



irfu



P2 MM Project

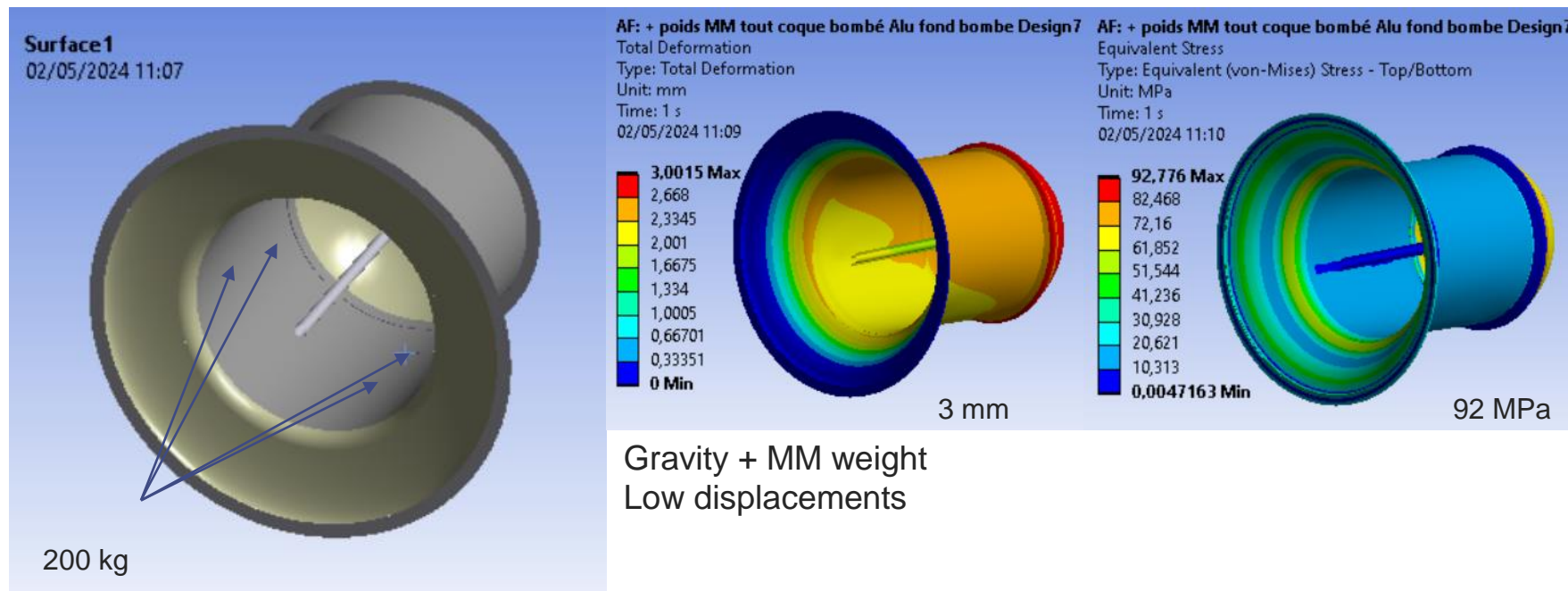
Design – Simulations - Integrations

22-05-24

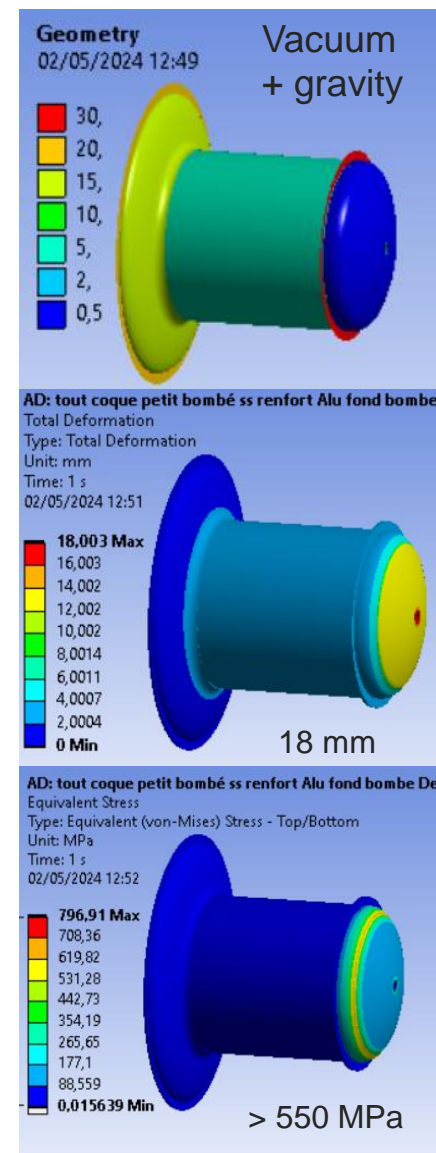
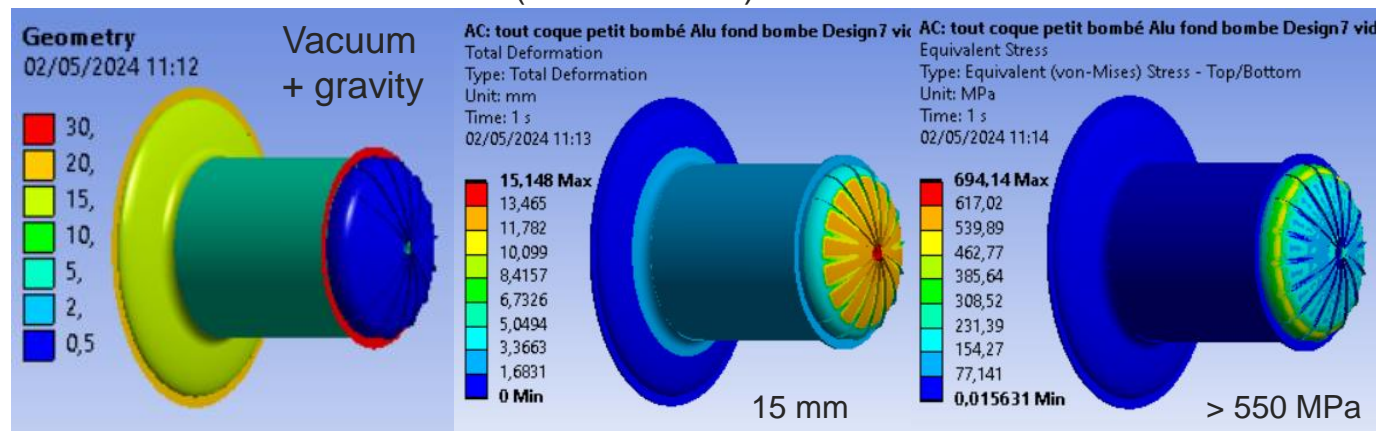
Thomas LEBRUN – Sandrine CAZAUX



