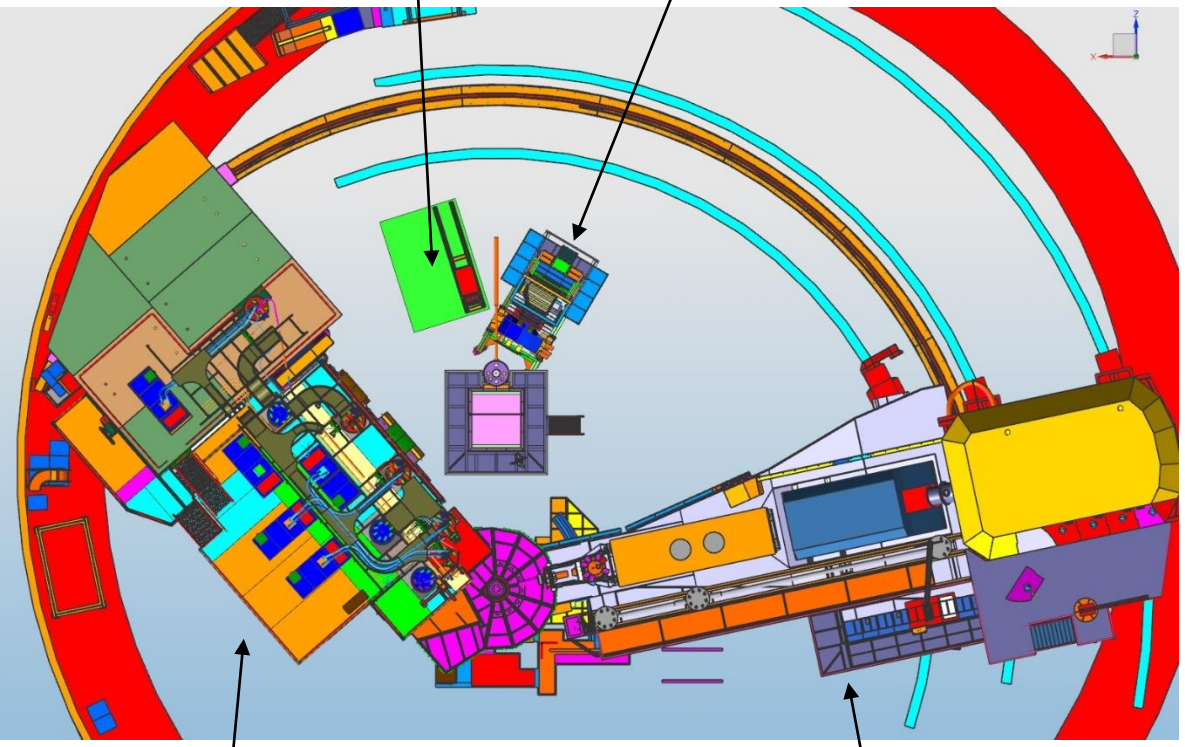
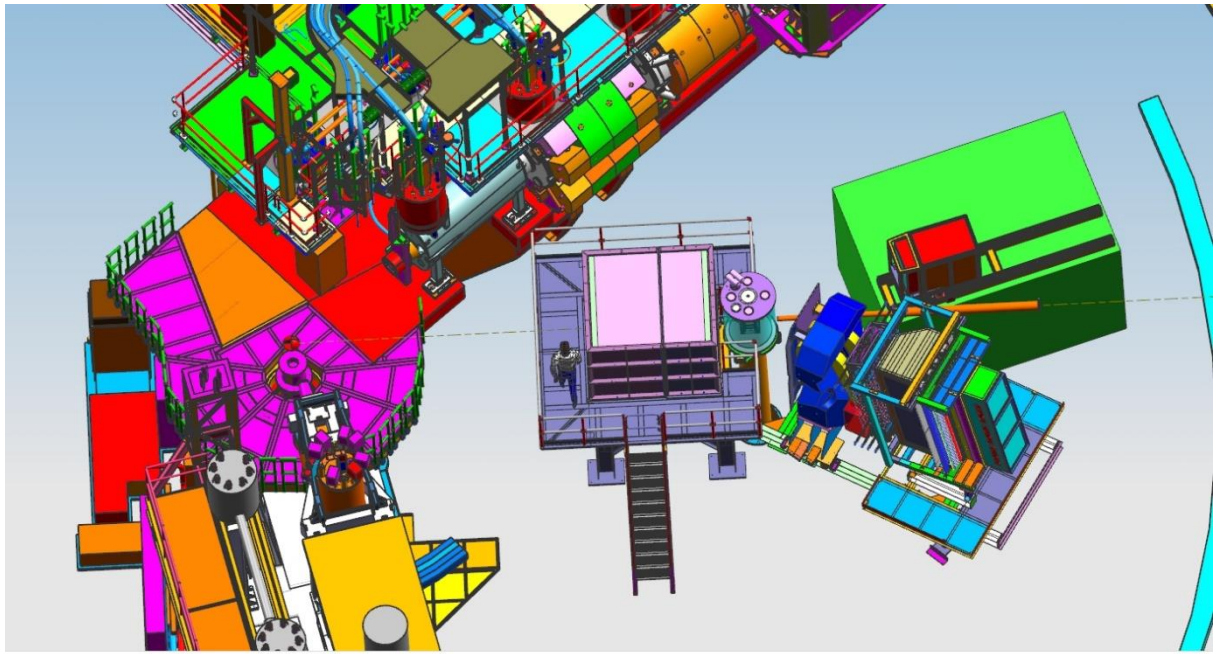
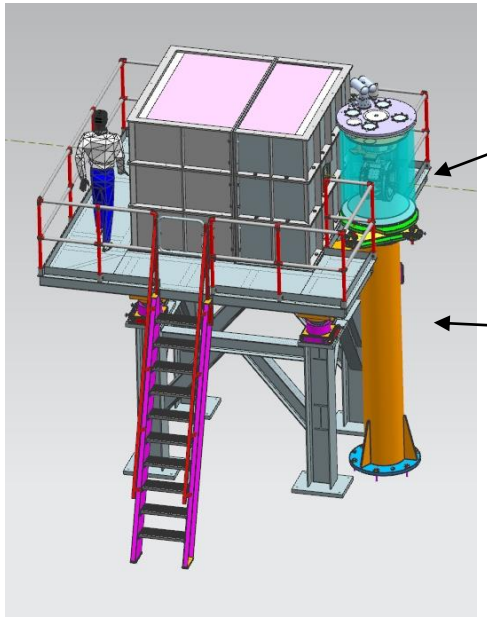
CPS

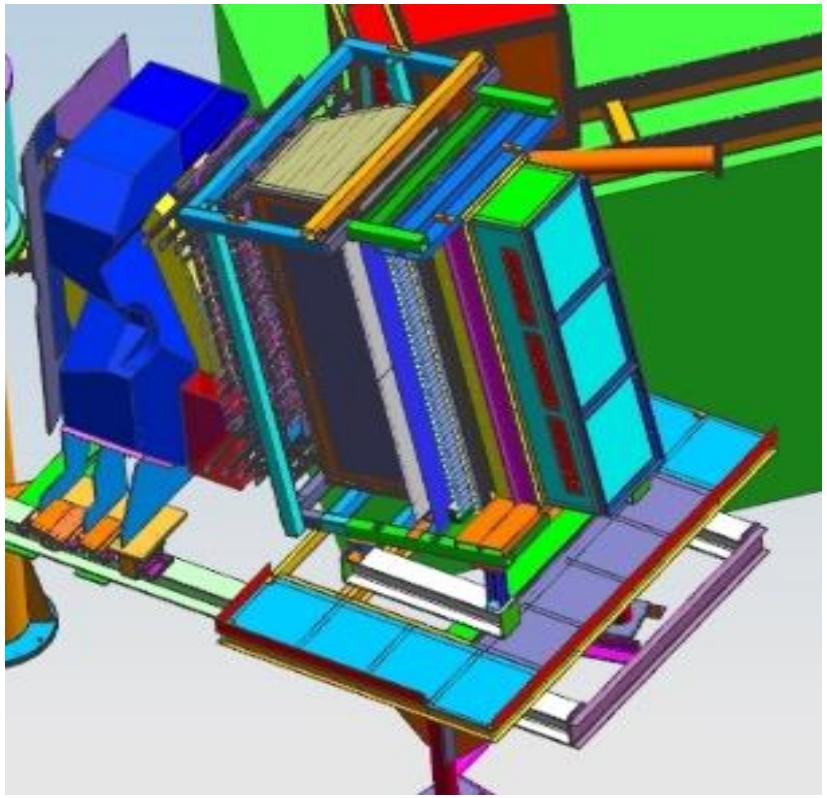
1. CAD 3D models
   I. Hall Layout – installation and removal options
   II. Shielding layers -Build up
   III. Radiator
   IV. Platforms
   V. Tungsten Tunnel Collimator upstream of target
2. Cu Absorber Prototype modeling and testing
3. CPS magnet yoke/pole/coils delivery
4. Unfinished work

CPS in Hall C


NPS Detector
Big Bite Magnet
SHMS at 38°
HMS at 78°

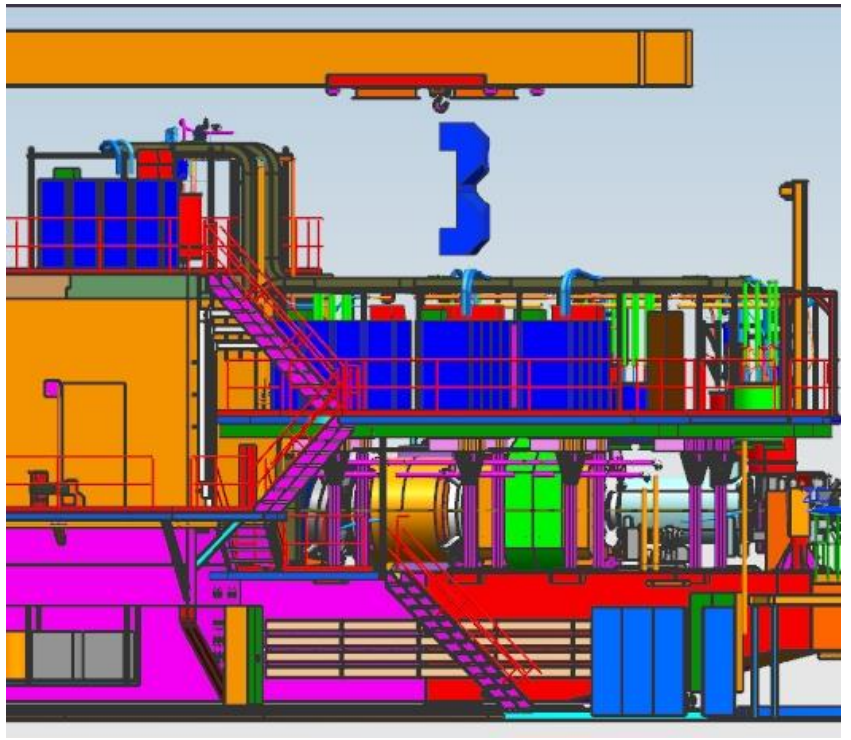



Target chamber (SCP0157)
Hall C Existing support

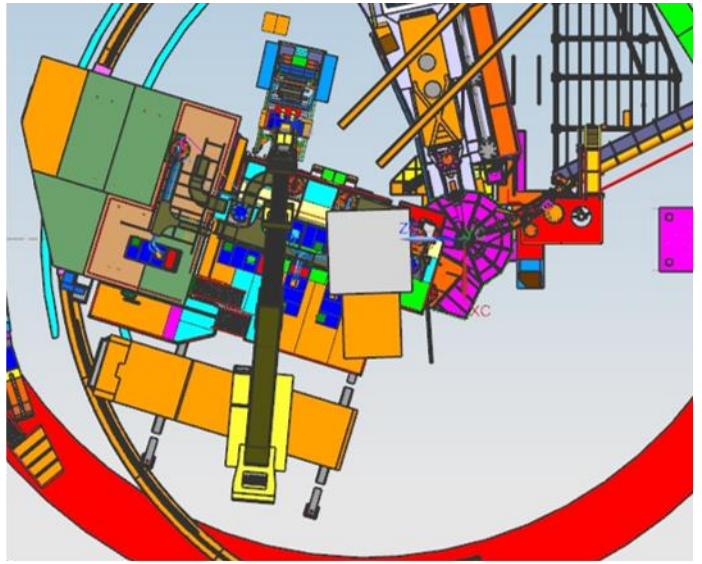


Getting Big Bite Magnet over SHMS

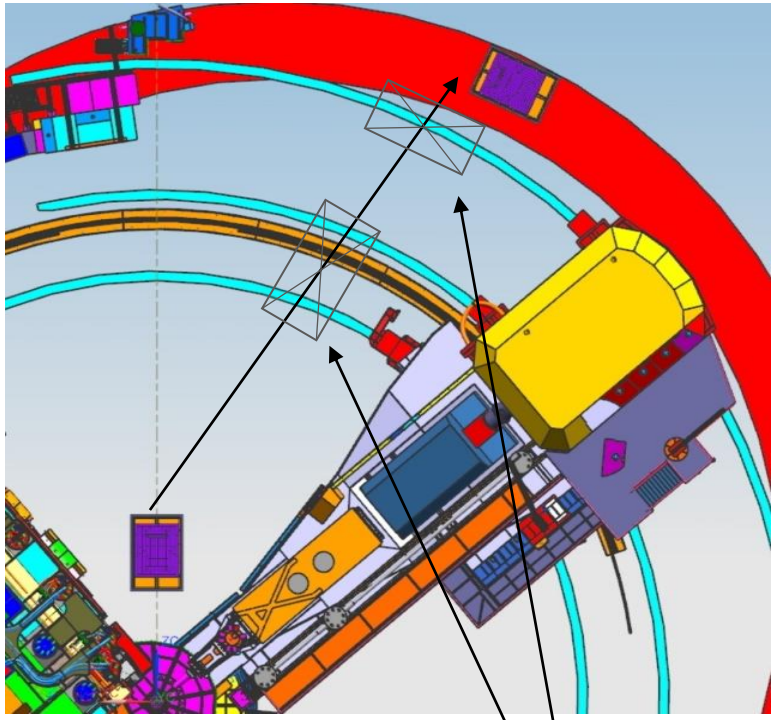
Big Bite Magnet can be dissembled and lifted over the SHMS with Hall C standard crane



