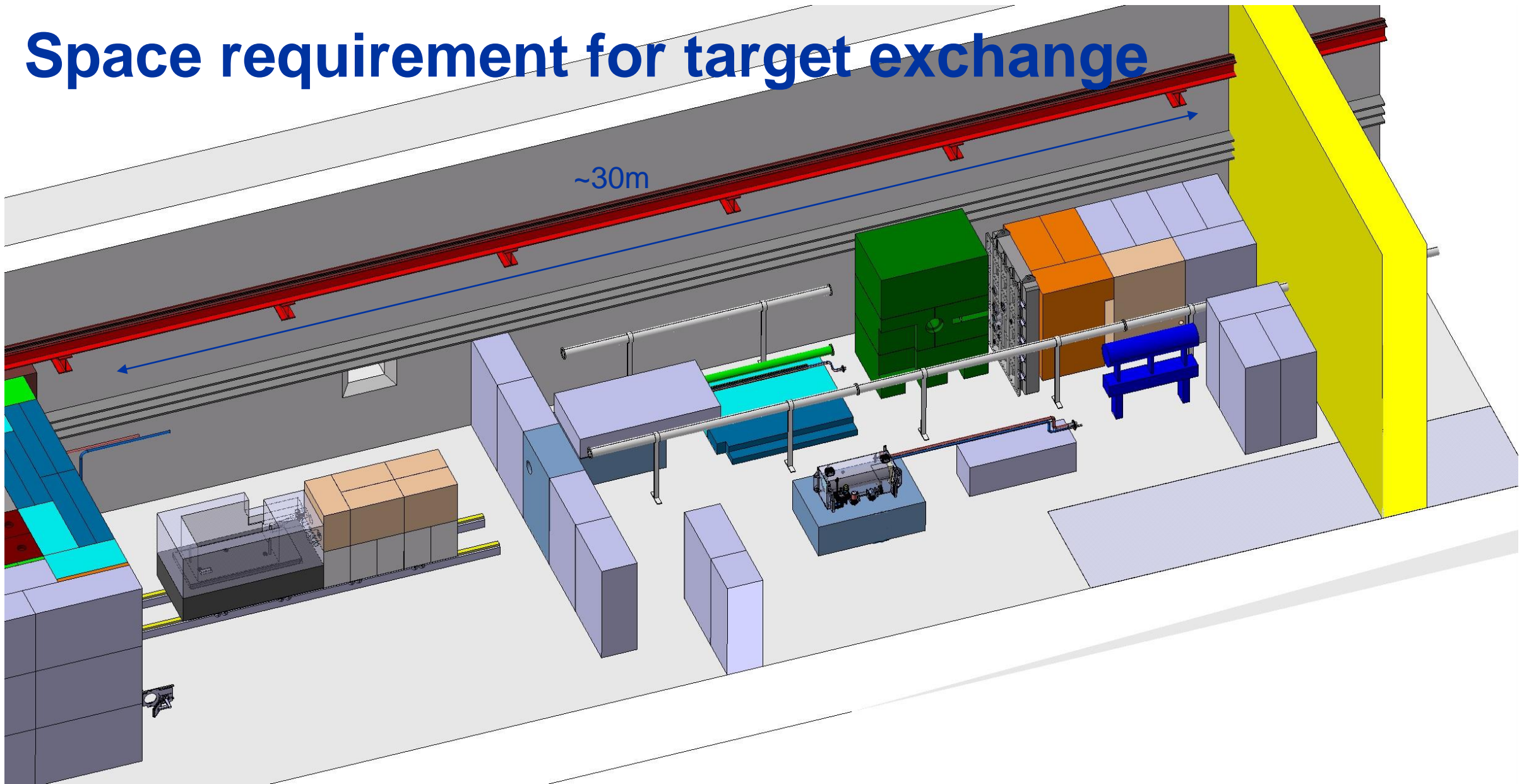








# Space requirement for target exchange



# The target service building

## Nuclear ventilation system of the target complex

- Air handling units, filters, dehumidifiers (outside)

## Target cooling systems

- Pumps, Filters, Heat exchanger, Cooling instrumentation, He circulation system (target primary confinement)

