HIE-ISOLDE

Installation and Integration

ISOLDE workshop & users meeting

CERN, 17-19 Dec 2012

Erwin Siesling on behalf of the HIE integration team

HIE ISOLDE integration

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- EN/EL : RENE NECCA, JEAN-CLAUDE GUILLAUME, GEORGI GEORGIEV, JEAN-PIERRE BILLON-GRAND EN/EL
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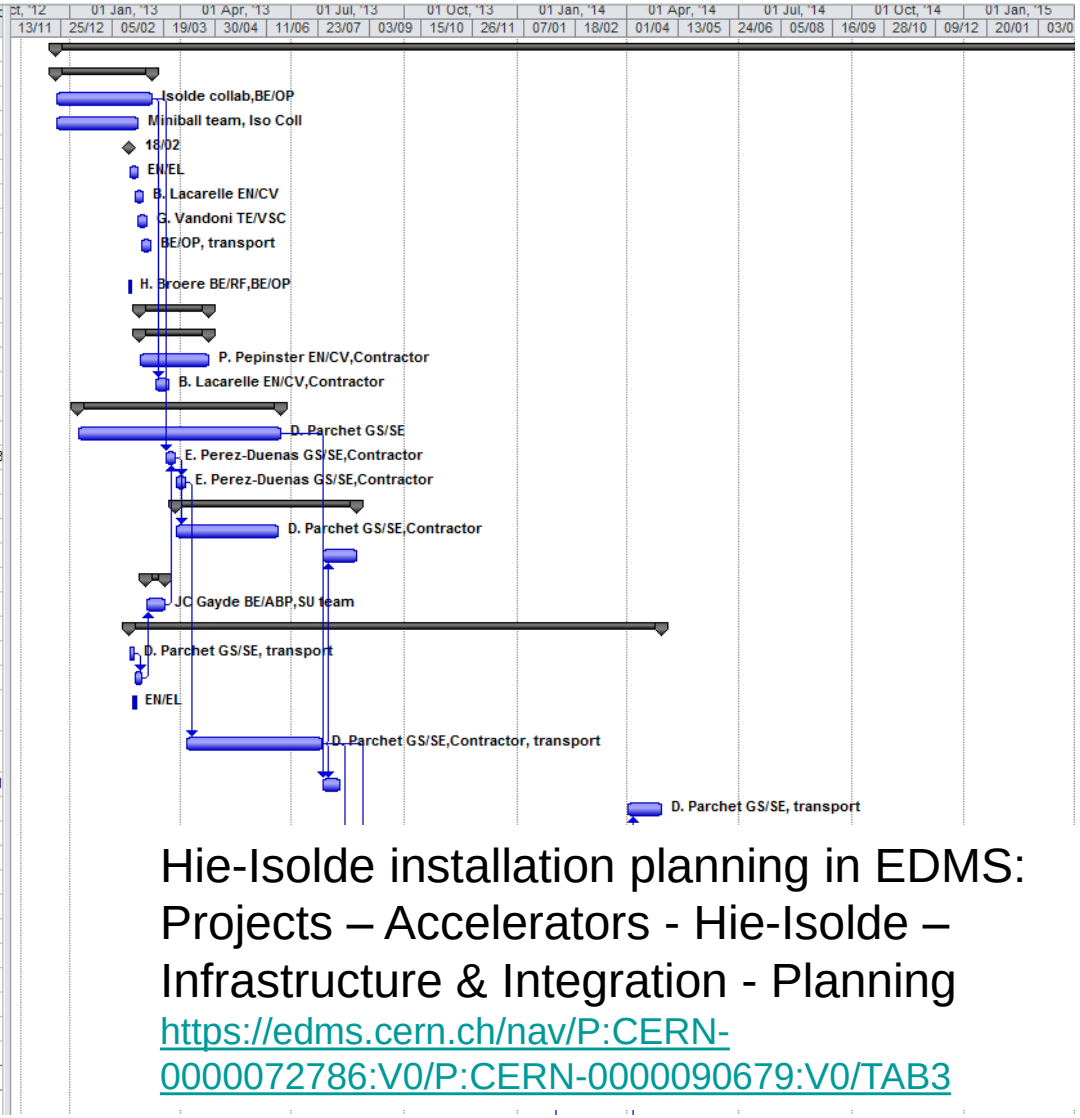
- TE/MSC : JEAN-PHILIPE TOCK, YANN LECLERCQ, LLOYD WILLIAMS, ARNAUD BOUZOUD
- DSG/RP : JOACHIM VOLLAIRE, SANDRA GIRON
- TE/ABT : BRENNAN GODDARD

Outline

- **Hie-Isolde – Installation & Integration**
  - Schedule and planning – LS1 and beyond
  - Changes to the existing facility – present situation
  - New buildings and what will be inside
  - The experimental hall – co-activities during LS1 and beyond
  - Towards hardware and beam commissioning
  - Conclusions

Hie-Isolde Planning

Task Name	Duration	Start	Finish	Predec
Hall 170 activities	**644 days?**	**Thu 20/12/12**	**Tue 09/06/15**	
Hall 170 preparations	**57 days?**	**Thu 20/12/12**	**Fri 08/03/13**	
empty hall	57 days?	Thu 20/12/12	Fri 08/03/13	
move Miniball & B-NMR setup	48 days?	Thu 20/12/12	Mon 25/02/13	
Dismounting beamline starting date	0 days	Mon 18/02/13	Mon 18/02/13	
remove existing beamlines cabling	6 days?	Mon 18/02/13	Mon 25/02/13	
remove existing water tubes	6 days?	Fri 22/02/13	Fri 01/03/13	
remove existing vacuum tubing	6 days?	Mon 25/02/13	Mon 04/03/13	
dismantle existing REX beamlines +remove dipole	6 days?	Thu 28/02/13	Thu 07/03/13	
removal RF dummy load	1 day	Mon 18/02/13	Mon 18/02/13	
Cooling & Ventilation	**40 days?**	**Wed 27/02/13**	**Tue 23/04/13**	
HAVC installation	**40 days?**	**Wed 27/02/13**	**Tue 23/04/13**	
mechanical installation (ducts, diffusers)	40 days?	Wed 27/02/13	Tue 23/04/13	
extraction ventilators roof	2 wks	Mon 11/03/13	Fri 22/03/13	93
CE hall 170	**120 days**	**Mon 07/01/13**	**Fri 21/06/13**	
order special concrete parts tunnel extension	6 mons	Mon 07/01/13	Fri 21/06/13	
cutting wall platform	6 days	Wed 20/03/13	Wed 27/03/13	113,93
escavate cable traches tunnel	6 days	Thu 28/03/13	Thu 04/04/13	107
Metal structures	**106 days**	**Thu 28/03/13**	**Thu 22/08/13**	
modification racks platform	3 mons	Thu 28/03/13	Wed 19/06/13	107
installation cryo jumpers platform	1 mon	Fri 26/07/13	Thu 22/08/13	118
Survey marking work	**12 days?**	**Mon 04/03/13**	**Tue 19/03/13**	
tracing Tunnel, linac beamline and CG	12 days?	Mon 04/03/13	Tue 19/03/13	116
Tunnel	**311 days**	**Mon 18/02/13**	**Mon 28/04/14**	
removal roof tunnel	4 days	Mon 18/02/13	Thu 21/02/13	
remove side door and end shielding	5 days	Fri 22/02/13	Thu 28/02/13	115
remove existing electrical cabling (lights, etc) + AUG	2 days	Thu 21/02/13	Fri 22/02/13	
new walls installation & adaptation existing walls (40 -> 80cm)	4 mons	Fri 05/04/13	Thu 25/07/13	108
install special concrete roof/cable feed parts	2 wks	Fri 26/07/13	Thu 08/08/13	106,11
new roof installation	1 mon	Tue 01/04/14	Mon 28/04/14	138
Survey preparation work	**115 days?**	**Mon 03/06/13**	**Fri 08/11/13**	
beamline marking, geod. Infrastructure cntrl	10 days?	Mon 03/06/13	Fri 14/06/13	
geod. Netw. Upgrade	5 days?	Mon 04/11/13	Fri 08/11/13	
Cable trays	**70 days?**	**Tue 30/07/13**	**Mon 04/11/13**	
Cable tray period	70 days?	Tue 30/07/13	Mon 04/11/13	
platform internal	1.5 mons	Tue 30/07/13	Mon 09/09/13	
platform into tunnel	1.5 mons	Tue 13/08/13	Mon 23/09/13	118
inside tunnel	1.5 mons	Tue 27/08/13	Mon 07/10/13	118
platform to HEBT	1.5 mons	Tue 17/09/13	Mon 28/10/13	
ex-entrance and B199 into tunnel	1.5 mons	Tue 17/09/13	Mon 28/10/13	
Tunnel & HEBT infrastructure	**65 days**	**Tue 05/11/13**	**Mon 03/02/14**	**124**
installation water tubing 27C and 20C(only tunnel)	3 mons	Tue 05/11/13	Mon 27/01/14	



Hie-Isolde installation planning in EDMS: Projects – Accelerators - Hie-Isolde – Infrastructure & Integration - Planning
https://edms.cern.ch/nav/P:CERN-0000072786:V0/P:CERN-0000090679:V0/TAB3

Planning issues & delay

- **Move of LS1 versus HIE ISOLDE installations**

  - Running PS injection complex till half Feb is a problem for EL / CV: 18kV transformer needs connection to PS group -> March 2013. Workaround (Rene Necca): EL can provide temp solution for possible test of installed CV parts (except large ventilators)

- **Civil Engineering**

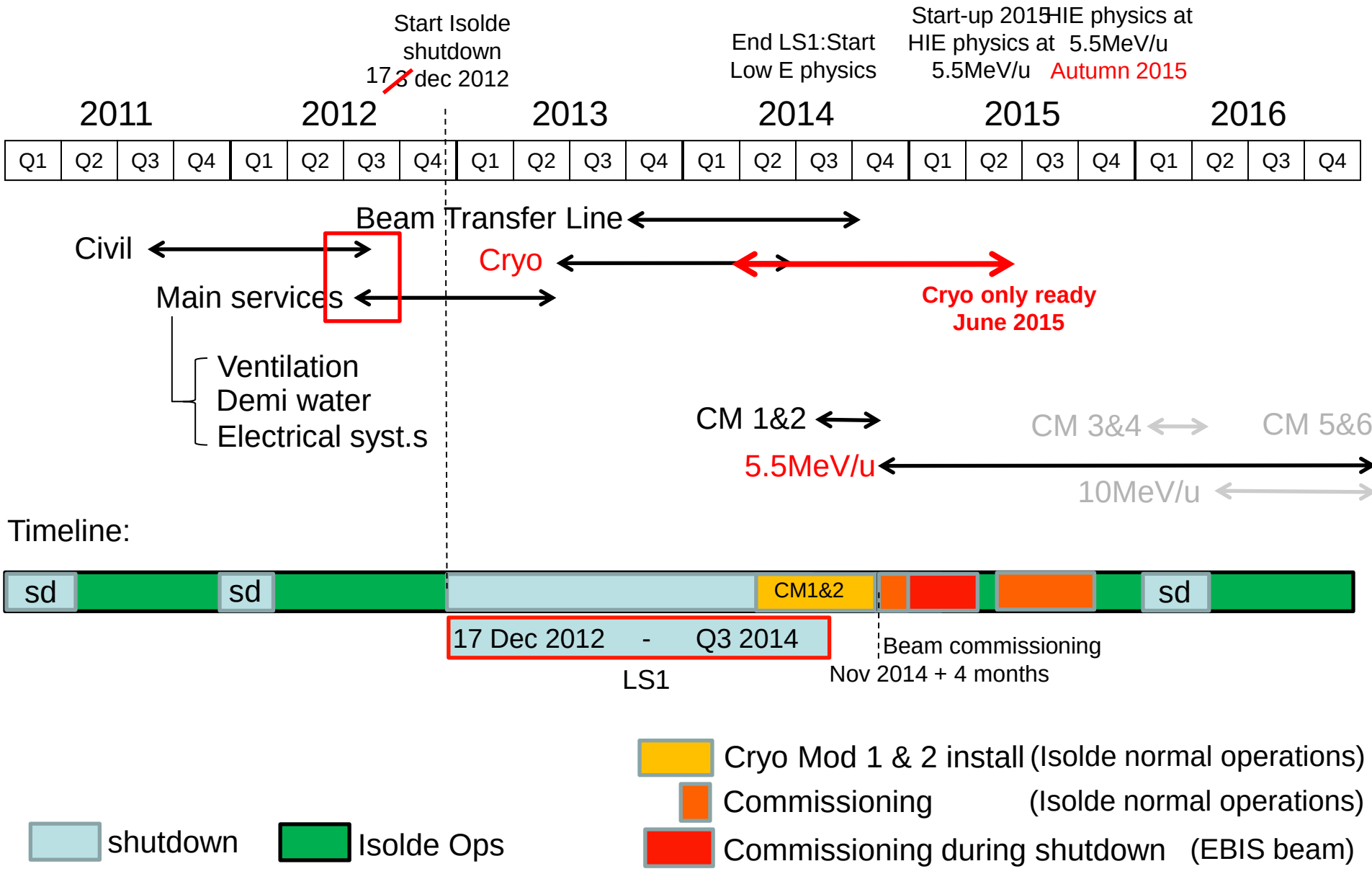
  - Civil Engineering 1 ½ month delay –> EL and CV move

Critical path

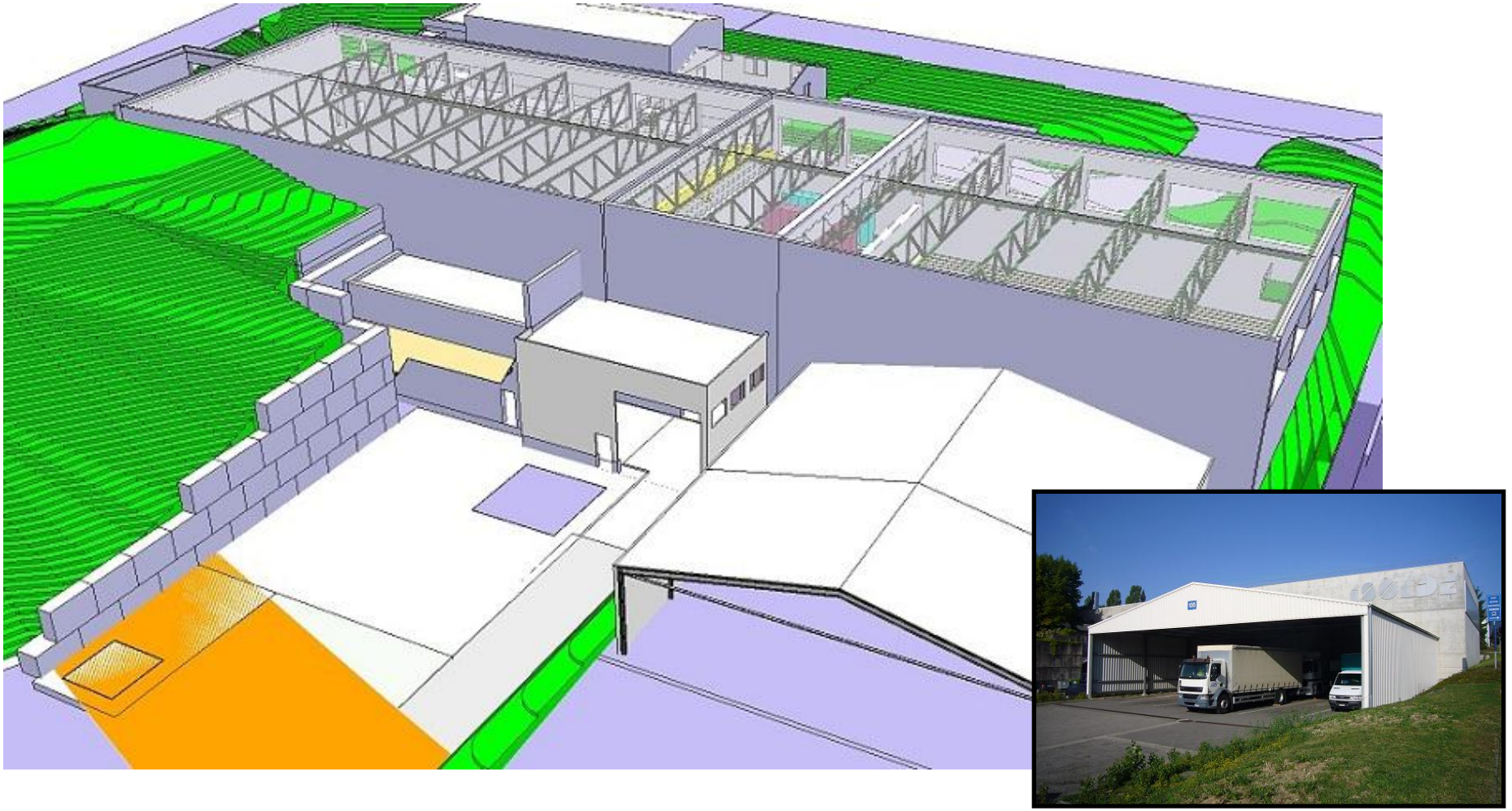
- **Critical path**
  - **HEBT baseline changed to two 90 degree bend experimental lines:**
    2 extra MD dipoles need 4 more months to produce, and this will push the beam commissioning into 2015.
  - **Cryo Module 1 & 2 will arrive late:**
    With the present schedule the installation of CM 1 & 2 before Nov.2014 is not feasible, this also pushes beam commissioning into 2015
    Physics at 5.5MeV/c in June 2015