Optional for Big Bite Magnet to be lifted with a mobile crane



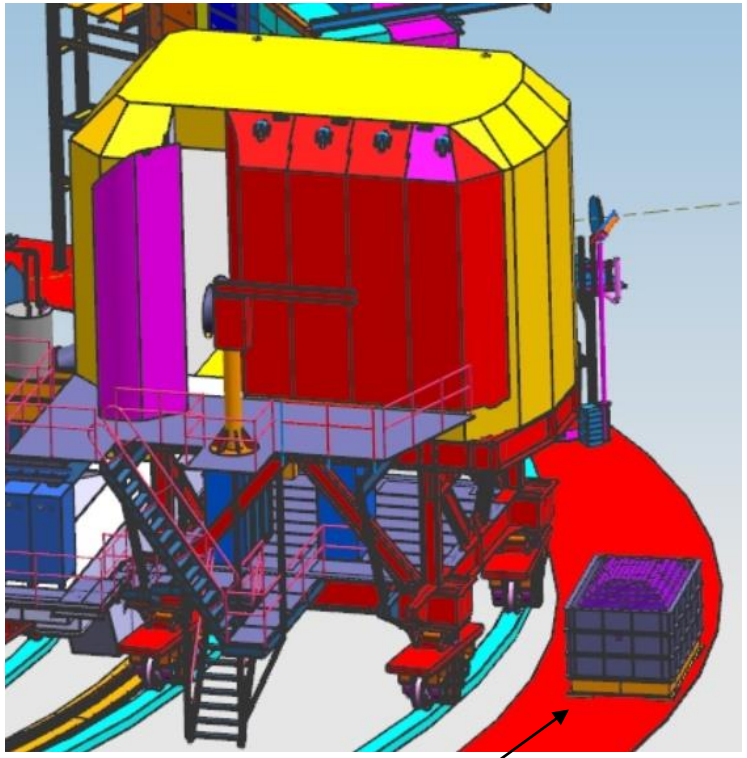
CPS Storage Location in Hall C



CPS moving to storage location

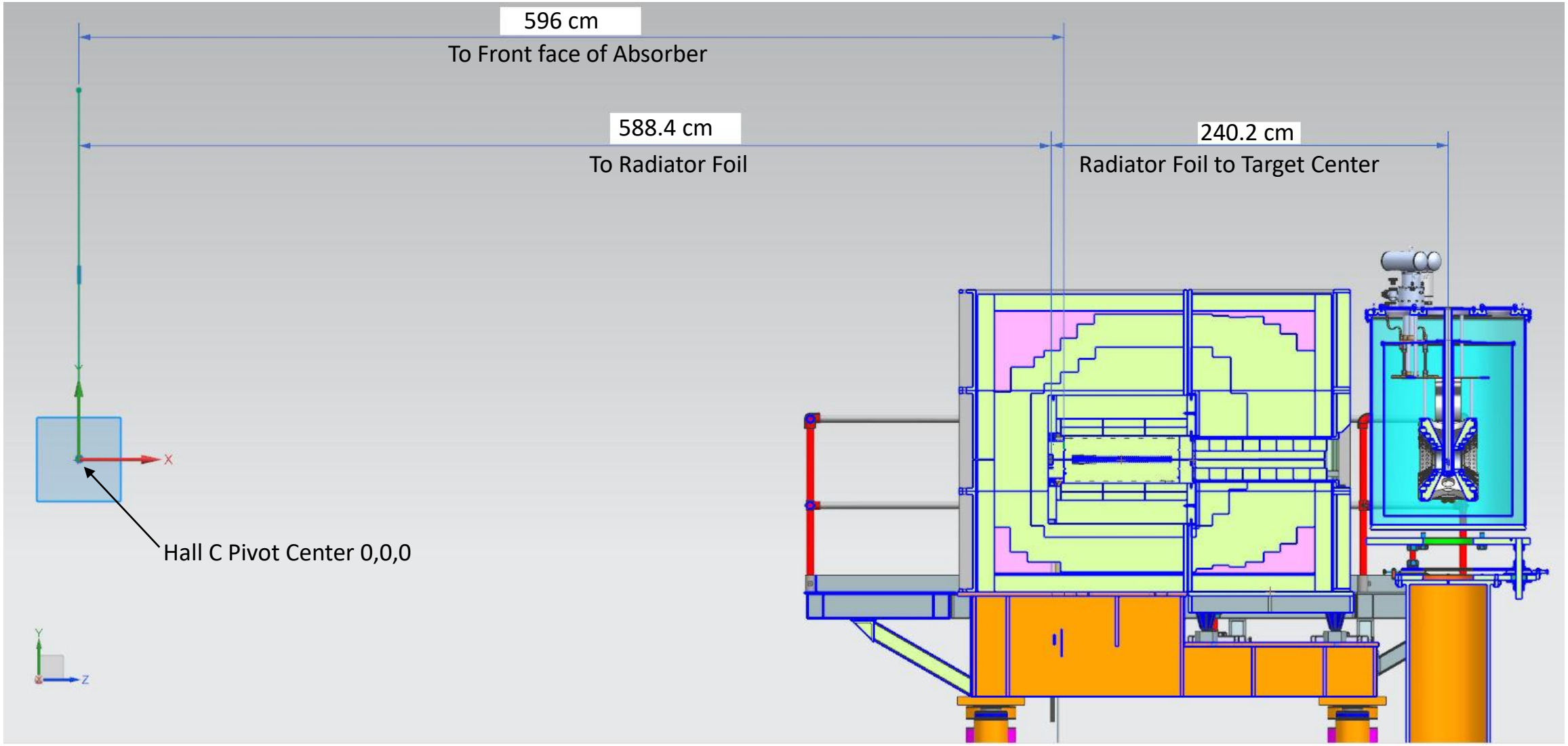
Ramps to go over SHMS, HMS rails

HMS shown at 30 degrees CPS in back

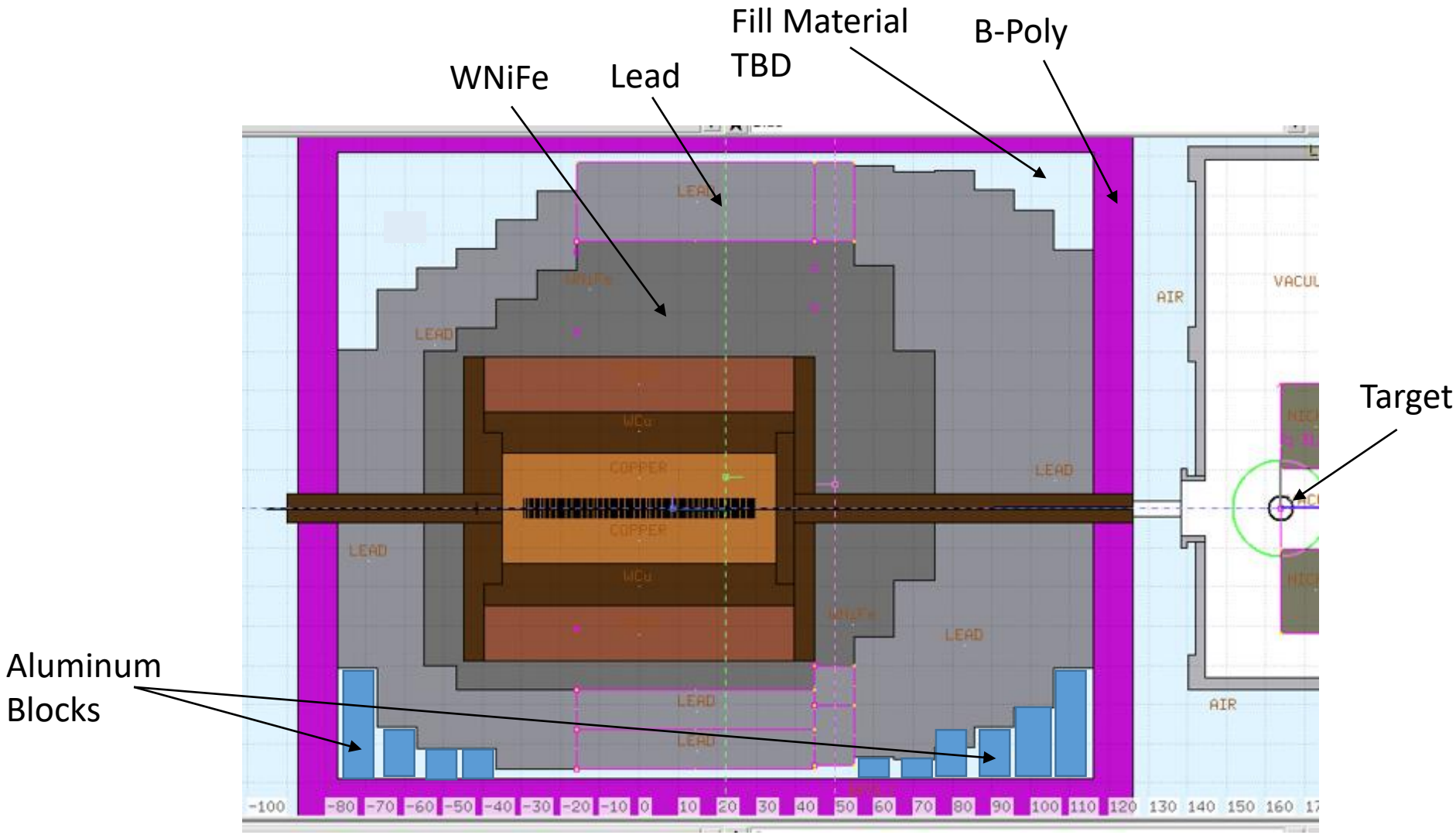


CPS in Storage Location

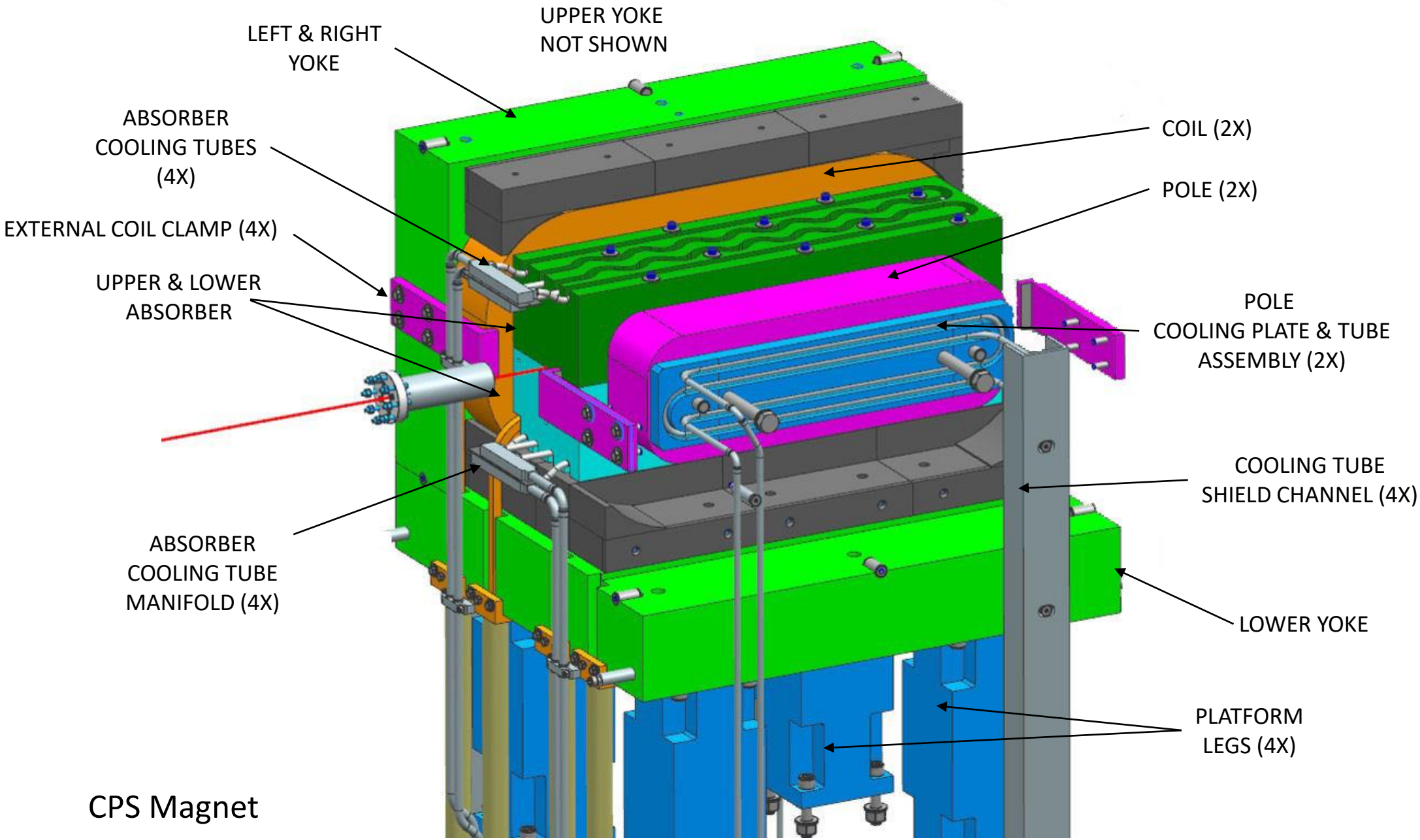
CPS Magnet Distances



Side cross section of CPS shielding

