

LIU-PSB

Handling issues with BT.BHZ10 and BTM.BHZ10

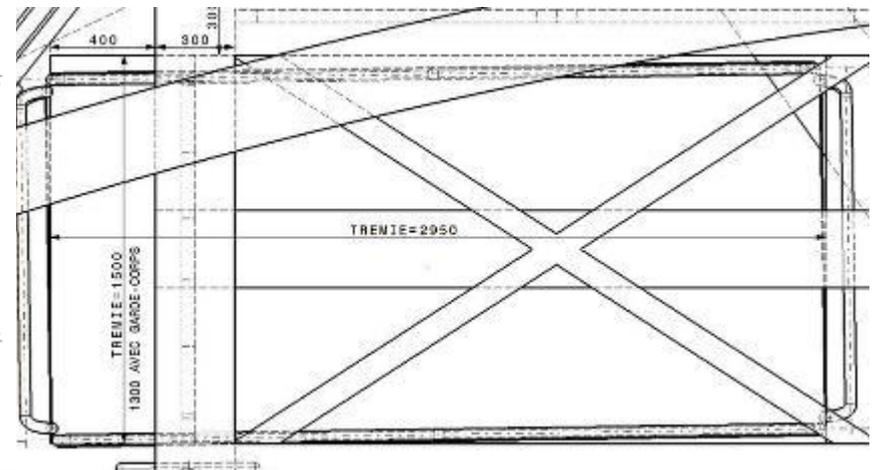
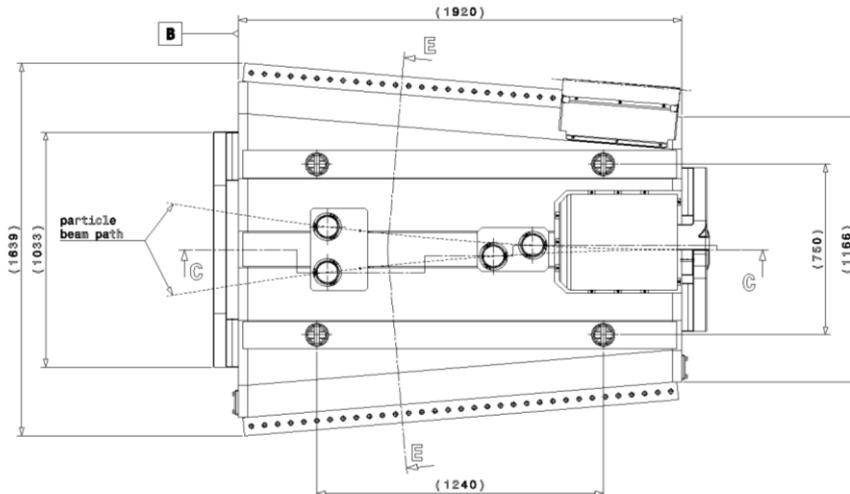
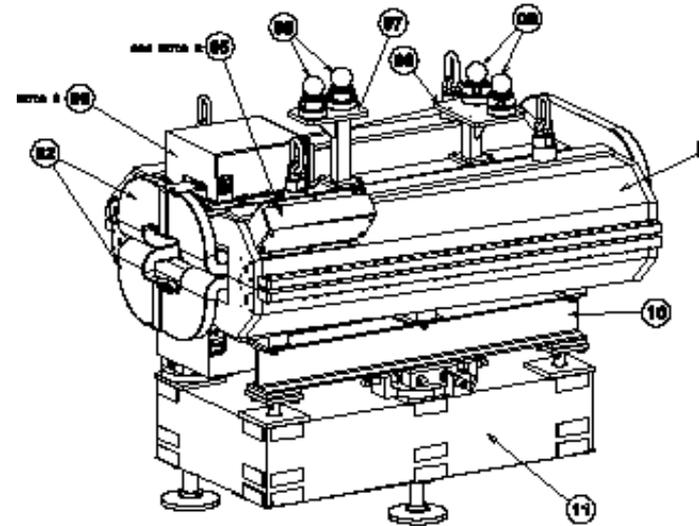
JL Grenard, C. Bertone
EN/HE – EDMS 1583928
26/2/2015