- **Critical path**
- Cryogenics:
- Re-using an old cold box already existing at CERN, and splitting the procurement of the cryogenic system into 3 parts (compressor station, cold box and cryogenic distribution) to obtain lower prices from the tenderers, could have the following schedule:
- 1) New technical spec to be written and new invitation to tender to launch for the **compressor station** alone; **Finance Committee approval in June 2013**, contract placed in July and delivery at CERN after 12-14 months, i.e. **delivery by September 2014**,
- 2) Re-installation of an **old cold box** (like ALEPH) to be completed also by **September 2014**;
- 3) New technical spec to be written and new invitation to tender to launch for the **cryogenic distribution (transfer line + jumper boxes)**; **Finance Committee approval in June 2013**, contract placed in July and delivery at CERN after 12-14 months, i.e. **delivery by September 2014**.
- Then, we need 3 months of installation if we can have in parallel the installation of the compressor station and of the cryogenic distribution. **End of installation completed by December 2014**.
- Then **commissioning of the compressor station and of the cold box: six months** if we don't have a bad surprise with the reuse of the old equipment…
- The cryogenic system could then be **ready to supply liquid helium by June 2015**.
- Adding 4 months for beam commissioning means physics at 5.5MeV/c in October 2015

Hie-Isolde 5.5MeV/u Planning



New buildings



Construction starting date: Aug 2011

New buildings

9th Steering Committee May 2012

New buildings

Top-view construction side: 10 July

Construction site

July 2012

B199 (Cold Box) and B198 (Compressors)

New buildings

B198 (Compressors), roof closed: 19 Sept

Compressor building 198

Installation of the crane and roof September 2012

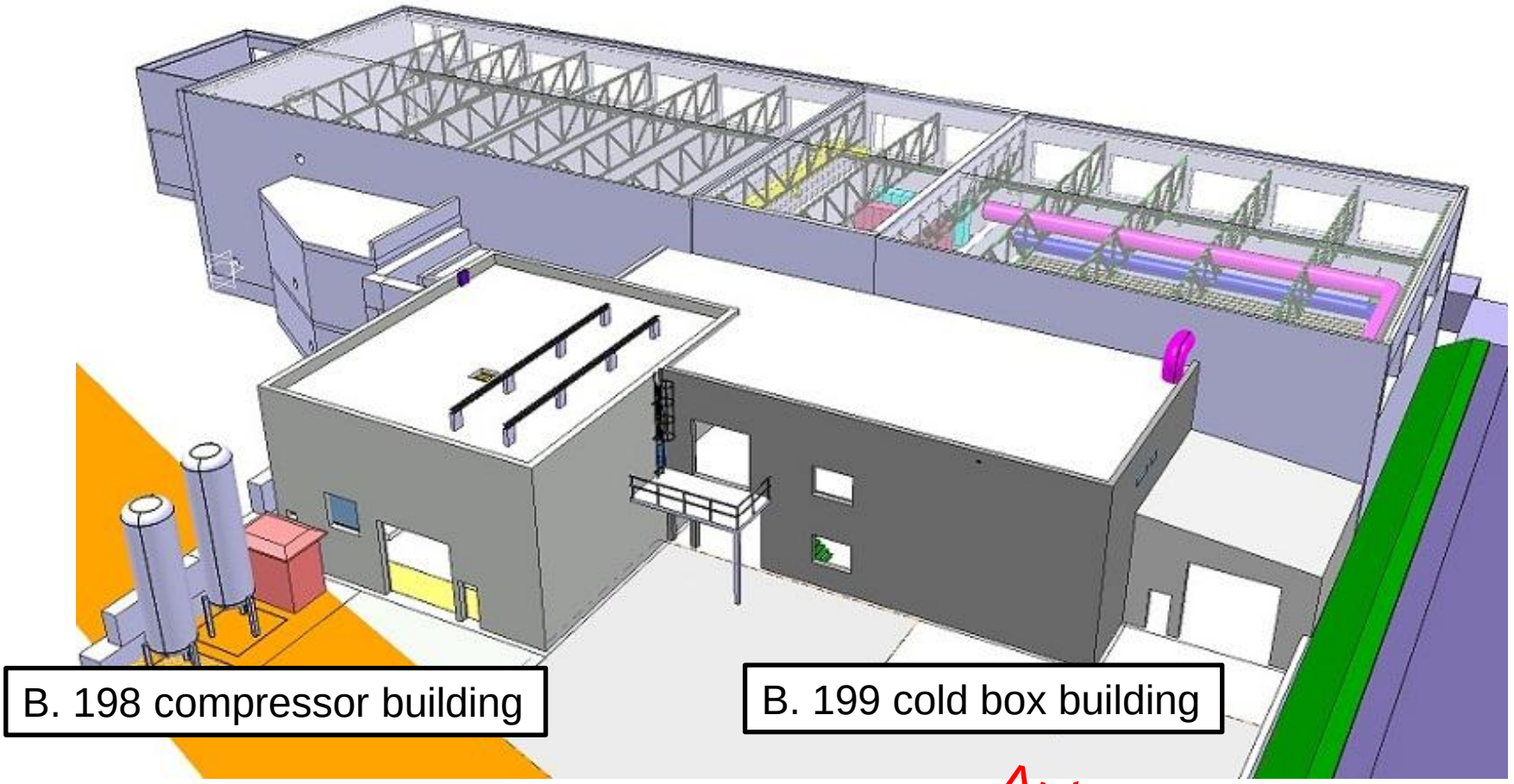
New buildings

Top-view construction side: 20 September

Construction site

September 2012

Civil Engineering



Autumn 2012 !

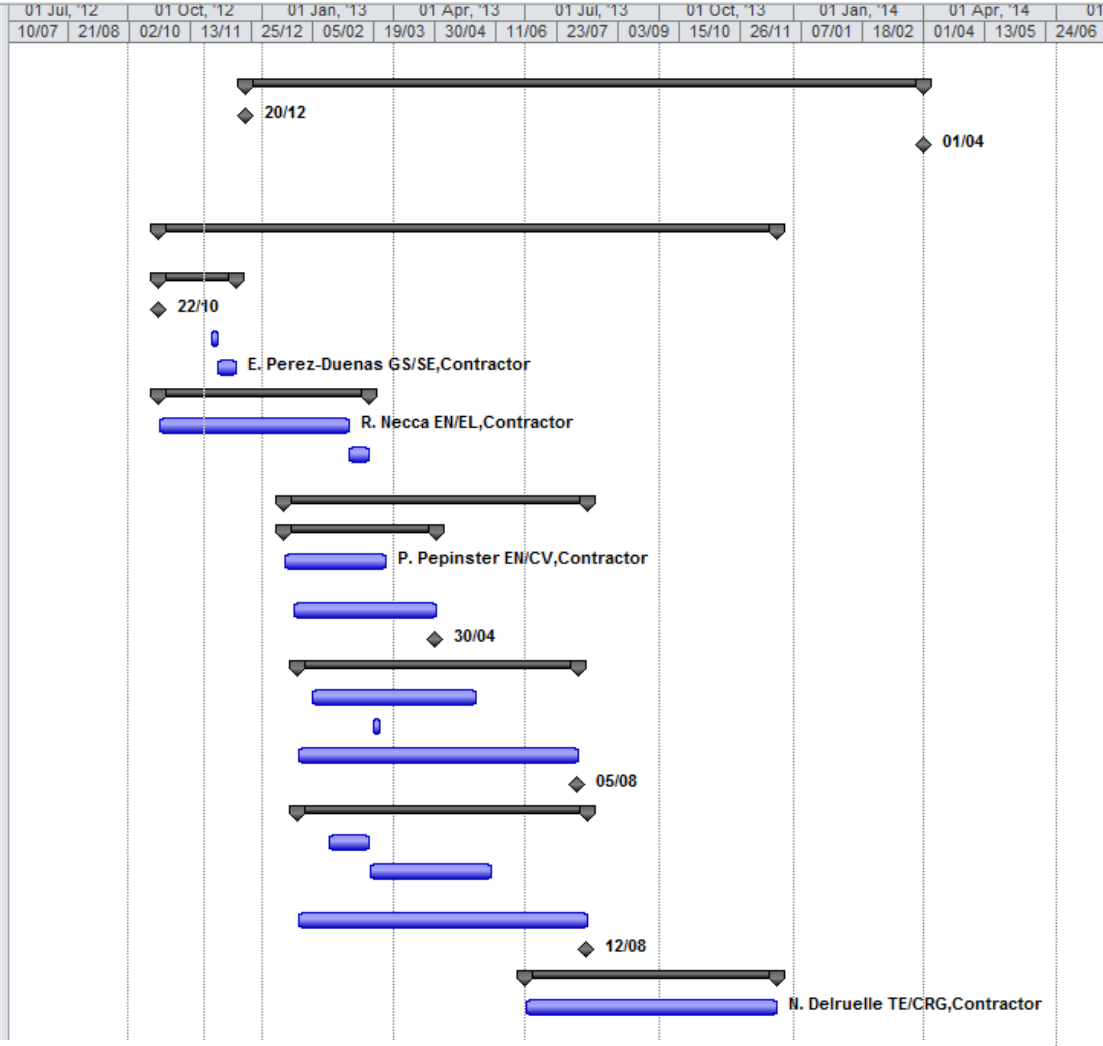
Civil Engineering finished summer 2012

New buildings

Winter 2012

Co-Activities B198

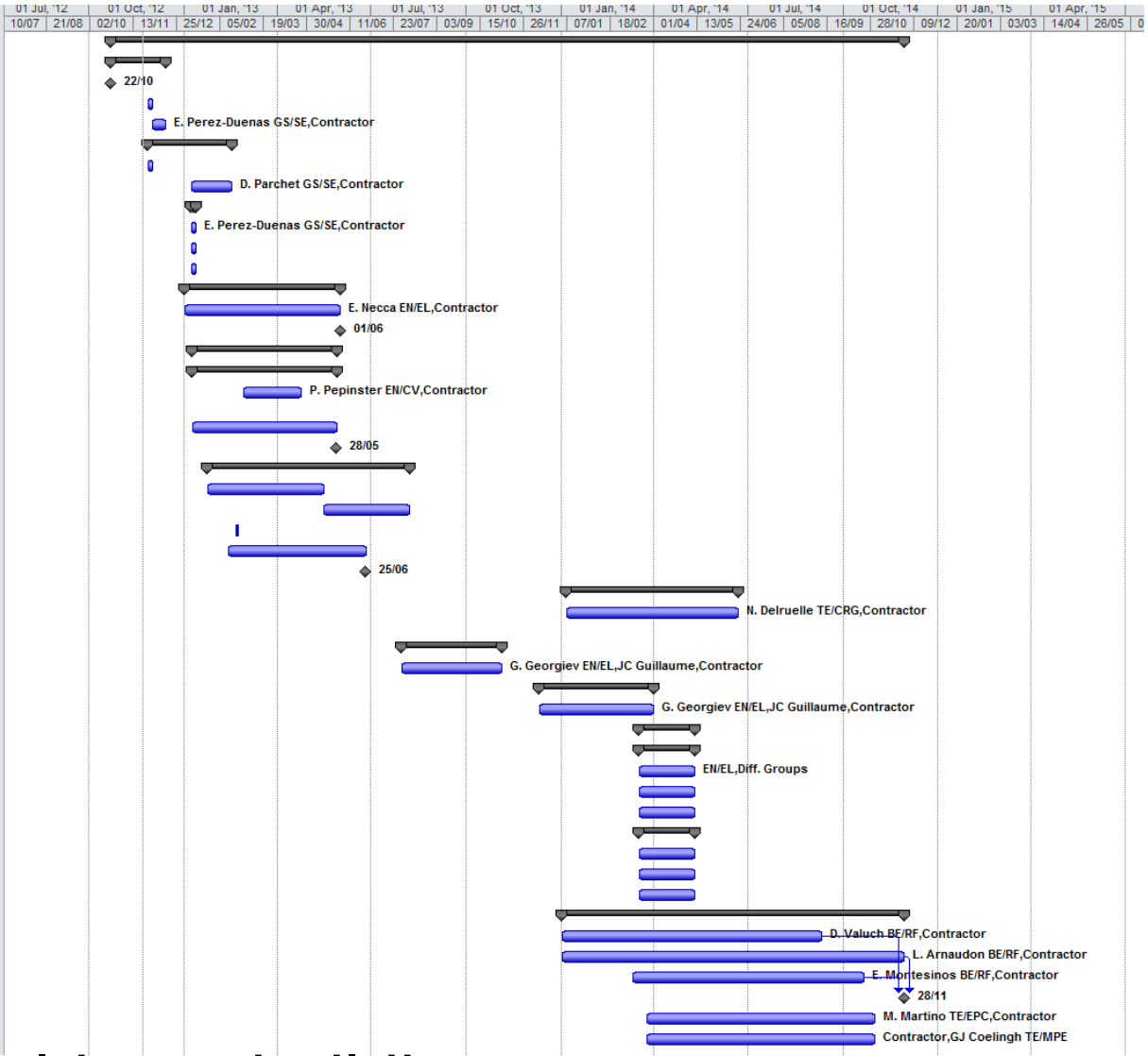
Task Name	Duration	Start	Finish	Predec
Long Shutdown LS1 (Isolde)	**333 days**	**Thu 20/12/12**	**Tue 01/04/14**	
ISOLDE Shutdown start	0 days	Thu 20/12/12	Thu 20/12/12	
ISOLDE Shutdown end	0 days	Tue 01/04/14	Tue 01/04/14	
B198 Compressor building activities +B197 (existing station)	**305 days?**	**Mon 22/10/12**	**Fri 20/12/13**	
Civil engineering	**39 days?**	**Mon 22/10/12**	**Thu 13/12/12**	
Building ready	0 days	Mon 22/10/12	Mon 22/10/12	
Doors installation	5 days?	Mon 26/11/12	Fri 30/11/12	
Finalization inside (paint floor, etc)	2 wks	Fri 30/11/12	Thu 13/12/12	
EL distribution for CV and Cryo	**104 days?**	**Mon 22/10/12**	**Thu 14/03/13**	
Cable trays, cabling and distribution cabinets	95 days?	Mon 22/10/12	Fri 01/03/13	
Transfo's connection to PS 18kV hub (inj complex stop)	2 wks	Fri 01/03/13	Thu 14/03/13	
Cooling and Ventilation	**149 days?**	**Wed 16/01/13**	**Mon 12/08/13**	
B198 HAVC installation	**75 days?**	**Wed 16/01/13**	**Tue 30/04/13**	
mechanical installation (duct, structures, etc)	50 days?	Wed 16/01/13	Tue 26/03/13	
electrical installation	71 days?	Tue 22/01/13	Tue 30/04/13	
system ready	0 days	Tue 30/04/13	Tue 30/04/13	
B198 prim. Water installation	**137 days?**	**Fri 25/01/13**	**Mon 05/08/13**	
mechanical installation	81 days?	Mon 04/02/13	Mon 27/05/13	
cooling towers installation	5 days	Mon 18/03/13	Fri 22/03/13	
electrical installation	137 days?	Fri 25/01/13	Mon 05/08/13	
system ready	0 days	Mon 05/08/13	Mon 05/08/13	
B197 secondary demi water installation	**142 days?**	**Fri 25/01/13**	**Mon 12/08/13**	
dismantling 197 cooling station	20 days?	Fri 15/02/13	Thu 14/03/13	
mechanical installation (duct, structures, etc)	60 days?	Fri 15/03/13	Thu 06/06/13	
electrical installation	142 days?	Fri 25/01/13	Mon 12/08/13	
system ready	0 days	Mon 12/08/13	Mon 12/08/13	
Cryo	**125 days?**	**Mon 01/07/13**	**Fri 20/12/13**	
Compressors installation and commissioning (original plan)	125 days?	Mon 01/07/13	Fri 20/12/13	



