ILD Experimental hall design

01.02.2012

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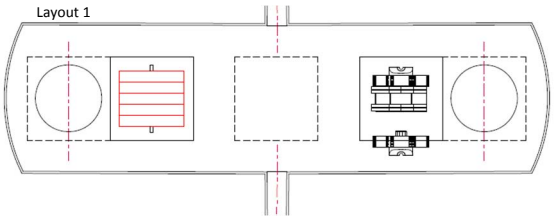
ILD Integration Meeting, Paris

Overview

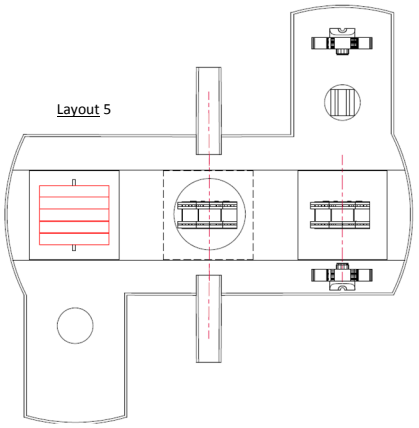
- Machine group is finalising the design of the civil facilities for the TDR/DBD
- This is in the focus of the ILC management: cost drivers!
- Discussions between detector concepts (SiD/ILD) and ILC CFS group have been intensified since Granada
- Dedicated meeting in December at SLAC: final input from detector groups
- Started with the „non-mountain“ sites
- Japanese site requirements are different (talk Yasuhiro)

General agreement: z-shaped layout is best

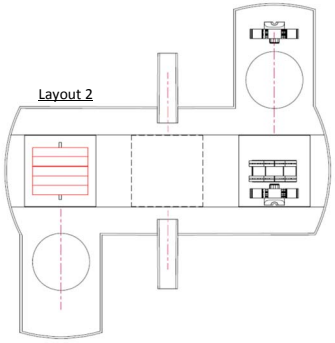


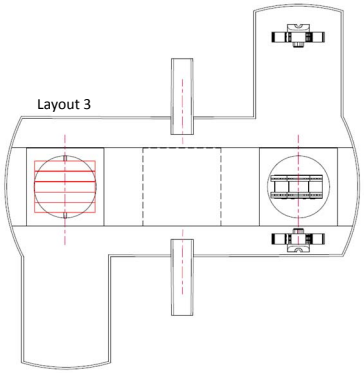
Rating Scale 1÷5 : 1=Low, 5=High

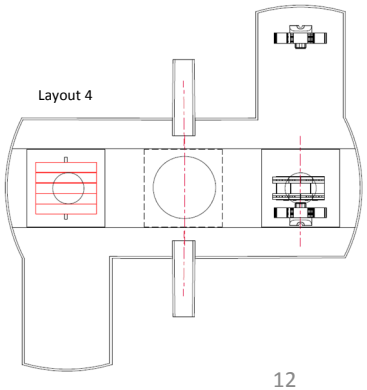
#	Requirement	Layout 1	Layout 2	Layout 3	Layout 4	Layout 5
1	Surface assembly of Magnet	1	4	3	3	4
2	Underground installation of Tracker, Calorimeters and Forwards	1	4	2	2	4
3	Number and Size of Cranes	3	3	3	2	4
4	Costs: Shafts and Halls size	4	2	2	2	3
5	Infrastructures	NA	NA	NA	NA	NA
6	Easy Maintenance, Smooth Operation	2	4	3	2	4
7	Beam Comissioning	1	1	1	4	4
8	Safety	2	4	2	2	4
	Final Score	14	22	16	17	27



From Marco Oriunno
Granada Spain







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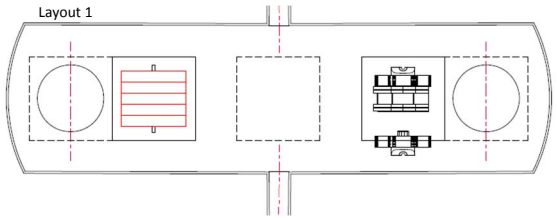

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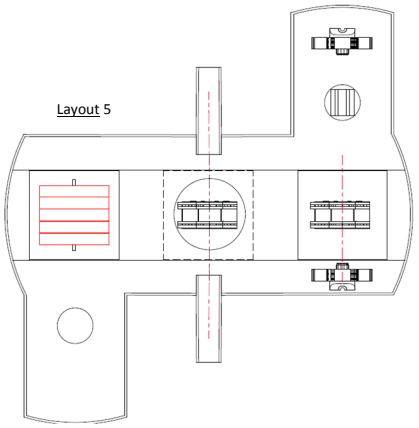
#	Requirement	Layout 1	Layout 2	Layout 3	Layout 4	Layout 5
1	Su					4
2	U Ca					4
3	N					4
4	Co					3
5	In					NA
6	Ea					4
7	Be					4
8	Safety	2	4	2	2	4
	Final Score	14	22	16	17	27

Number and sizes of shafts still under study



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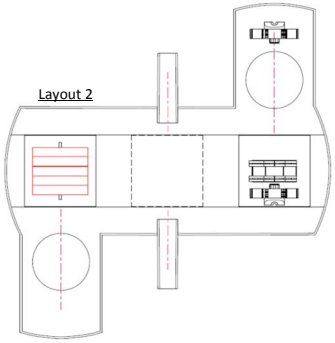
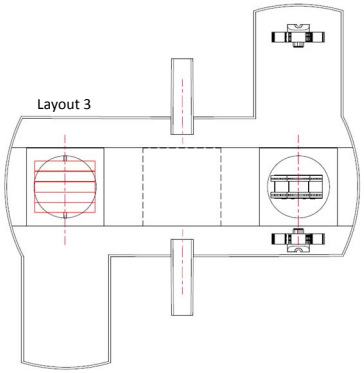
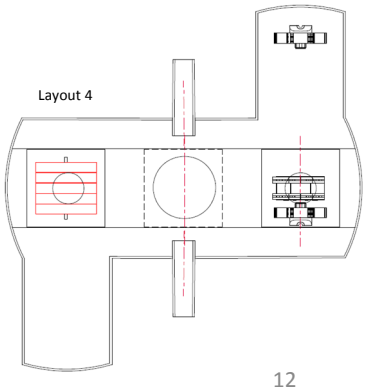
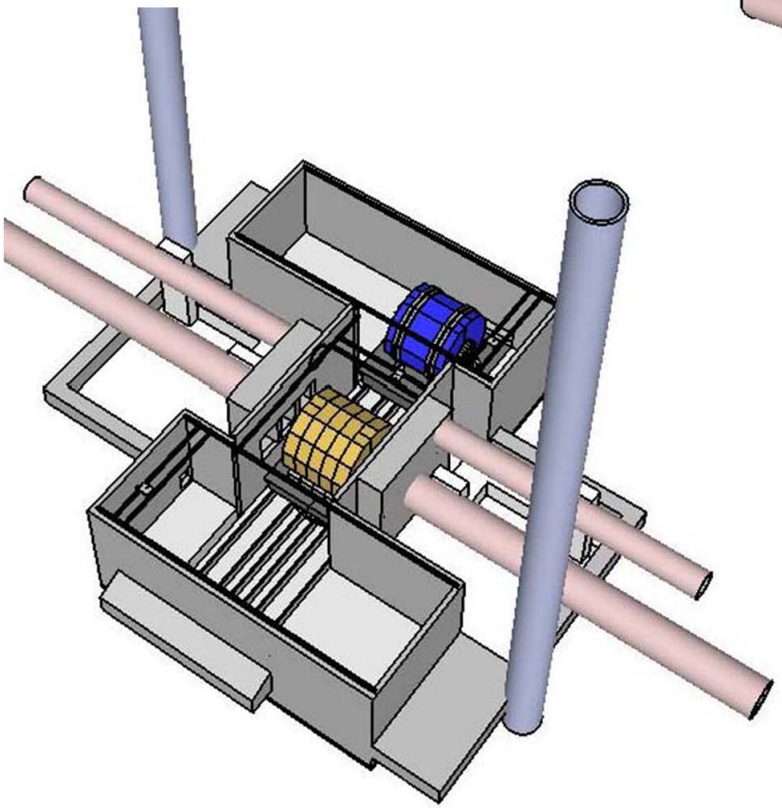
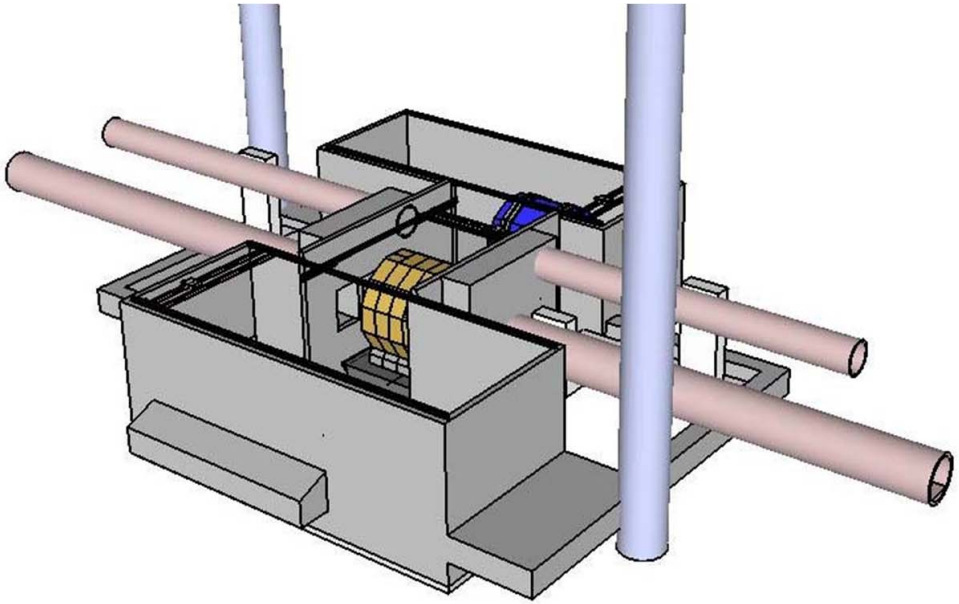
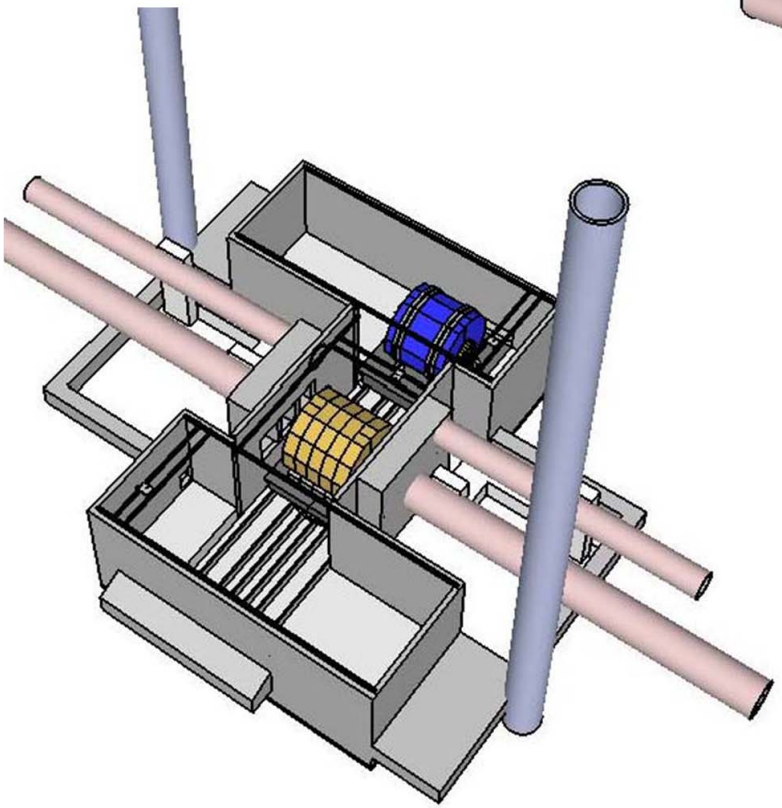