ENGINEERING
DEPARTMENT

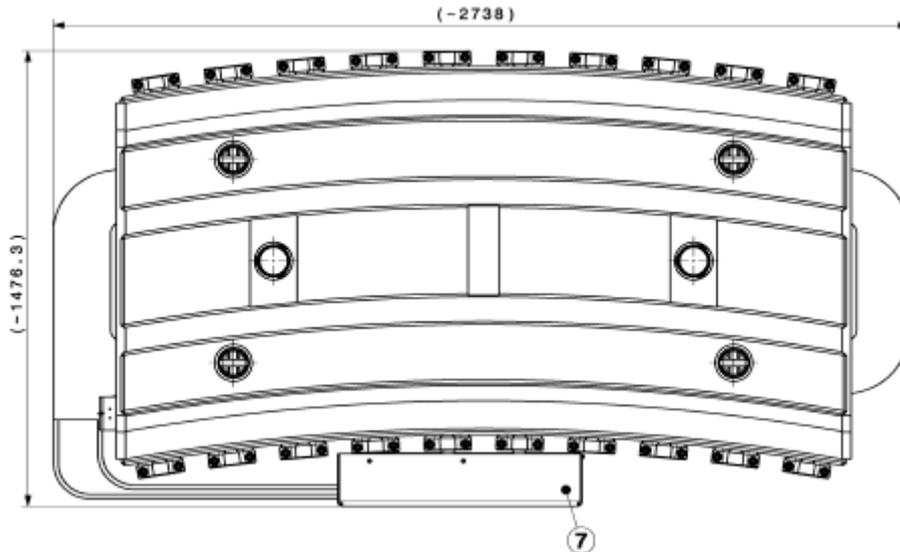
BT.BHZ10 dimensional issues

- Magnet width: 1639mm -> not compatible with the current width of the tremie (1500mm)
- Weight of the magnet 9200kg -> at the limit of the crane lifting capacity (10t), no lifting tool (direct hook up) -> lifting points directly embedded on the top

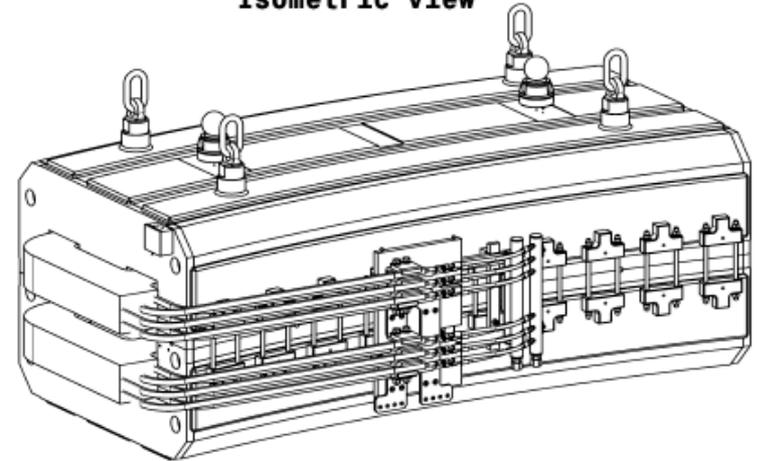


BTM.BHZ10 installation issues

- Weight 17.6t -> much bigger than the crane capacity-> will be transported in several pieces (2 halves, coils + vacuum pipe) in the tunnel (already agreed by TE/MS) and assembled there in an area under the crane coverage (after the cable trays)
- Overall width 1476mm -> 12mm gap on each side of the current tremie -> similar problem to BT.BHZ10
- Necessary to lift it without the vacuum pipe, otherwise potentially too long (length of the tremie = 2950mm)