MM Load Rounded bottom (Aluminum)



Rounded bottom « standard » (not thickness)



Rounded bottom « standard »
(not thickness)

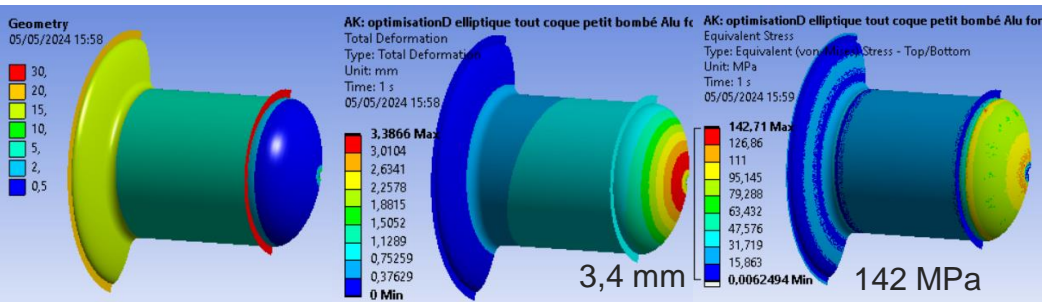
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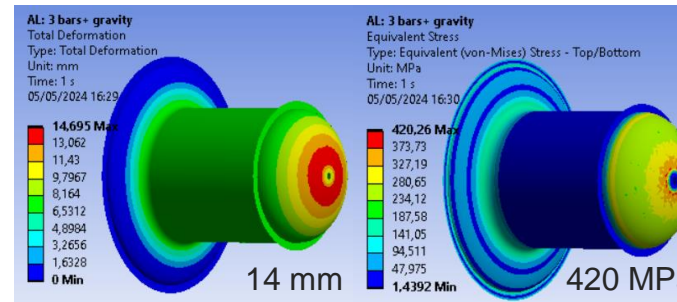
FE Optimization



Elliptical + 150 mm



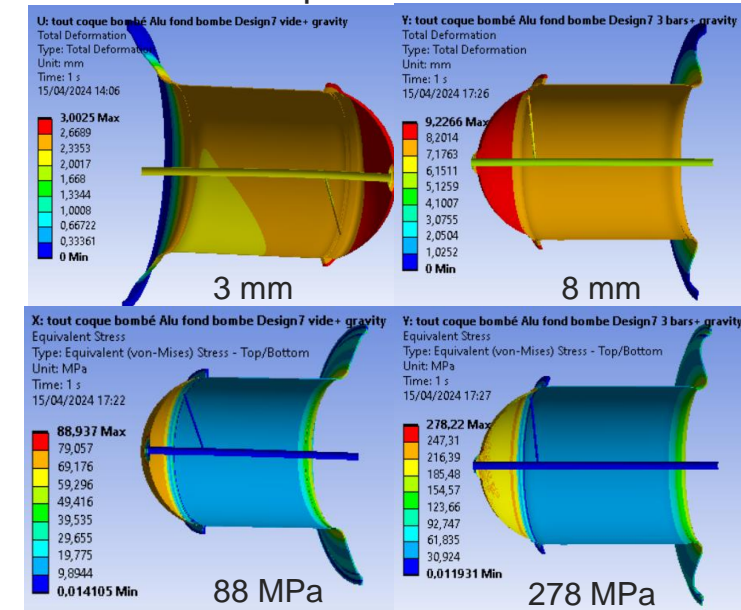
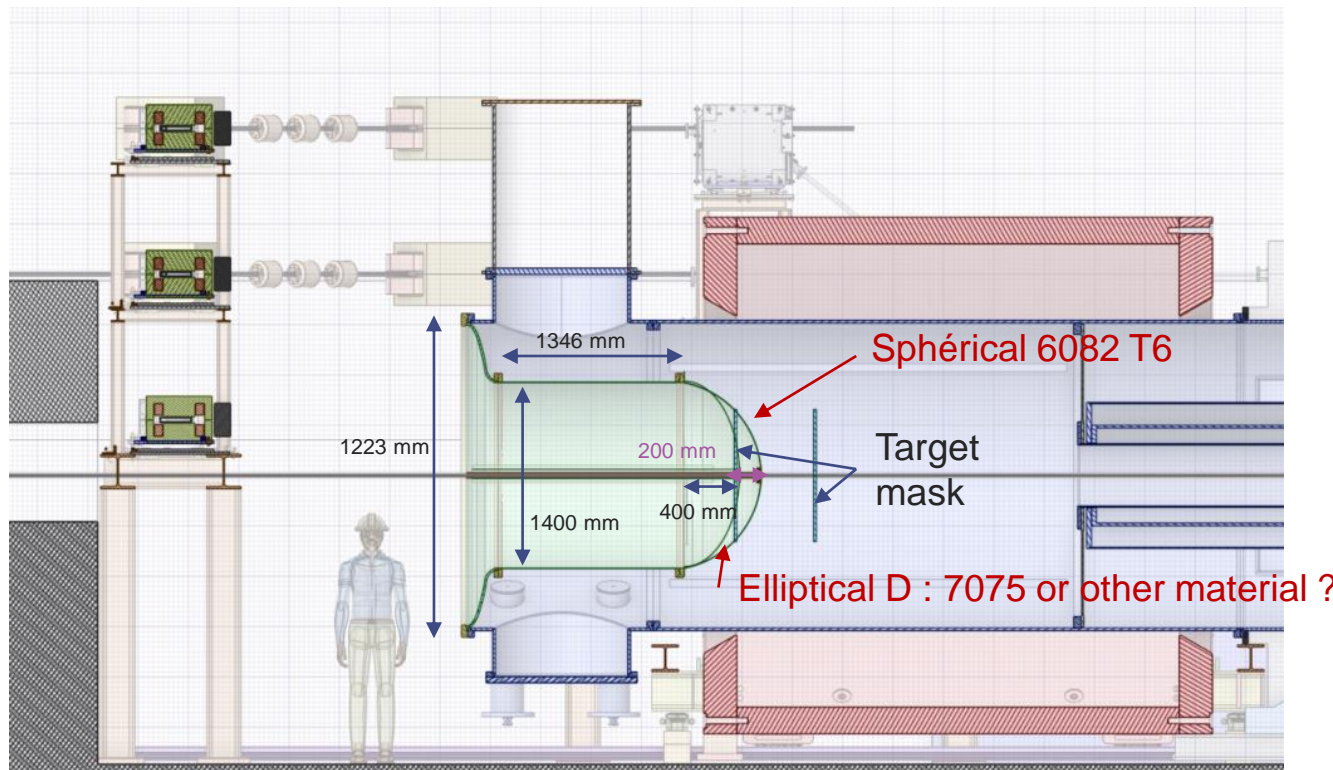
Vacuum + gravity