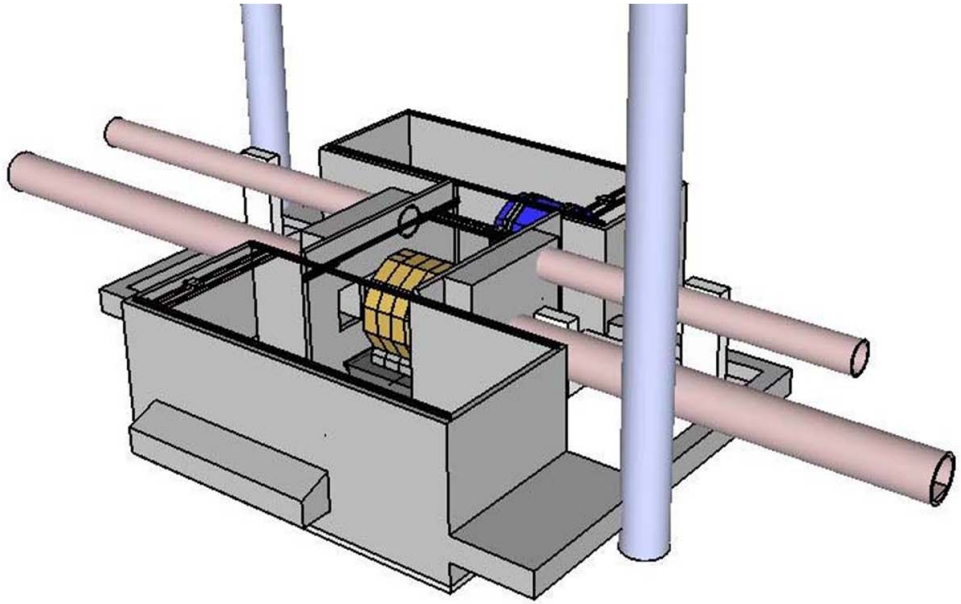






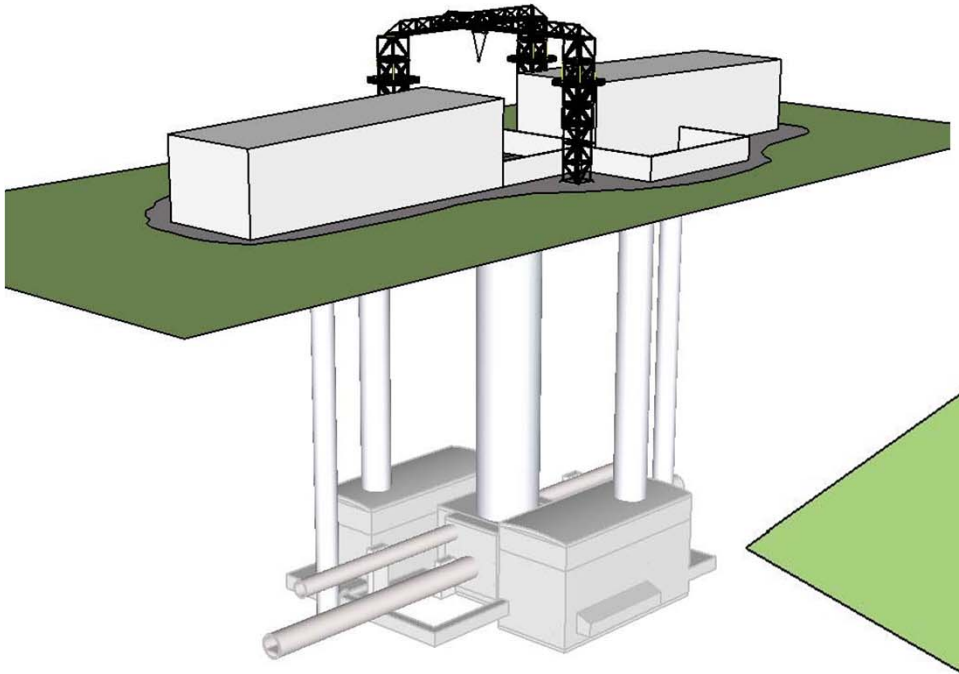


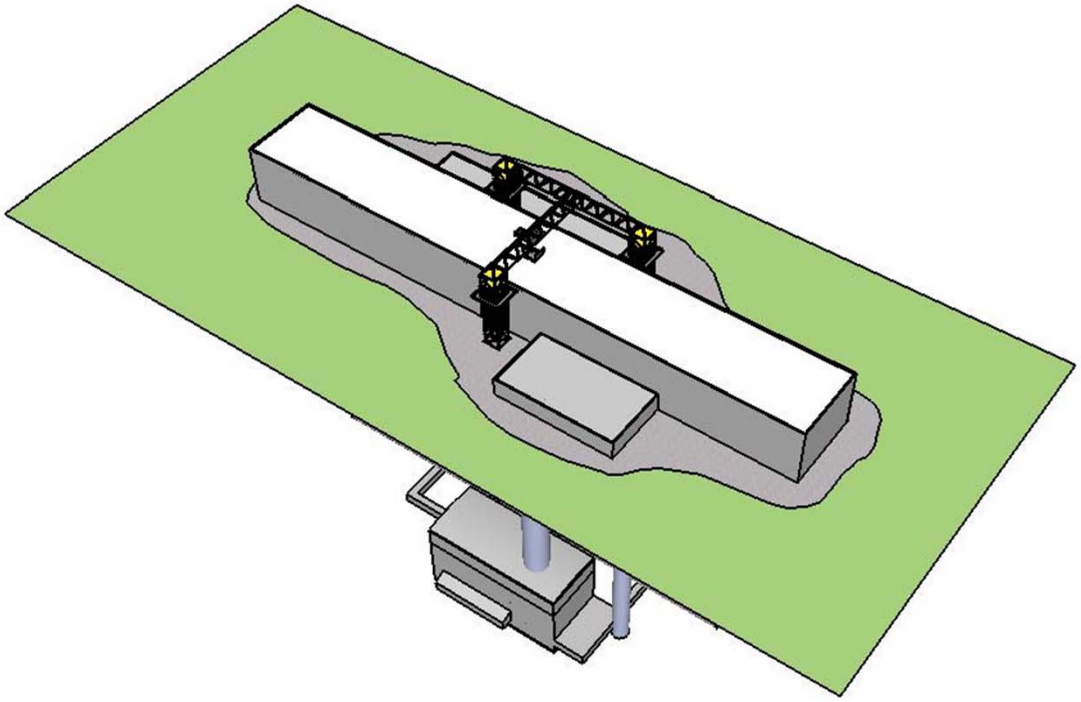




Optimisation for ILD requirements important!