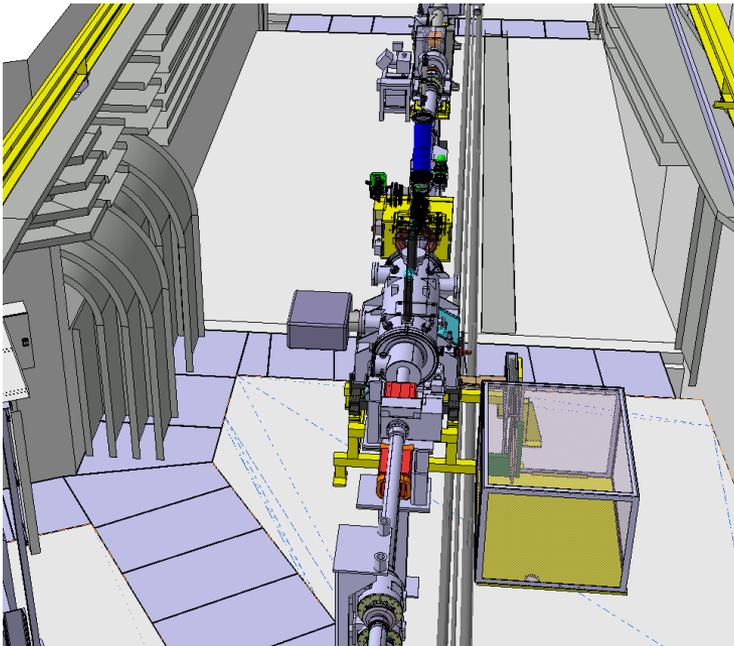
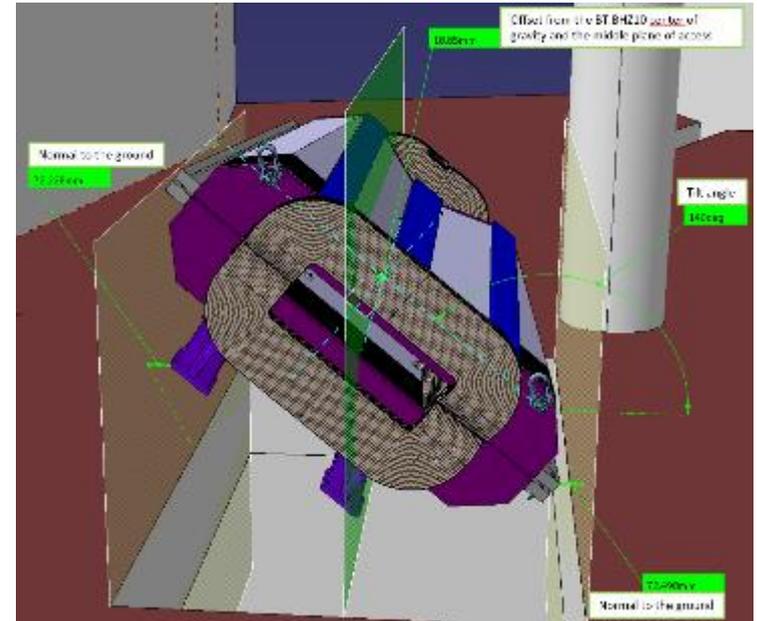


Isometric view



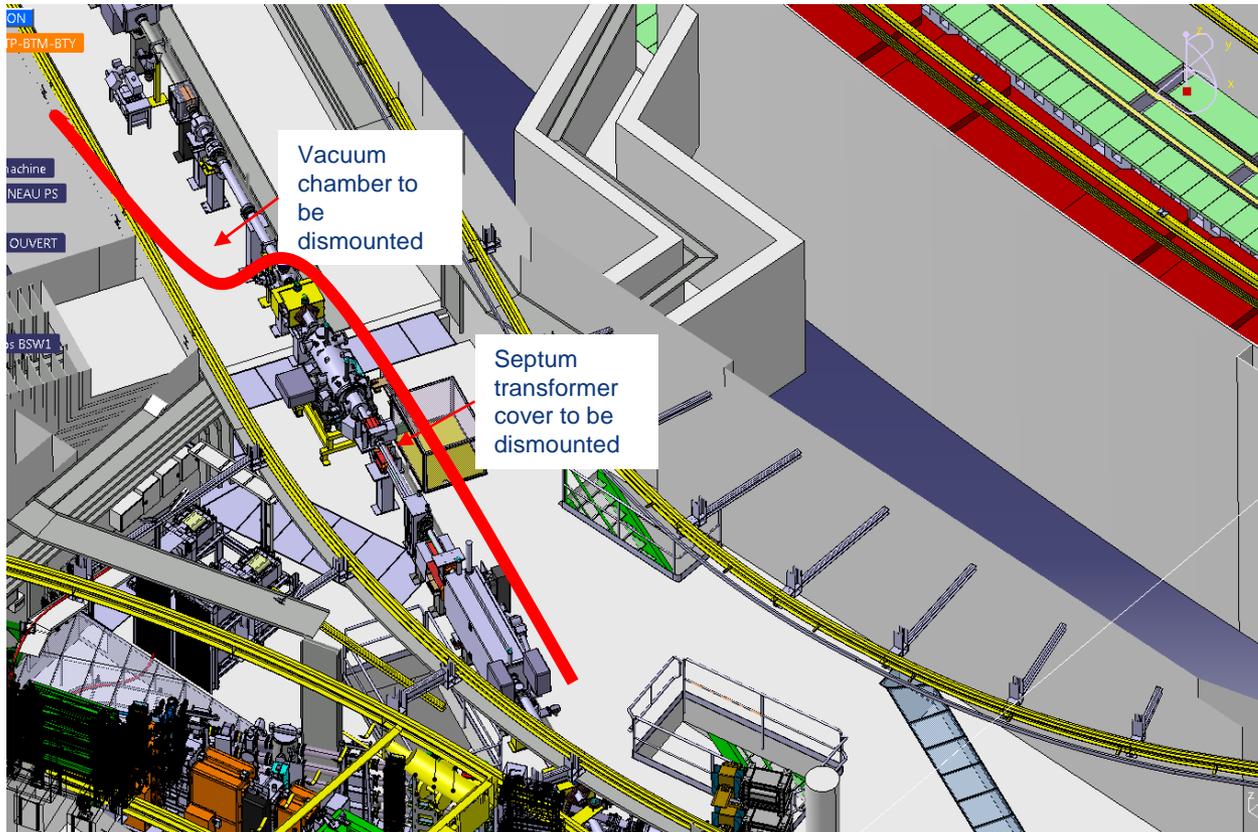
BT.BHZ tilting studies and corridor transfer