3 bars (4 bars int., 1 bars ext.)

7075 Rp0,2 = 390 Mpa
Rm = 475 Mpa
Bad to weld & trainable, see to manufacturing ?

With Spherical membrane



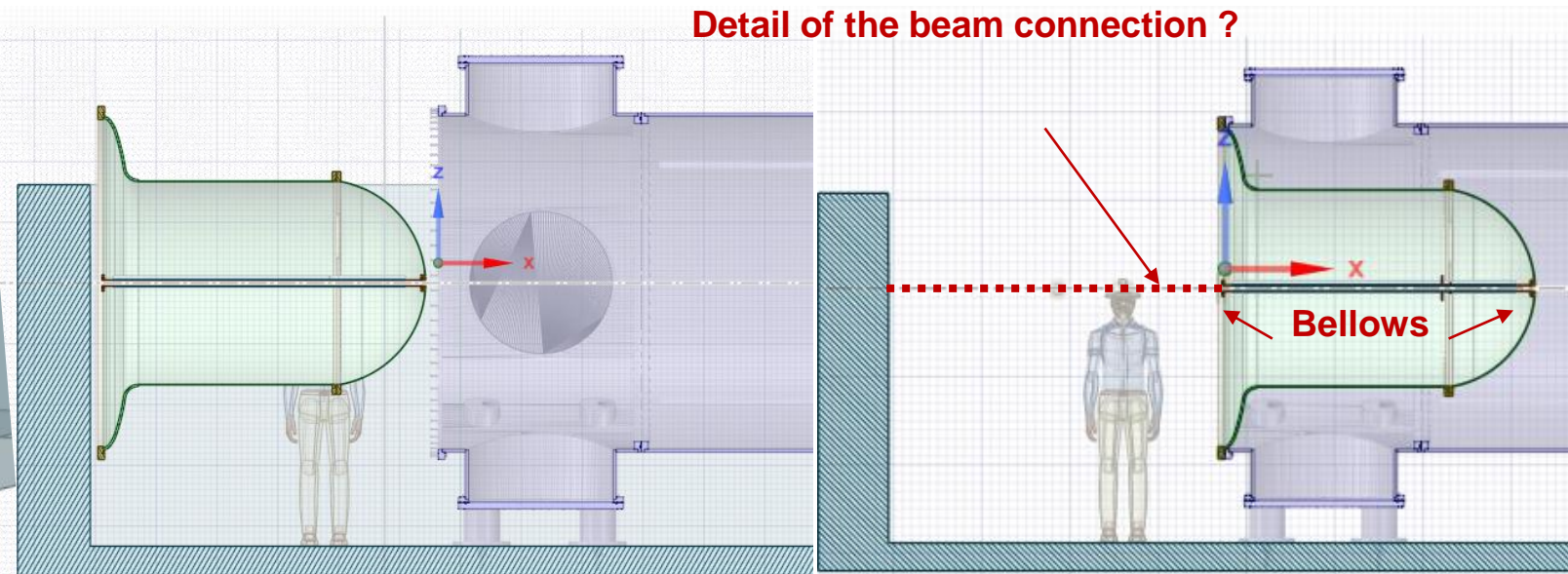
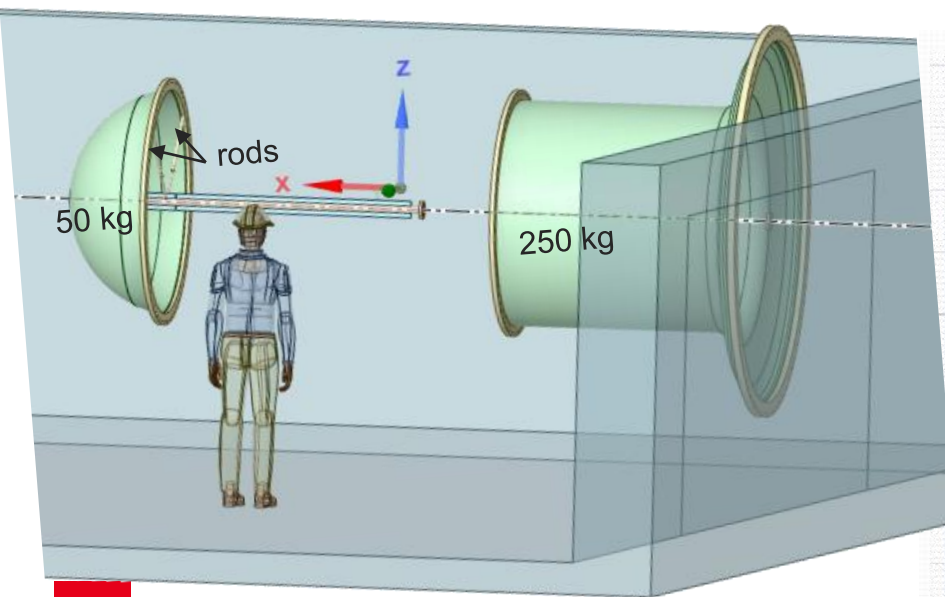
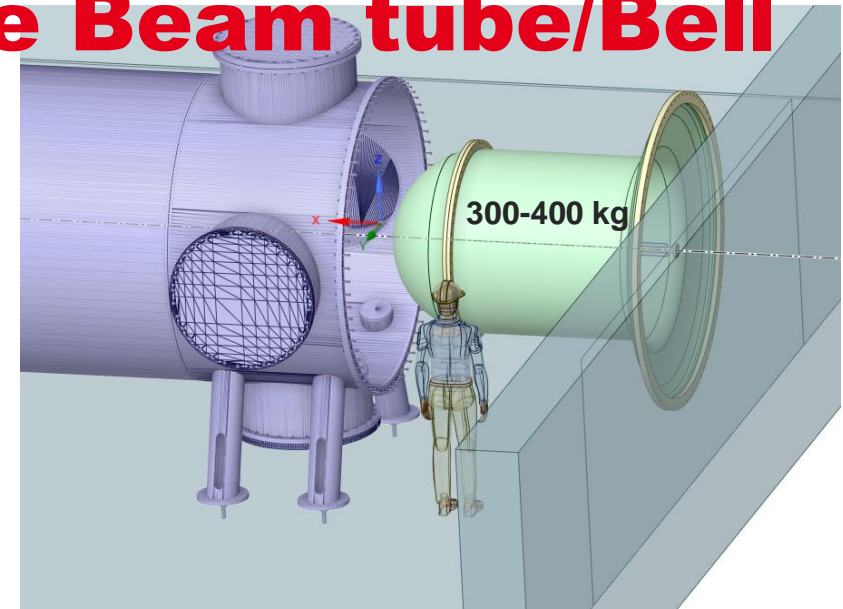
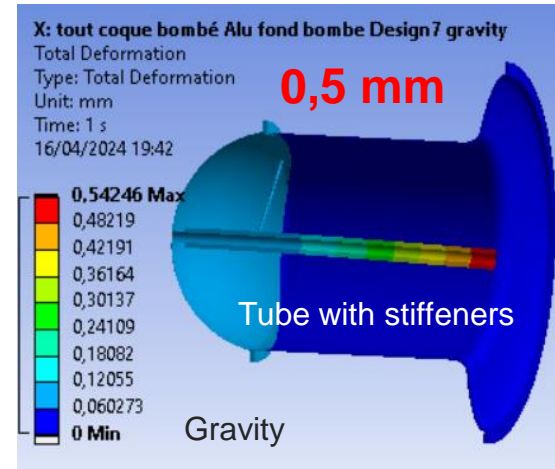
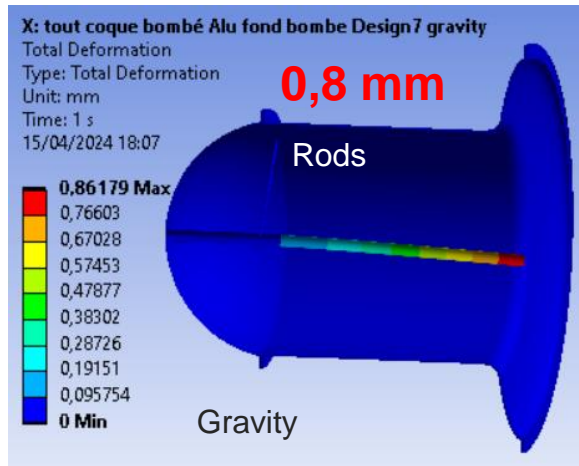
Vacuum + gravity 3 bars (4 bars int., 1 bars ext.)