Compressor building 198

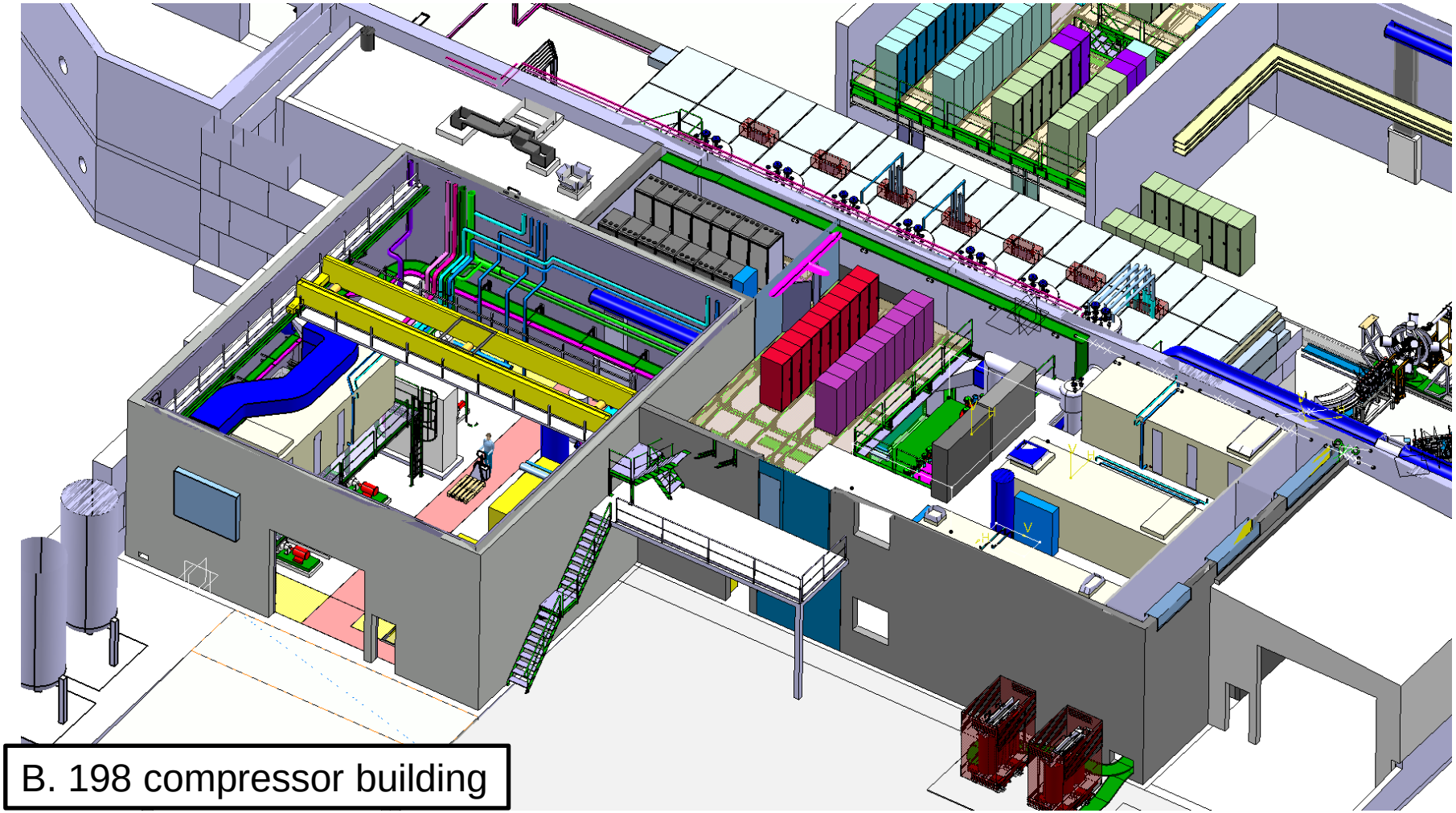
Co-Activities B199

Task Name	Duration	Start	Finish	Predec
B199 Cold Box building	**550 days?**	**Mon 22/10/12**	**Fri 28/11/14**	
Civil engineering	**39 days?**	**Mon 22/10/12**	**Thu 13/12/12**	
Building ready	0 days	Mon 22/10/12	Mon 22/10/12	
Doors installation	5 days?	Mon 26/11/12	Fri 30/11/12	
Finalization inside (paint floor, etc)	2 wks	Fri 30/11/12	Thu 13/12/12	
Metal structures	**60 days**	**Mon 26/11/12**	**Fri 15/02/13**	
Stairs + barrier indoor	5 days	Mon 26/11/12	Fri 30/11/12	
Metal floor	6 wks	Mon 07/01/13	Fri 15/02/13	
Carrotage B199 into Hall 170	**1 wk**	Mon 07/01/13	**Fri 11/01/13**	
CV ducts	**1 wk**	Mon 07/01/13	Fri 11/01/13	
EL power distribution	**1 wk**	Mon 07/01/13	Fri 11/01/13	
Cryo cold line	**1 wk**	Mon 07/01/13	Fri 11/01/13	
EL distribution for CV, Cryo, RF, EPC	**109 days?**	**Tue 01/01/13**	**Sat 01/06/13**	
Cable trays, cabling and distribution cabinets	109 days?	Tue 01/01/13	Fri 31/05/13	
EL systems ready	0 days	Sat 01/06/13	Sat 01/06/13	
Cooling and ventilation	**101 days?**	**Tue 08/01/13**	**Tue 28/05/13**	
B199 HAVC installation	**101 days?**	**Tue 08/01/13**	**Tue 28/05/13**	
mechanical installation (duct, structures, etc)	40 days?	Wed 27/02/13	Tue 23/04/13	
electrical installation	101 days?	Tue 08/01/13	Tue 28/05/13	
system ready	0 days	Tue 28/05/13	Tue 28/05/13	
B198 prim. Water installation	**140 days?**	**Wed 23/01/13**	**Tue 06/08/13**	
mechanical installation	81 days?	Wed 23/01/13	Wed 15/05/13	
insulation building 198,199, 170	60 days?	Wed 15/05/13	Tue 06/08/13	
chillers installation	1 day	Wed 20/02/13	Wed 20/02/13	
electrical installation	96 days?	Tue 12/02/13	Tue 25/06/13	
system ready	0 days	Tue 25/06/13	Tue 25/06/13	
Cryo	**120 days?**	**Mon 06/01/14**	**Fri 20/06/14**	
Cold Box, dewar and transfer line installation and commissioning (original plan)	120 days?	Mon 06/01/14	Fri 20/06/14	
Cable trays	**70 days?**	**Tue 30/07/13**	**Mon 04/11/13**	
from B199 into tunnel - see Hall 170 activities	70 days?	Tue 30/07/13	Mon 04/11/13	
Cabling	**80 days**	**Tue 10/12/13**	**Mon 31/03/14**	
from B199 into tunnel - see Hall 170 activities	4 mons	Tue 10/12/13	Mon 31/03/14	
Racks installation	**40 days**	**Mon 17/03/14**	**Fri 09/05/14**	
Ground floor	**40 days**	**Mon 17/03/14**	**Fri 09/05/14**	
vacuum racks (ex-entrance) - Linac vac	2 mons	Mon 17/03/14	Fri 09/05/14	
RF amplifiers	2 mons	Mon 17/03/14	Fri 09/05/14	
RF slow control	2 mons	Mon 17/03/14	Fri 09/05/14	
First floor	**40 days**	**Mon 17/03/14**	**Fri 09/05/14**	
RF Low Level faraday racks	2 mons	Mon 17/03/14	Fri 09/05/14	
solenoids EPC	2 mons	Mon 17/03/14	Fri 09/05/14	
solenoids QPS	2 mons	Mon 17/03/14	Fri 09/05/14	
Linac Equipment installation	**238 days?**	**Wed 01/01/14**	**Fri 28/11/14**	
LLRF batch 10 units, installation & test	9 mons	Wed 01/01/14	Tue 09/09/14	
RF slow control, installation and test	238 days?	Wed 01/01/14	Fri 28/11/14	
RF amplifiers	160 days?	Tue 11/03/14	Mon 20/10/14	
RF low level commissioned	0 days	Fri 28/11/14	Fri 28/11/14	76,77,7
Solenoids EPC's, installation and test	160 days?	Mon 24/03/14	Fri 31/10/14	
QPS system, installation and test	160 days?	Mon 24/03/14	Fri 31/10/14	