- Further studies proved that tilting the magnet was not the solution (magnet becoming too high for the area, not adequate with the lifting height of the crane)
- Replacing the 2 screw rows by a (old style) welded connection to make the magnet smaller is not convenient for MSC



- Corridor width between the tremie and the final destination is not enough to pass such large magnet (cable trays, ionic pump)
- Not possible to pass in tilting position in this area since the crane has not enough lifting height in that area

Alternative path identified



- Transferring the magnet at the booster level can be done via the external tremie (wider corridor)
- Passage of the magnet from one side to the other by removing the vacuum chamber (and its support) between the equipment BTV30 and BPM30
- All the way suspended to the crane

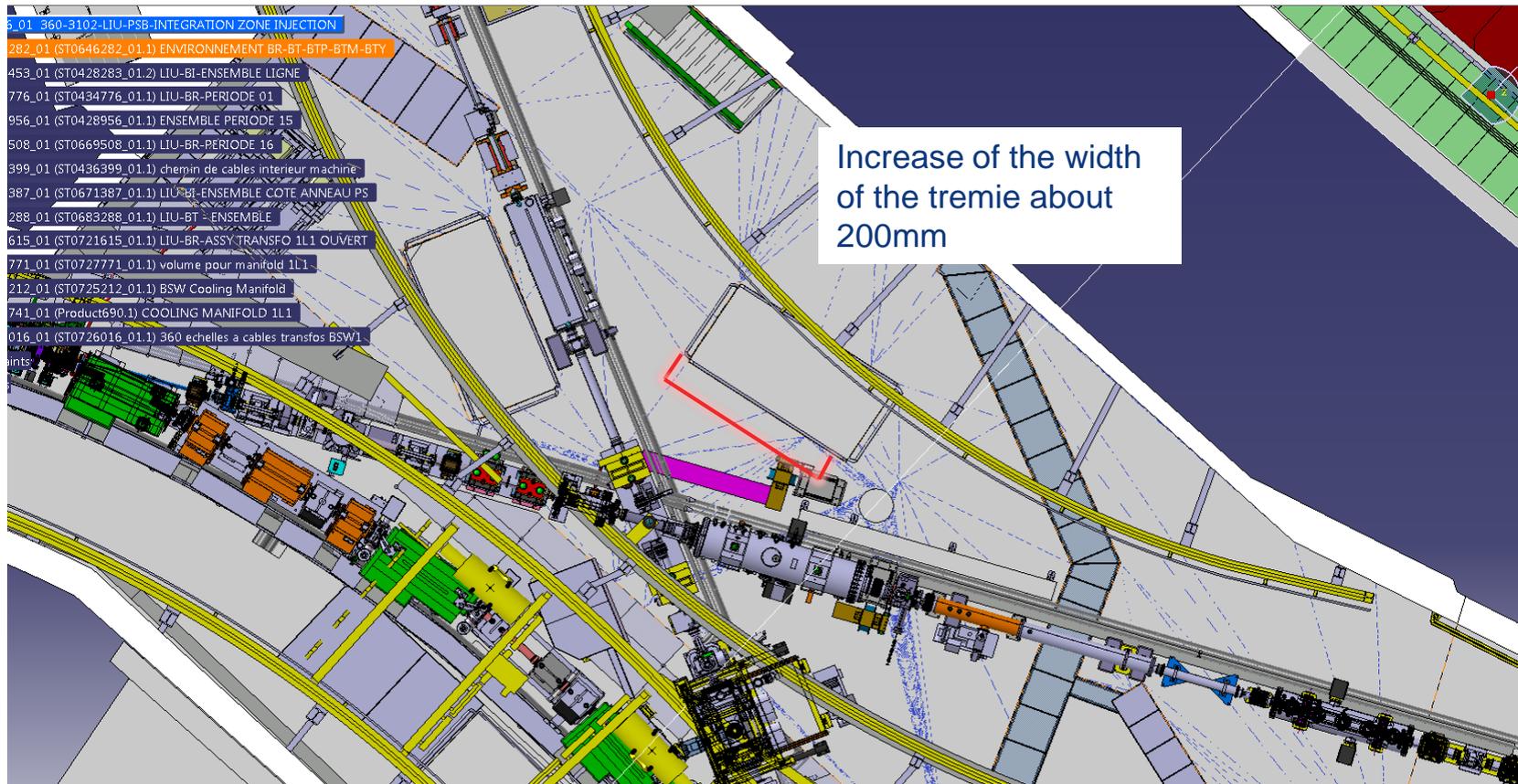
Proposal for increasing the tremie width