6082 T6 OK weld Rp0,2 280
MPa R315 Mpa

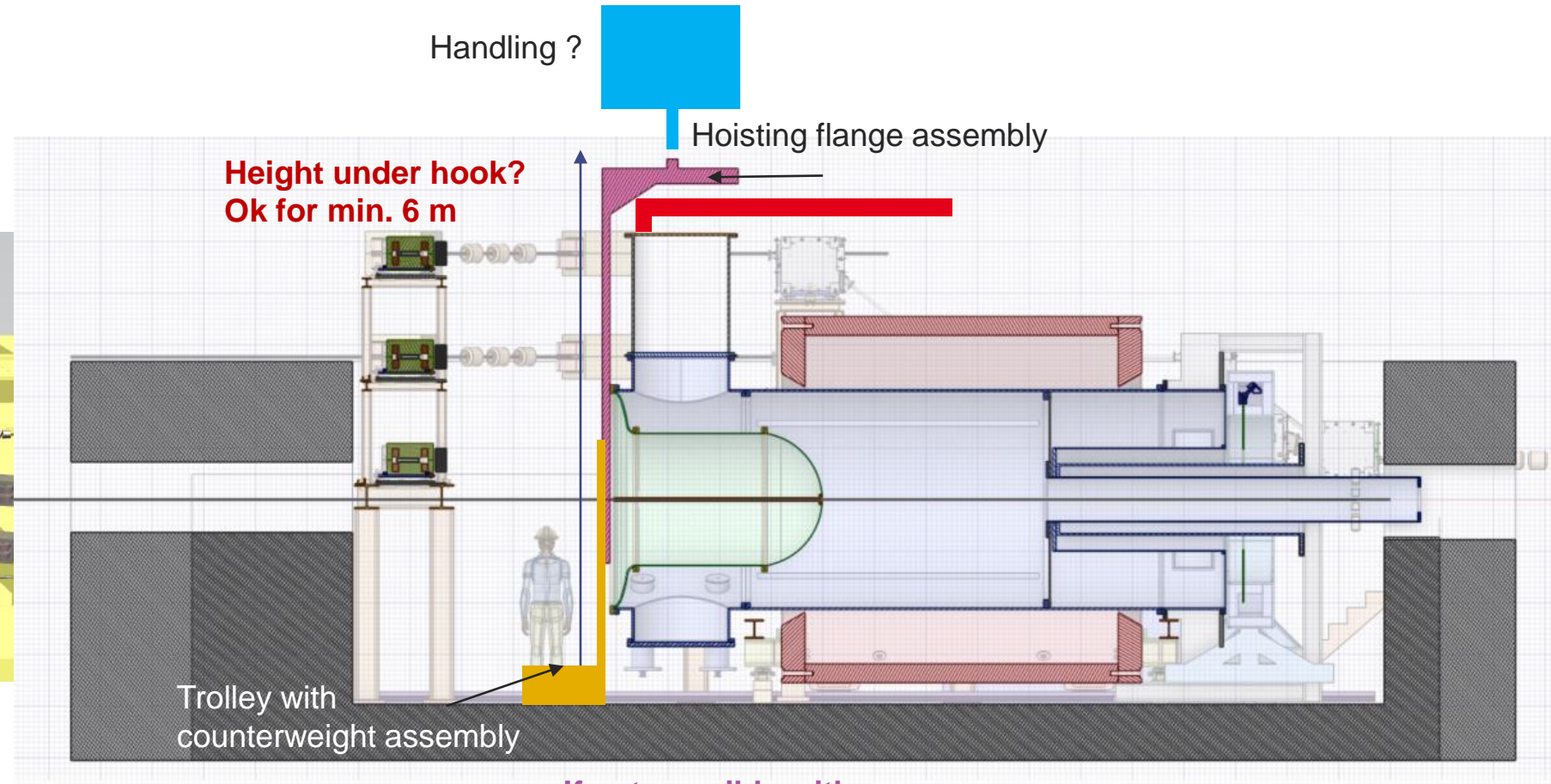
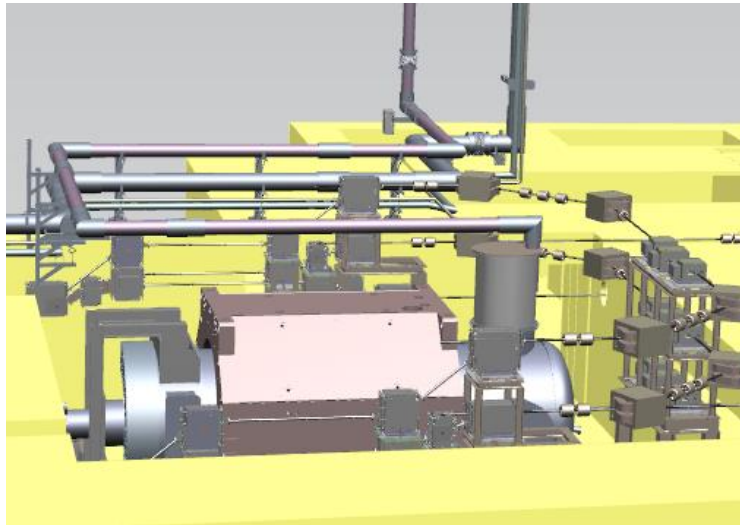
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Integration/connection of The Beam tube/Bell