Cold Box building 199

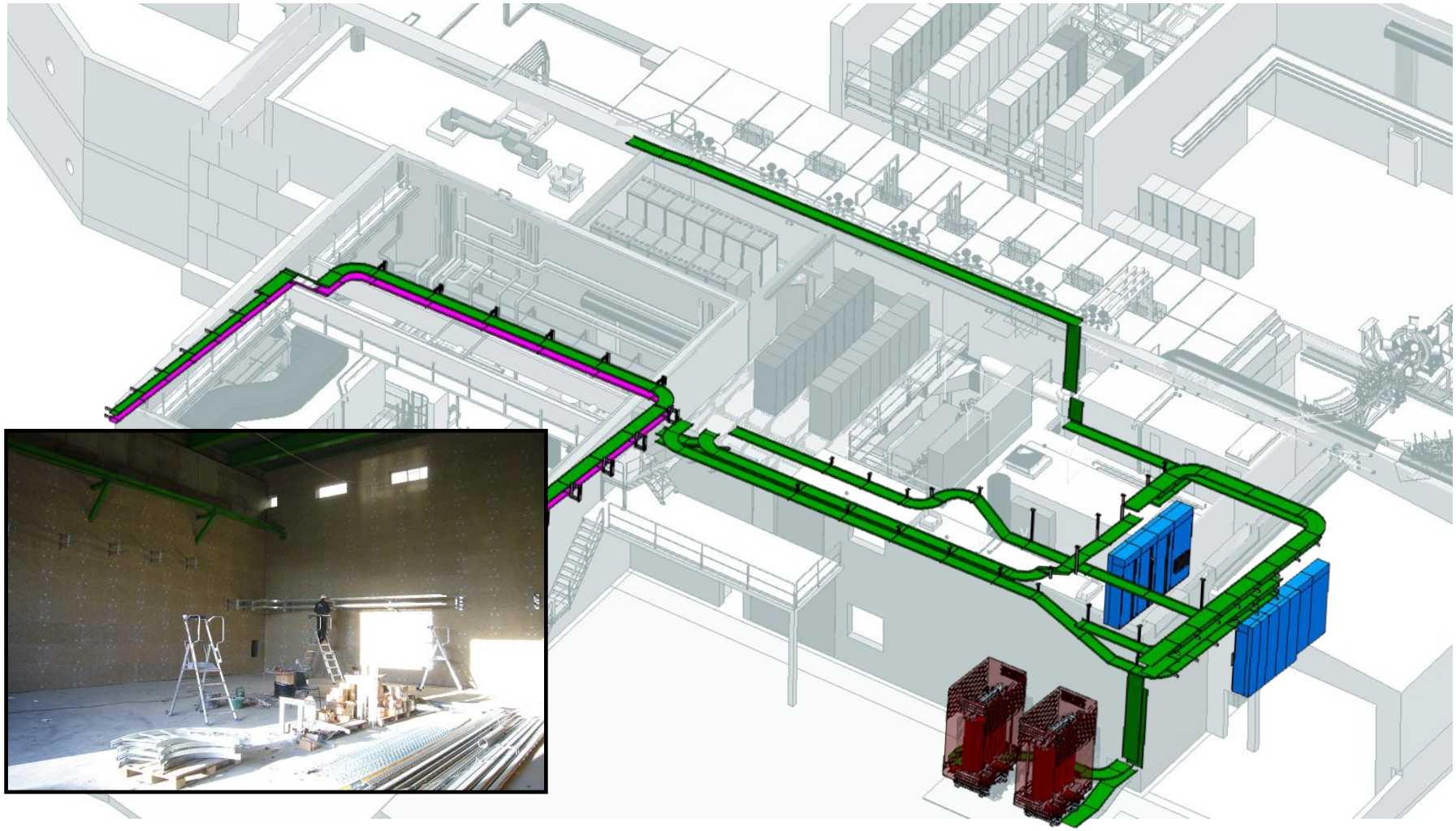
Main Services



B. 198 compressor building

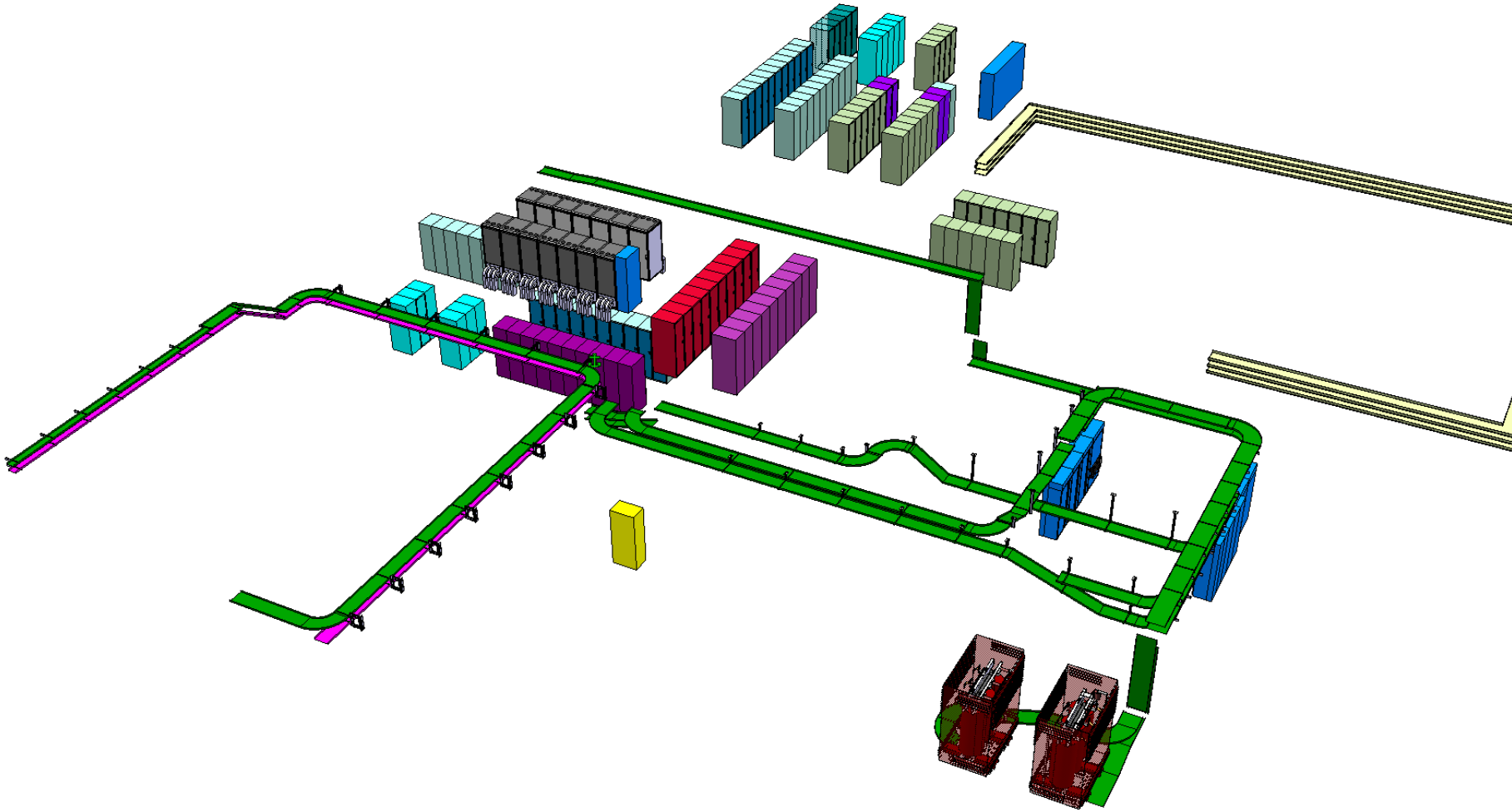
B. 199 cold box building

Electrical systems



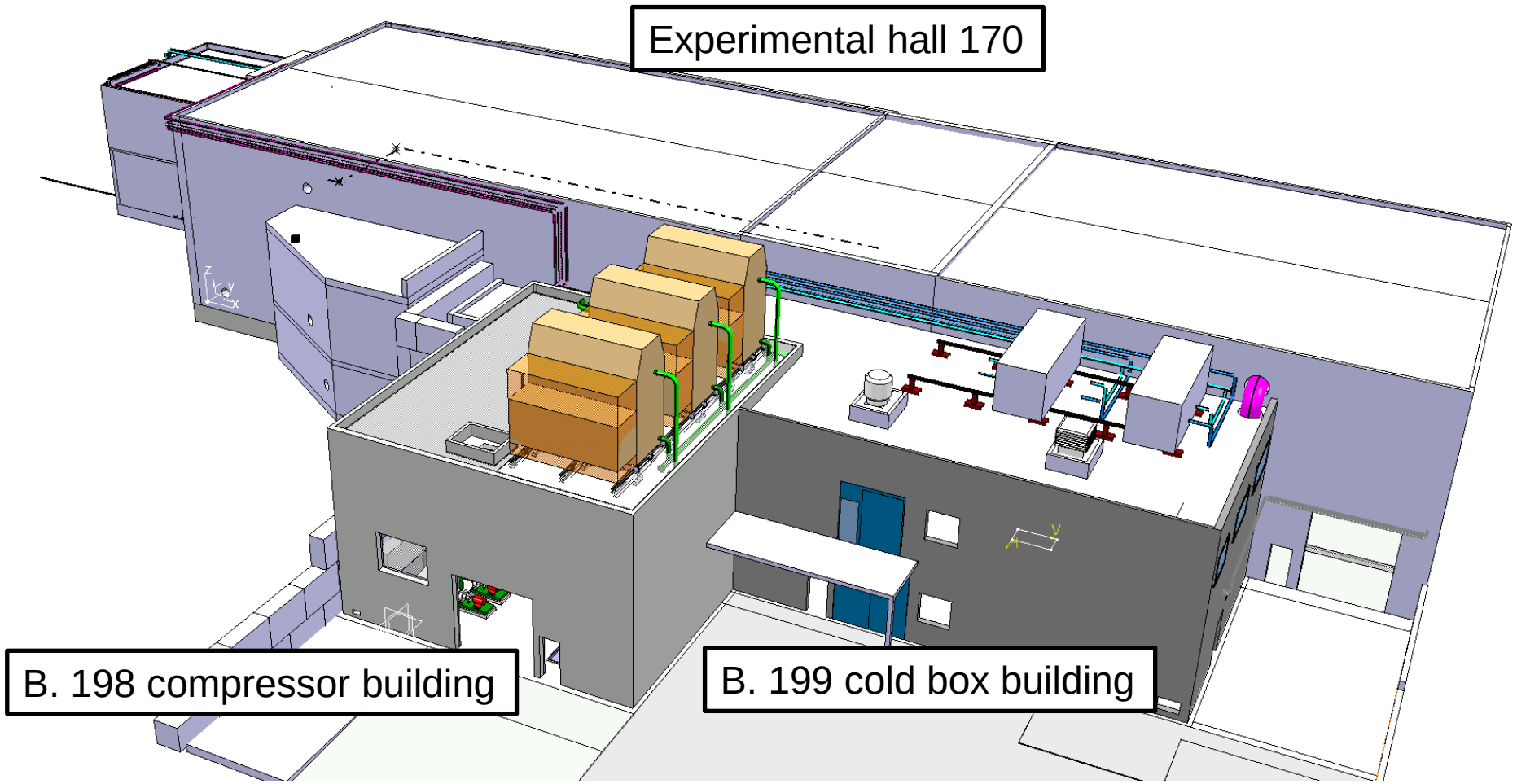
Electrical systems: Oct 2012 – June 2013

Electrical systems



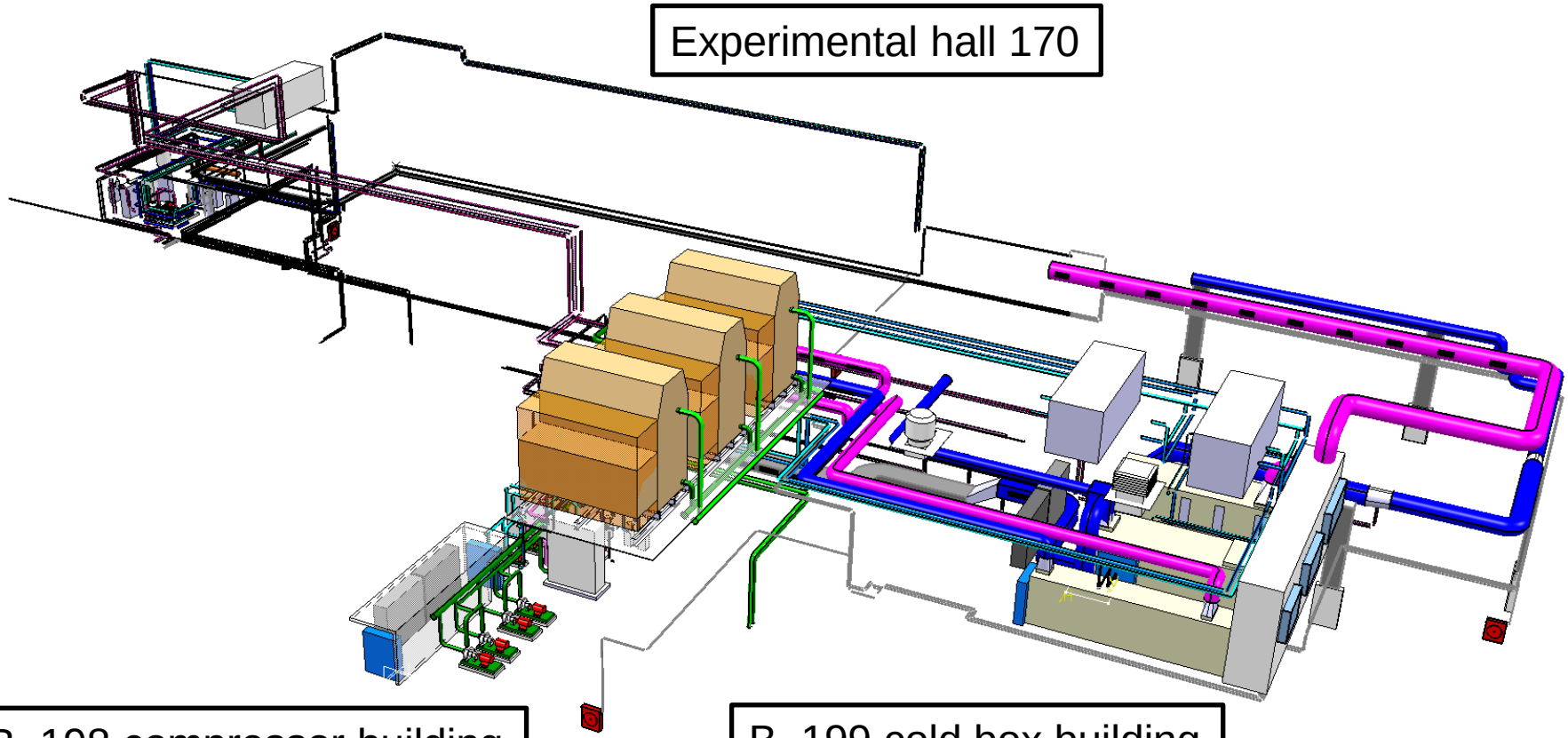
Electrical systems: Oct 2012 – June 2013

Cooling & Ventilation



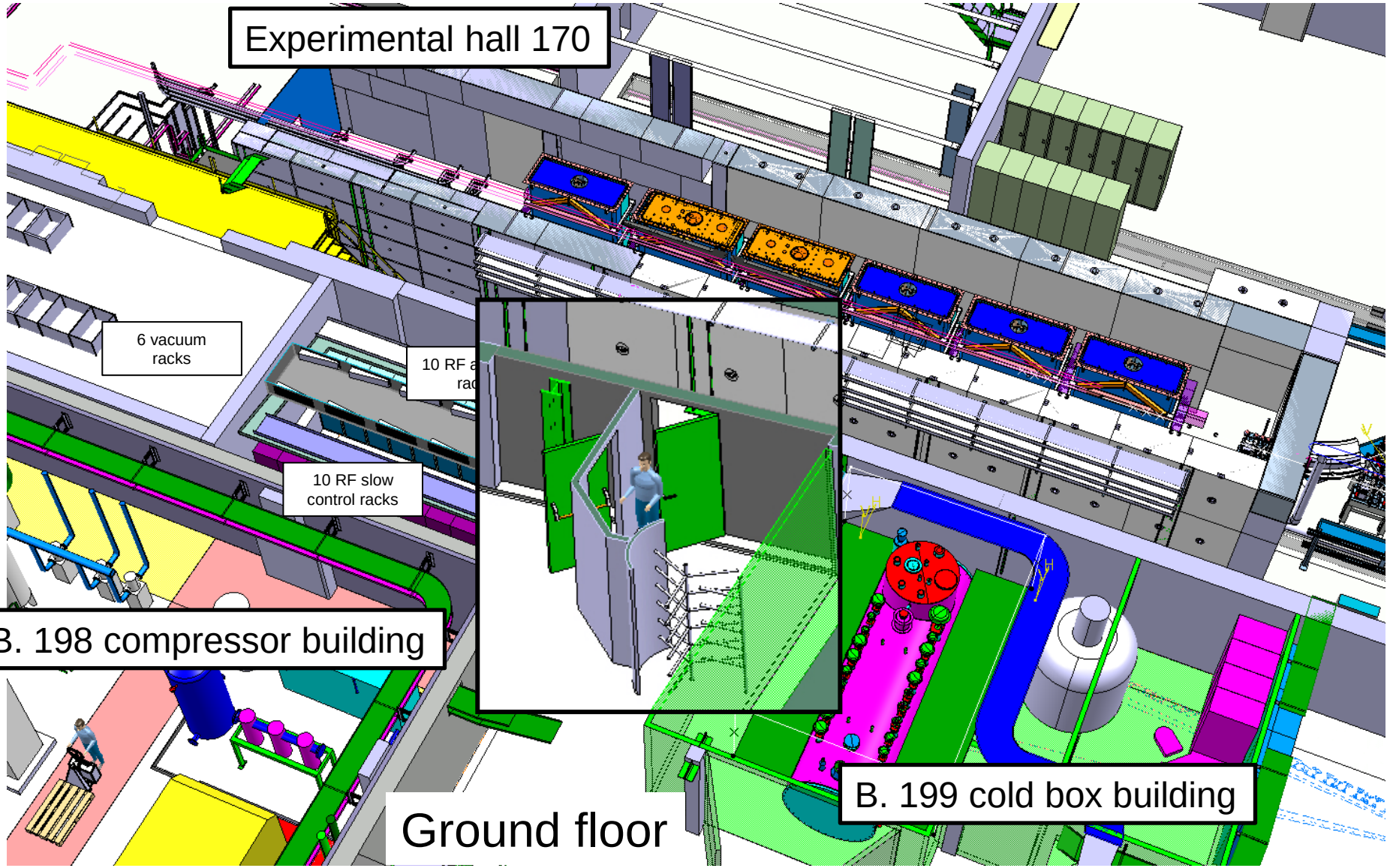
Cooling & Ventilation: Dec 2012 – June 2013