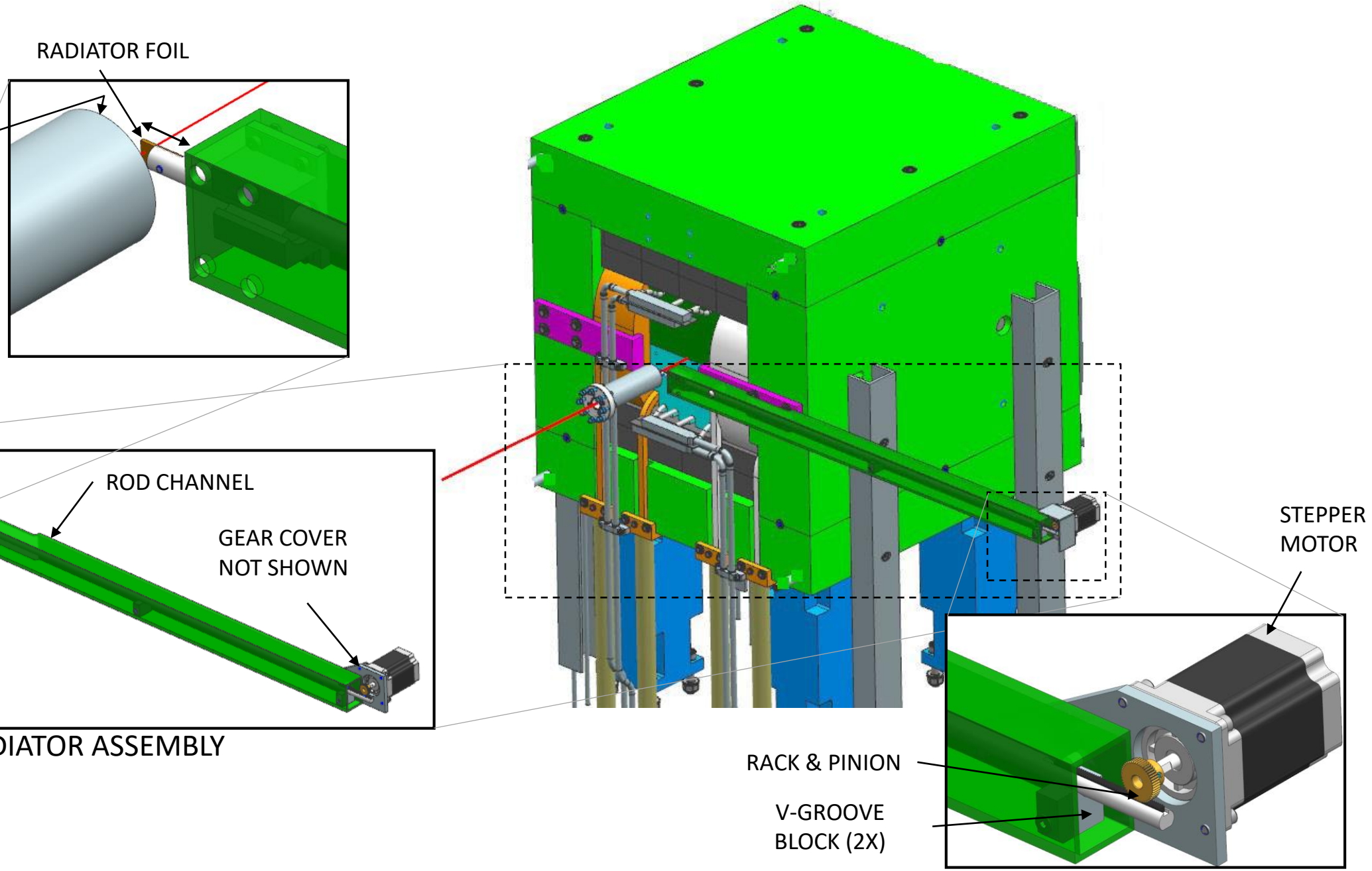


CPS in Hall C

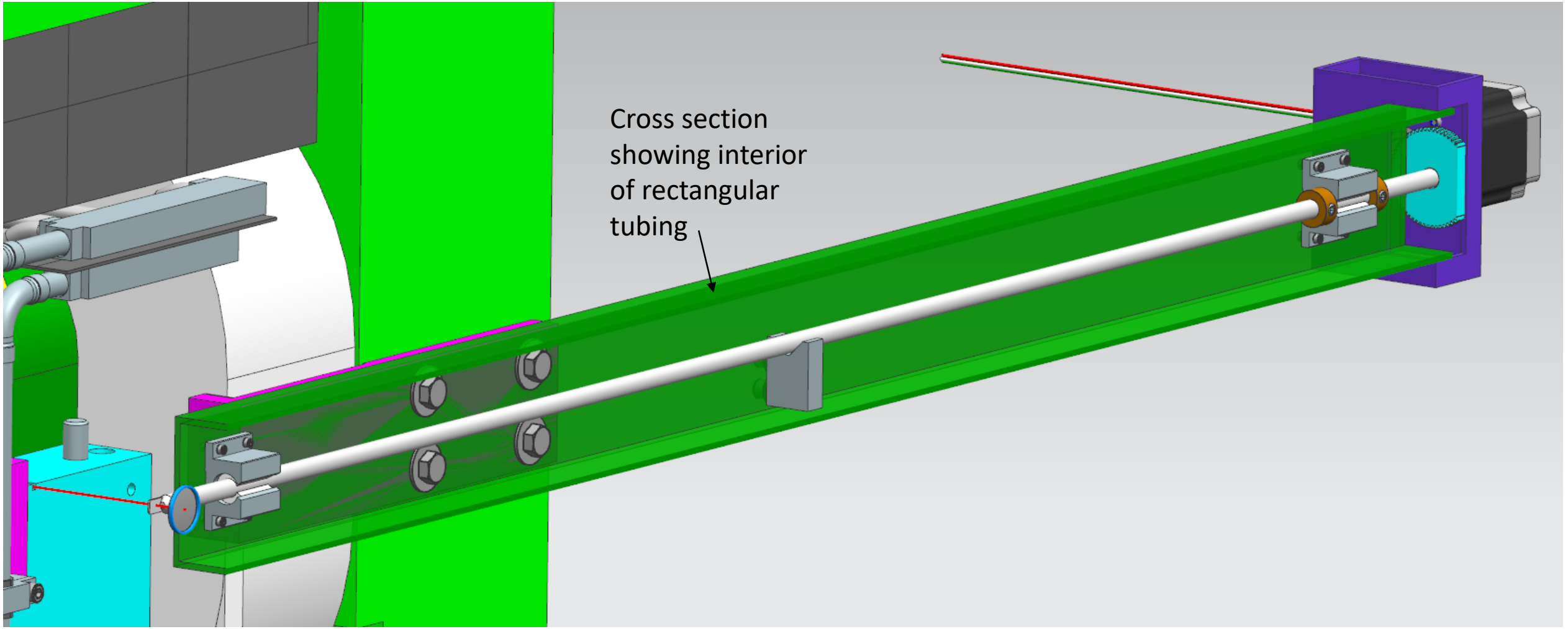


CPS Magnet

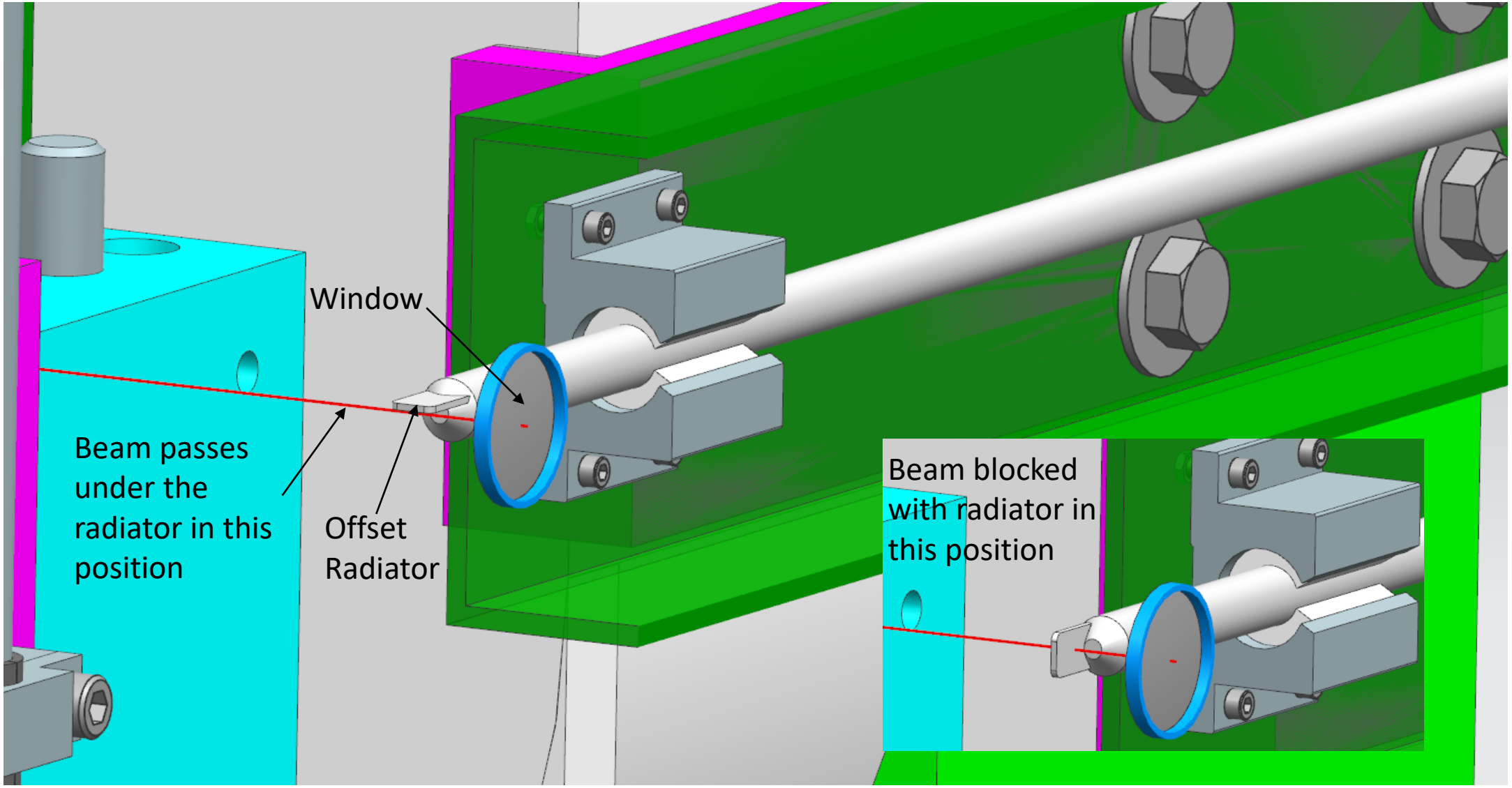
CPS in Hall C


RADIATOR FOIL
ALUMINUM WINDOW
ROD CHANNEL
GEAR COVER NOT SHOWN
RADIATOR ASSEMBLY
STEPPER MOTOR
RACK & PINION
V-GROOVE BLOCK (2X)

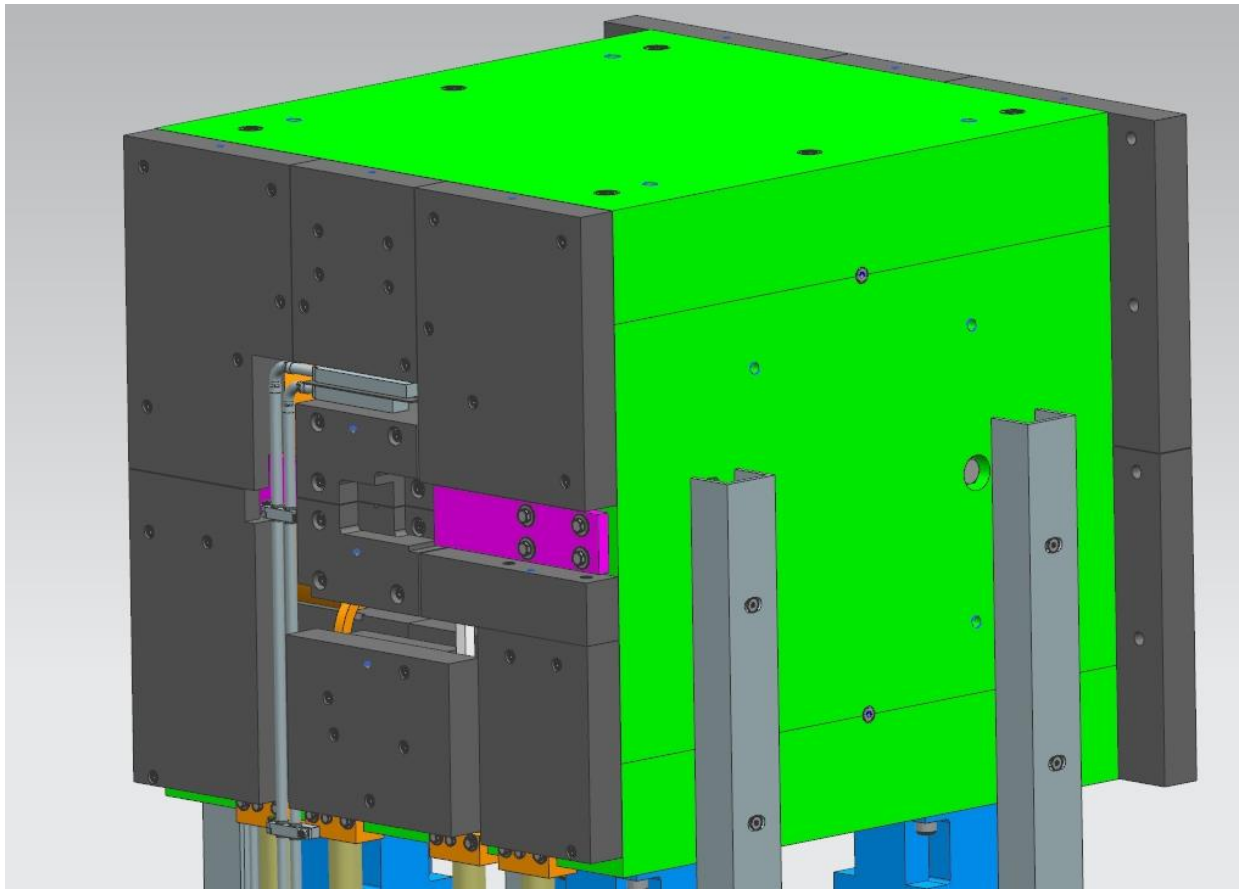
CPS Radiator



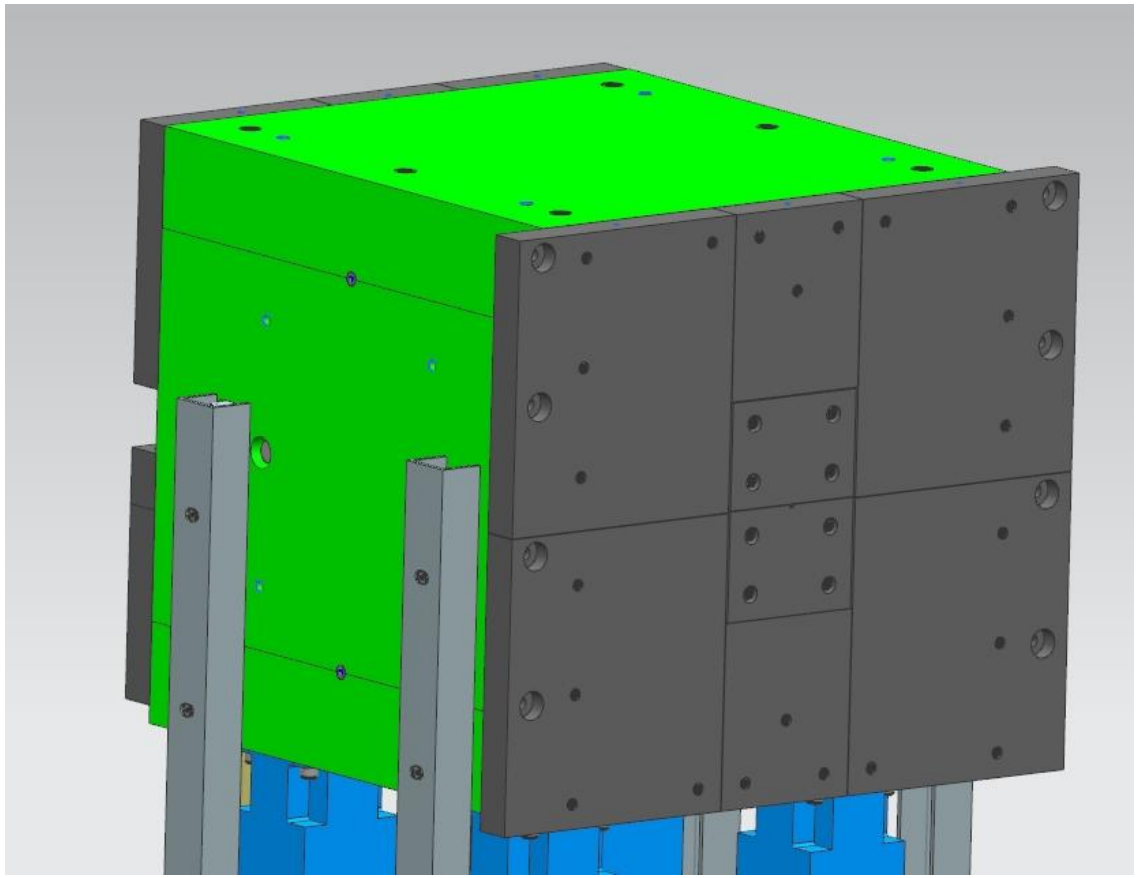
CPS Radiator



Tungsten Copper (80/20) 2” shielding added to magnet (Dark Gray)