Integration of the Bell - Handling ?



If not possible with crane

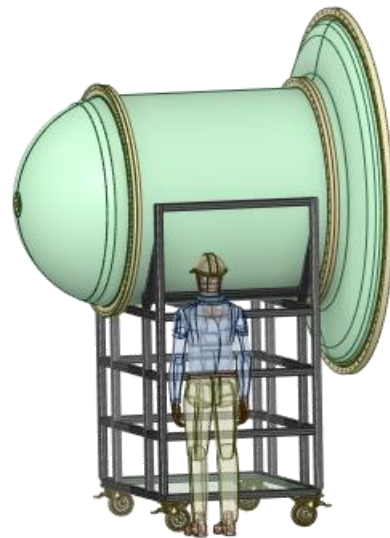
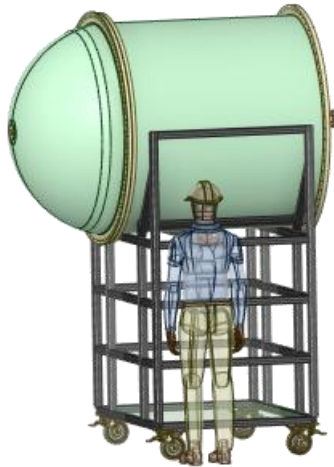


Trolley with counterweight

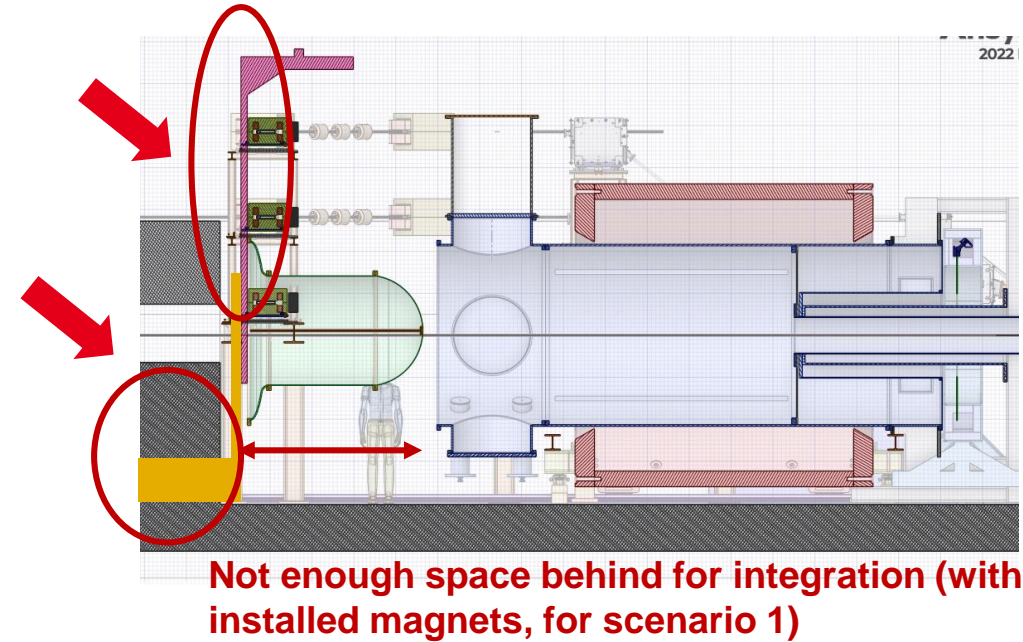
Integration of the Bell - scenario 1



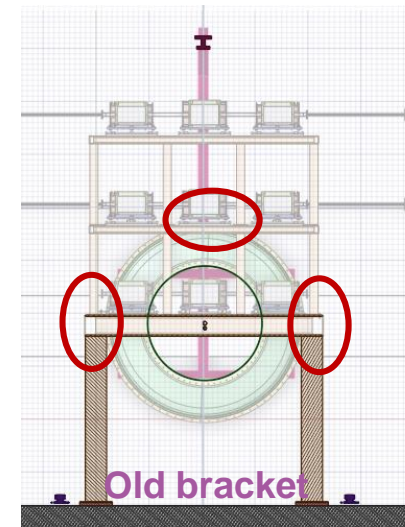
Trolley



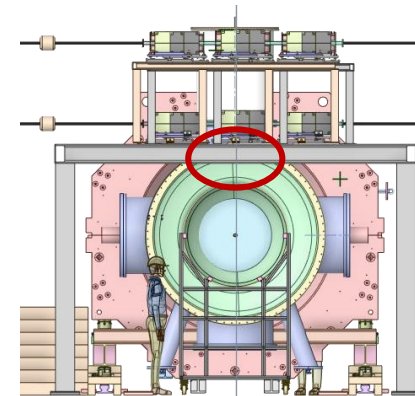
Handling frame
adjustable according
to the center of gravity