Cooling & Ventilation

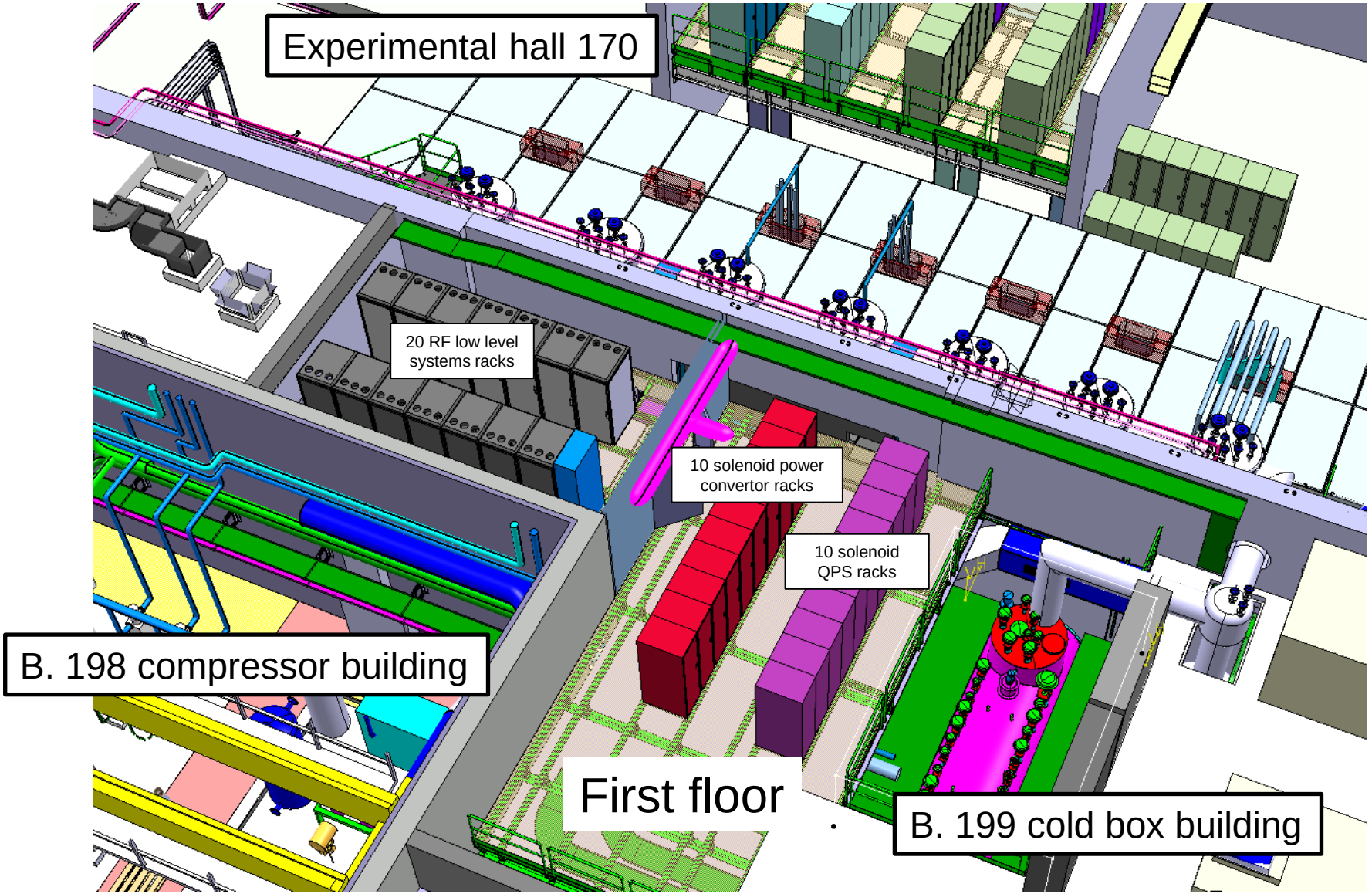


Cooling & Ventilation: Dec 2012 – June 2013

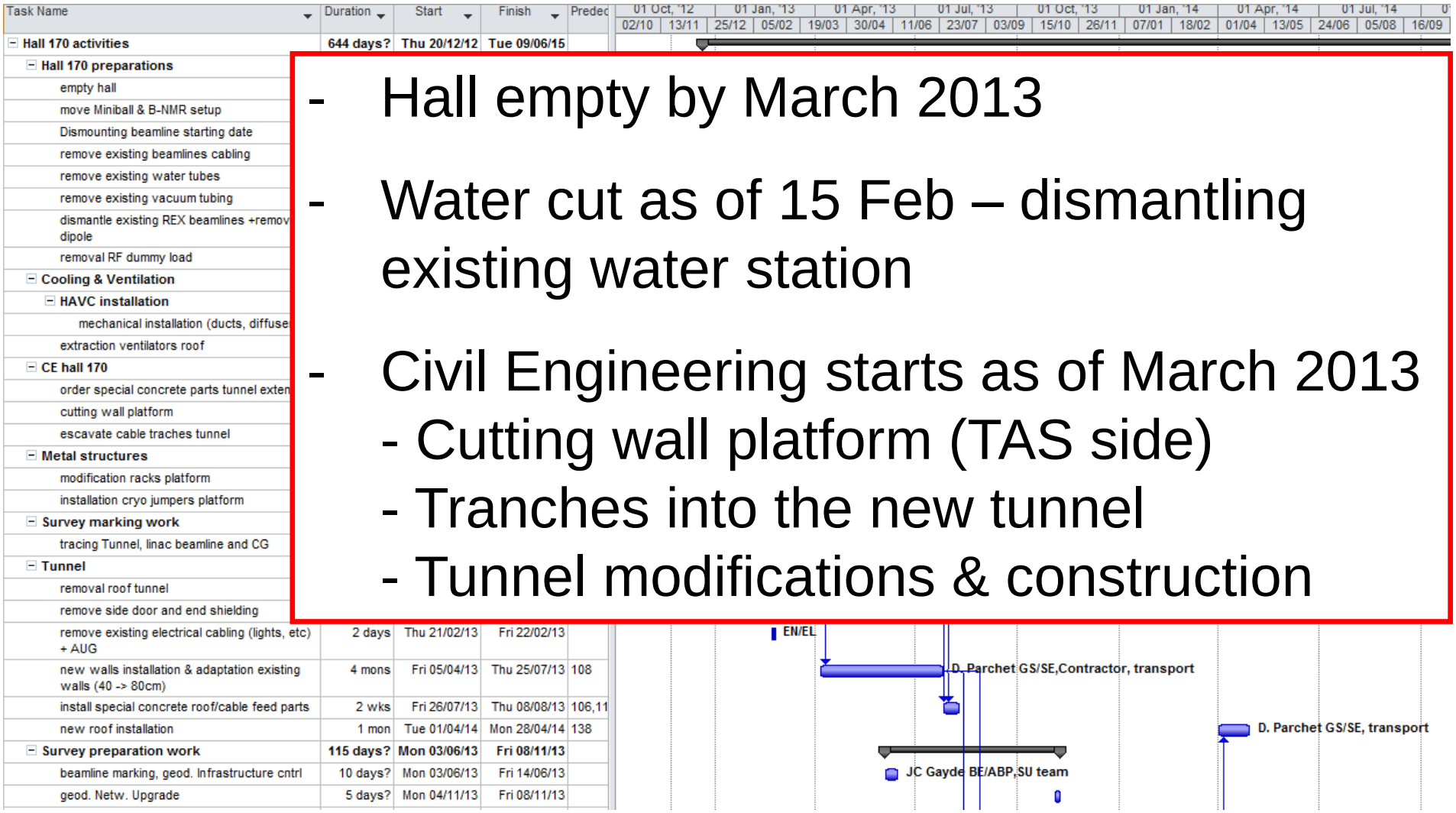
Racks sub systems



Racks sub systems



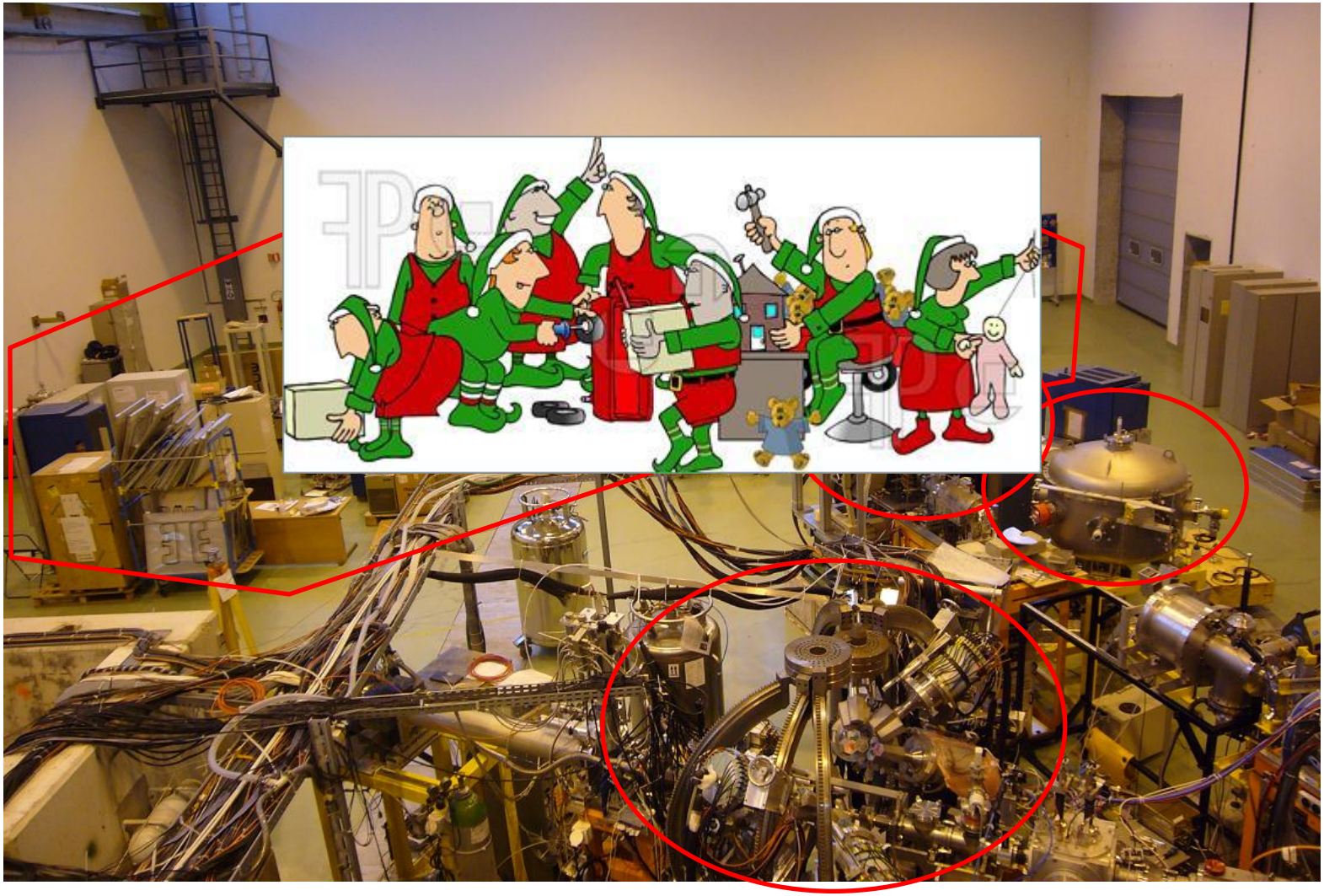
Co-Activities Hall 170



- Hall empty by March 2013
- Water cut as of 15 Feb – dismantling existing water station
- Civil Engineering starts as of March 2013
  - Cutting wall platform (TAS side)
  - Tranches into the new tunnel
  - Tunnel modifications & construction