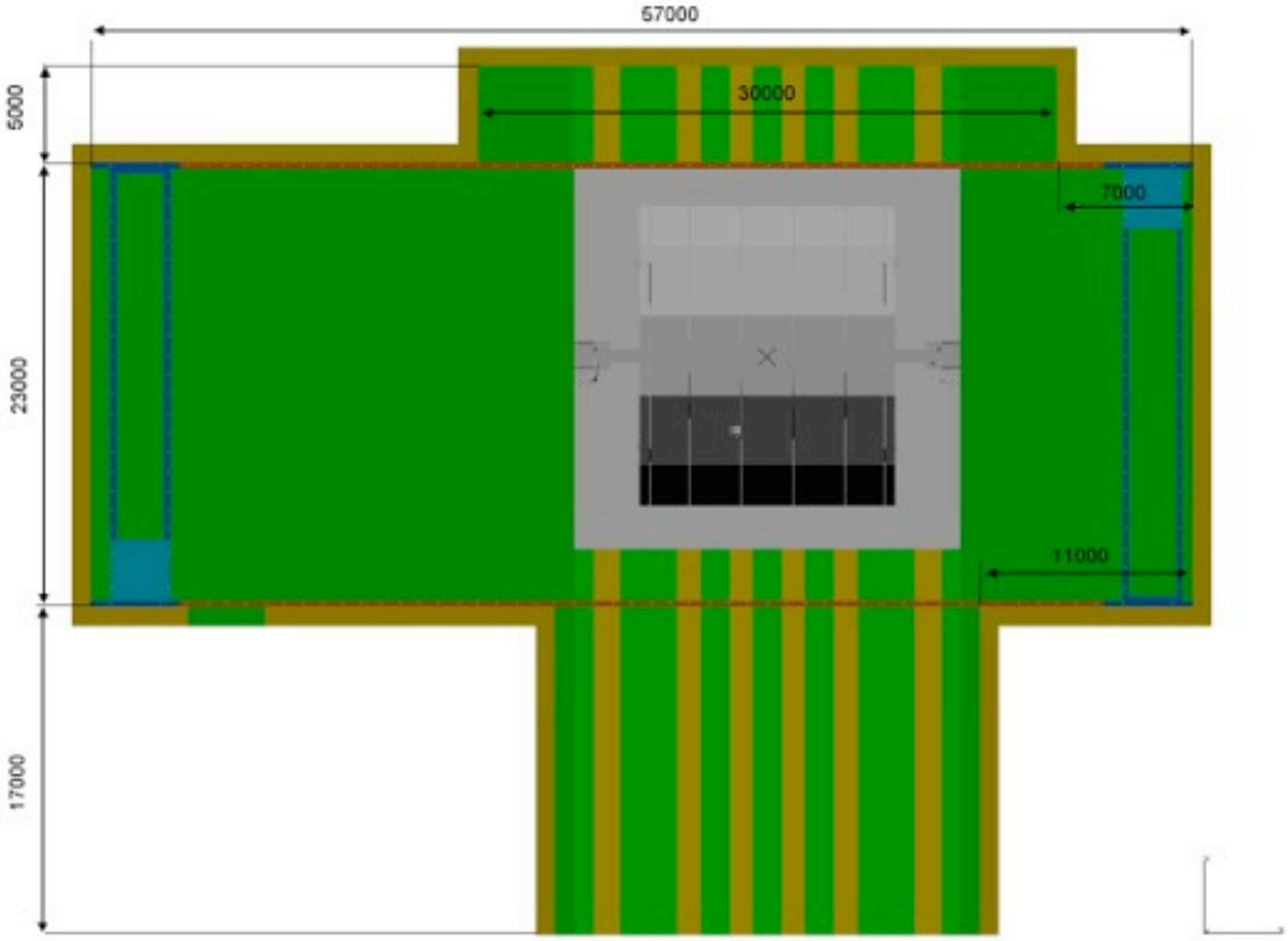
Global Design Effort - CFS



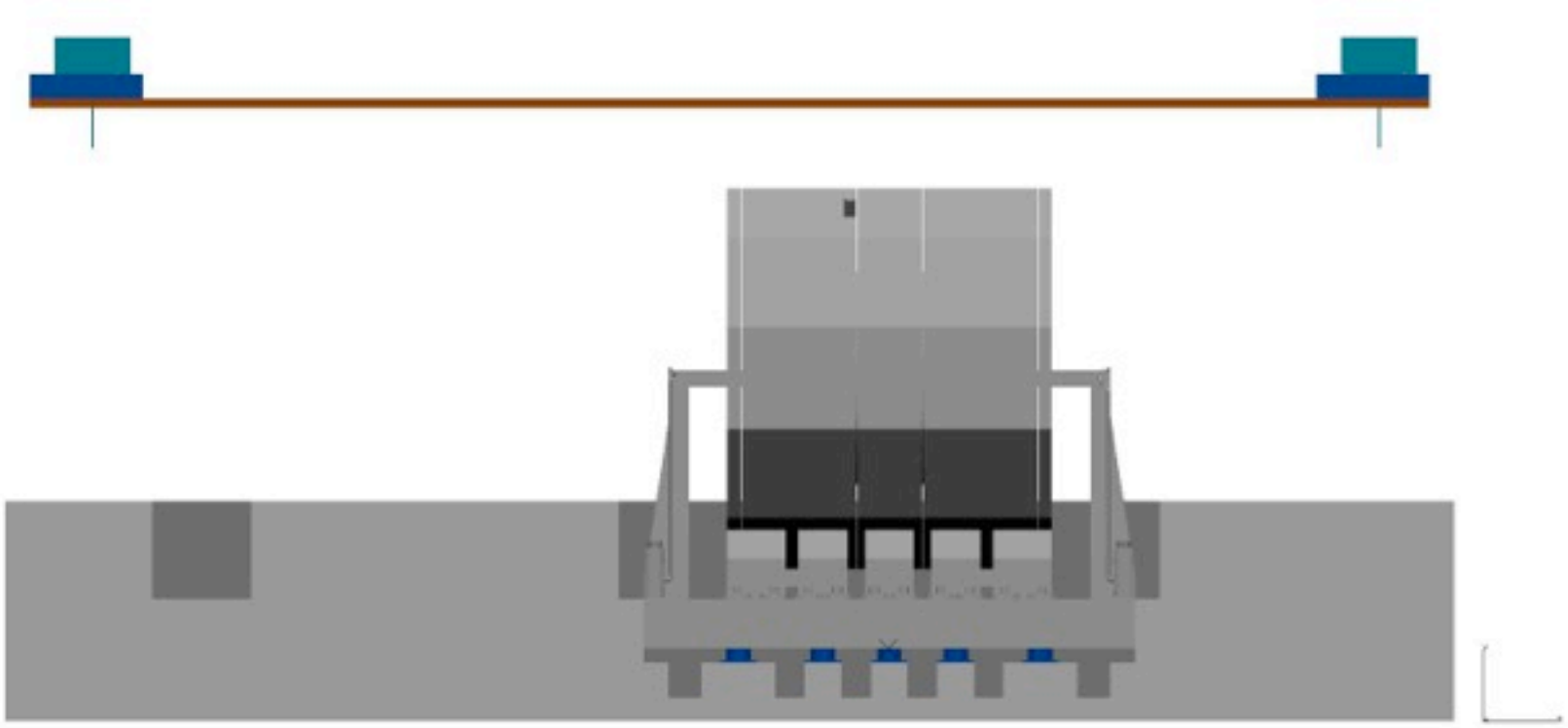


T. Lackowski

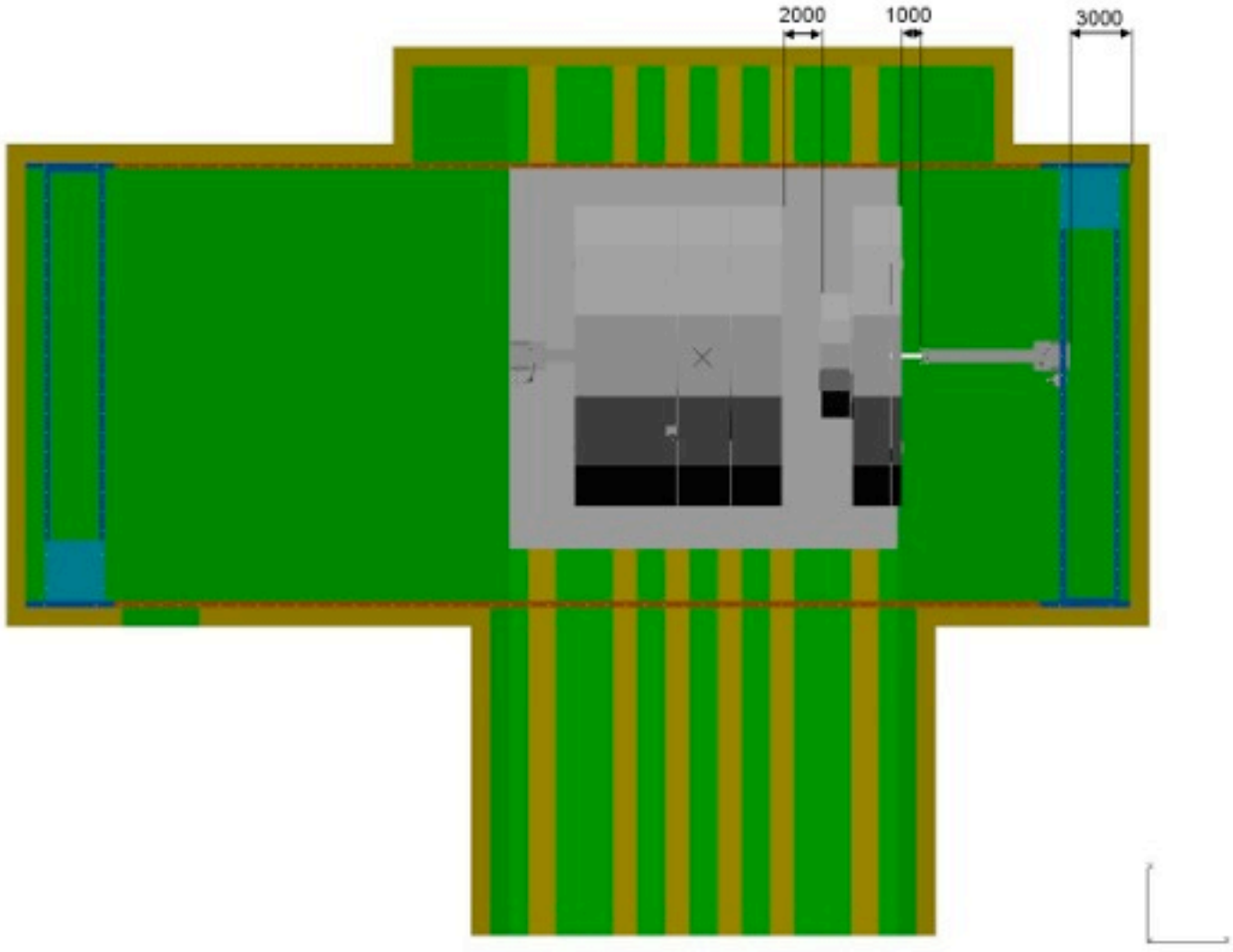
ILD Detector closed
top view



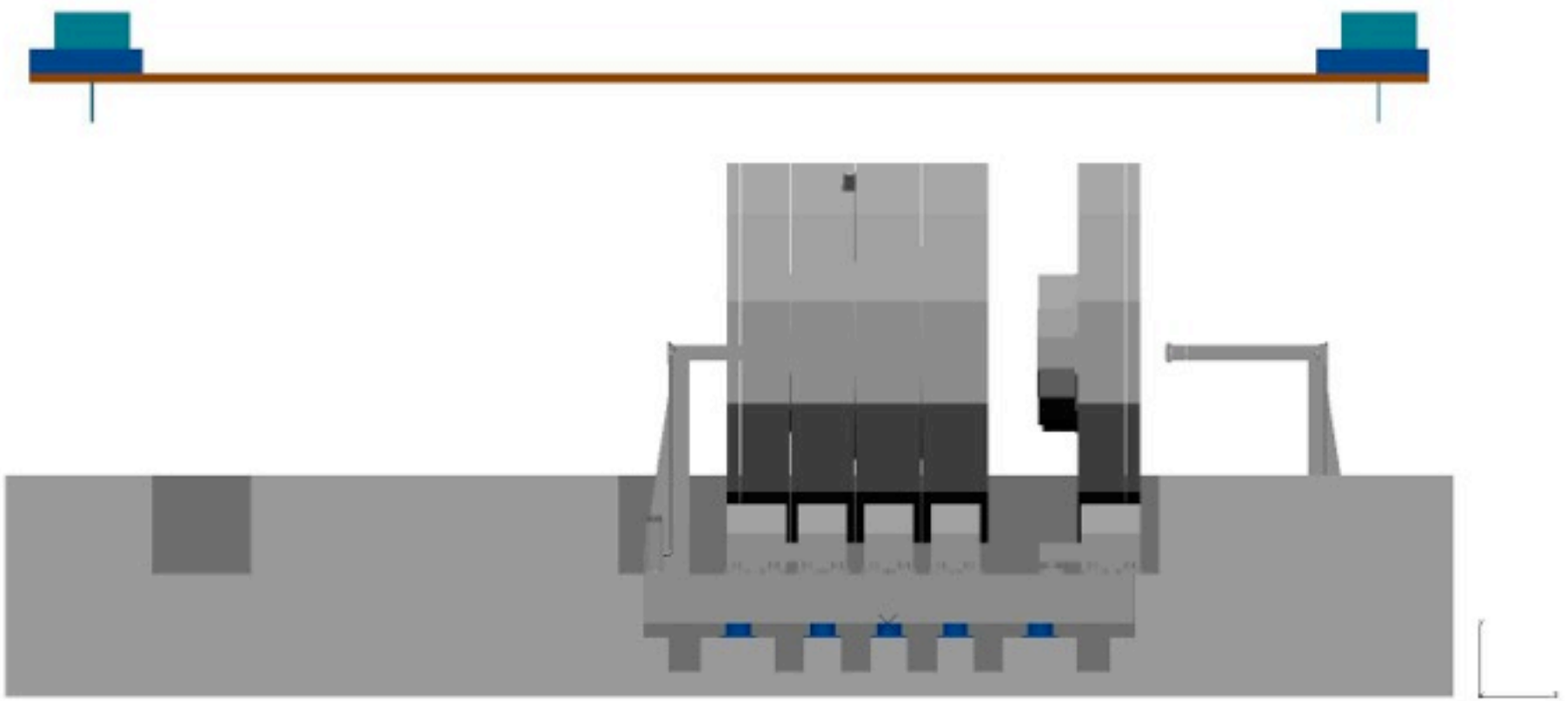
Side view