Not enough space behind for integration (with
installed magnets, for scenario 1)



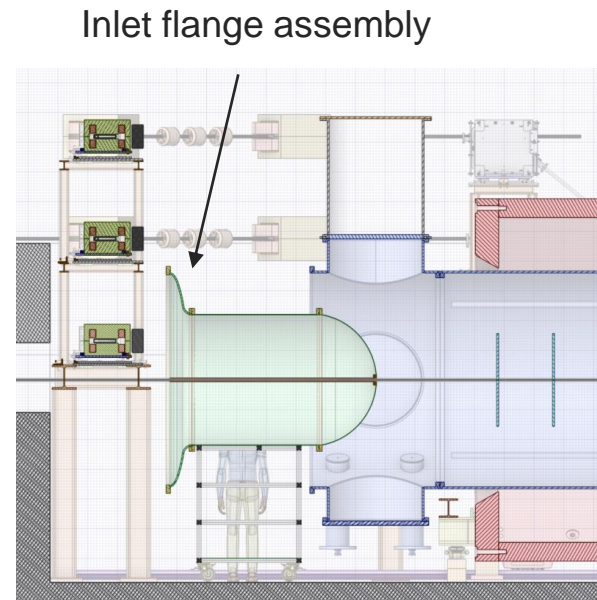
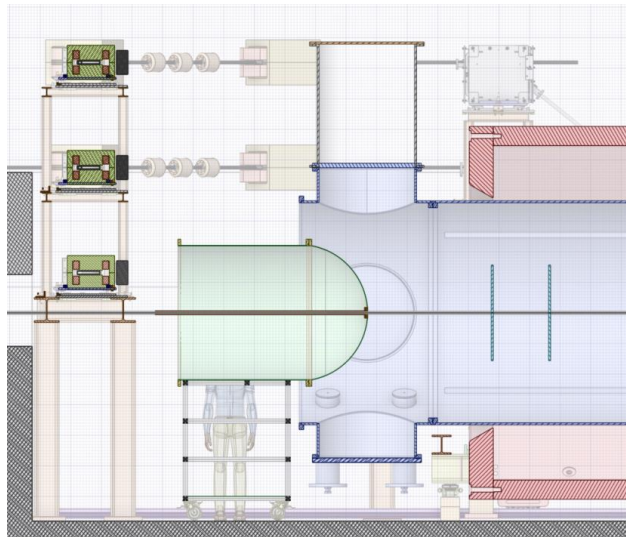
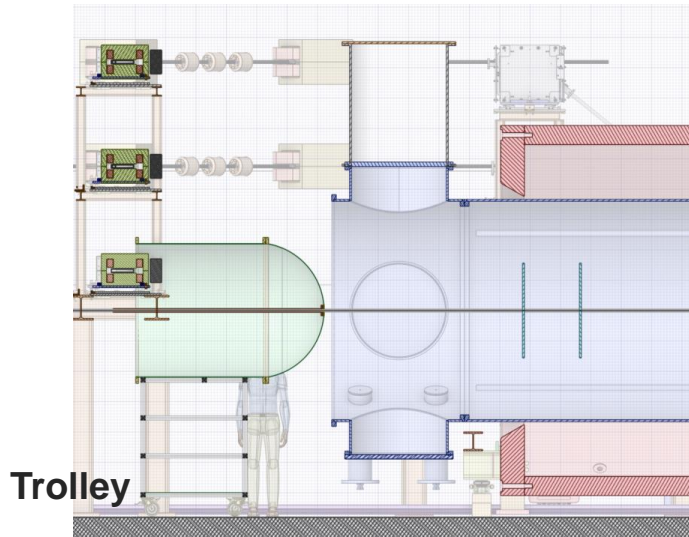
Old bracket



New bracket

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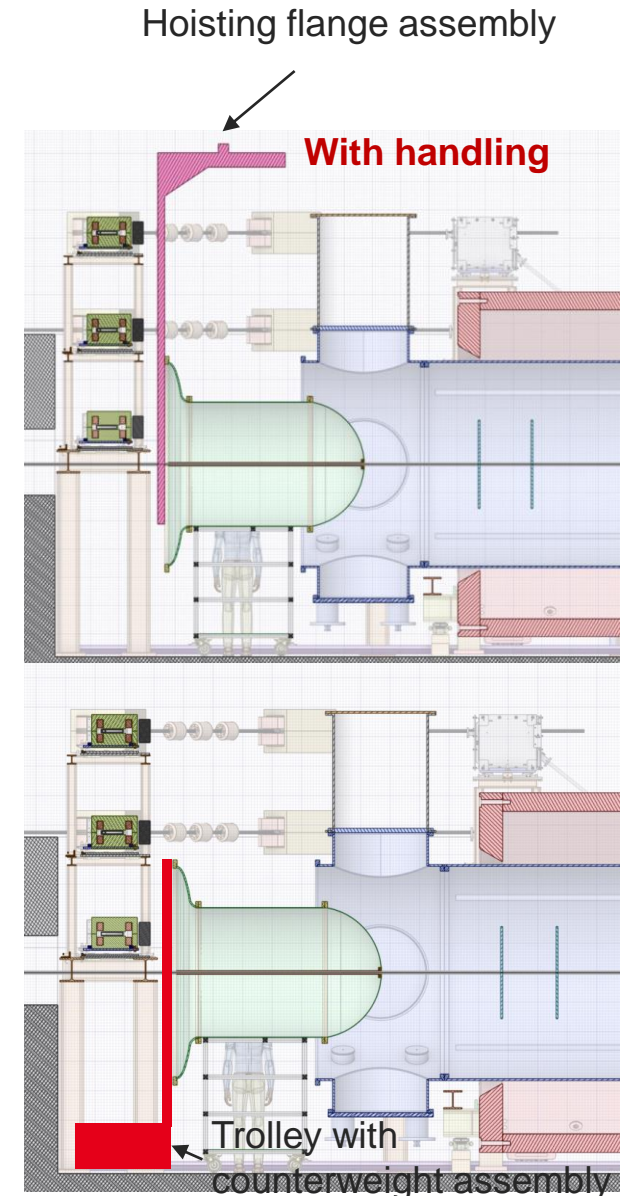
Integration of the Bell - scenario 2