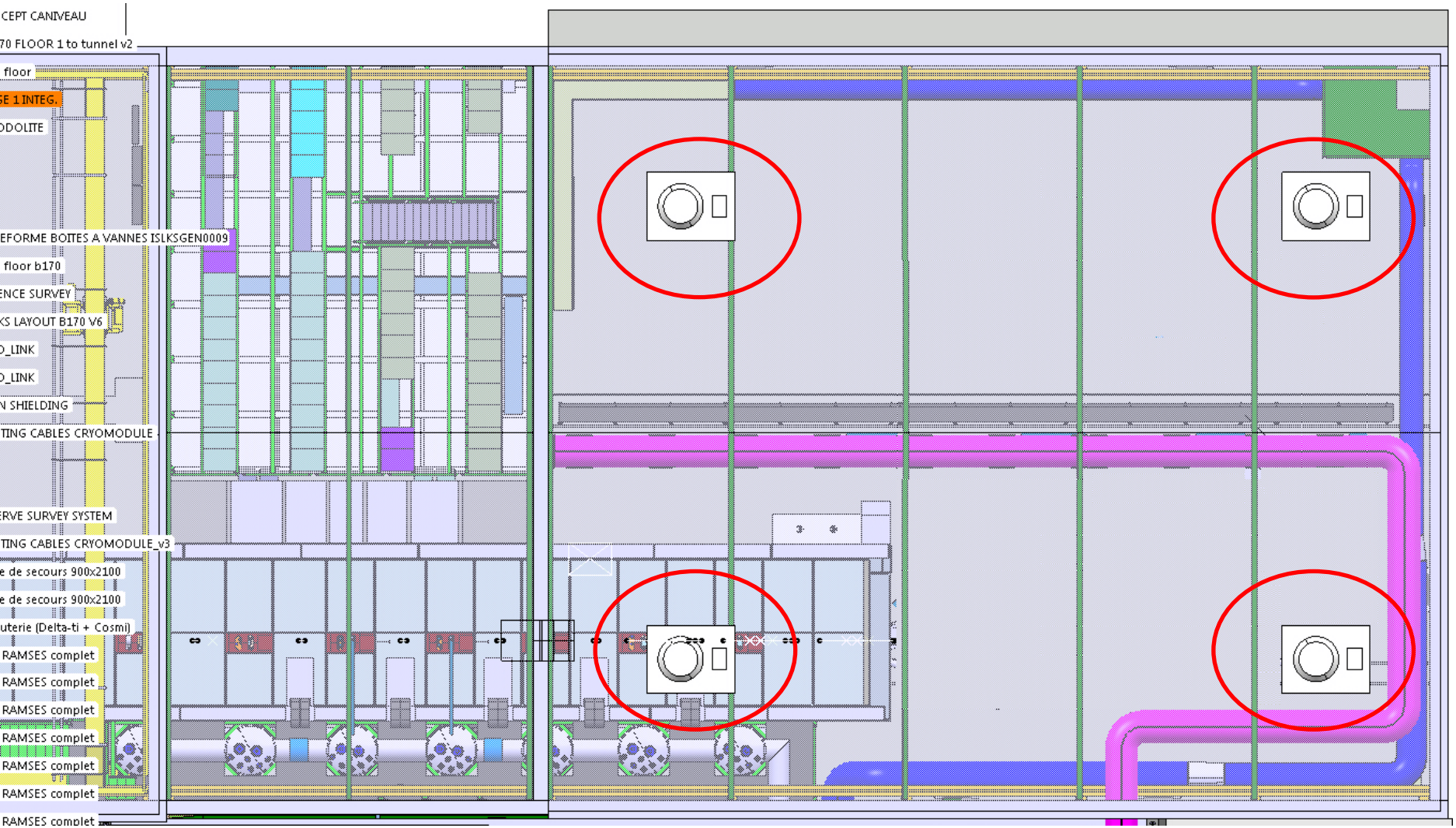
Experimental hall 170

Emptying the hall



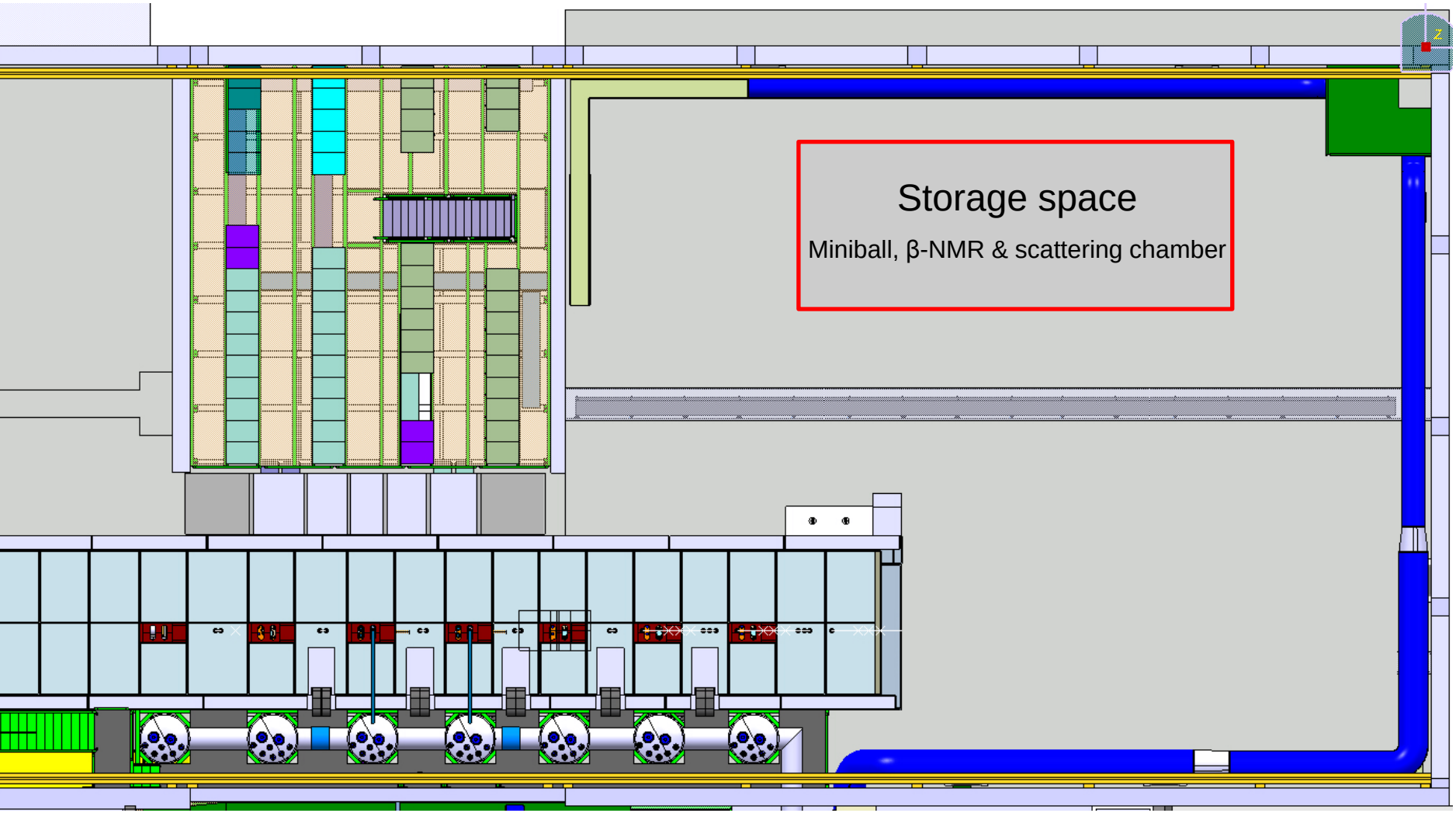
Extension empty by March 2013

Emptying the hall

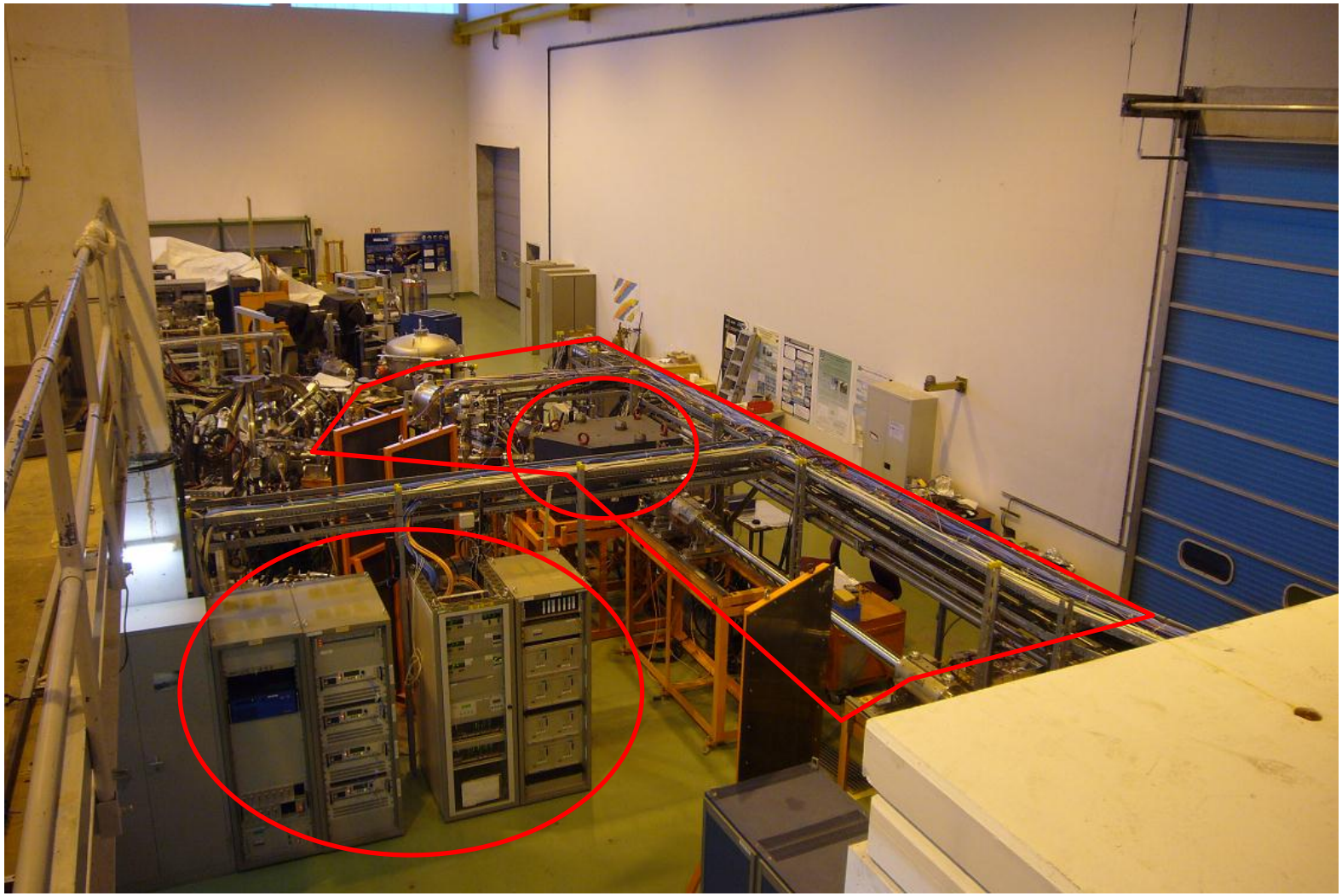


Installation roof ventilators end March 2013

Emptying the hall

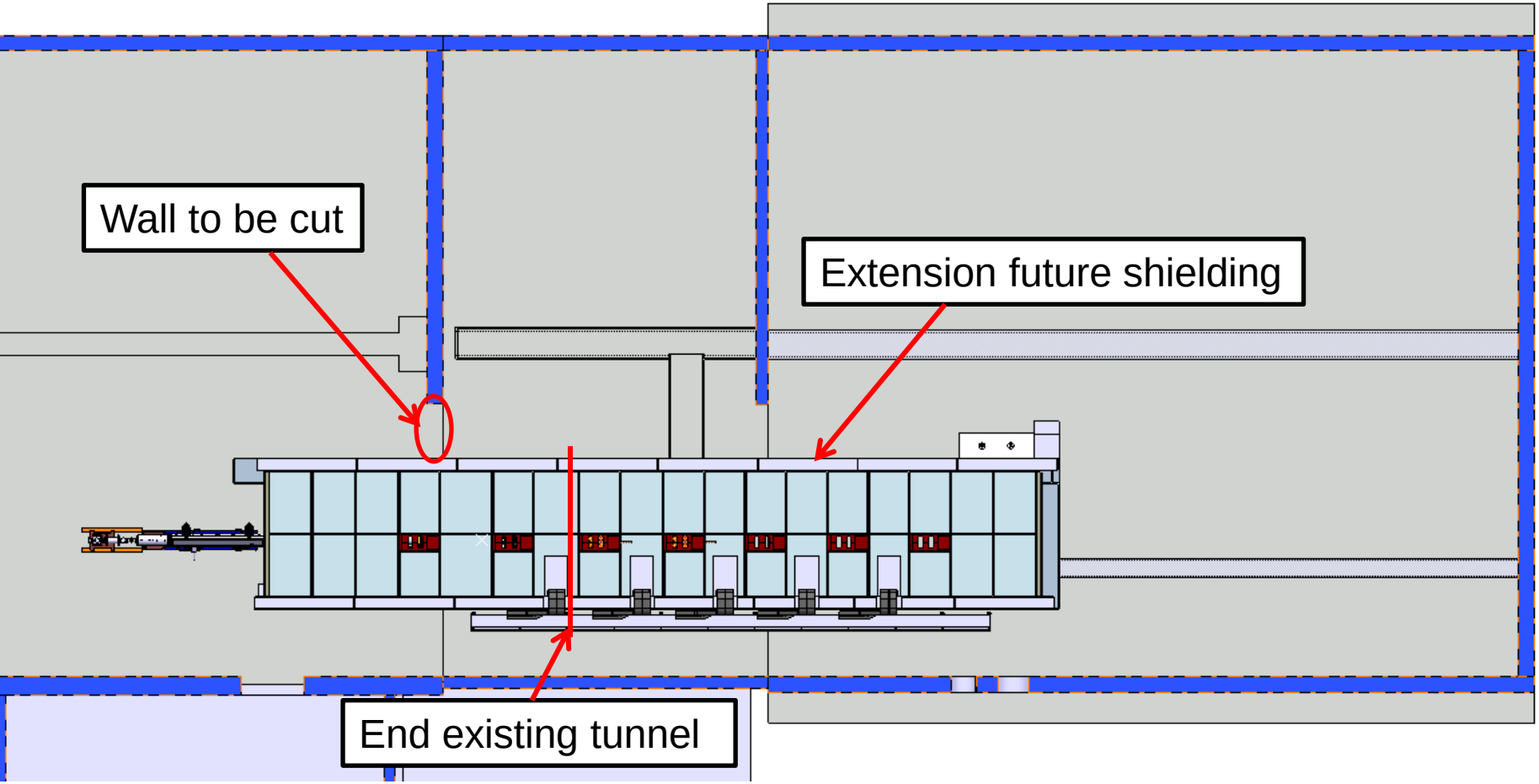


Emptying the hall



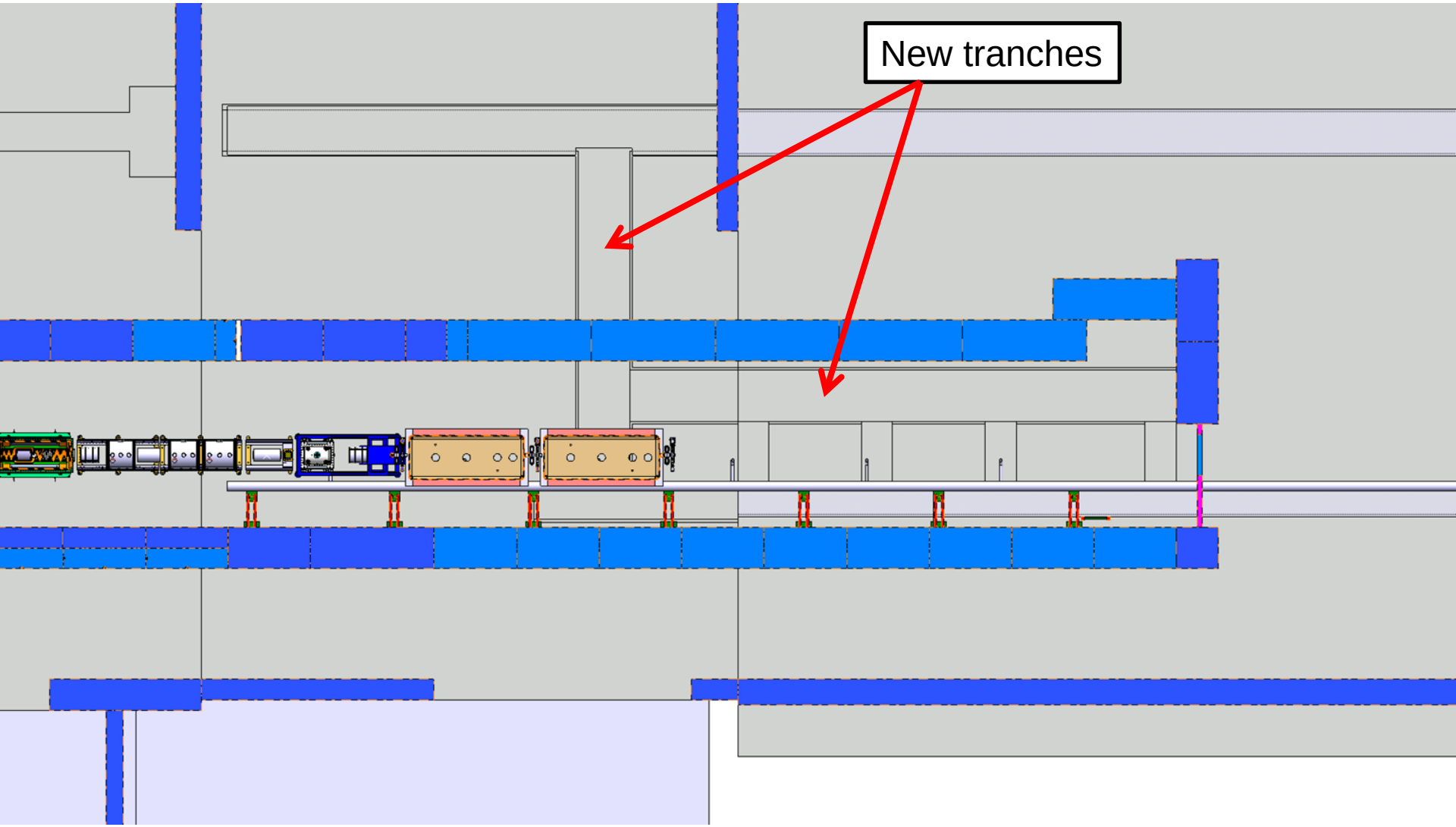
Dismounting existing REX lines as of 16 Feb

Civil Engineering in the hall



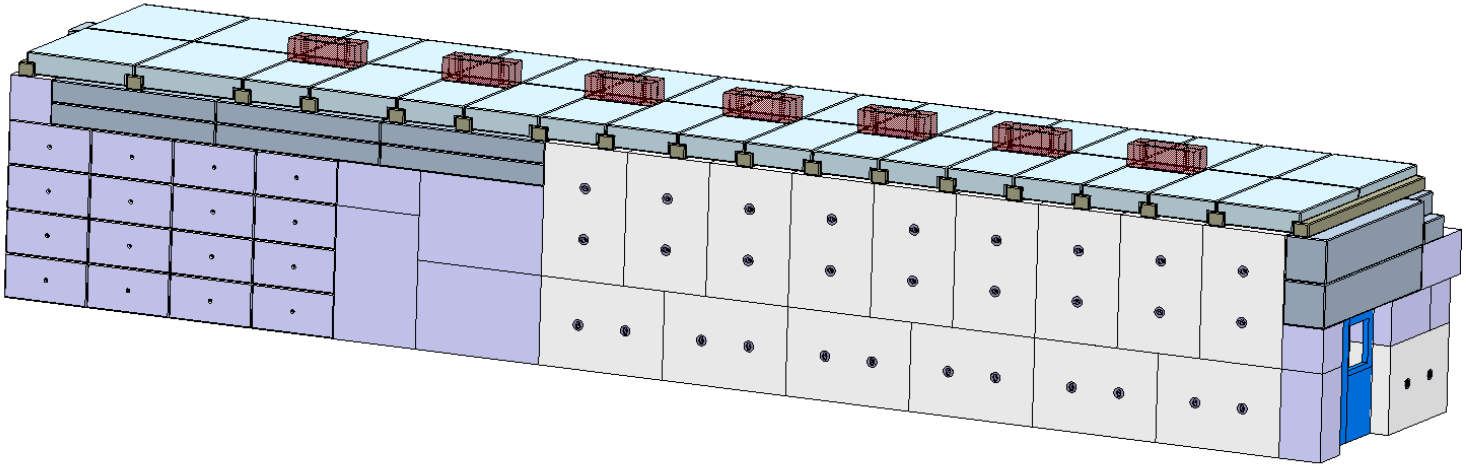
Tunnel, walls and tranches March – Aug 2013

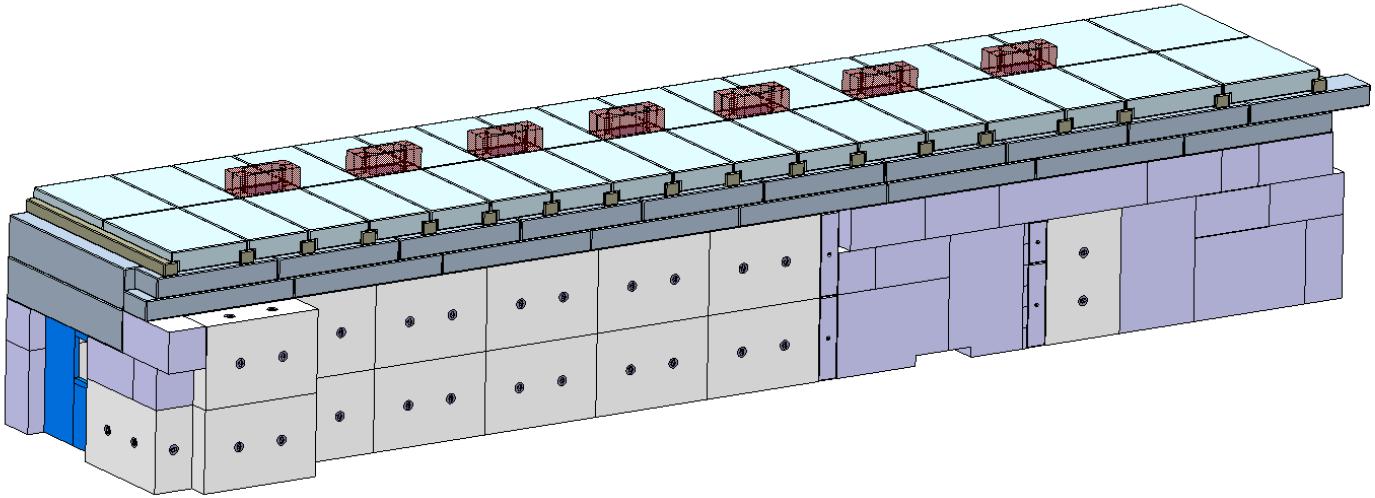
Civil Engineering in the hall



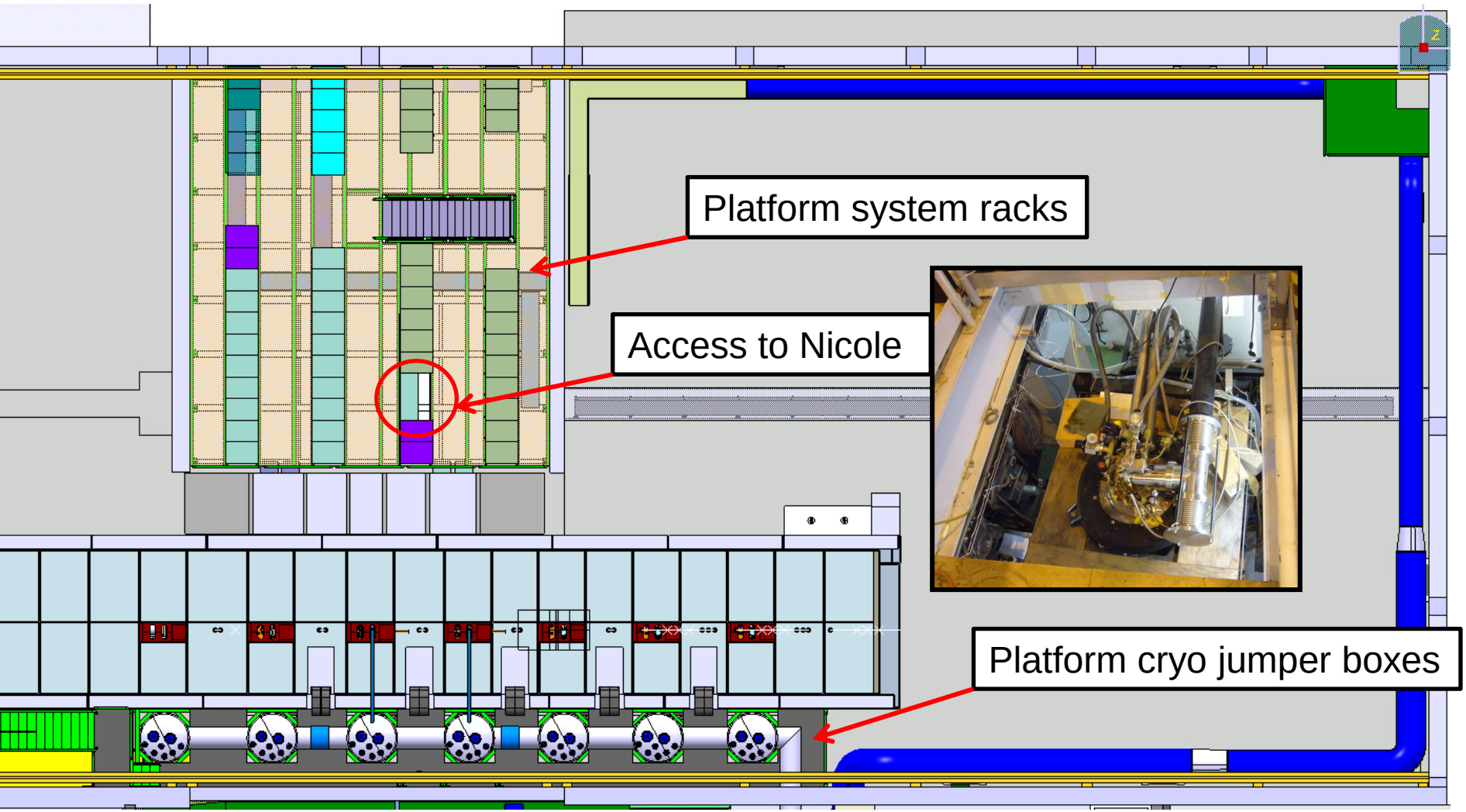
Tunnel, walls and tranches March – Aug 2013