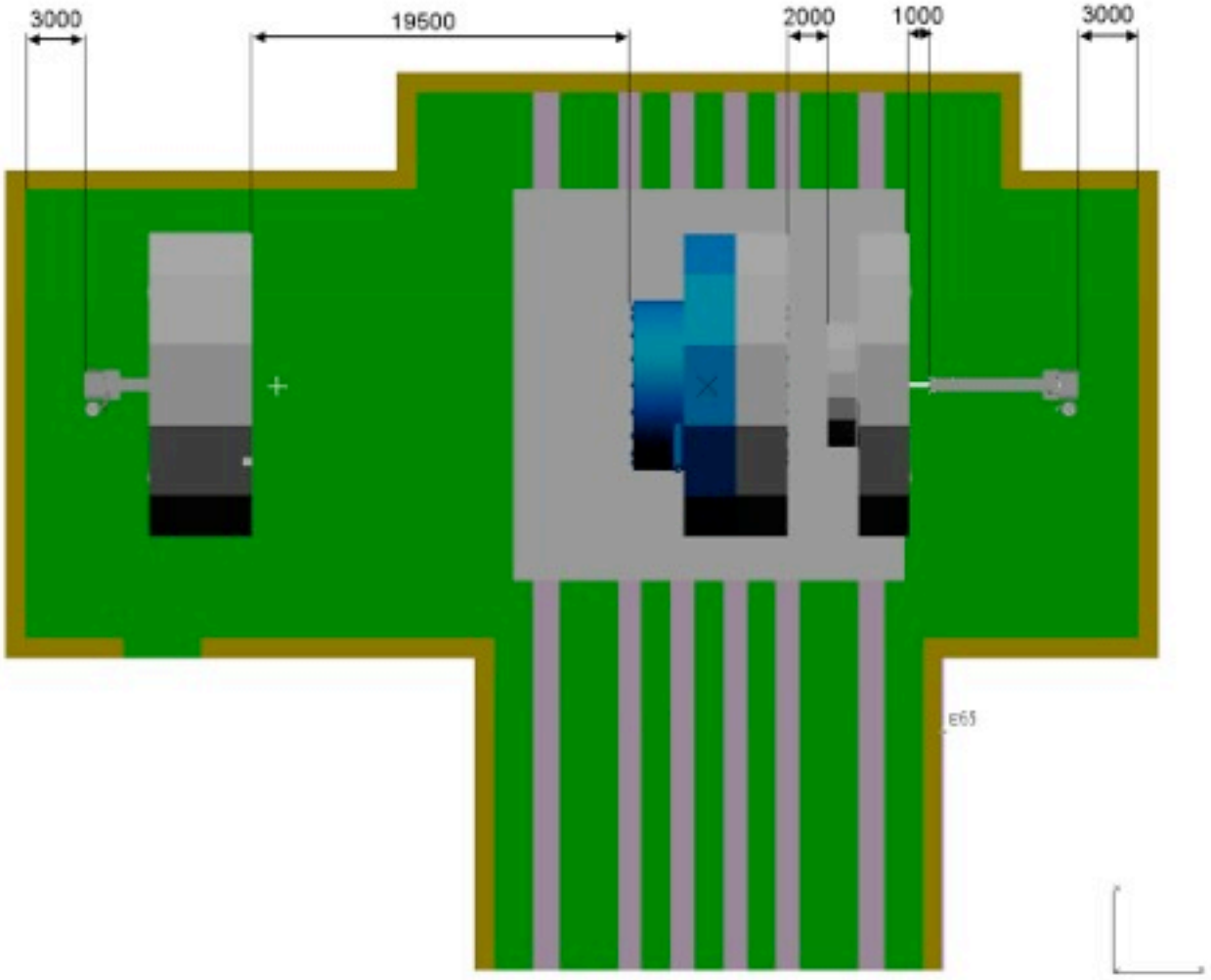
Right Endcap open
QD0 removed



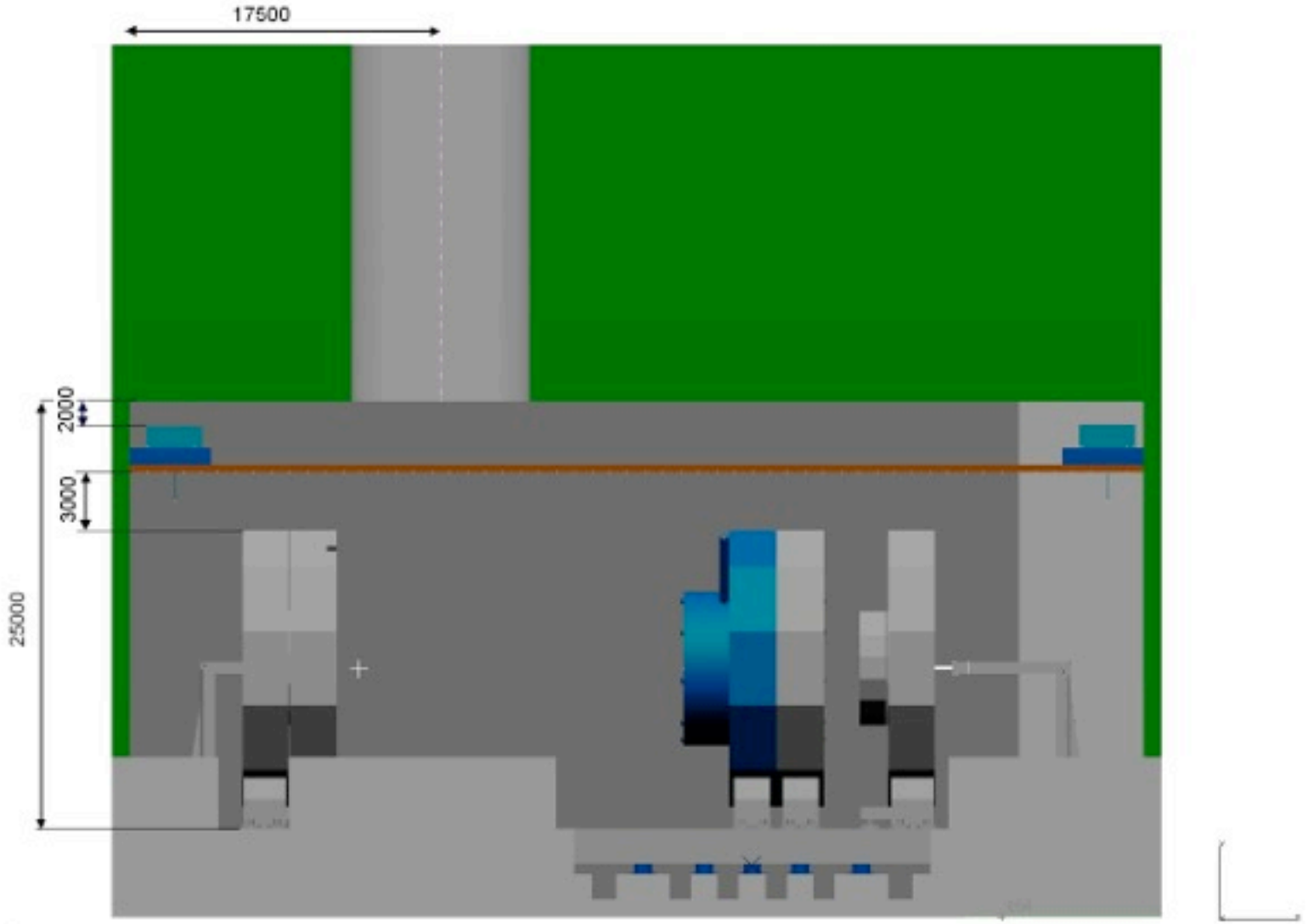
Side view



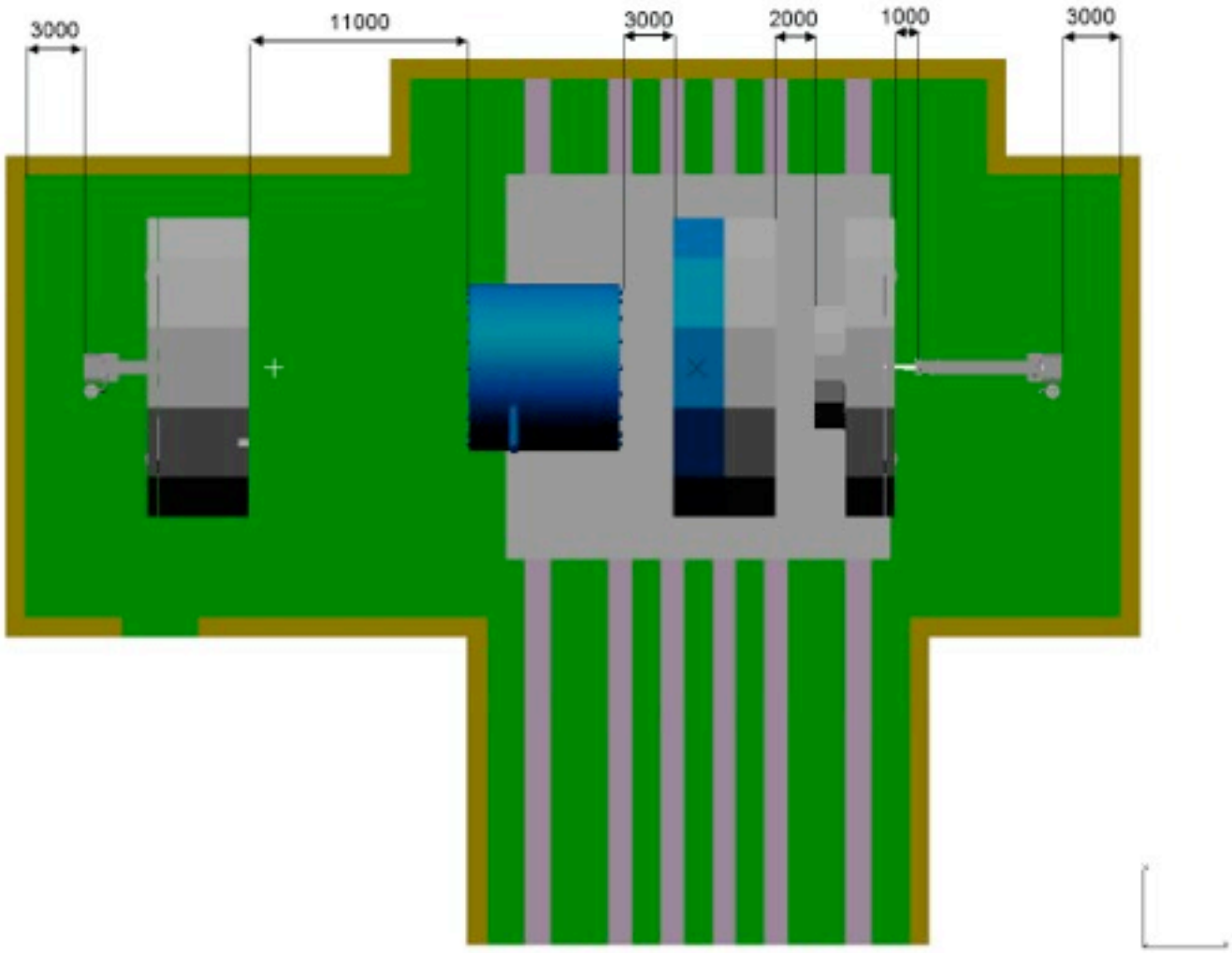
Left Endcap and left central yoke ring pushed to left side of the hall to allow cryostat/coil removal