Positive answer received from CE

-> feasible

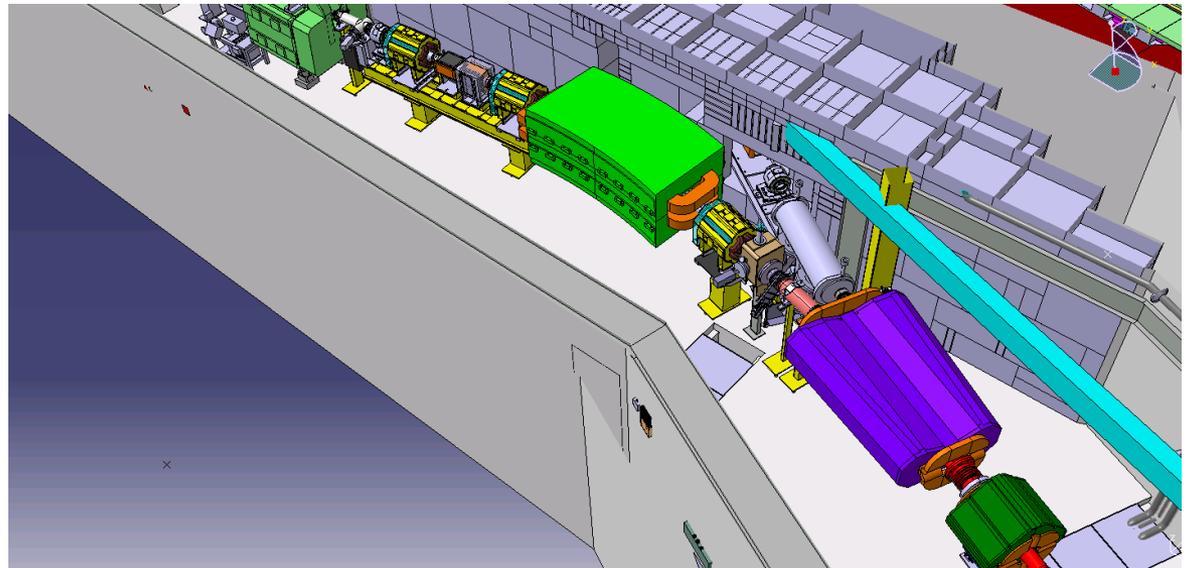
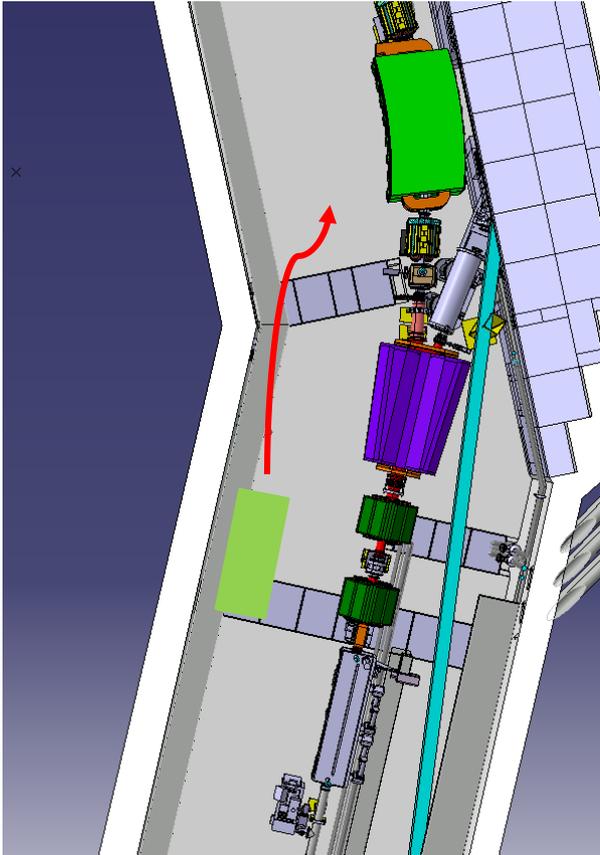
-> 4/5 days of work