Shielding tunnel





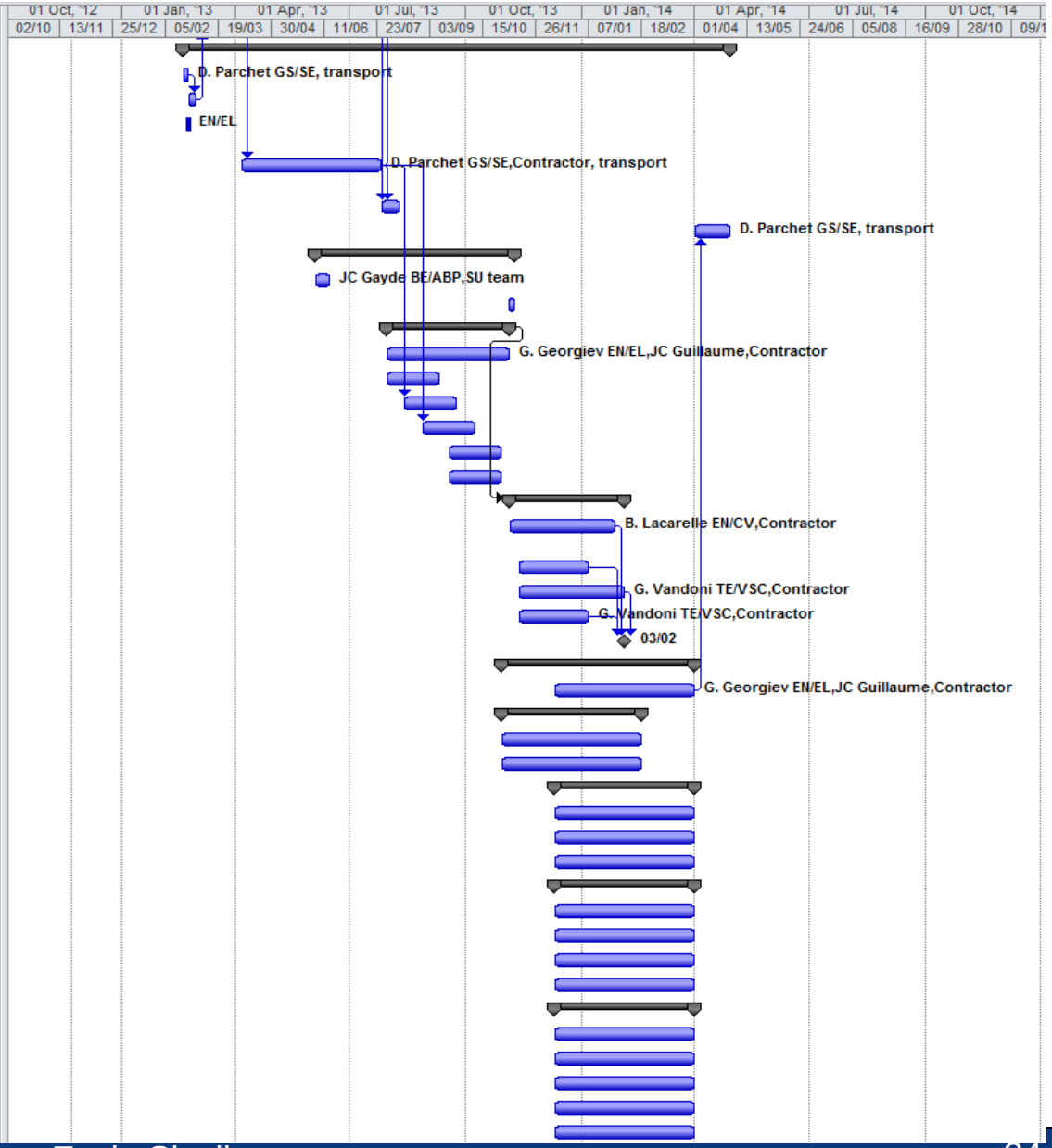
Metal structures



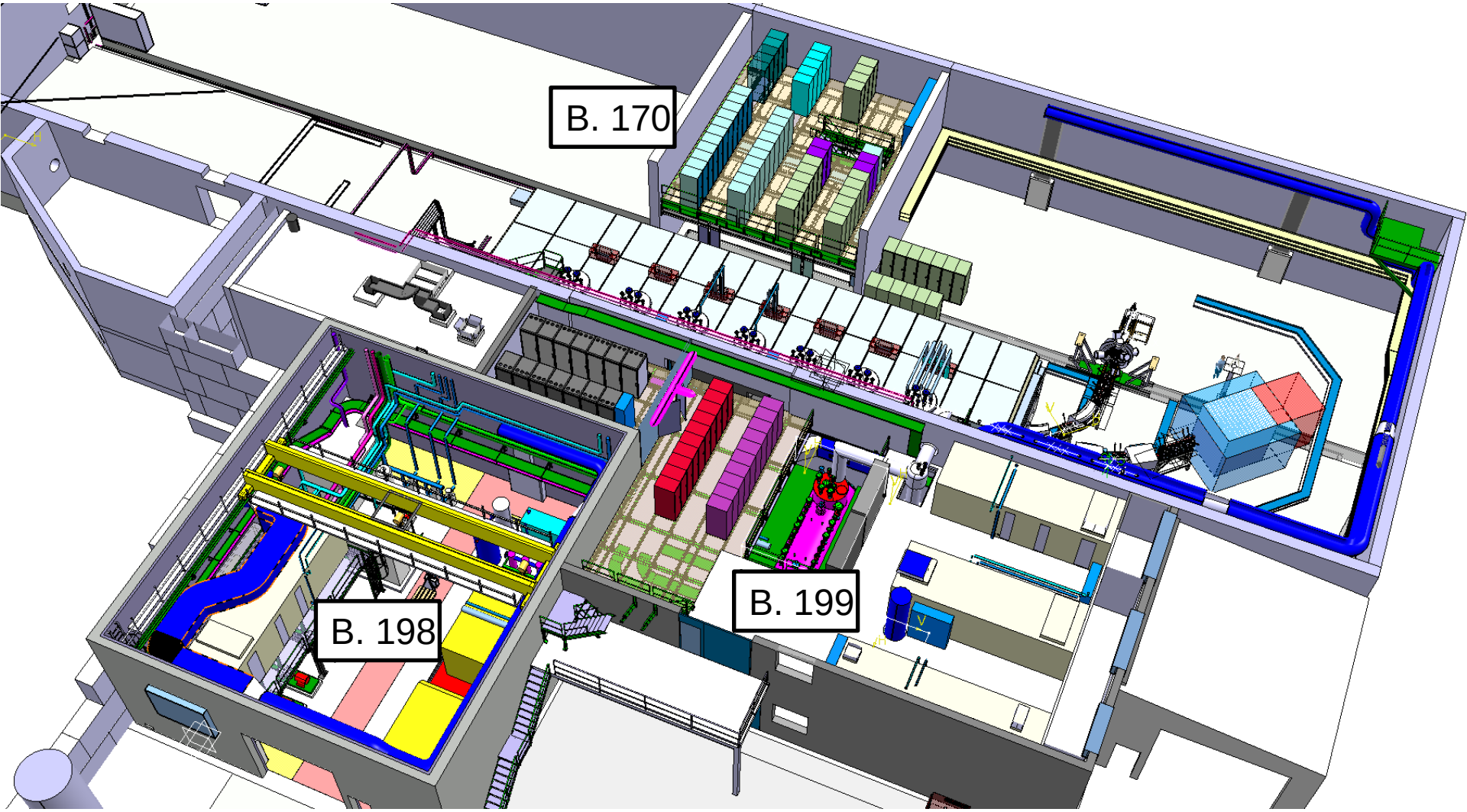
Platforms modification and installation April – Sept 2013

Co-Activities Hall 170

Task Name	Duration	Start	Finish	Predec
Tunnel	**311 days**	**Mon 18/02/13**	**Mon 28/04/14**	
removal roof tunnel	4 days	Mon 18/02/13	Thu 21/02/13	
remove side door and end shielding	5 days	Fri 22/02/13	Thu 28/02/13	115
remove existing electrical cabling (lights, etc) + AUG	2 days	Thu 21/02/13	Fri 22/02/13	
new walls installation & adaptation existing walls (40 -> 80cm)	4 mons	Fri 05/04/13	Thu 25/07/13	108
install special concrete roof/cable feed parts	2 wks	Fri 26/07/13	Thu 08/08/13	106,11
new roof installation	1 mon	Tue 01/04/14	Mon 28/04/14	138
Survey preparation work	**115 days?**	**Mon 03/06/13**	**Fri 08/11/13**	
beamline marking, geod. Infrastructure cntrl	10 days?	Mon 03/06/13	Fri 14/06/13	
geod. Netw. Upgrade	5 days?	Mon 04/11/13	Fri 08/11/13	
Cable trays	**70 days?**	**Tue 30/07/13**	**Mon 04/11/13**	
Cable tray period	70 days?	Tue 30/07/13	Mon 04/11/13	
platform internal	1.5 mons	Tue 30/07/13	Mon 09/09/13	
platform into tunnel	1.5 mons	Tue 13/08/13	Mon 23/09/13	118
inside tunnel	1.5 mons	Tue 27/08/13	Mon 07/10/13	118
platform to HEBT	1.5 mons	Tue 17/09/13	Mon 28/10/13	
ex-entrance and B199 into tunnel	1.5 mons	Tue 17/09/13	Mon 28/10/13	
Tunnel & HEBT infrastructure	**65 days**	**Tue 05/11/13**	**Mon 03/02/14**	**124**
installation water tubing 27C and 20C(only tunnel)	3 mons	Tue 05/11/13	Mon 27/01/14	
installation compressed air	2 mons	Tue 12/11/13	Mon 06/01/14	
installation vac recuperation	3 mons	Tue 12/11/13	Mon 03/02/14	
N2 venting line	2 mons	Tue 12/11/13	Mon 06/01/14	
infrastructure in place for HEBT	0 days	Mon 03/02/14	Mon 03/02/14	132,13
Cabling & connectors	**110 days**	**Tue 29/10/13**	**Mon 31/03/14**	
Cable period	4 mons	Tue 10/12/13	Mon 31/03/14	
Rack platform	**80 days**	**Tue 29/10/13**	**Mon 17/02/14**	
ethernet	4 mons	Tue 29/10/13	Mon 17/02/14	
EL distribution	4 mons	Tue 29/10/13	Mon 17/02/14	
from platform into tunnel	**80 days**	**Tue 10/12/13**	**Mon 31/03/14**	
DC power	4 mons	Tue 10/12/13	Mon 31/03/14	
WIC interlocks	4 mons	Tue 10/12/13	Mon 31/03/14	
Beam instrumentation	4 mons	Tue 10/12/13	Mon 31/03/14	
from platform to HEBT	**80 days**	**Tue 10/12/13**	**Mon 31/03/14**	
DC power	4 mons	Tue 10/12/13	Mon 31/03/14	
Vacuum	4 mons	Tue 10/12/13	Mon 31/03/14	
Beam instrumentation	4 mons	Tue 10/12/13	Mon 31/03/14	
EL distribution (experiments)	4 mons	Tue 10/12/13	Mon 31/03/14	
from B199 into tunnel	**80 days**	**Tue 10/12/13**	**Mon 31/03/14**	
RF power and measurement	4 mons	Tue 10/12/13	Mon 31/03/14	
RF phase ref line	4 mons	Tue 10/12/13	Mon 31/03/14	
Vacuum (from ex-entrance)	4 mons	Tue 10/12/13	Mon 31/03/14	
Misc (CM motor control, thermo couples, et	4 mons	Tue 10/12/13	Mon 31/03/14	
Solenoids DC	4 mons	Tue 10/12/13	Mon 31/03/14	

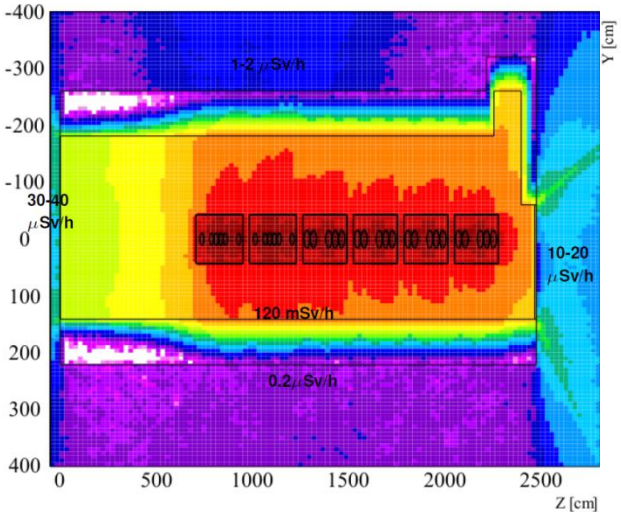


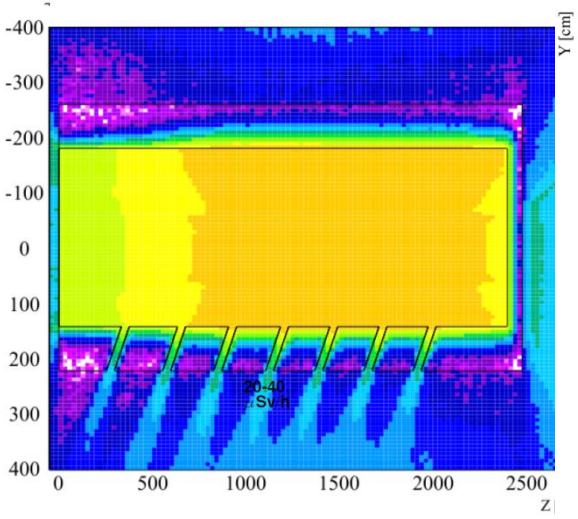
Cable trays and cabling

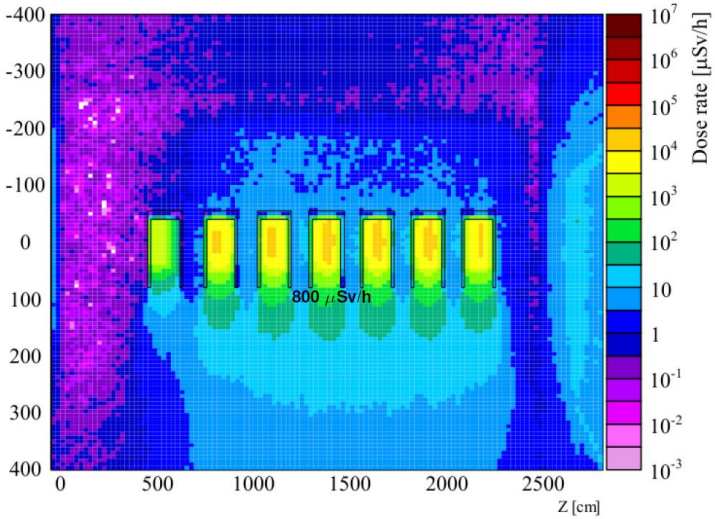


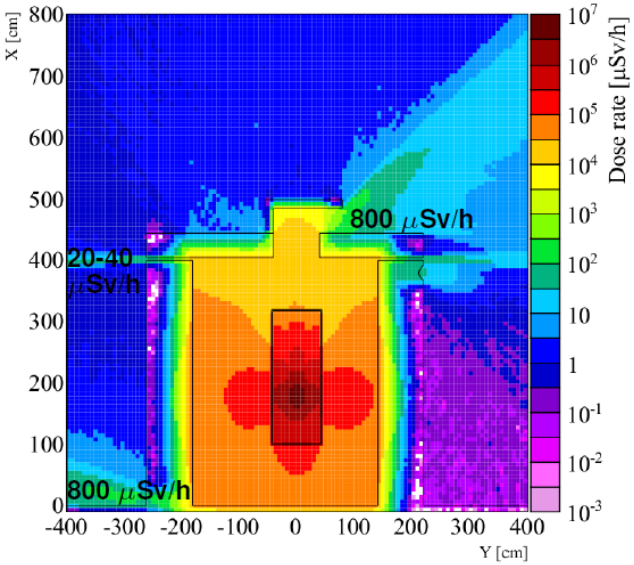
Cable trays and cabling Aug 2013 – March 2014