## Target controls systems

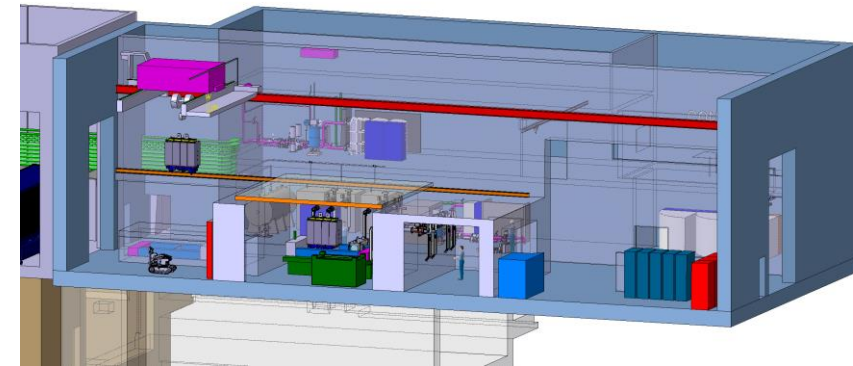
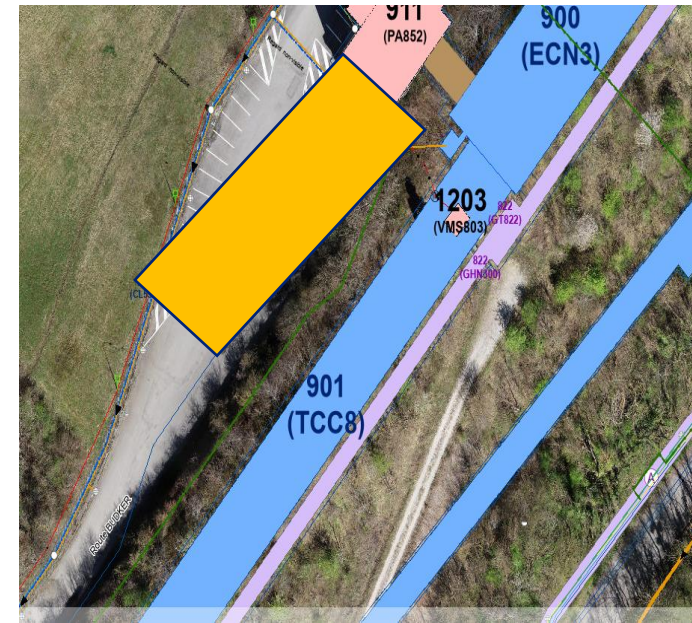
- Target monitoring (sensors), Target control valves, vacuum vessel confinement