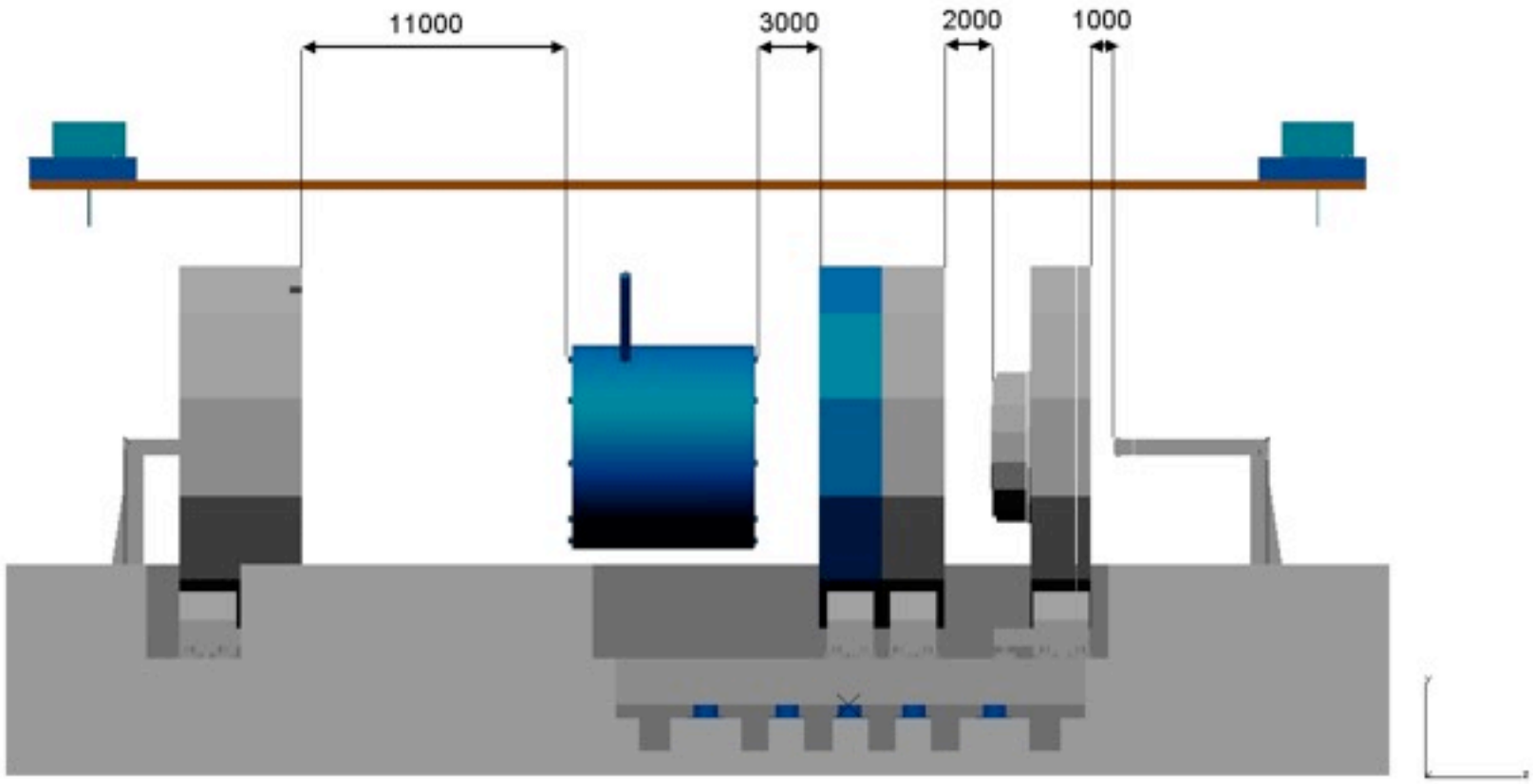
Side view



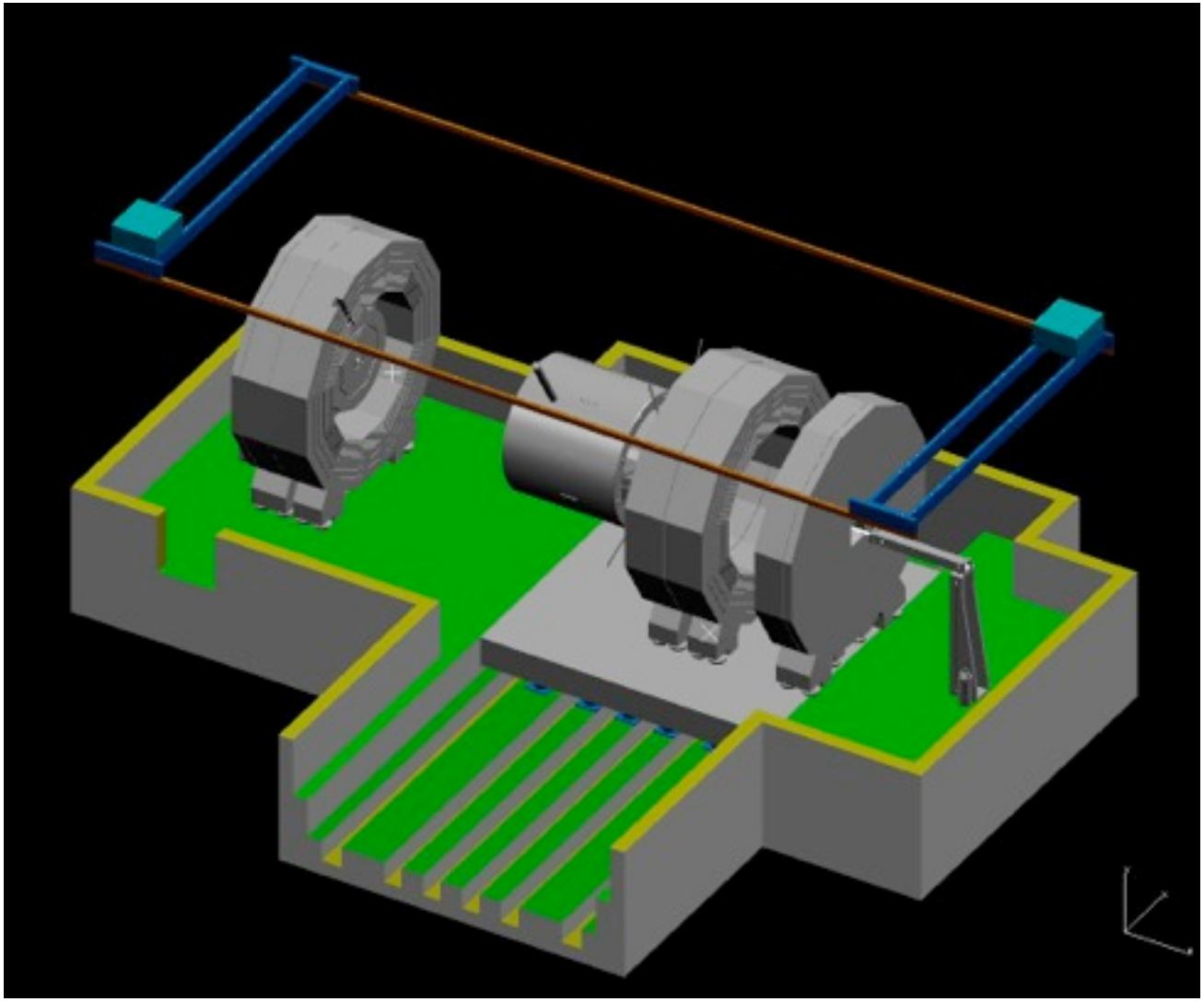
Cryostat/coil removed from central barrel top view