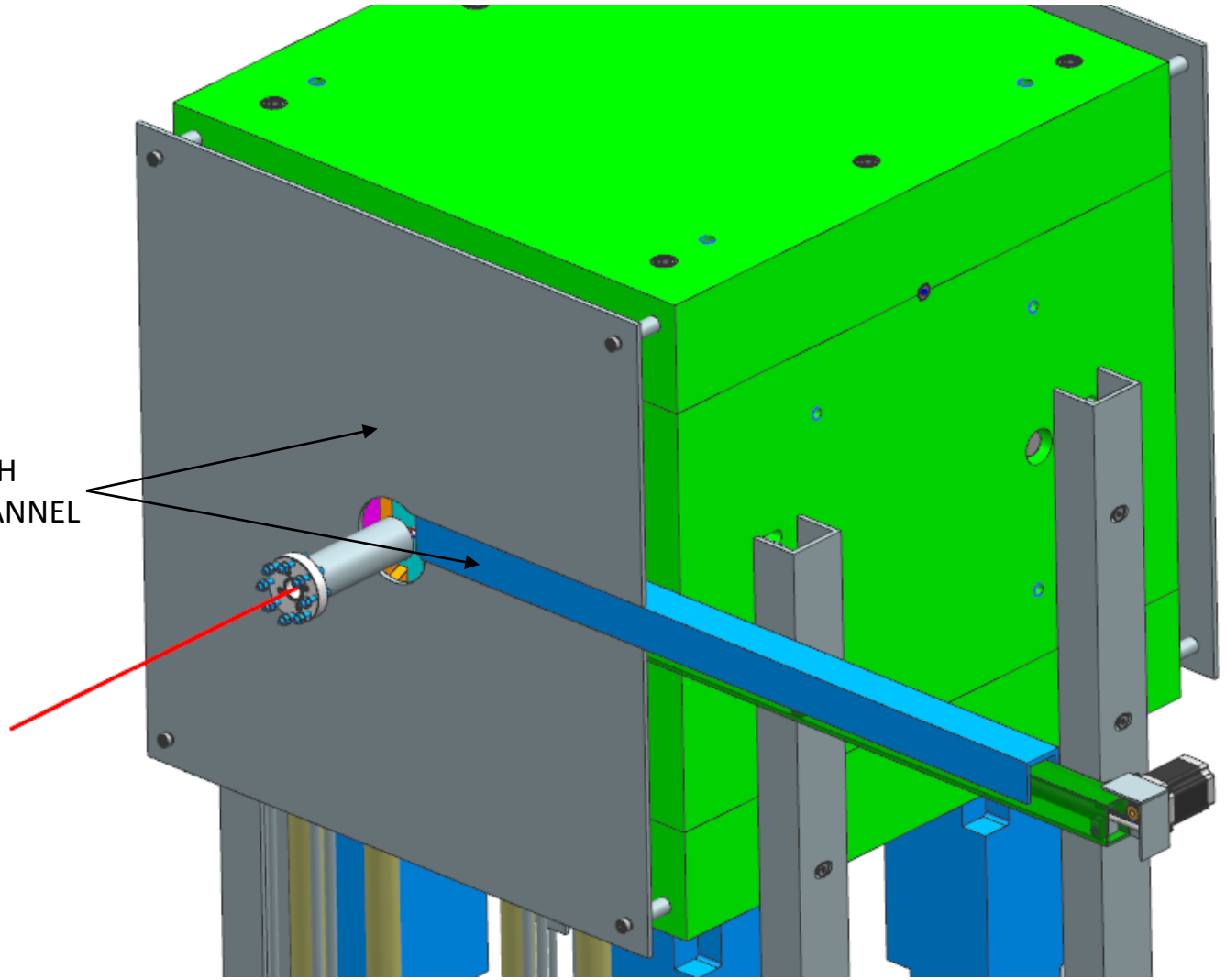
Upstream



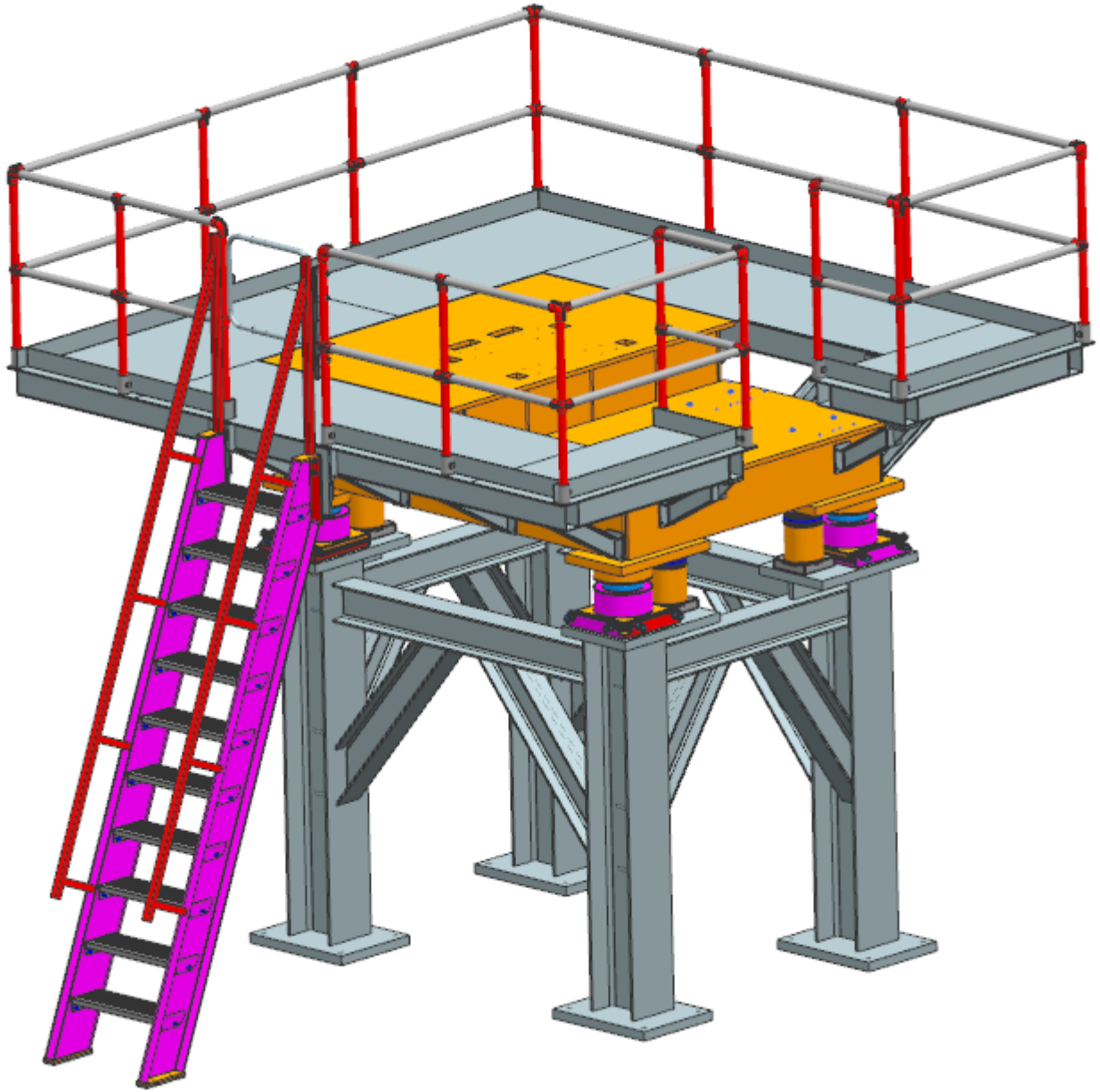
Downstream

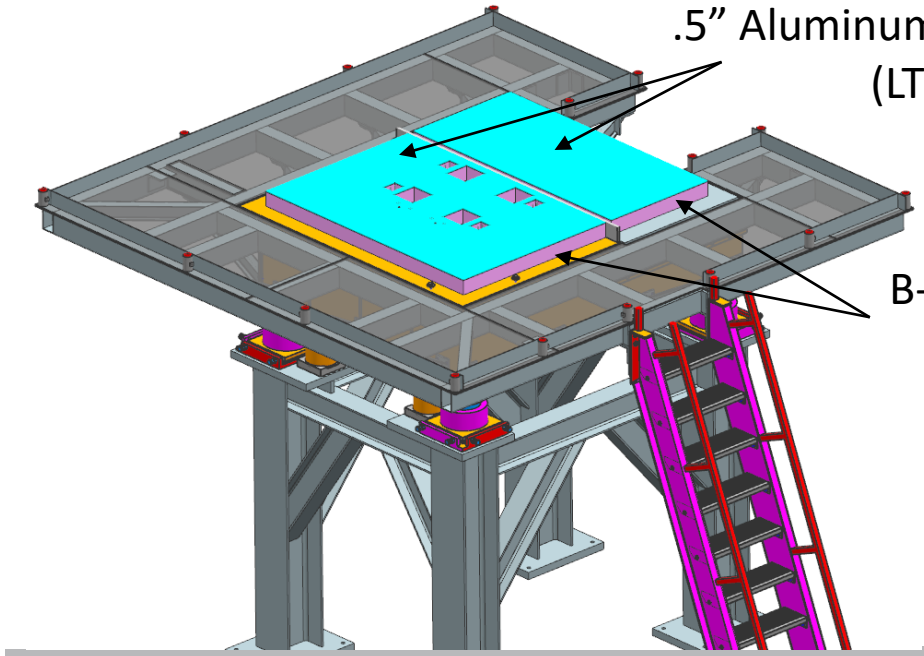
HALL C
CPS

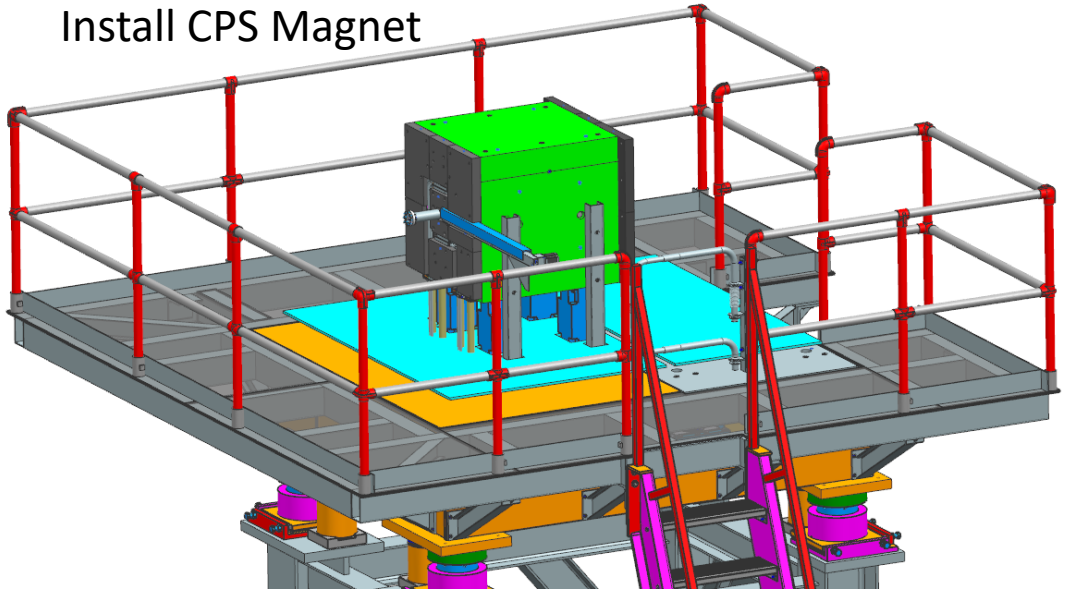
UP & DS COVER PLATE WITH
PROTECTION FOR ROD CHANNEL

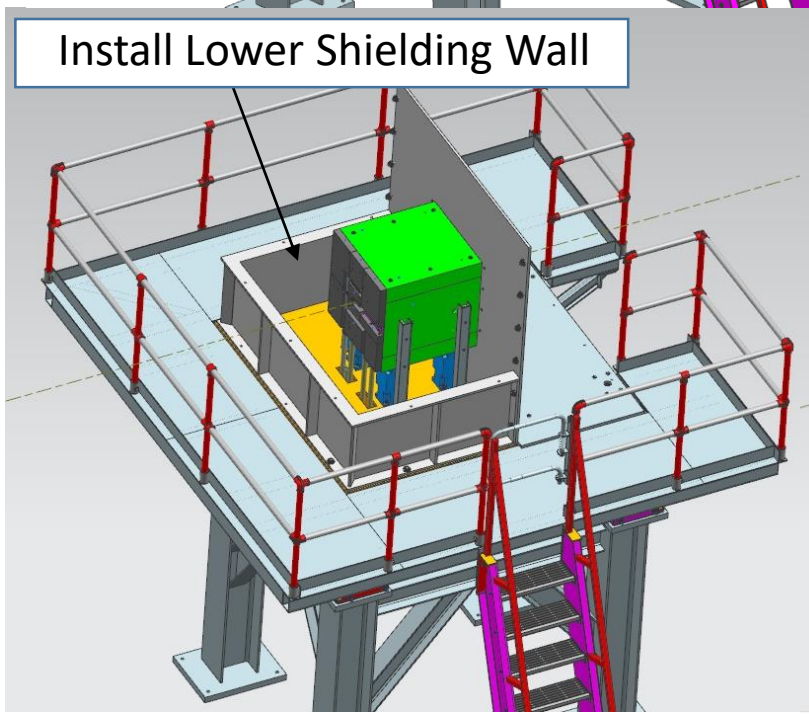


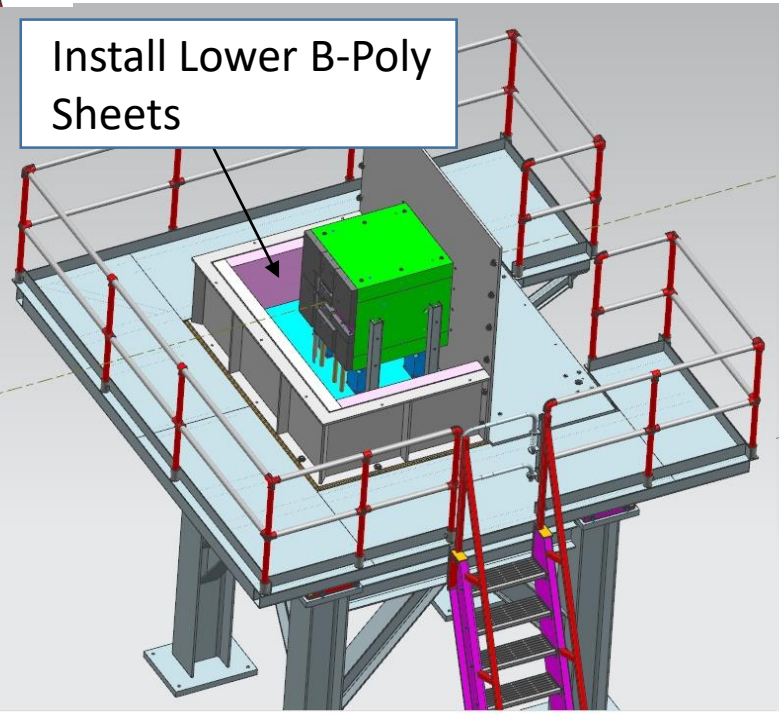
CPS shielding platform assembly

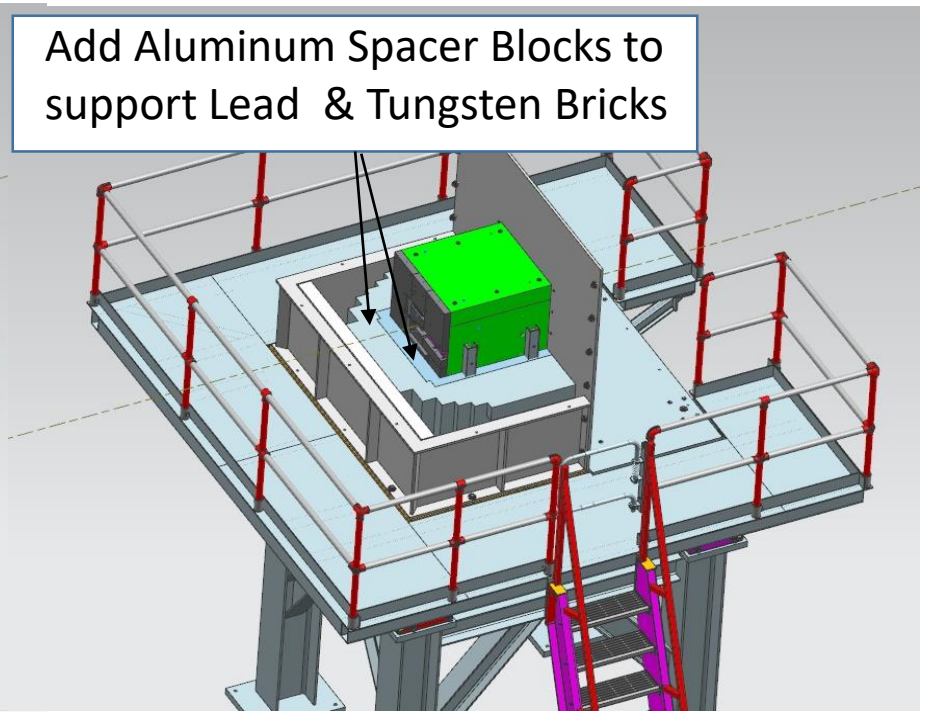



.5” Aluminum Sheets (2X)
(LT Blue)
B-Poly Sheets (2X)
(Pink)

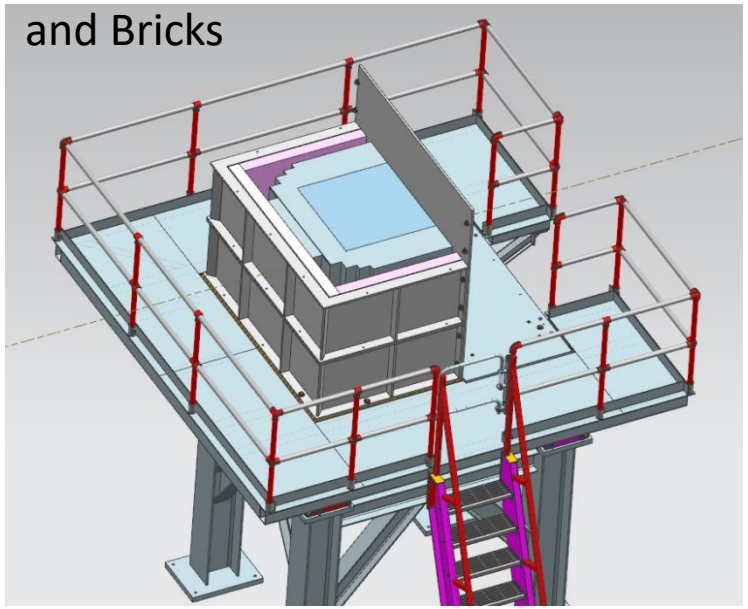

Install CPS Magnet


Install Lower Shielding Wall

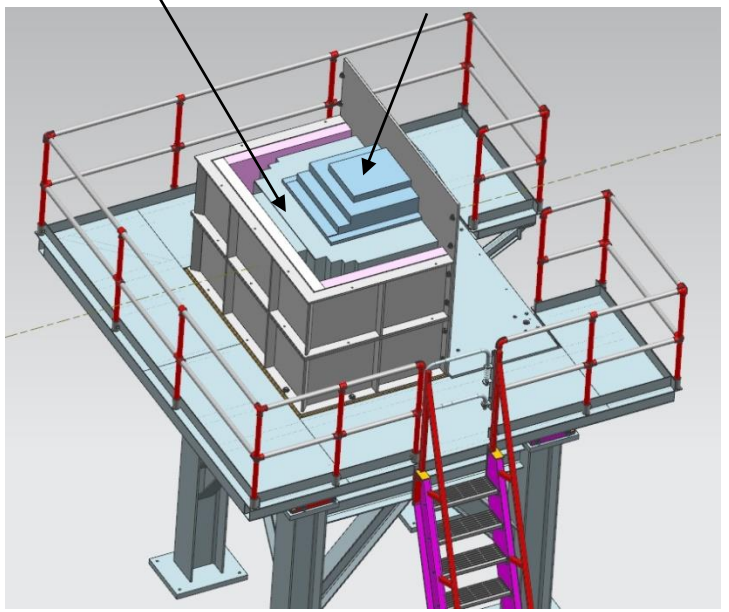

Install Lower B-Poly Sheets


Add Aluminum Spacer Blocks to support Lead & Tungsten Bricks

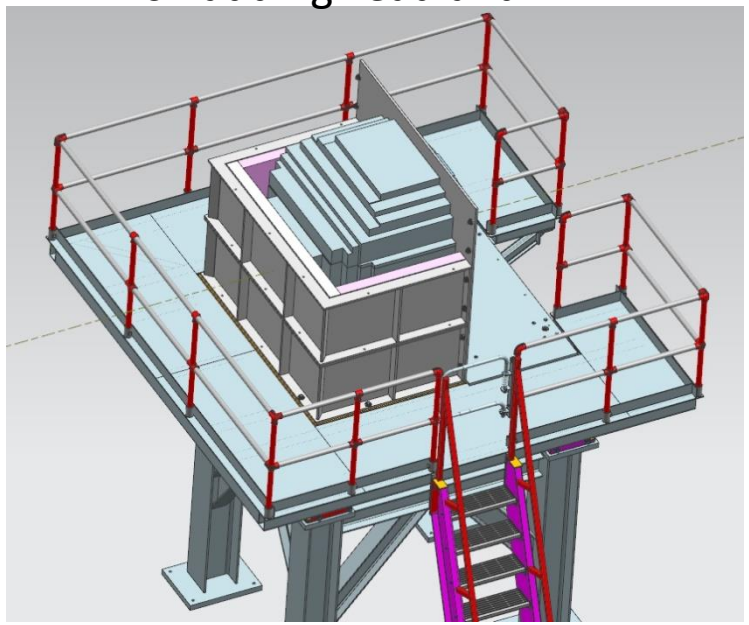
Add Second Layer Wall and Load B-Poly and Bricks