If not possible with handling

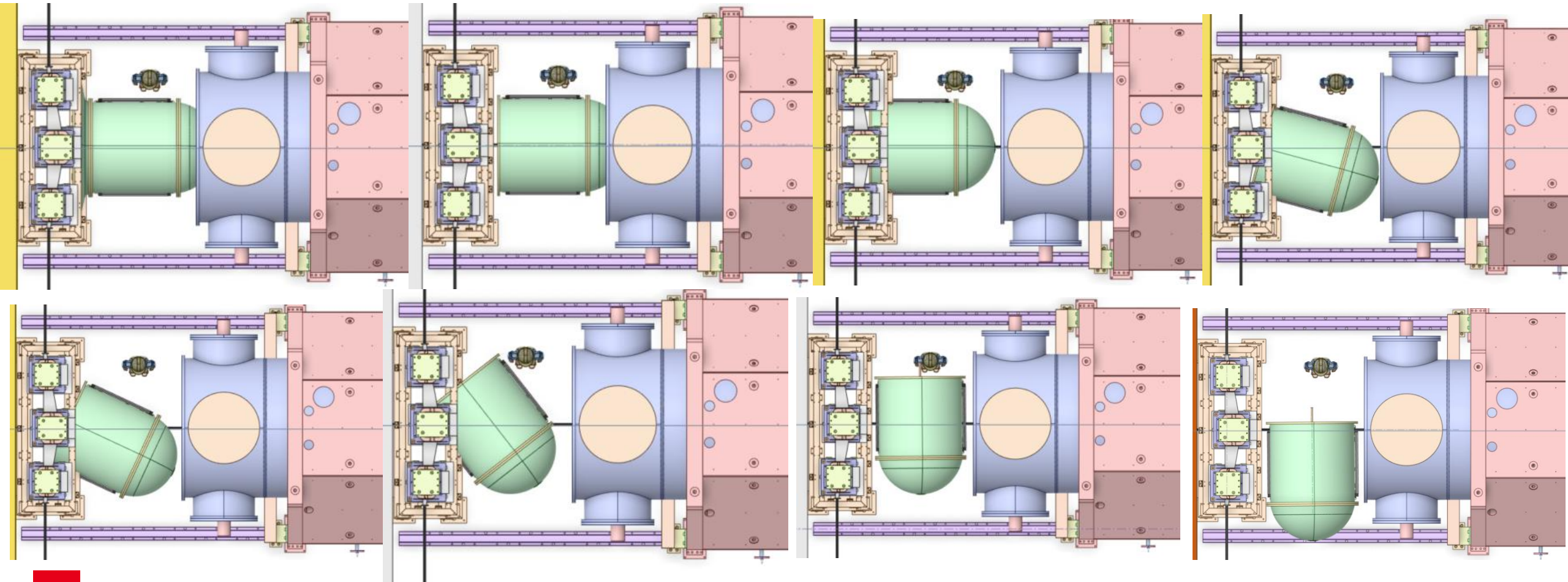


Trolley with counterweight

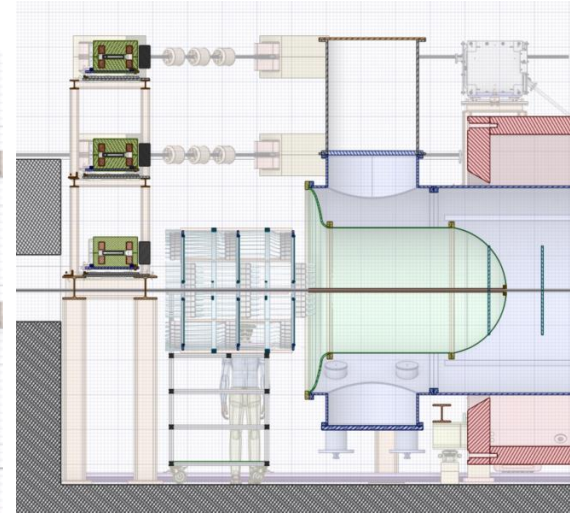
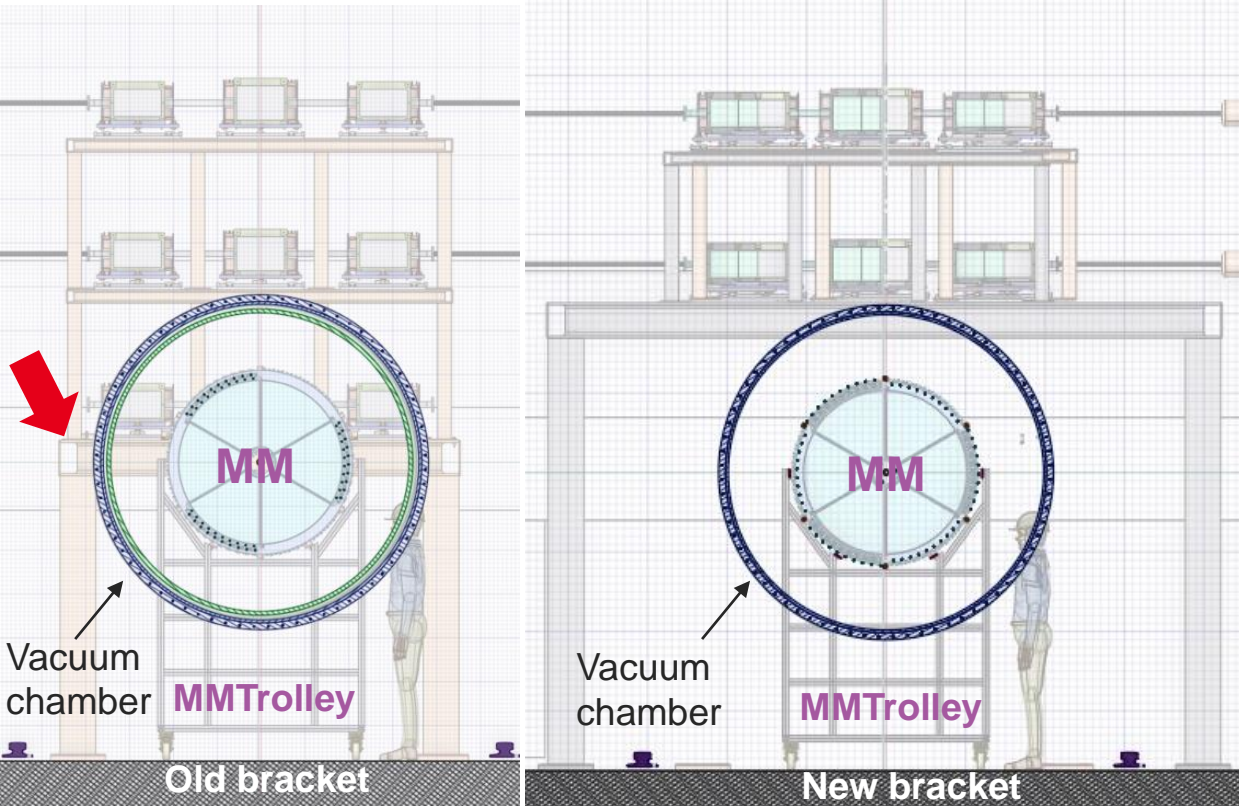