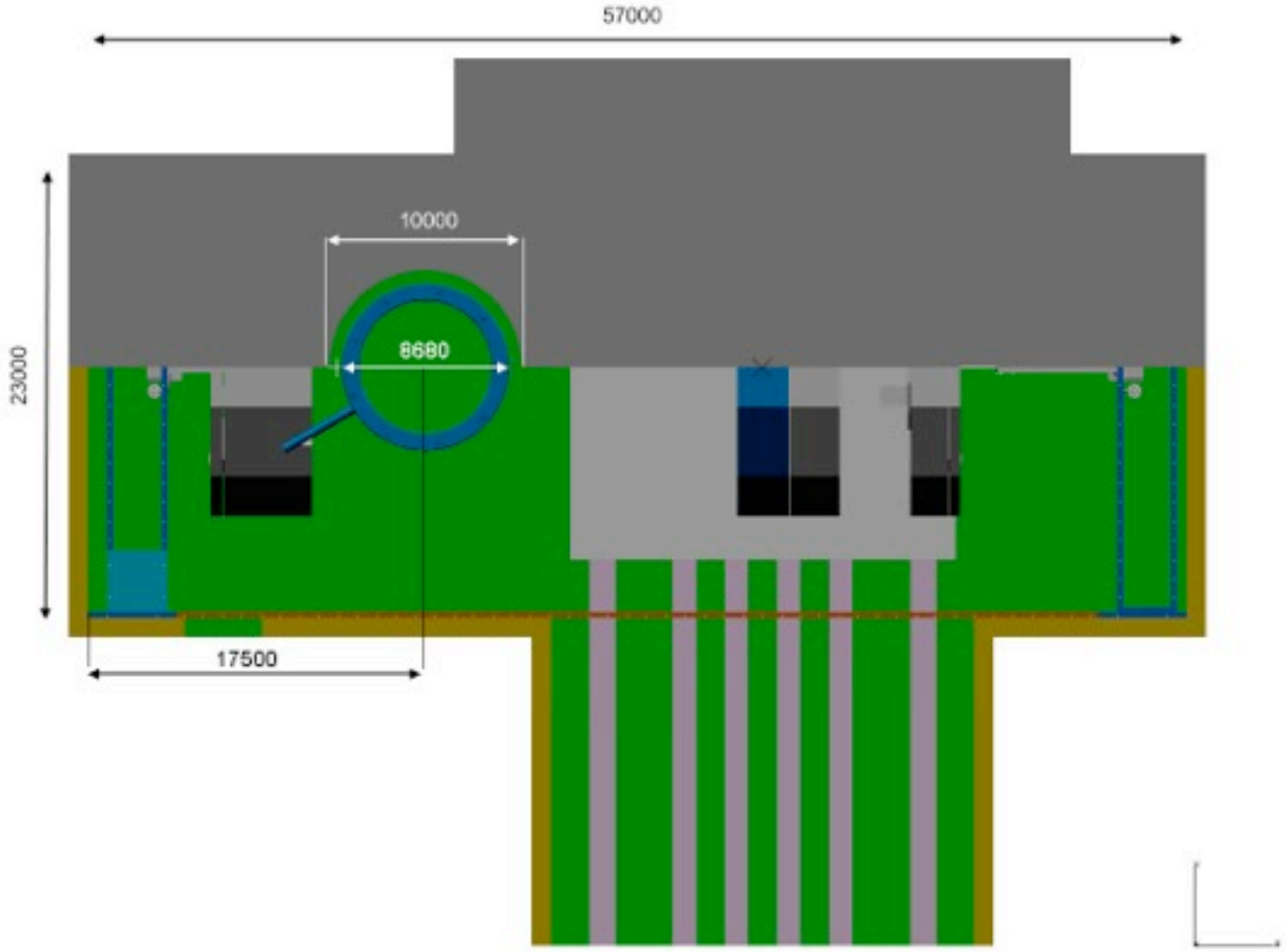
Side view



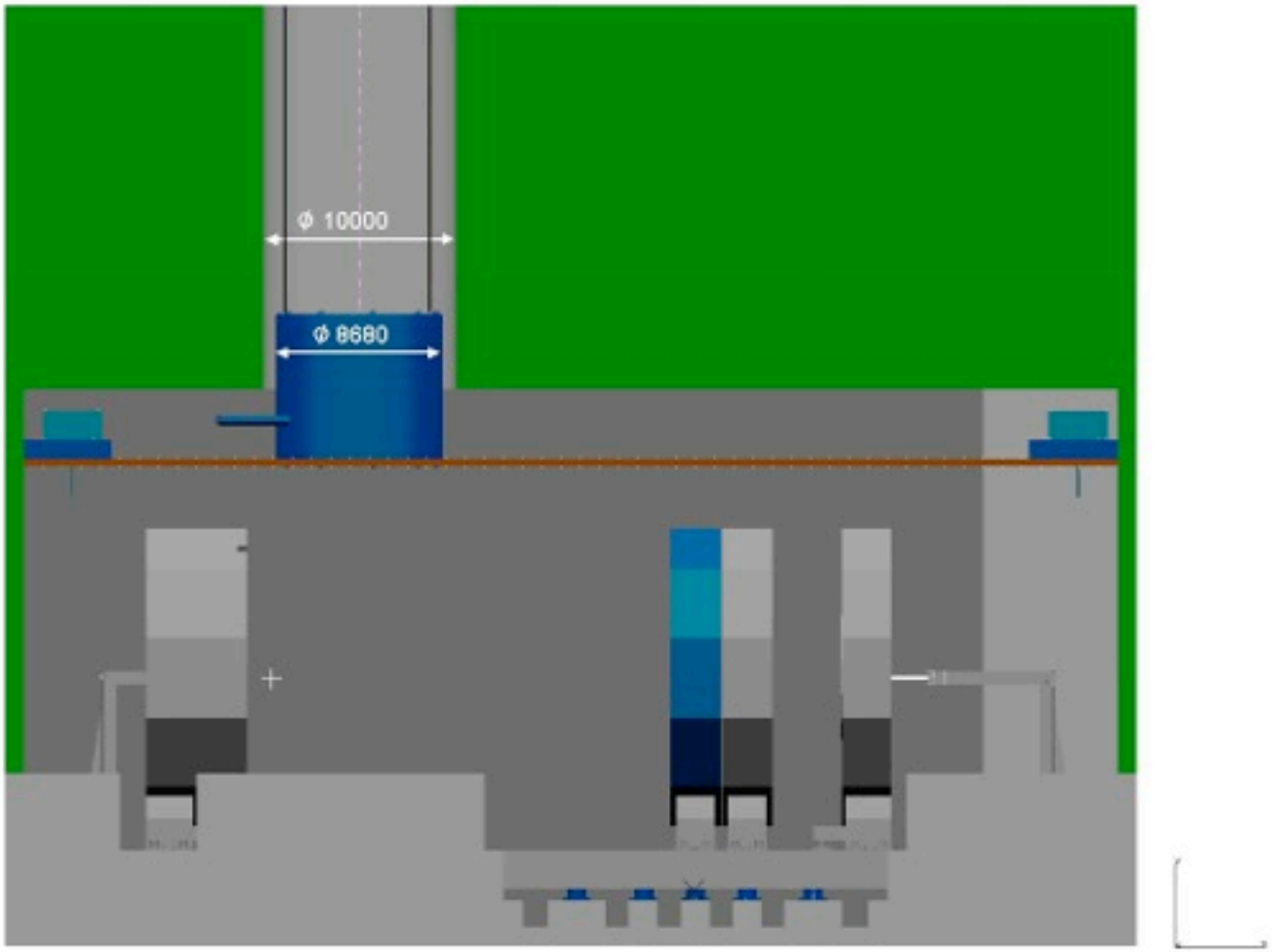
3-D view



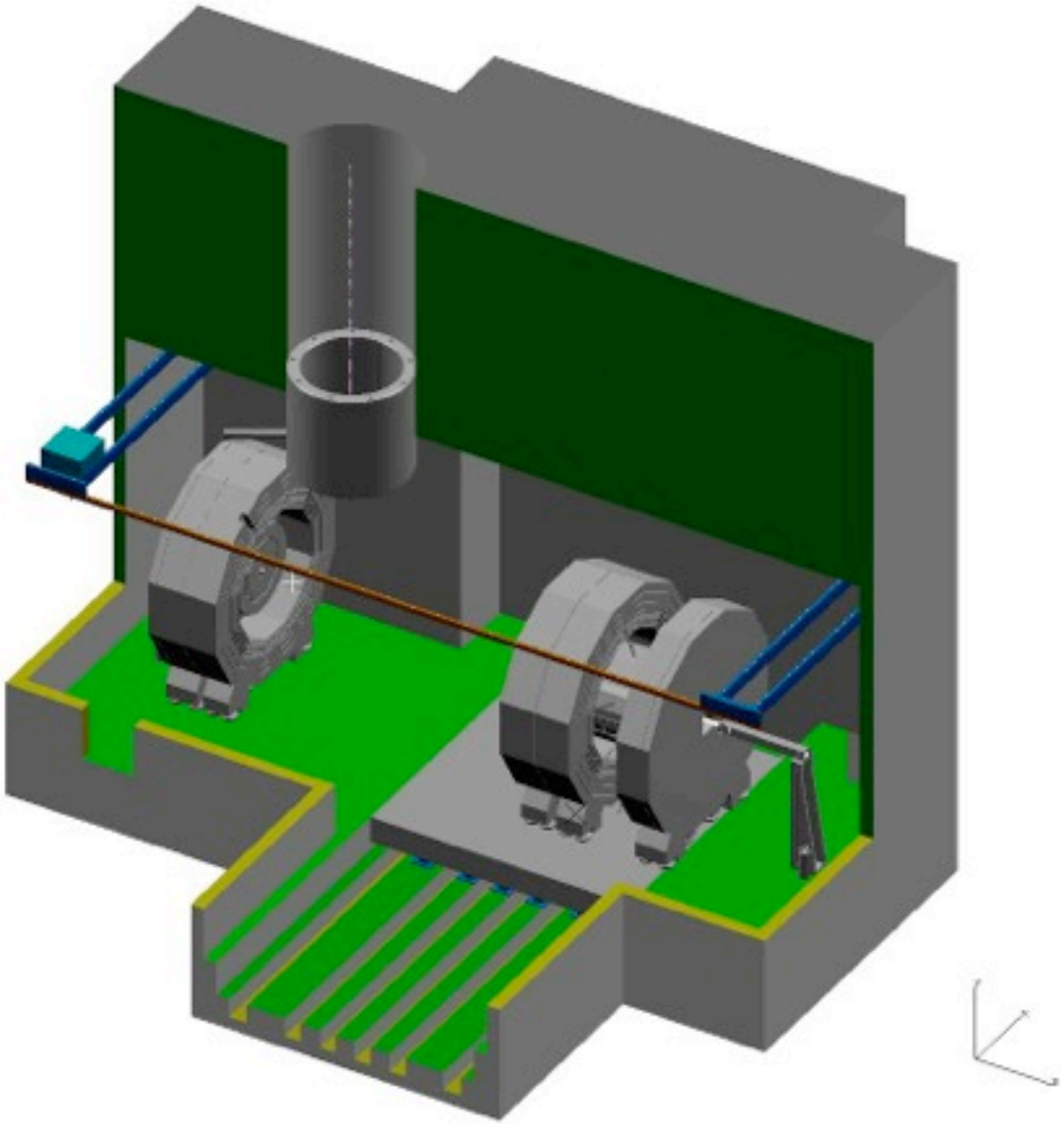
Cryostat/Coil removed from hall through experimental shaft (top view)