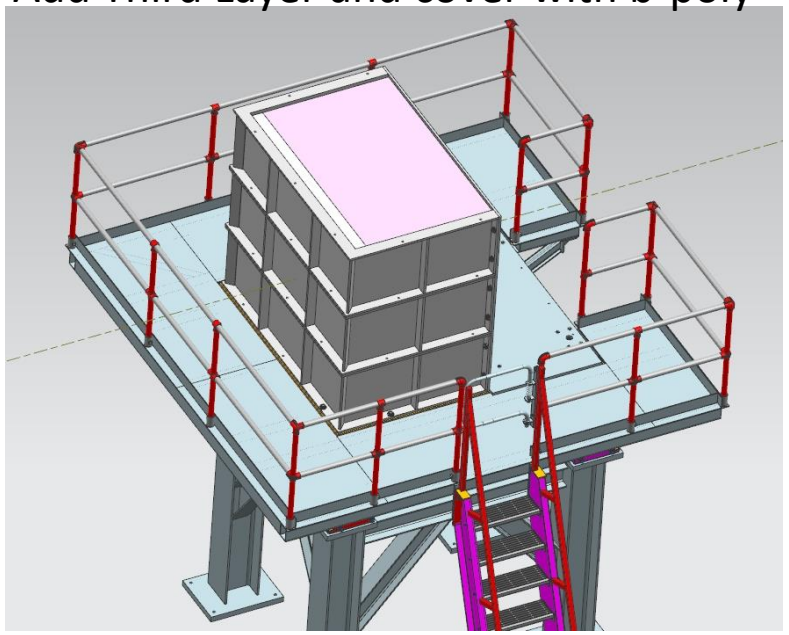
Lead Tungsten



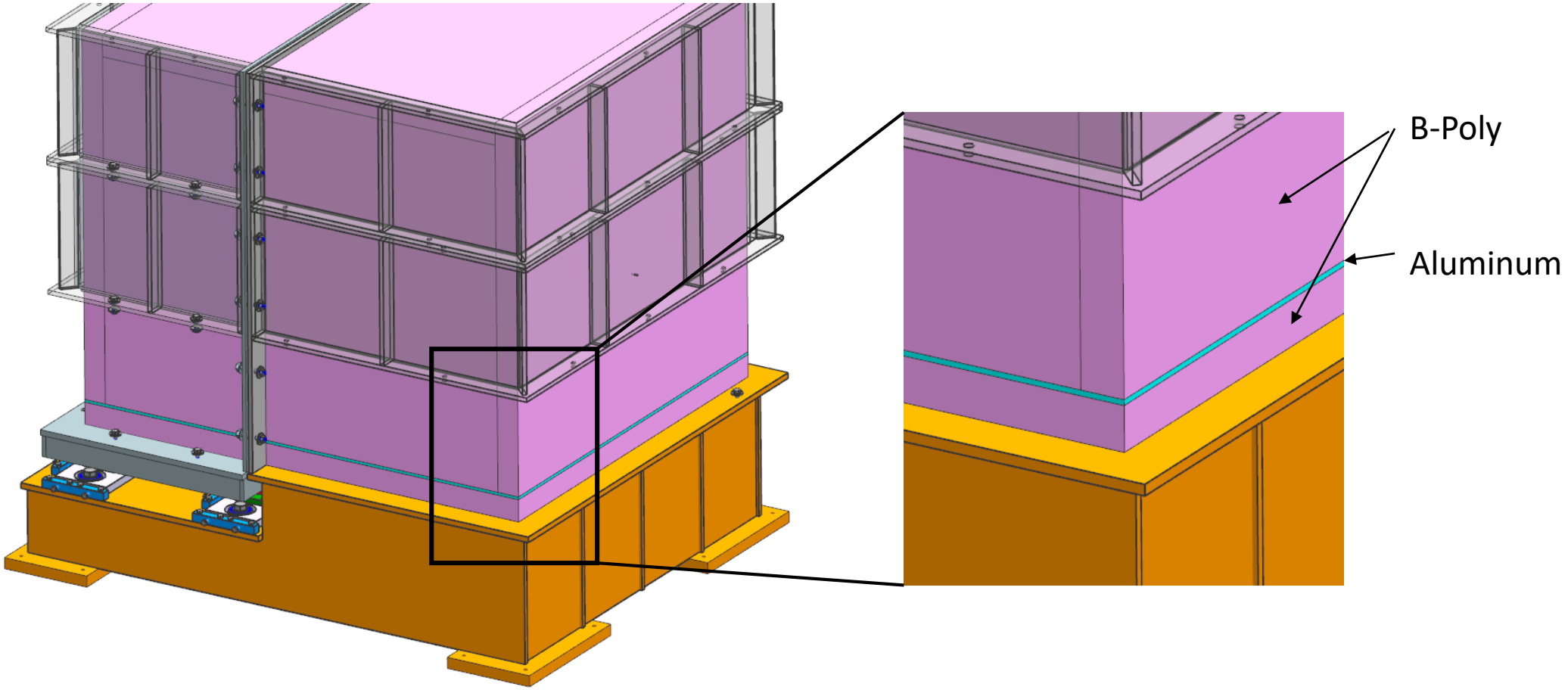
Finish adding Lead and …

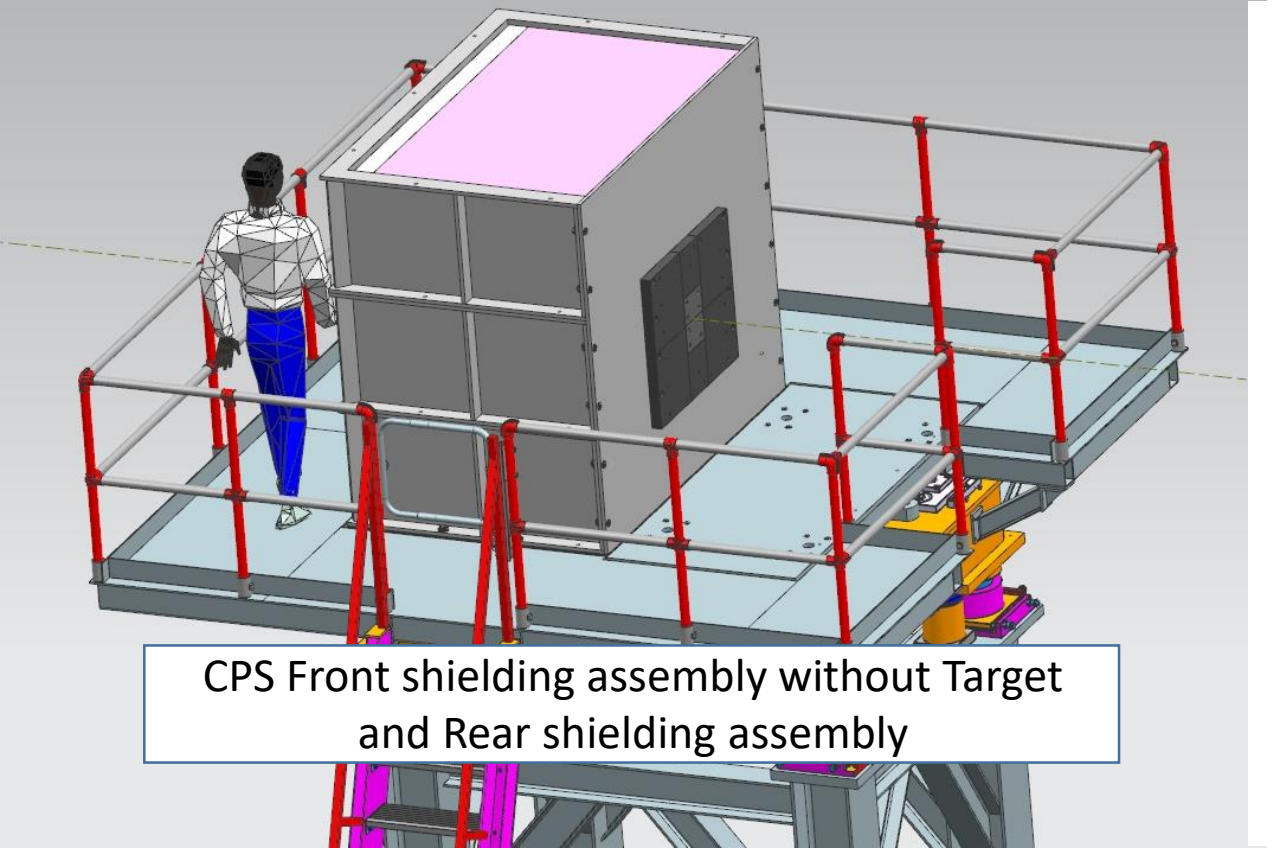


Add Third Layer and cover with b-poly

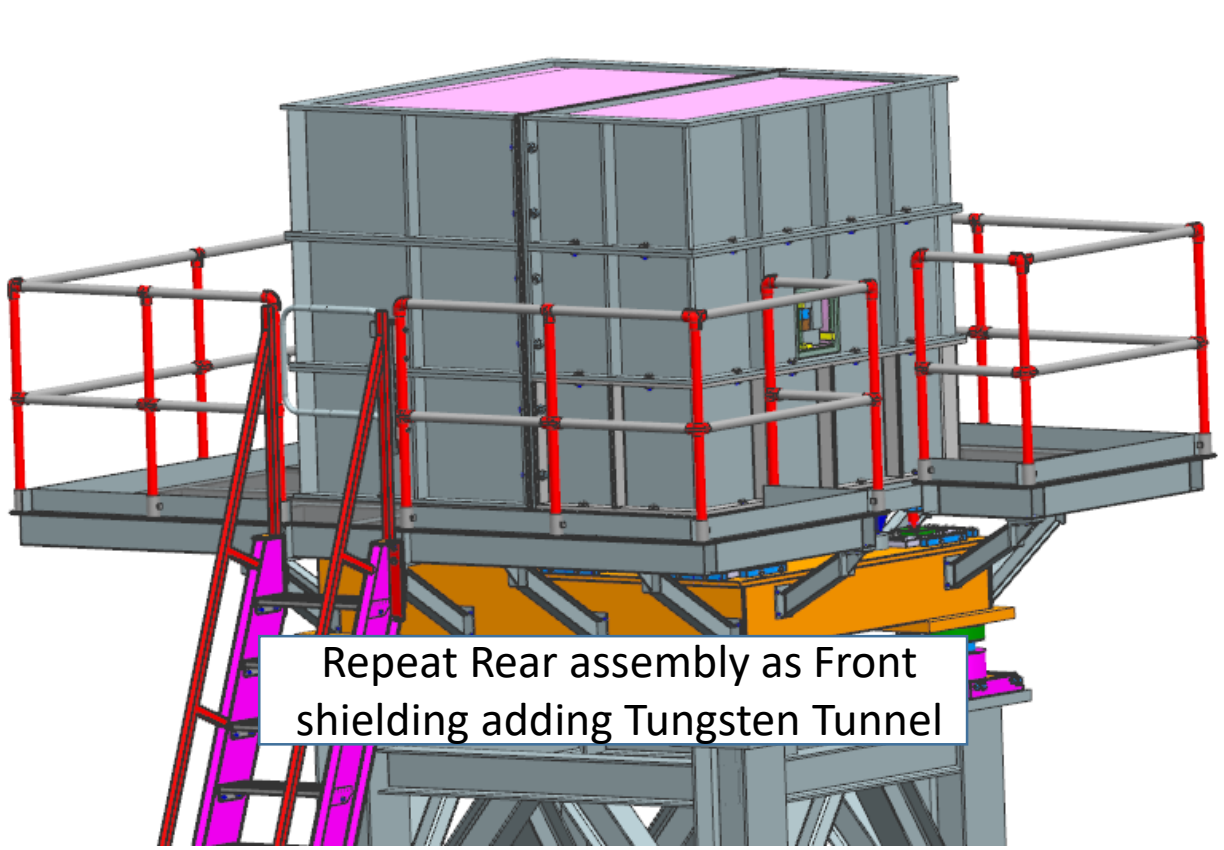


B-Poly Sheet with .5” Aluminum sheet

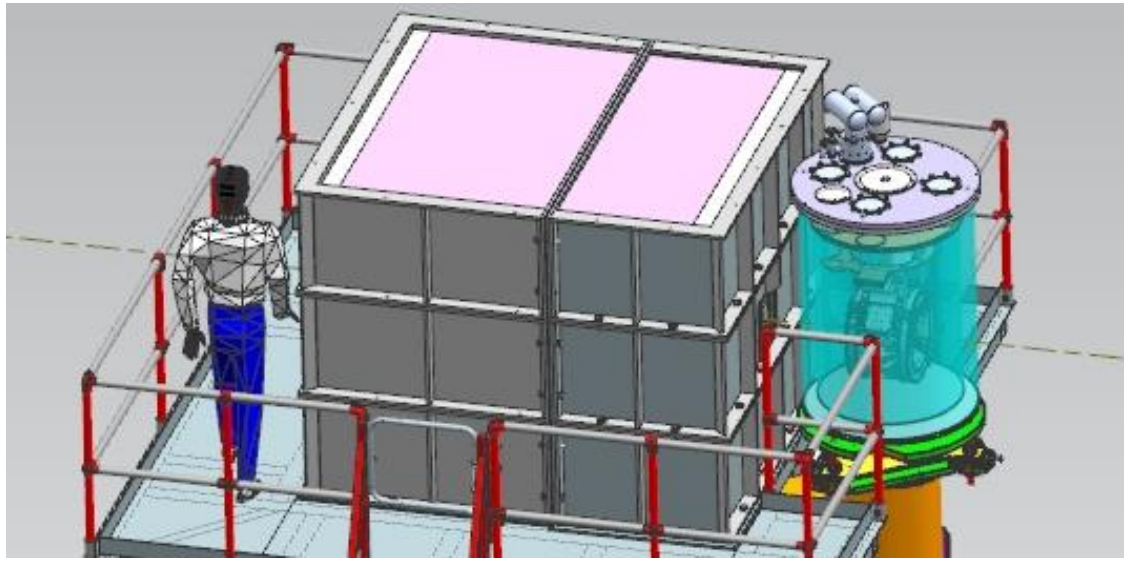




CPS Front shielding assembly without Target and Rear shielding assembly

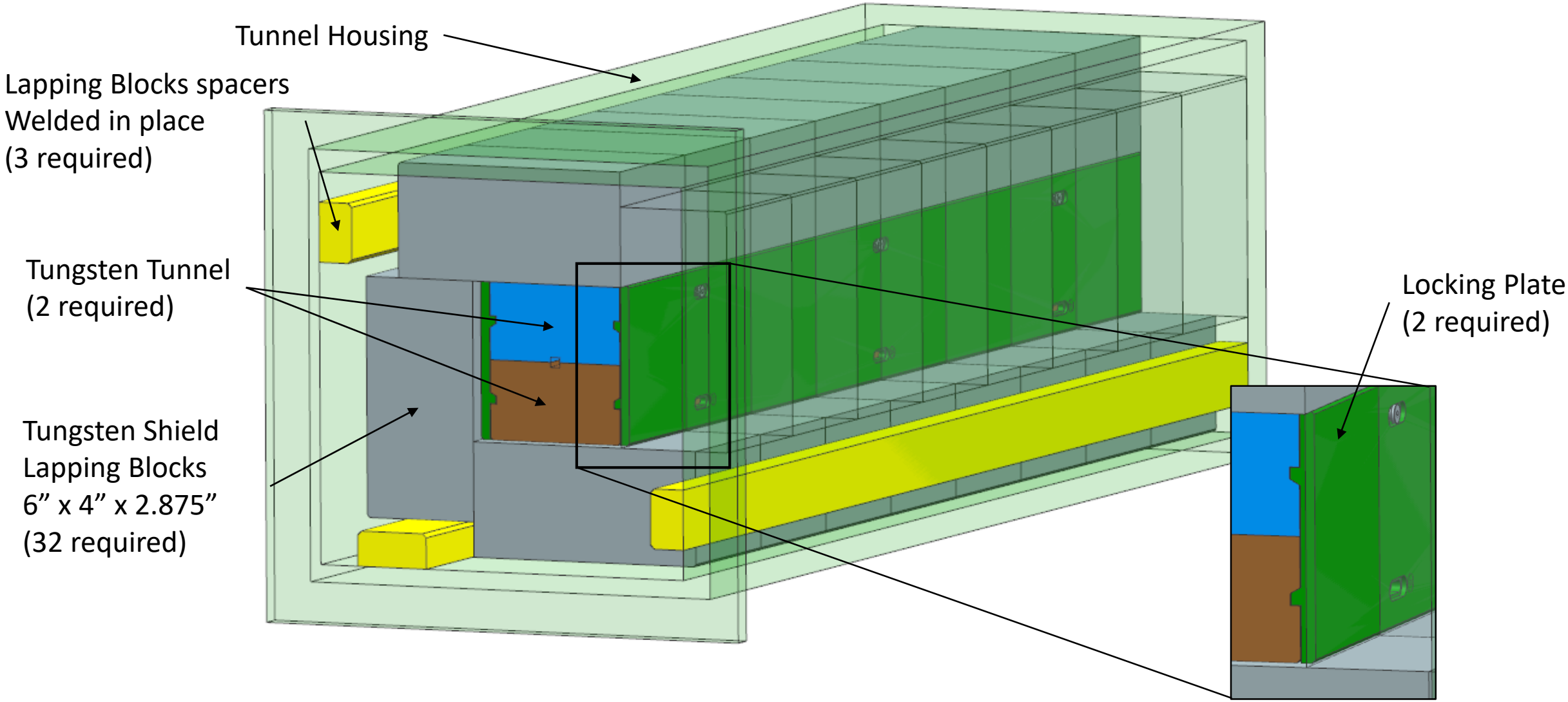


Repeat Rear assembly as Front shielding adding Tungsten Tunnel