Integration of the Bell - scenario 2

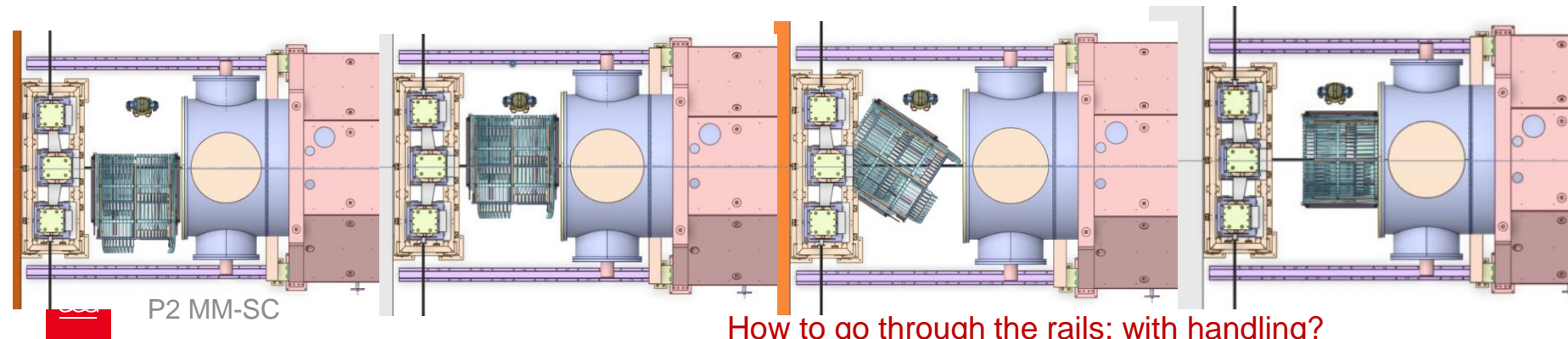
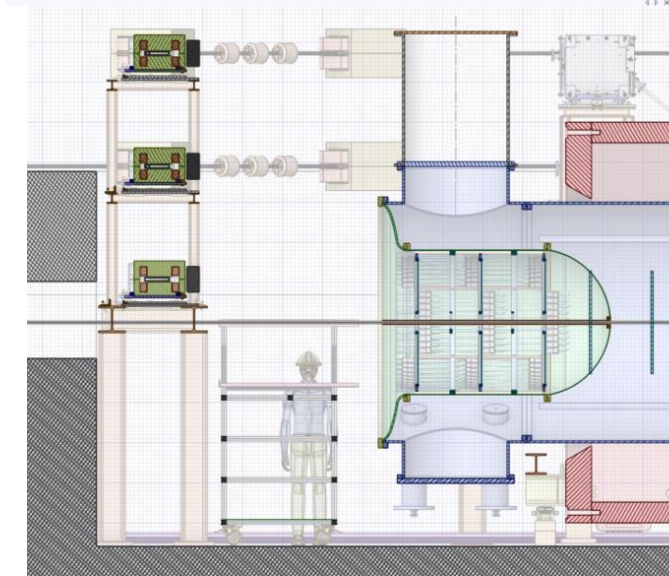
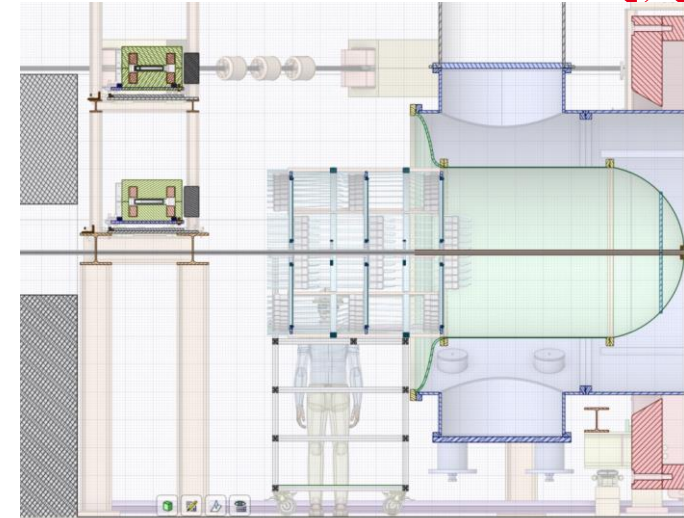
Top of view



MM Integration



No problem, enough space with new bracket



How to go through the rails: with handling?

Conclusion

- Optimization of the Bell design
 1. Elliptical shape : takes up less space (Ok for both target position),
Von Mises stresses high : possible with 7075 aluminum (used in aerospace) but difficult to weld : will see manufacturing point of view (or another material)
 2. Spherical shape : takes up more space (interference with the rear target position : 200 mm)
Ok with 6082 T6 aluminum, easier to weld
- Integration takes into account of the new support : with 2 rows of magnets, but I did not have time to redo them for the presentation
- Beam tube integration : a part attached to the membrane flange, then connected to the rest of the beam tube
 - Details of the beam tube, connection?
- Bell integration :
 - Scenario 1 : not Ok with magnets, not enough space behind for **direct** integration
 - Scenario 2 : Ok with magnets in **two phases** : special trolley and lifting tools
 - What is the height under the hook?
- MM integration :
 - Ok with MM trolley
 - How to go through the rails: Ok with crane?