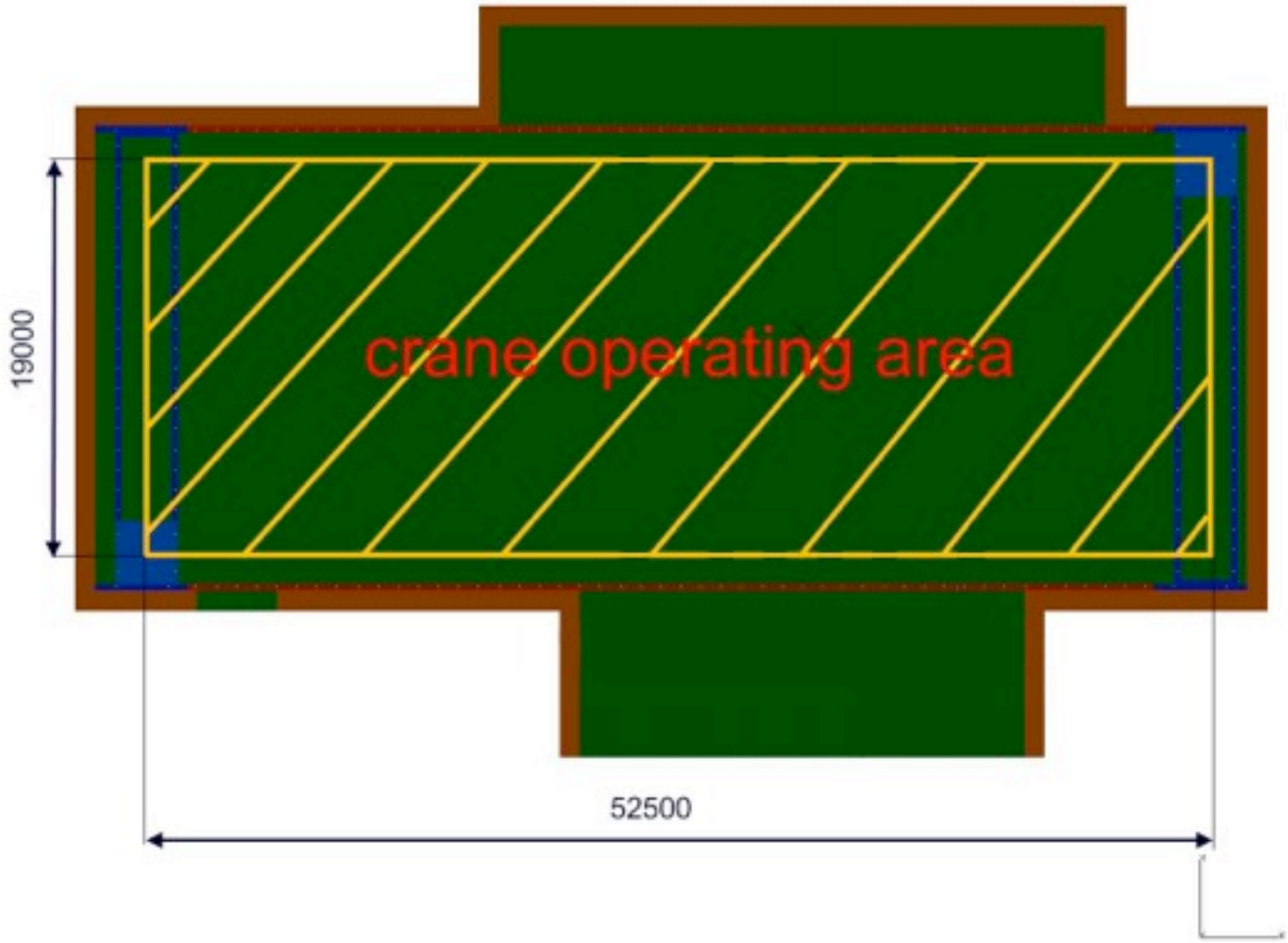
Side view



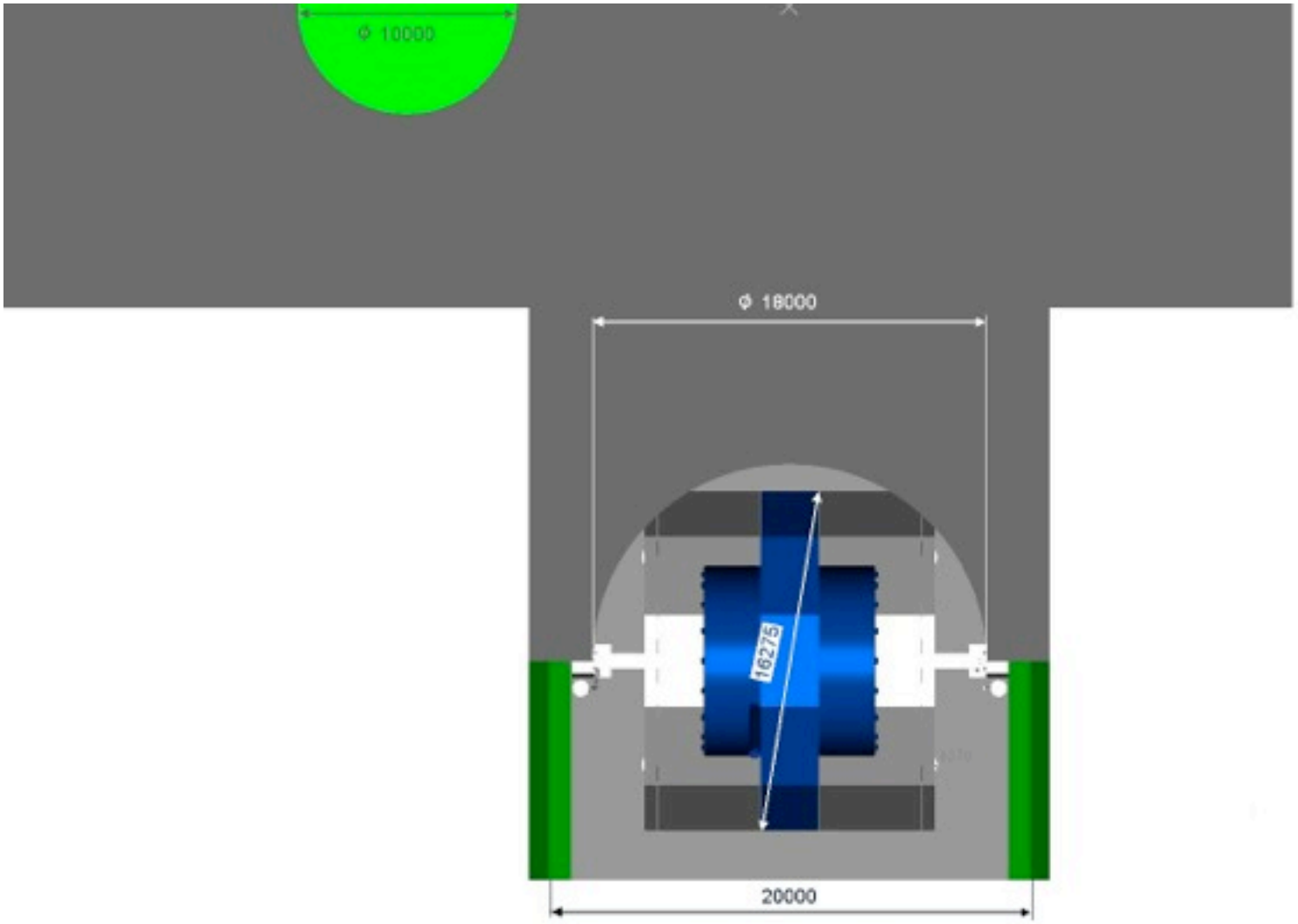
3-D view



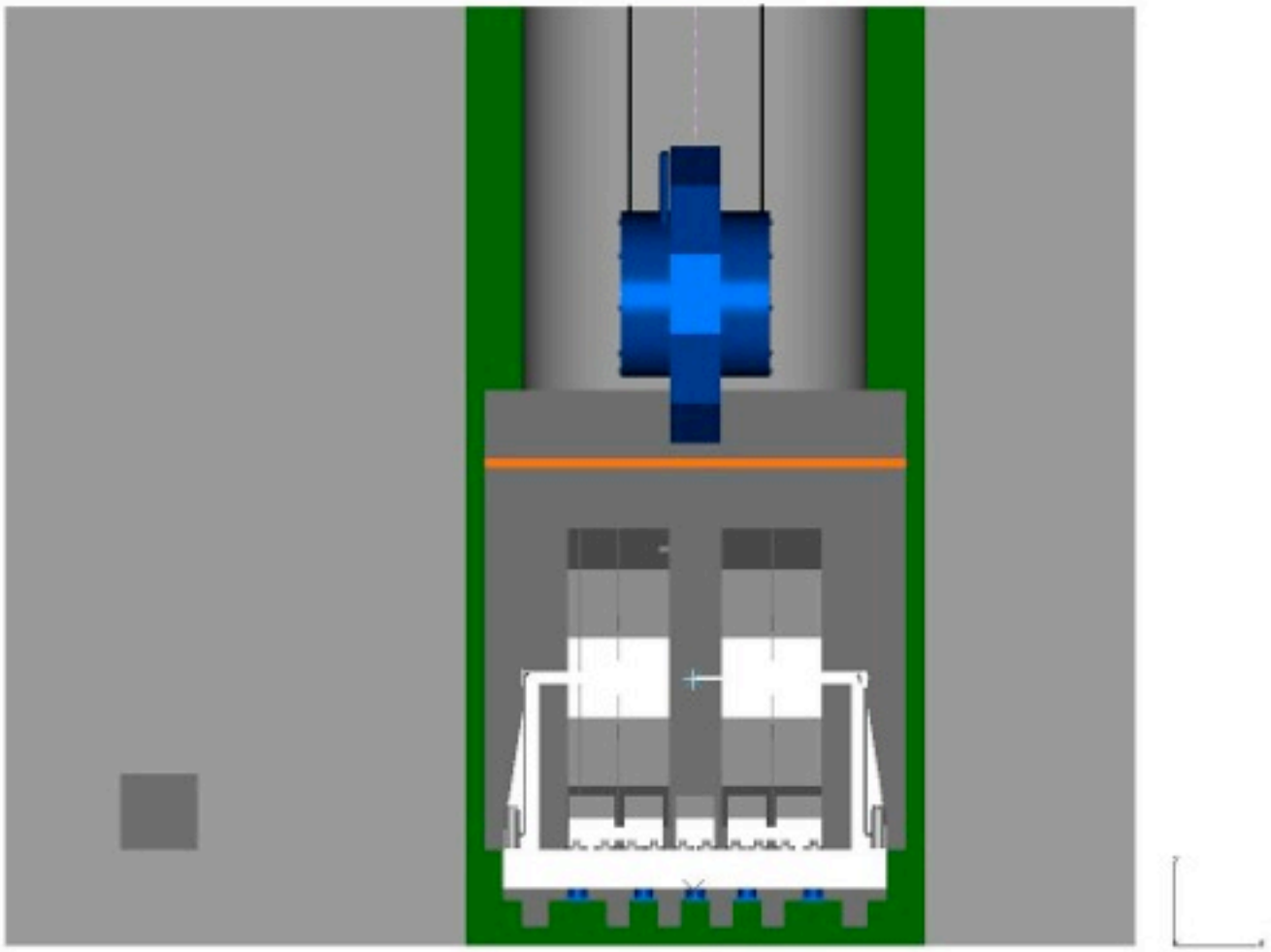
2x40 t crane operating area



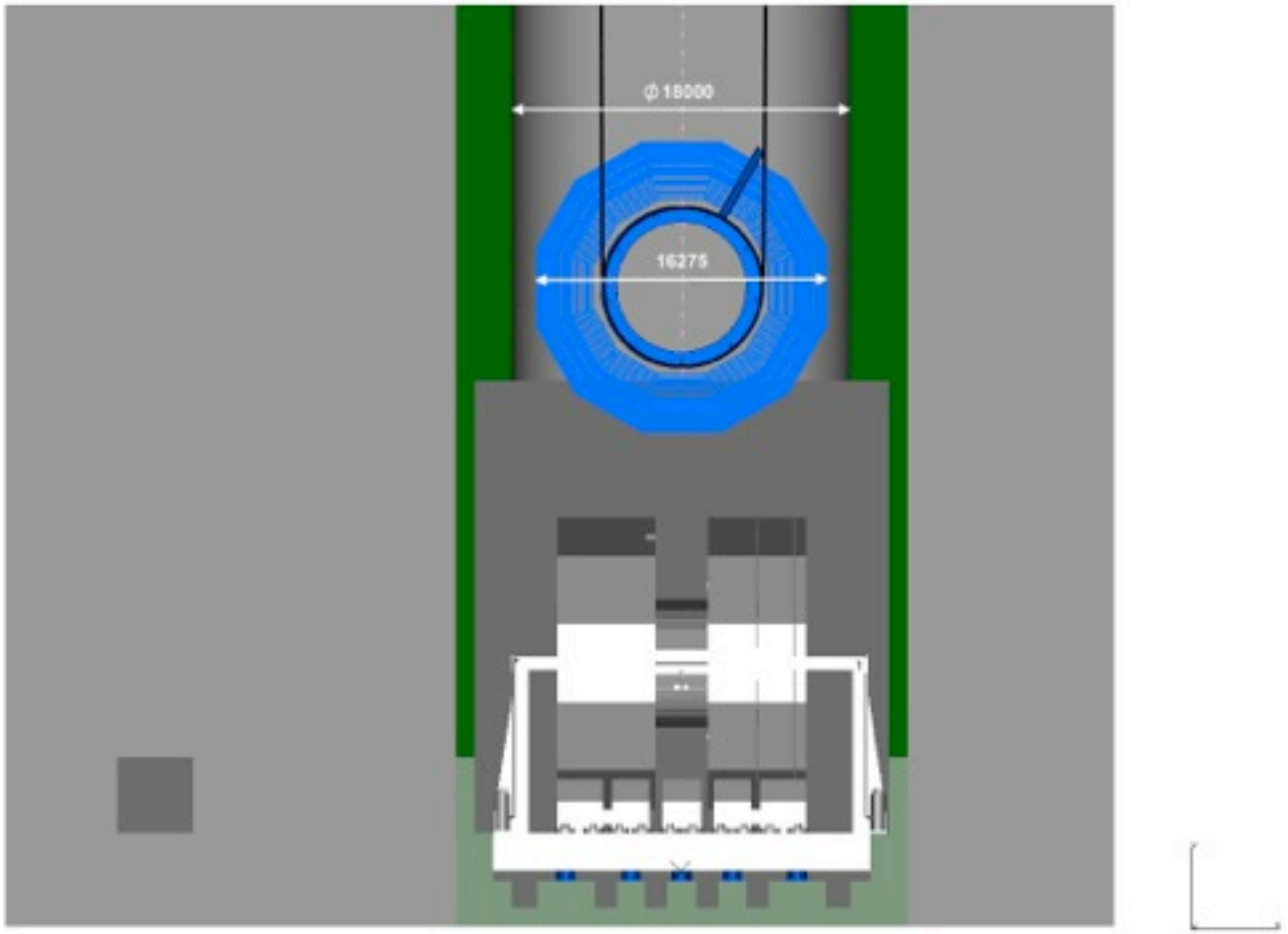
ILD central yoke piece in main shaft (top view)