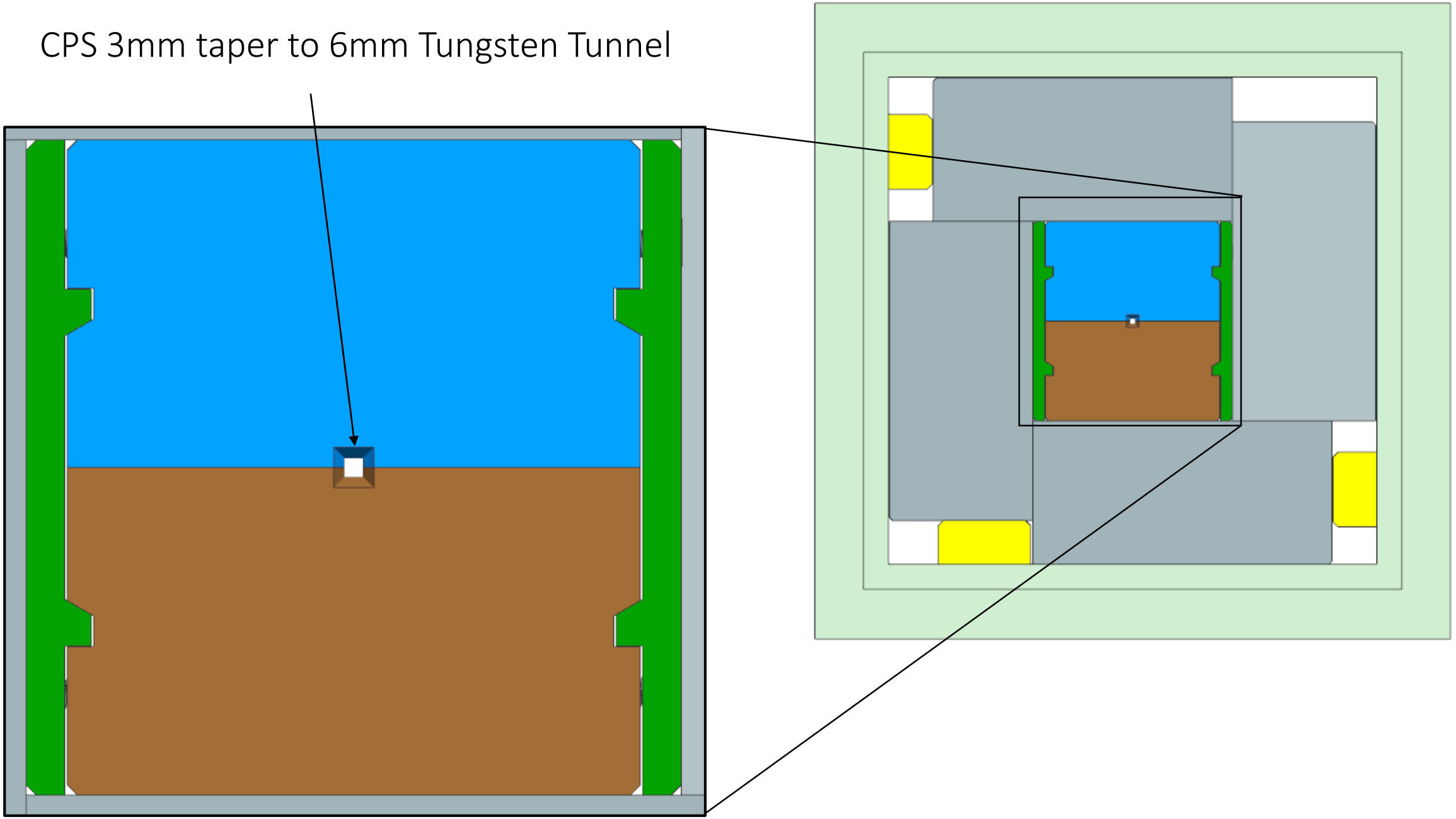


Target position to CPS

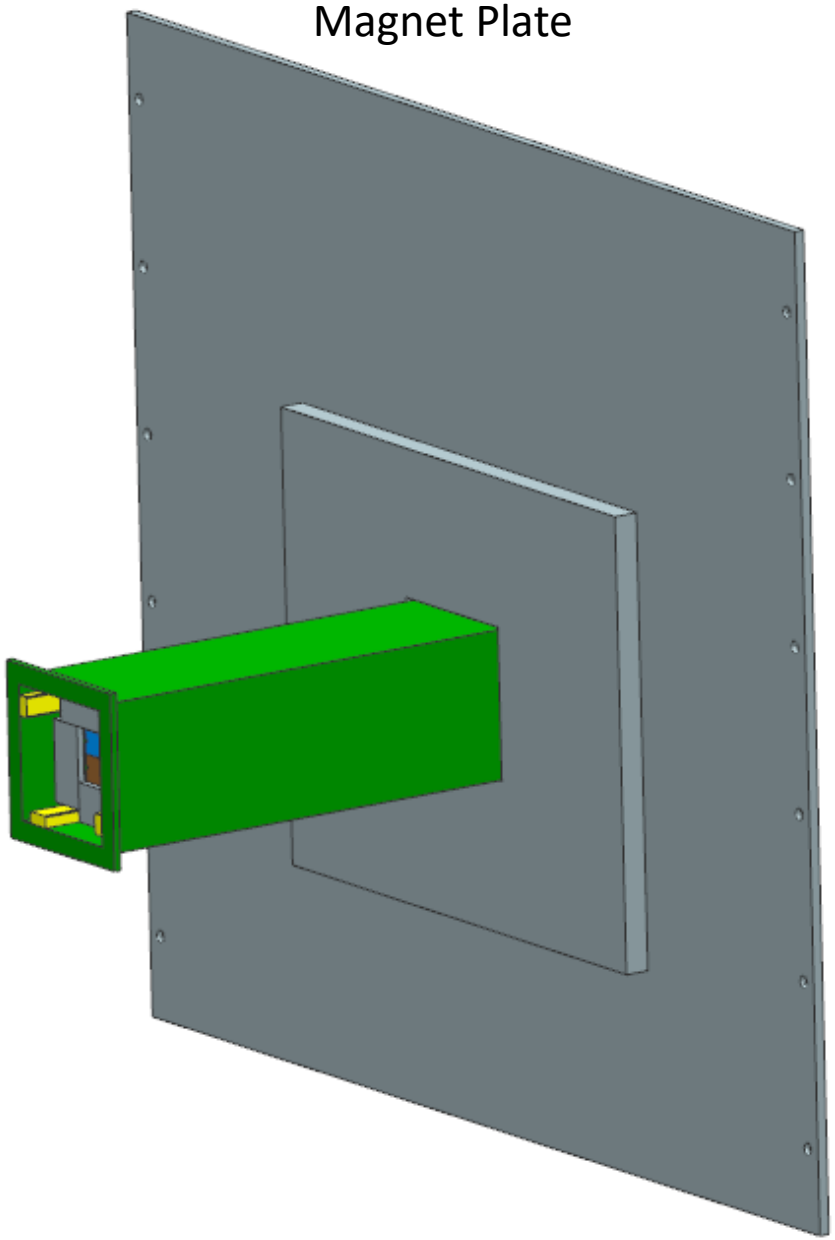
CPS 3mm to 6mm Tungsten Tunnel



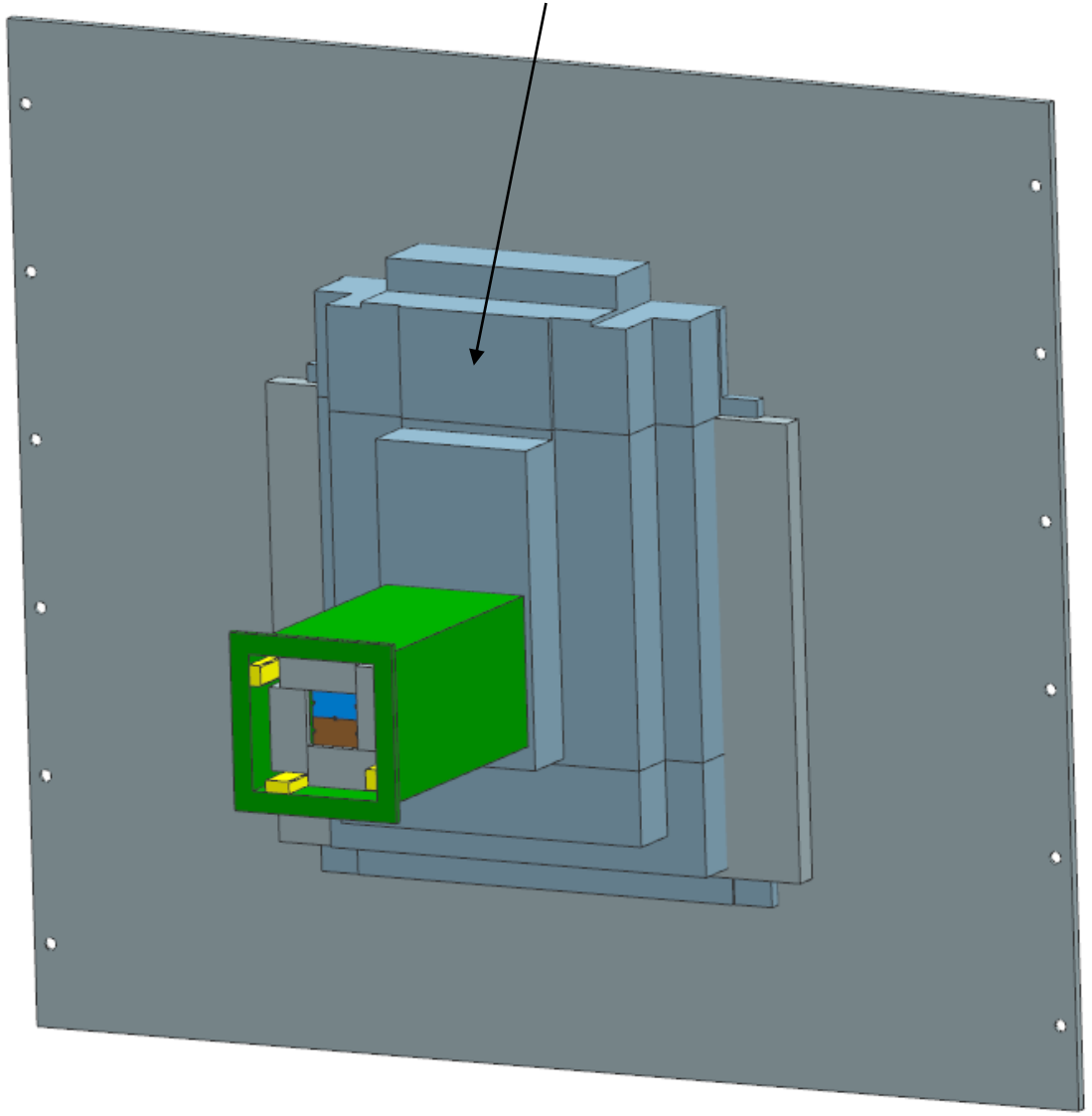
CPS 3mm taper to 6mm Tungsten Tunnel



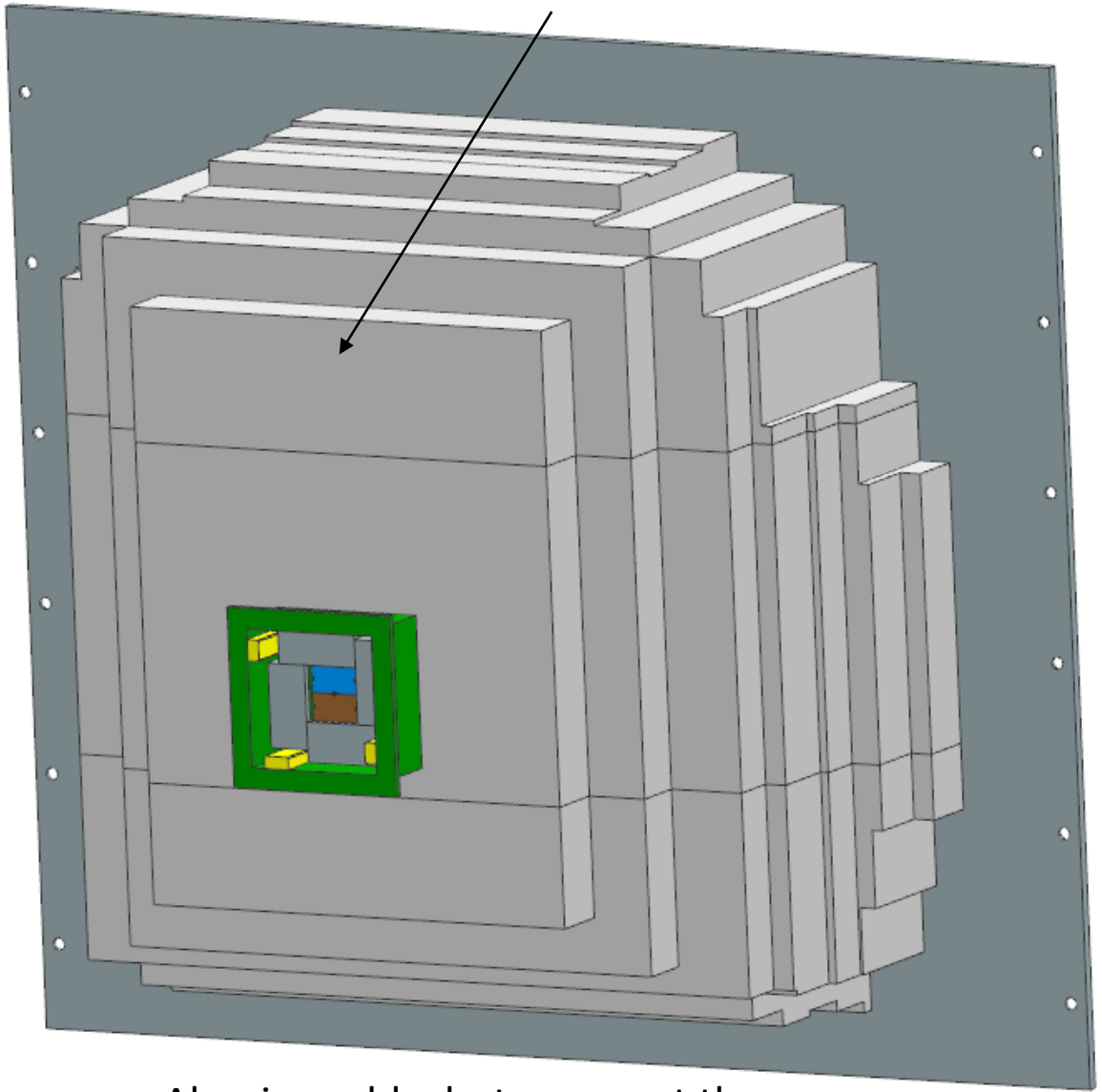
Rear Shielding
Magnet Plate



Rear Tungsten Brick

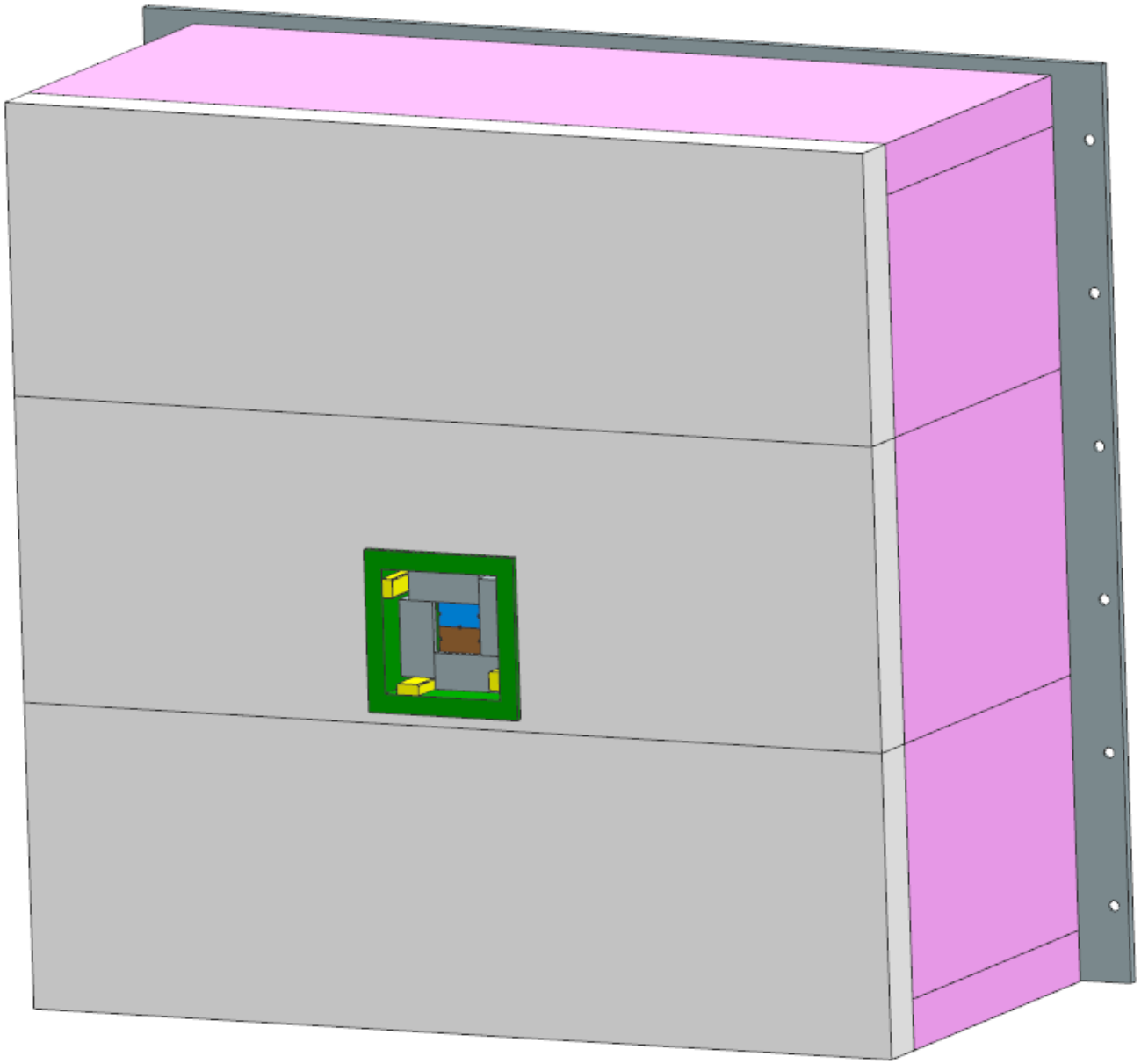


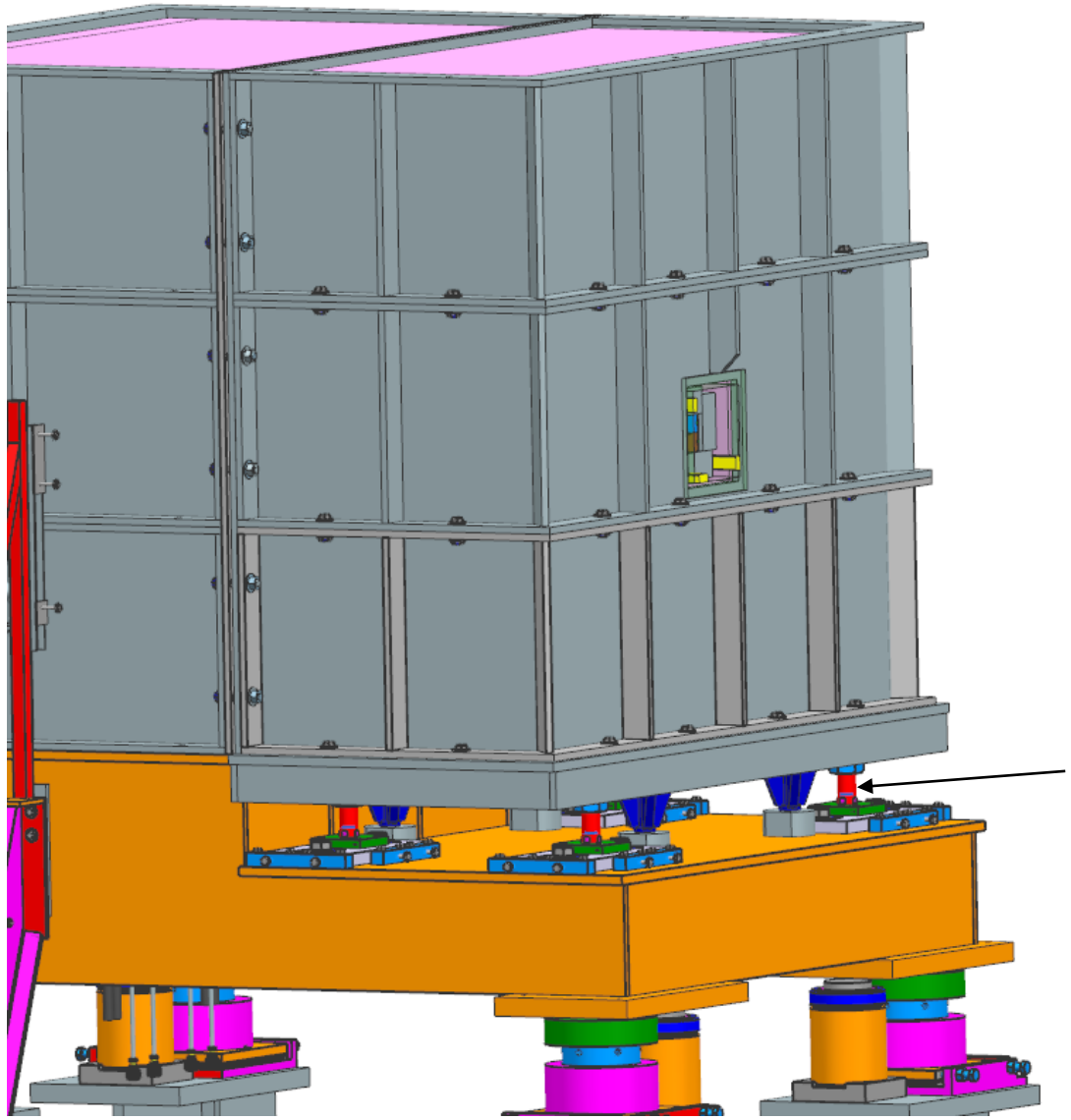
Rear Lead Bricks



Aluminum blocks to support the lead bricks (Not shown)