-> cost ~10kCHF to be added to the modification of the barriers (extra 5-10kCHF) for a total of 20kCHF



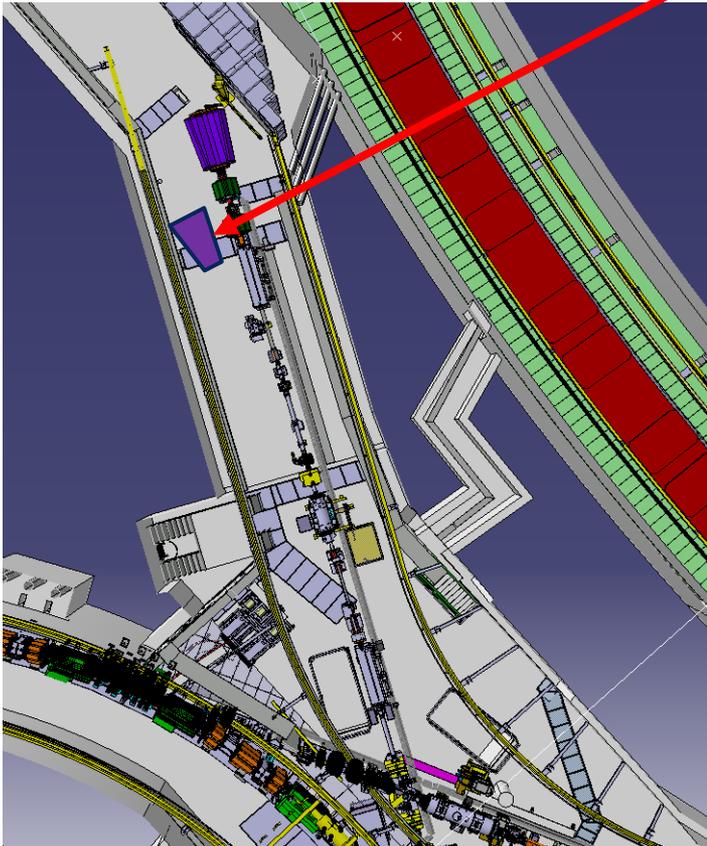
Going to destination with BTM.BHZ10

- Assembly on the corridor via the crane in a wider zone
- BTM.BHZ10 shall be installed as first
- The equipment (and the support) in the surroundings shall be installed after the magnet
- The supporting of this magnet is not clear
- Still to do: studies for a roller (most probably towed by another tractor) that permits to bring this magnet to destination and transfer to his final jacks: proposed solution depends mainly on the lower surface of the magnet



Going to destination with BT.BHZ10

- BTM.BHZ10 shall be installed before BT.BHZ10
- installation on the concrete support on the corridor (as the crane doesn't cover the final position) and the rolling up to the final position
- Still to do: studies for a tiny roller (most probably towed by another tractor) that permits to bring this magnet to destination. The issue there is the small distance between the grey block and the ground.



Conclusions

- After discussions and studies MSC and HE agreed that the best way to go should be to use the alternative passageway even if the cost to pay is the dismantling of some beam line elements and the increasing of the shaft width
- CE has given green light and estimation, these works could be planned for EYETS (if planning is ok)
- Budget (~20kCHF) could (for the time being) be taken from PSB-LIU to HE (already baselined); advise will be given in due time if the piling up of costs will create a problem
- As soon as the magnet design is more advanced (especially in the lower part and jacks), we can start to the studies of the trailers and transfer tools to the final position



ENGINEERING
DEPARTMENT

Thanks for your attention!