## Service cell

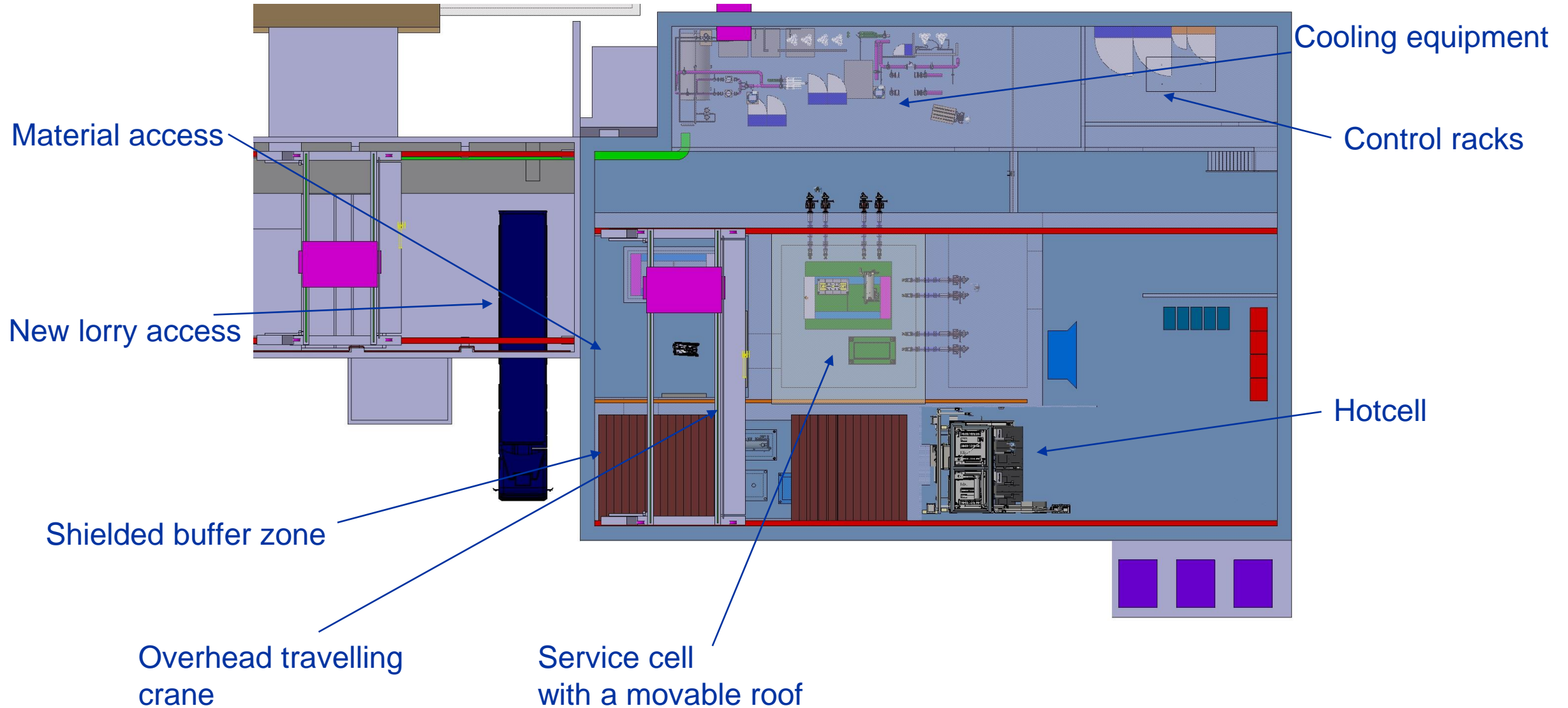
## Evaporator

## Electrical distribution system

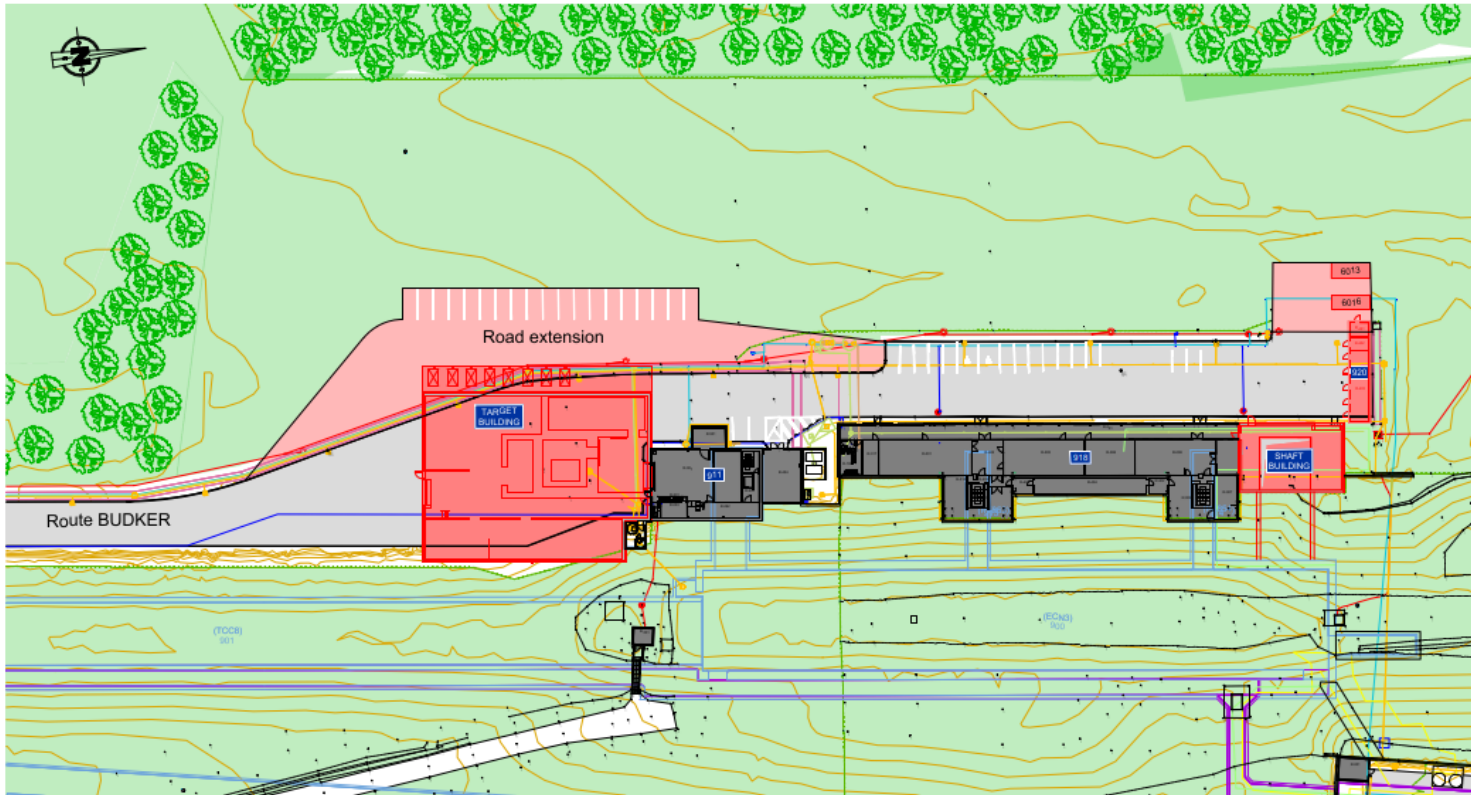
~700m<sup>2</sup>



# Service building



# Service building within the BDF/SHiP complex



# Description of subsystems described in the next talks



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