Side view

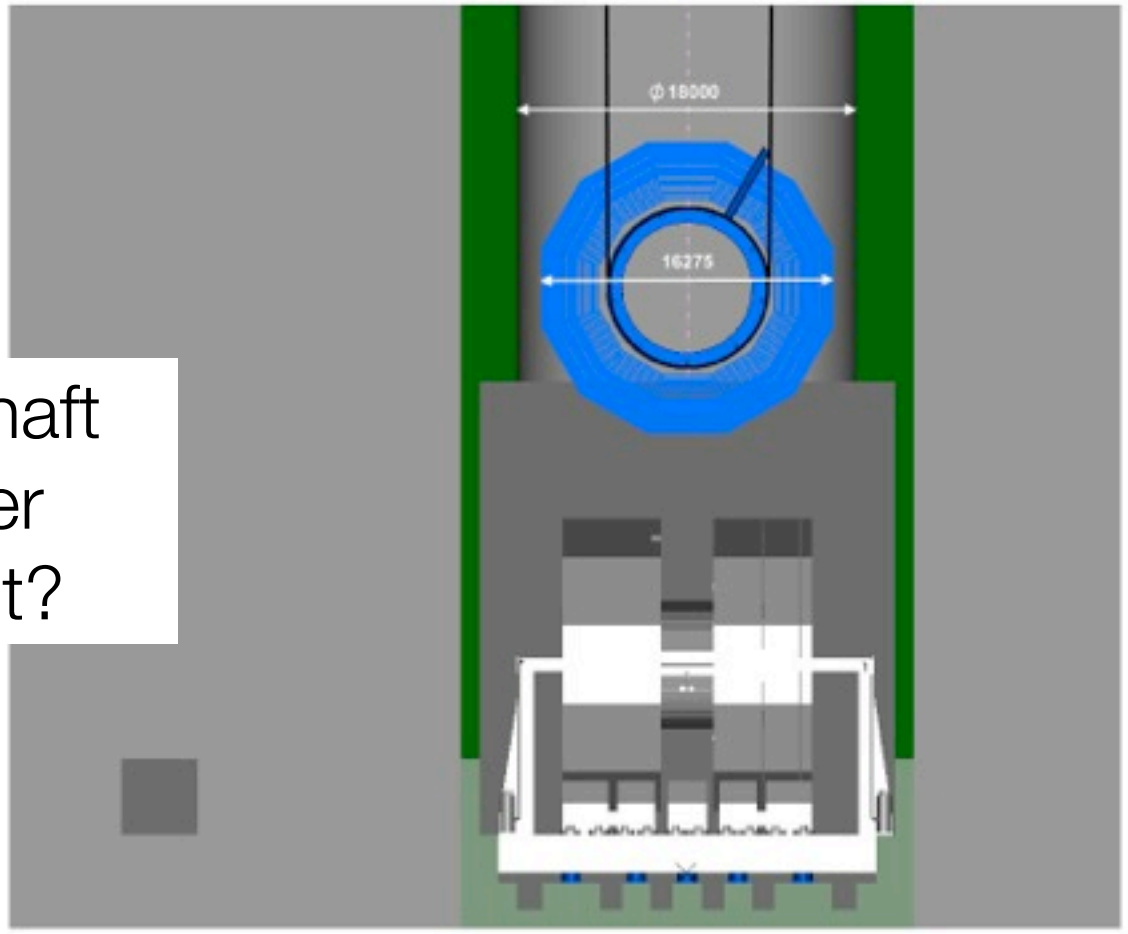


Turned 90 degrees

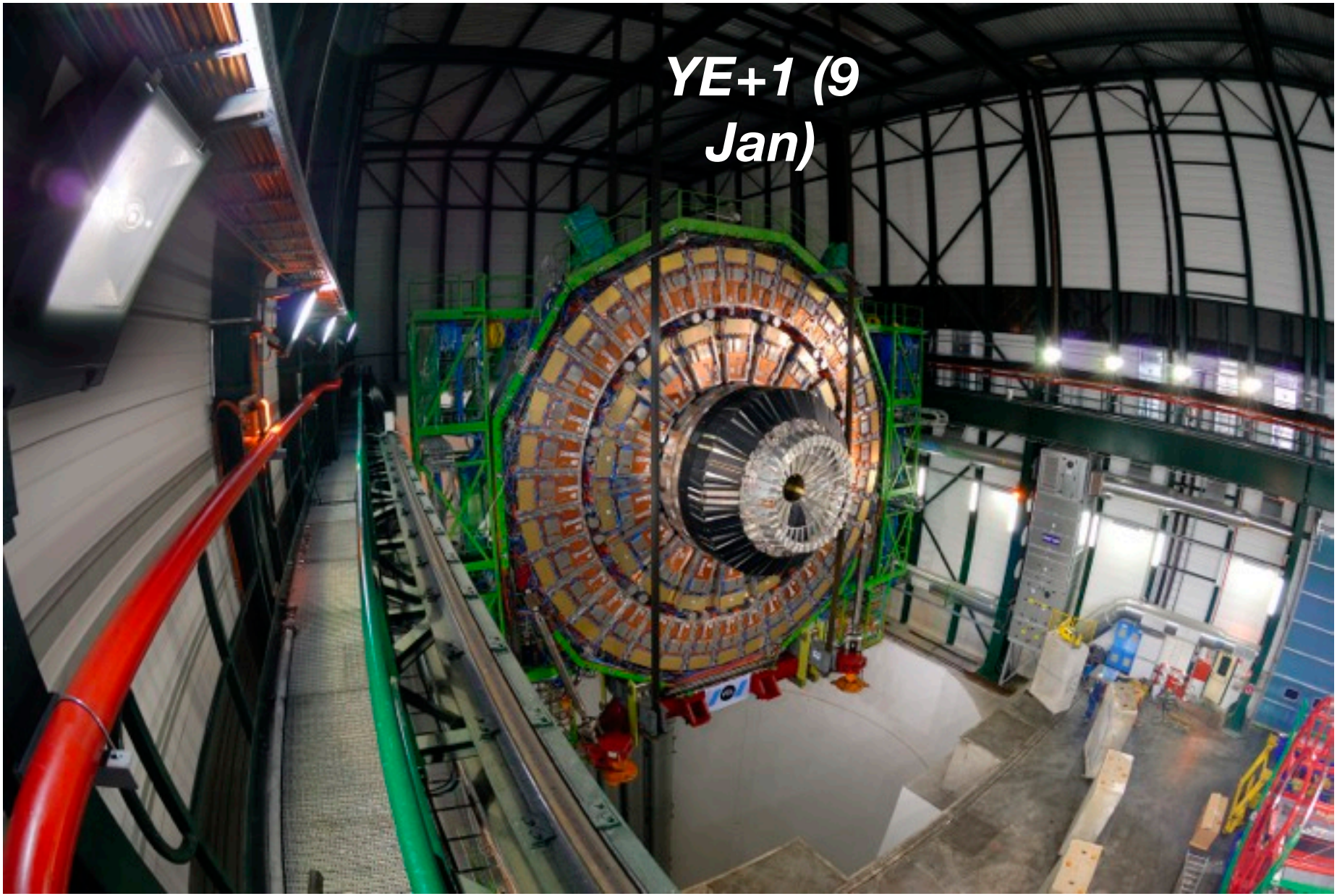


Turned 90 degrees

Is 18m shaft diameter sufficient?



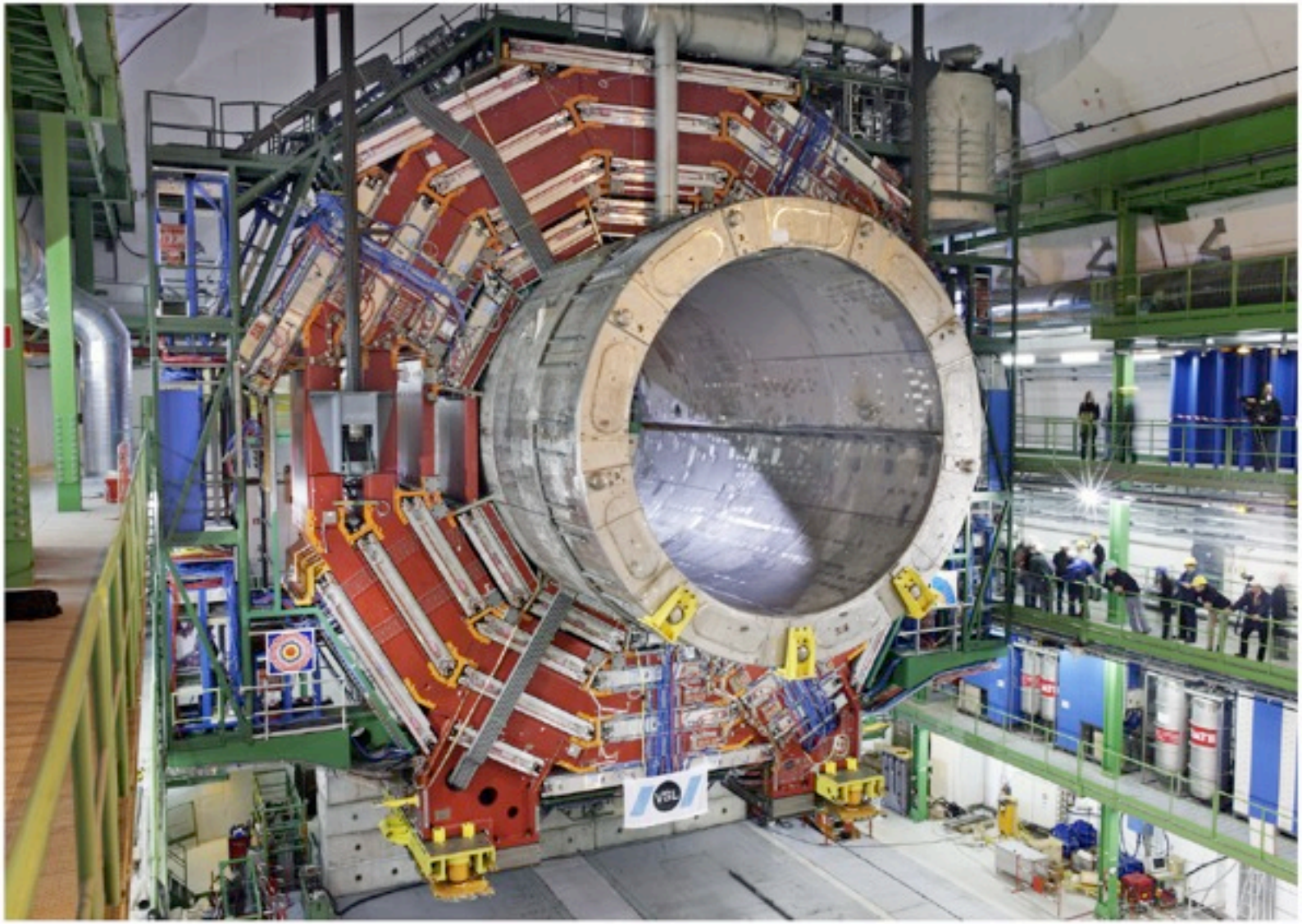
Heavy Lowering 1



Heavy Lowering (YB0)

Heavy Lowering 1

Heavy Lowering (YB0, 28 Feb)



YB0 landing in the CMS experiment hall

Cost of Shaft Excavation

T. Lackowski

- Includes excavation, lining, pre-grouting
  - Costs are for projected depth
  - FY 12 dollars
- Cost of impact on crown not included
  - Crown support cost may increase due to stress concentration