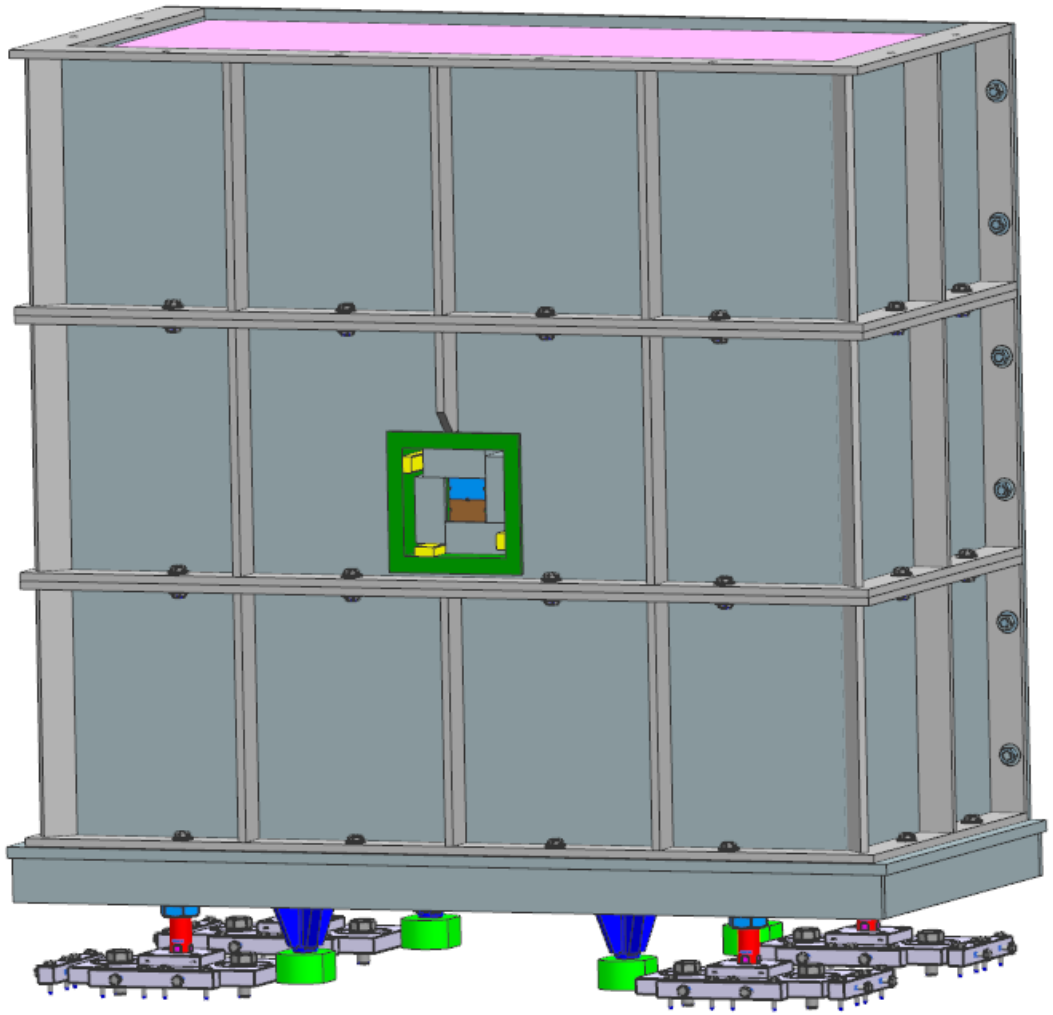
B-Poly Sheets

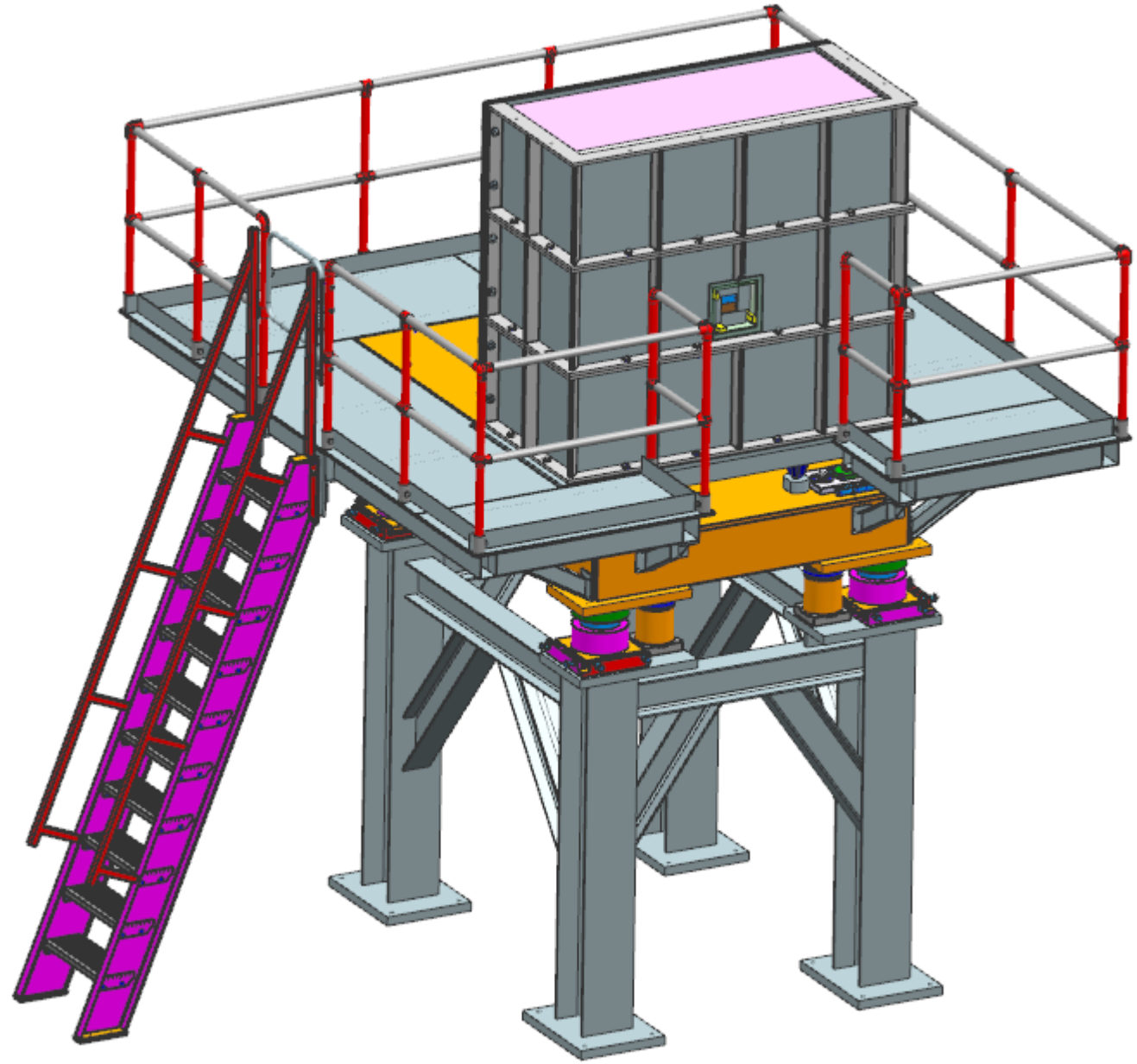


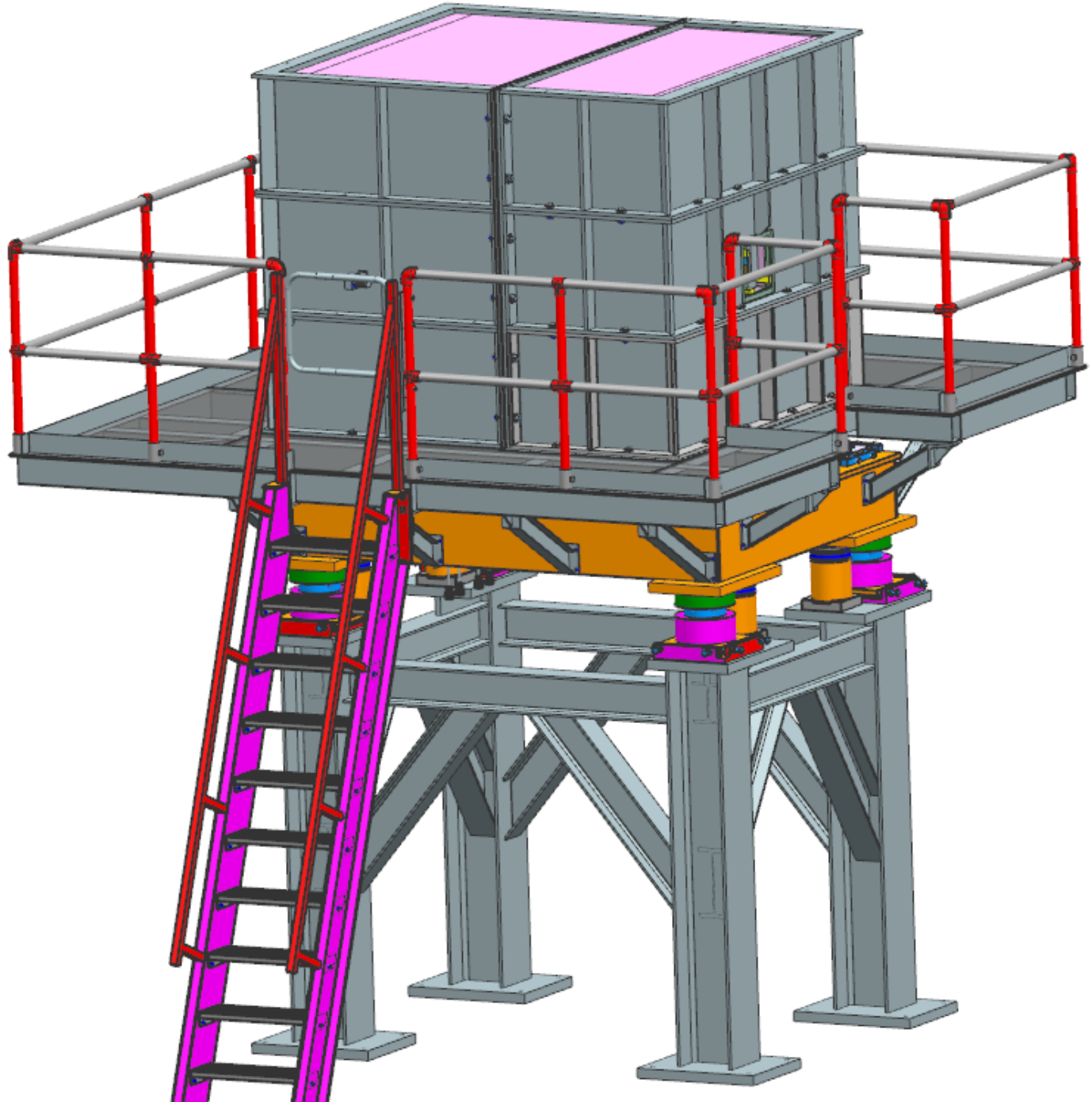


Rear Shielding independent of Front Shielding using lifts and Jacks

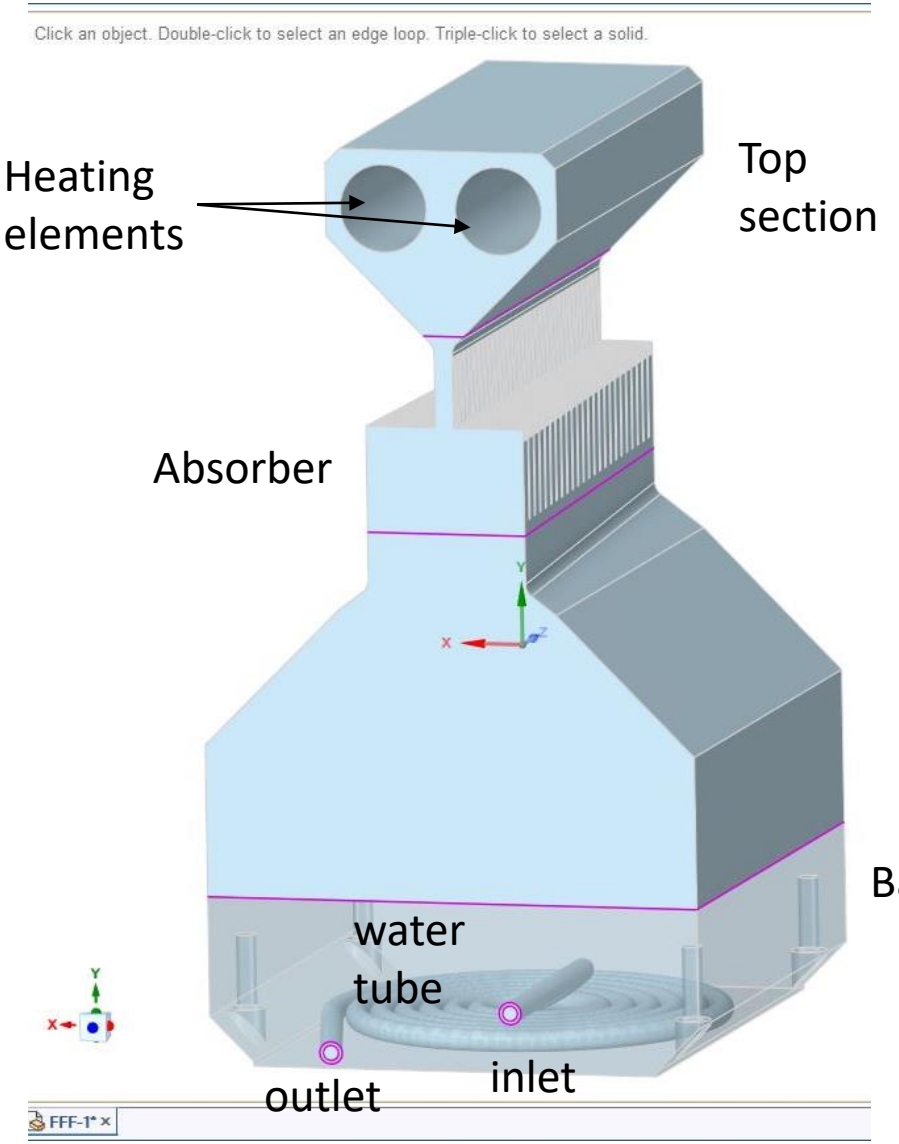
Rear Shielding Assembly

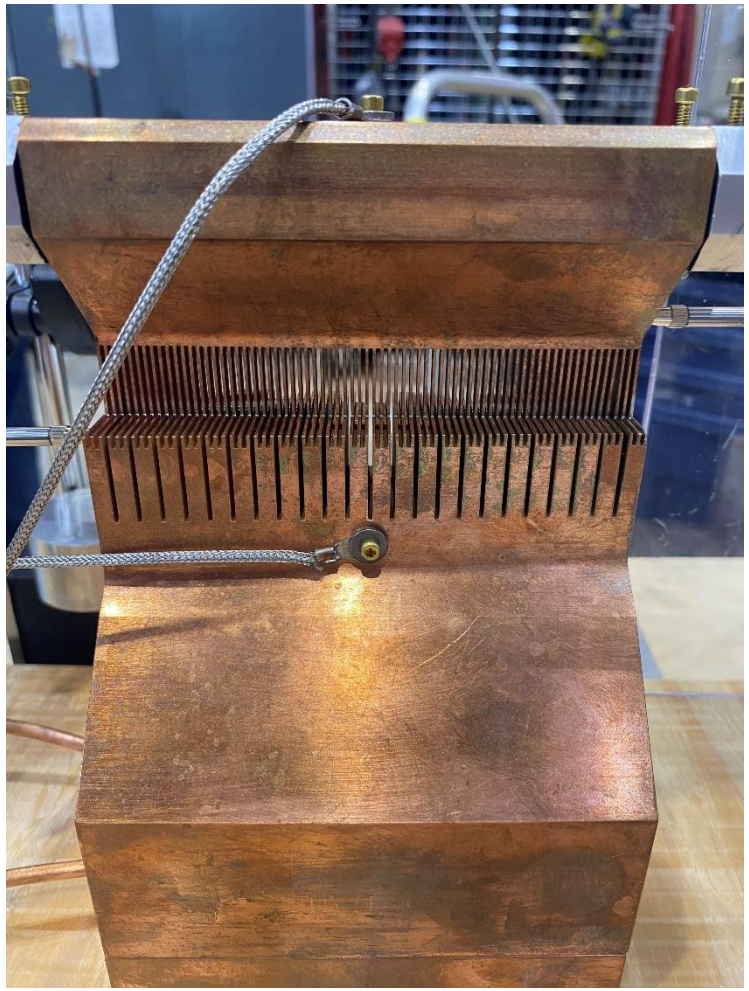




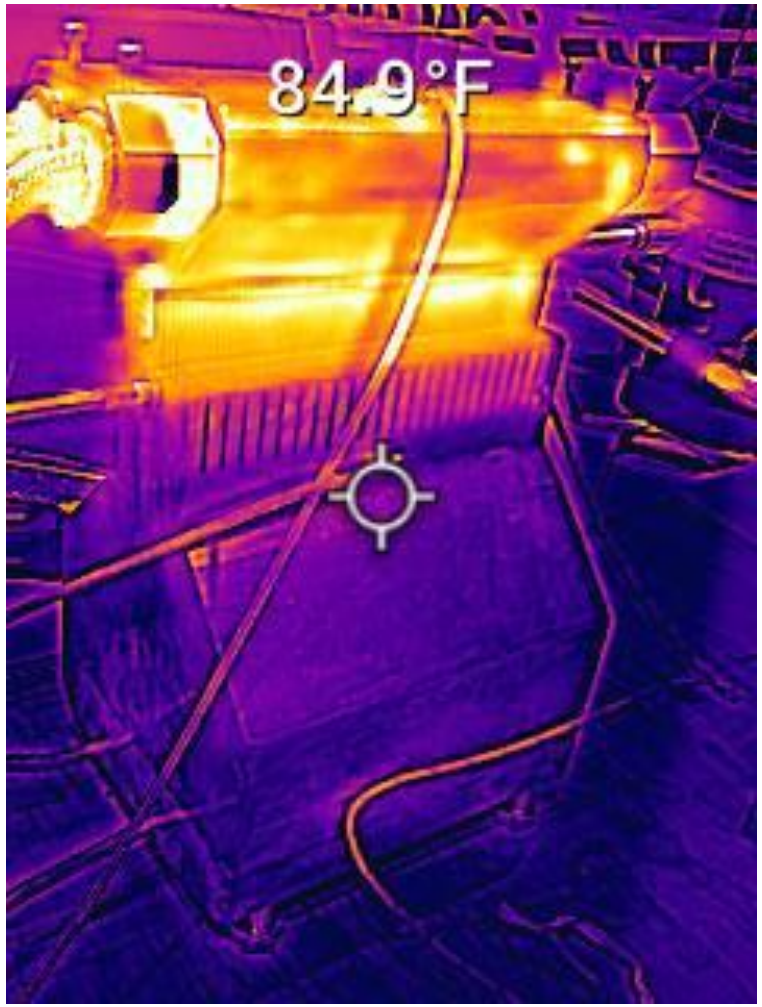


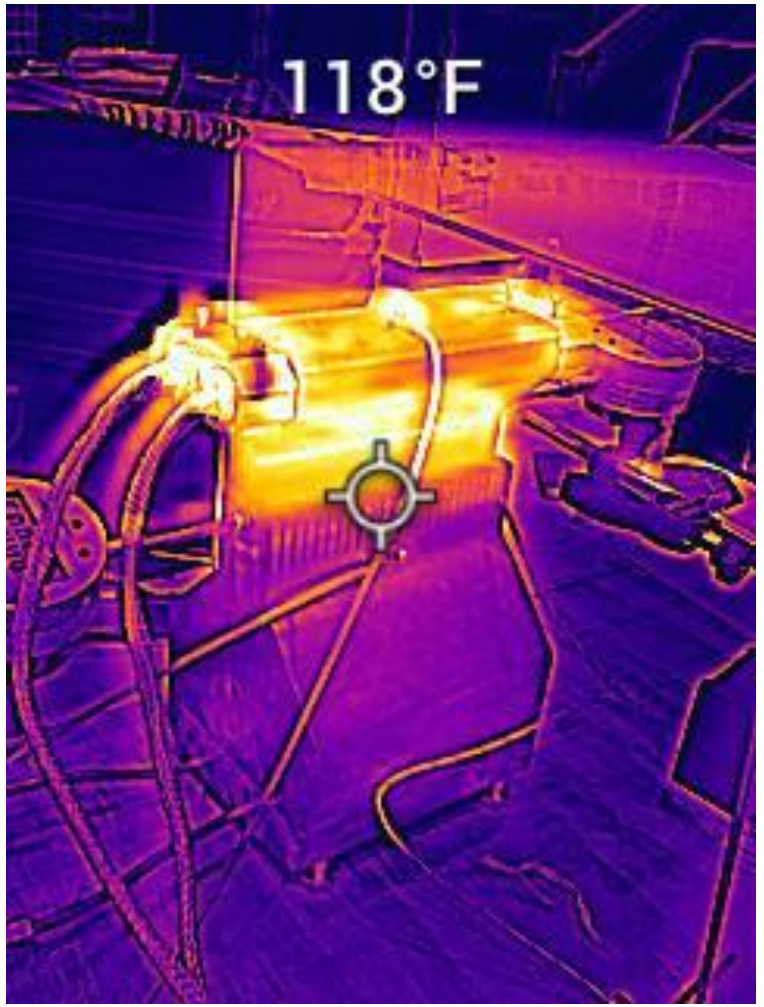
A thermal analysis was performed using both Ideas and Fluent software.
Both Models agreed well with each other on temperature profiles

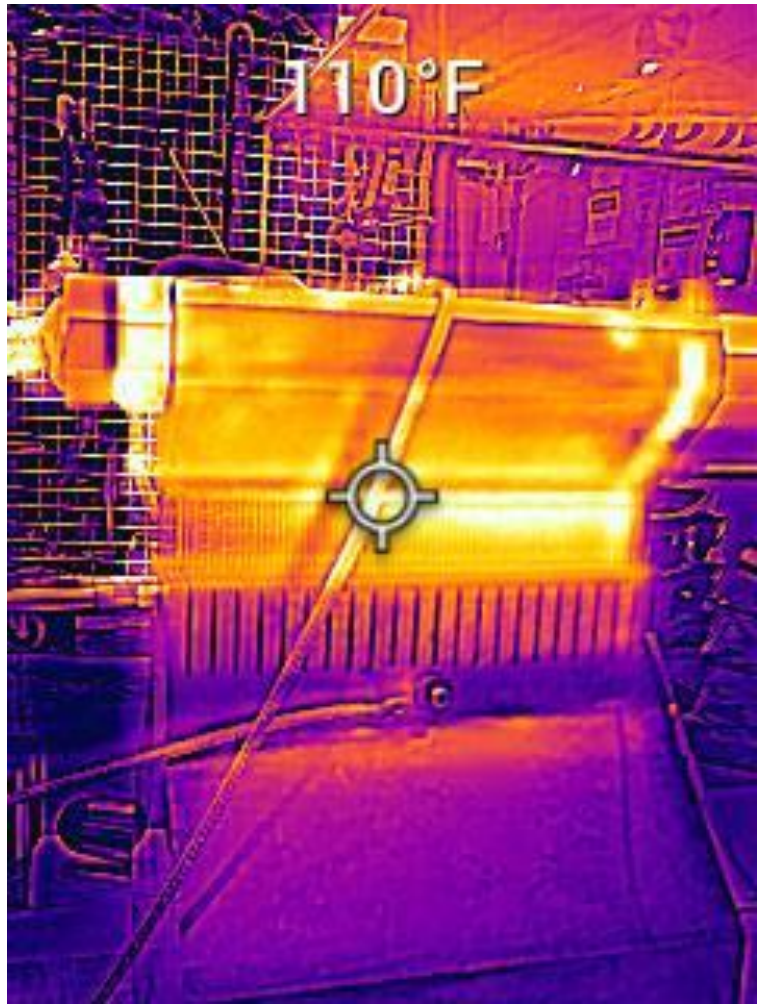




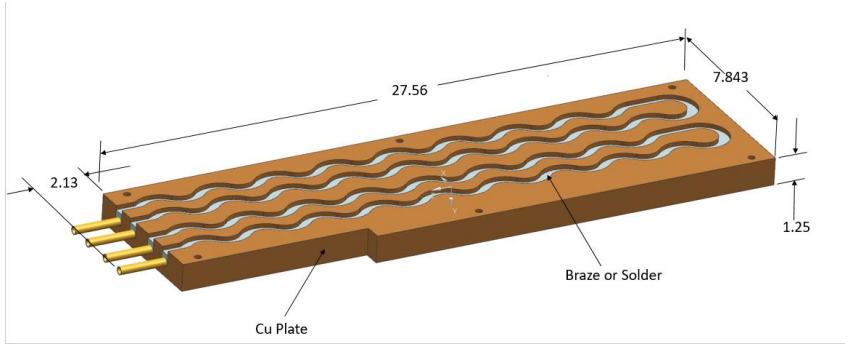
Thermal Camera Captures







ABSORBER COOLING TUBES (In Absorber)



27.56

7.843

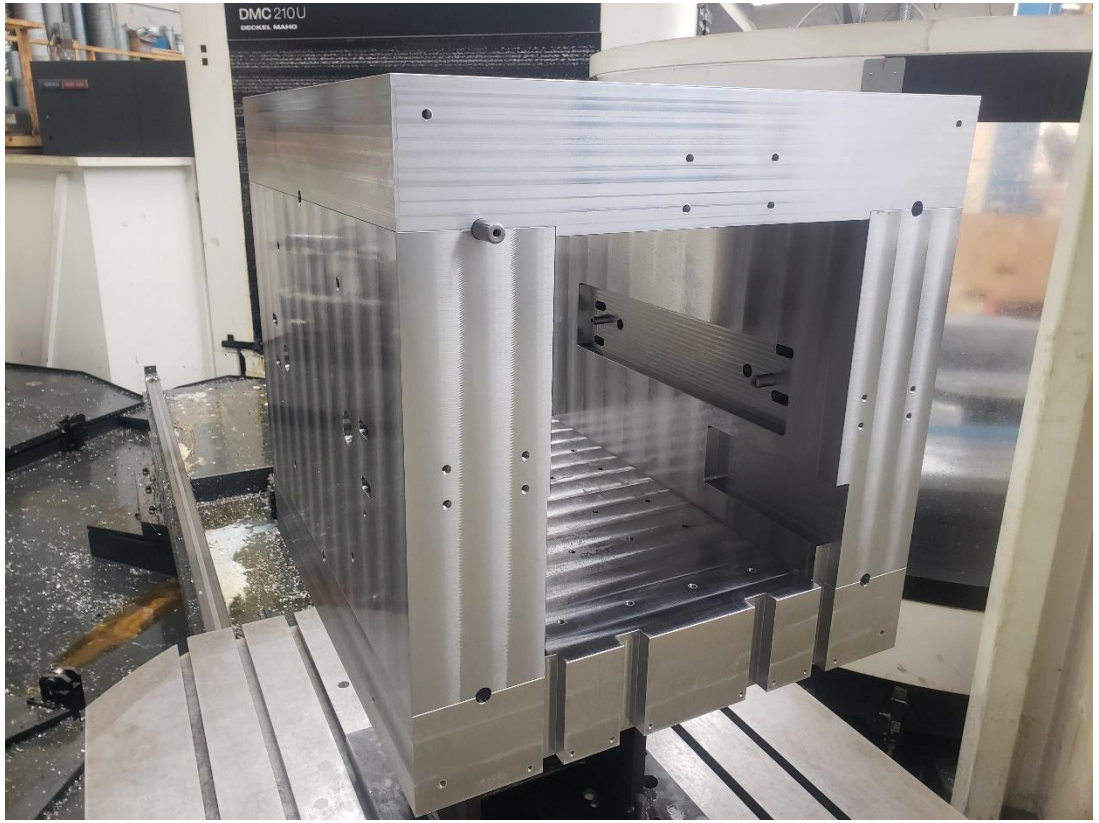
2.13

5.734

Cu Absorber

Braze or Solder does not have to be flush with the surface.

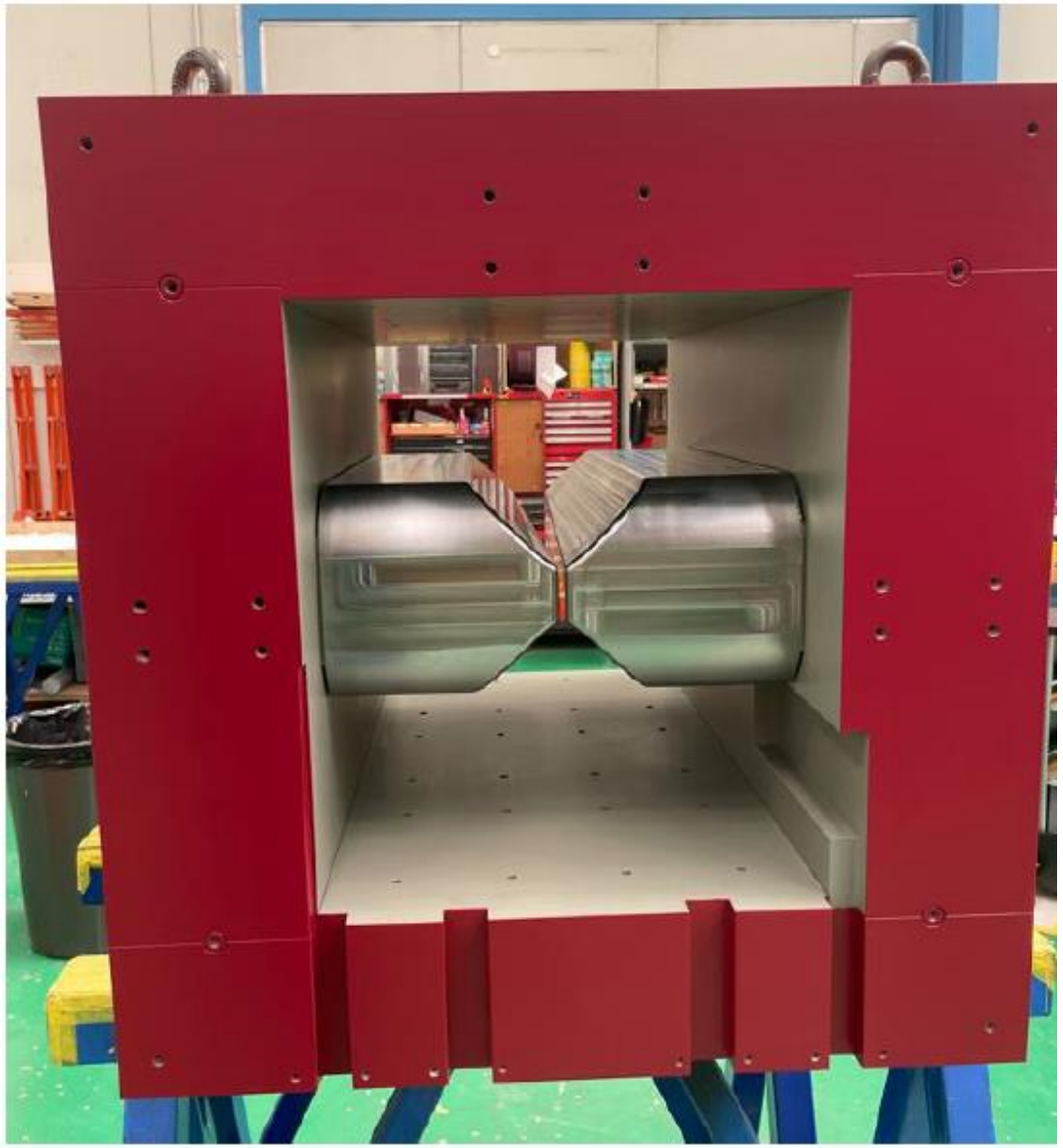
Magnet Steel and Pole Cooling Plate



Test fit up of Yoke pieces at factory

Pole Cooling plate 1 of 2

CPS Magnet Factory Trail Assembly



COILS

Dimensional checks, Hi-pot test, Cleaned, Water flow test done

CPS Items Remaining

- Finish testing of Cu absorber prototype and finalize cooling design
- Brazing of Pole's cooling plate water lines and final machining of cooling plate.
- Cu Absorber cooling plates (finish design, fabricate & test)
- Machining / brazing of Cu absorber halves and shielding blocks. (Cu and W blocks material on site)
- Beam line finalized and procured
- Procurement of water chillers and water containment chambers
- Support Frames for CPS, Target and Big Byte
- Layout of PSUs and cooling lines.
- Assemble of CPS magnet and field mapping
- Target platform details
- Finalize Absorber design, assembly details and Hall installation plans – develop schedule