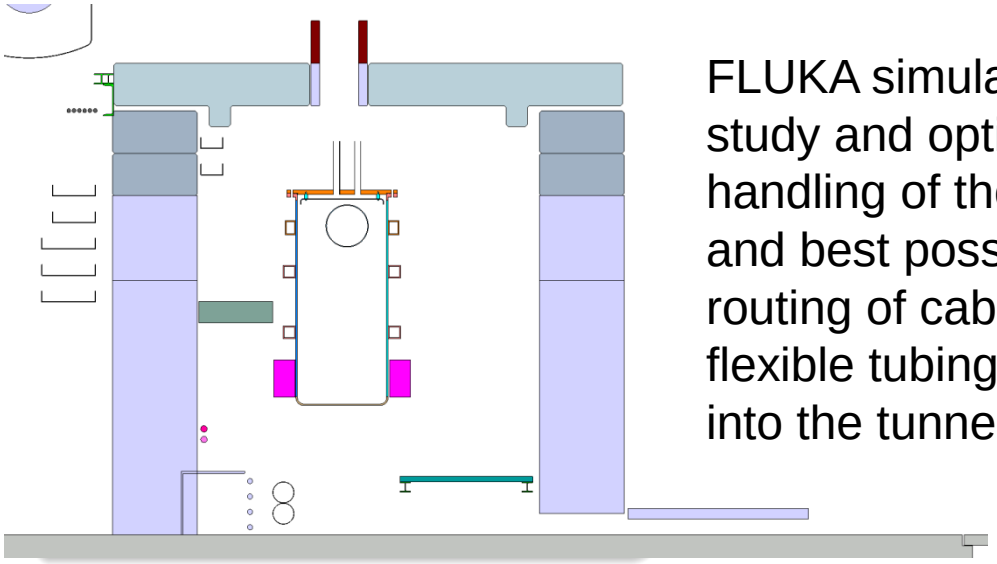
Cabling versus shielding









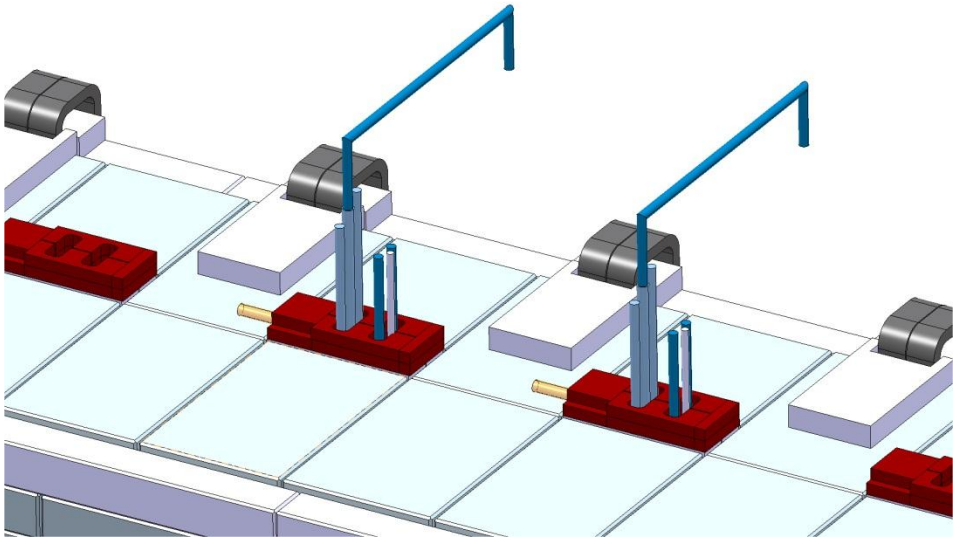


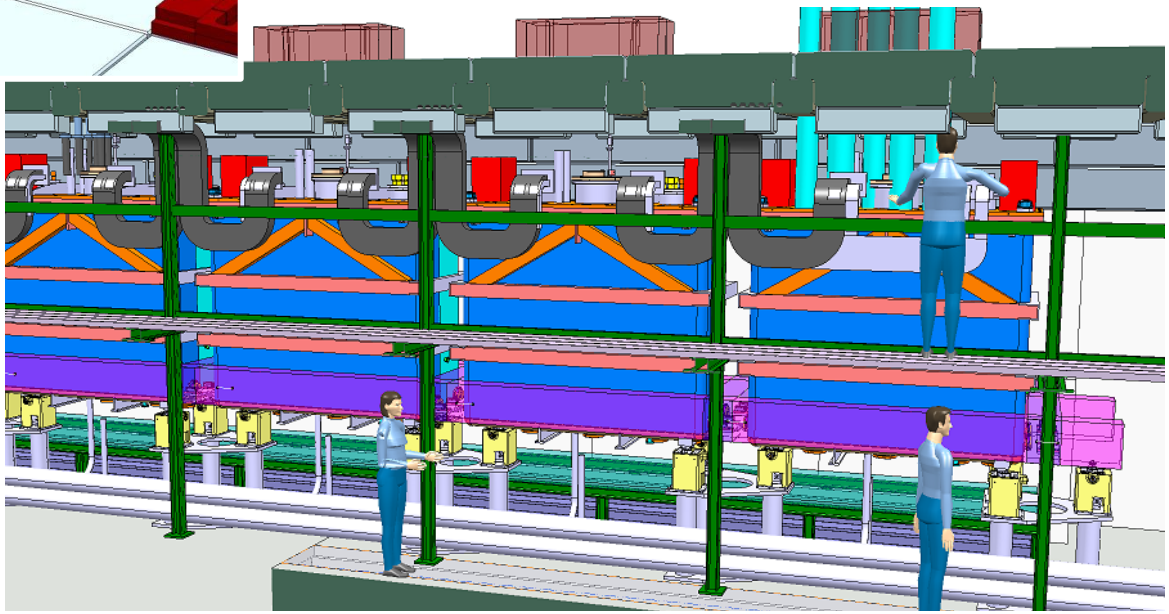
FLUKA simulations to study and optimize handling of the CM's and best possible routing of cables and flexible tubing (cryo) into the tunnel

Studies: Sandra Giron, Joachim Vollaire DGS/RP

Courtesy: S. Maridor EN/MEF

Tunnel cabling and tubing

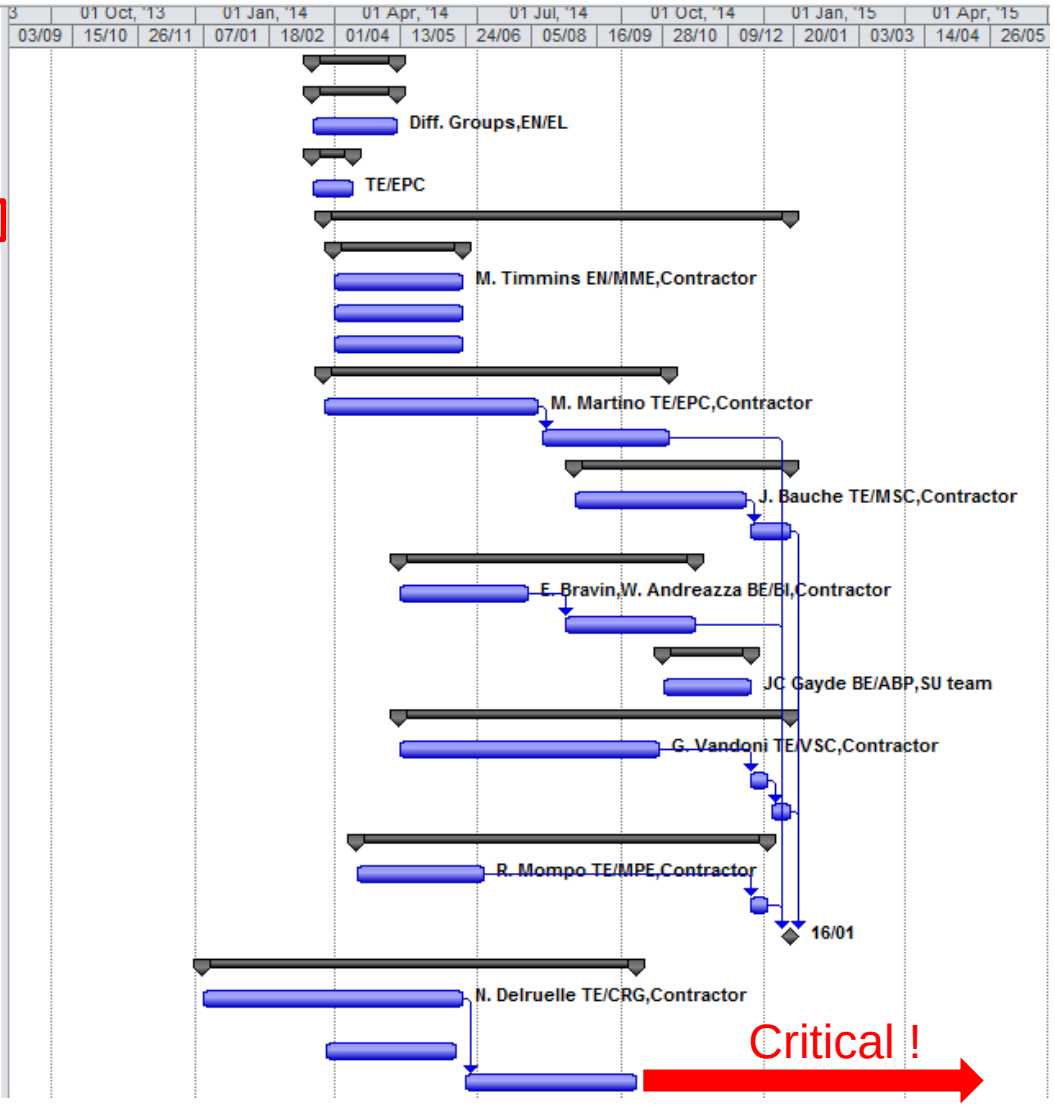




RF cables, Cryo flexibles & He release

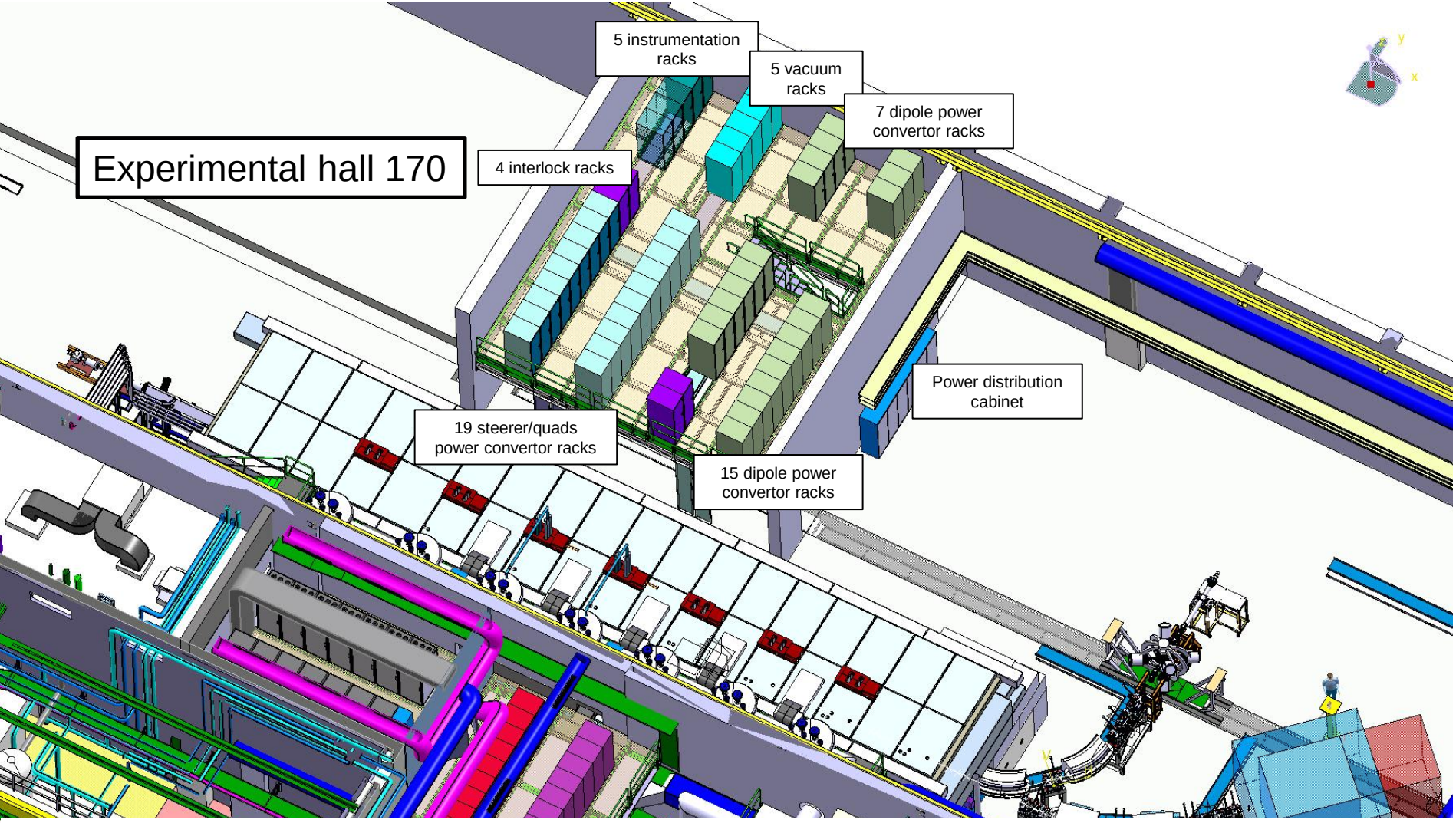
Racks, HEBT & Cryo Hall 170

Task Name	Duration	Start	Finish	Predec
Racks installation	**40 days**	**Mon 17/03/14**	**Fri 09/05/14**	
platform	**40 days**	**Mon 17/03/14**	**Fri 09/05/14**	
EPC, Vacuum, BI, WIC	2 mons	Mon 17/03/14	Fri 09/05/14	
floor	**20 days**	**Mon 17/03/14**	**Fri 11/04/14**	
EPC Danfysik racks replacement	1 mon	Mon 17/03/14	Fri 11/04/14	
HEBT Equipment installation	**215 days?**	**Mon 24/03/14**	**Fri 16/01/15**	
Supports installation	**60 days?**	**Mon 31/03/14**	**Fri 20/06/14**	
HEBT dipoles	60 days?	Mon 31/03/14	Fri 20/06/14	
HEBT tables (steerers, quads, DBs)	60 days?	Mon 31/03/14	Fri 20/06/14	
CM jacks (in tunnel)	60 days?	Mon 31/03/14	Fri 20/06/14	
Power convertors	**160 days**	**Mon 24/03/14**	**Fri 31/10/14**	
Installation and connection	5 mons	Mon 24/03/14	Fri 08/08/14	
Commissioning	3 mons	Mon 11/08/14	Fri 31/10/14	168
magnets	**100 days**	**Mon 01/09/14**	**Fri 16/01/15**	
Installation	4 mons	Mon 01/09/14	Fri 19/12/14	
Commissioning	1 mon	Mon 22/12/14	Fri 16/01/15	171
BI diagnostic boxes	**136 days**	**Mon 12/05/14**	**Mon 17/11/14**	
Installation hardware and electronics	3 mons	Mon 12/05/14	Fri 01/08/14	
Commissioning	3 mons	Tue 26/08/14	Mon 17/11/14	174
Survey alignement work	**40 days?**	**Tue 28/10/14**	**Mon 22/12/14**	
transfer lign 1st and smooth aligment	40 days?	Tue 28/10/14	Mon 22/12/14	
Vacuum	**180 days**	**Mon 12/05/14**	**Fri 16/01/15**	
Installation pumps, chambers & controllers	6 mons	Mon 12/05/14	Fri 24/10/14	
Close vacuum	2 wks	Mon 22/12/14	Fri 02/01/15	179
Commissioning	2 wks	Mon 05/01/15	Fri 16/01/15	180
WIC interlocks	**190 days**	**Mon 14/04/14**	**Fri 02/01/15**	
installation equipment and boxes (at elemer	3 mons	Mon 14/04/14	Fri 04/07/14	
commissioning	2 wks	Mon 22/12/14	Fri 02/01/15	183
HEBT ready for beam commissioning	0 days	Fri 16/01/15	Fri 16/01/15	169,17
Cryogenics	**200 days?**	**Mon 06/01/14**	**Fri 10/10/14**	
cold transfer line on tunnel installation (original plan)	120 days?	Mon 06/01/14	Fri 20/06/14	
jumper boxes installation (original plan)	3 mons	Tue 25/03/14	Mon 16/06/14	
Cryo commissioning	4 mons	Mon 23/06/14	Fri 10/10/14	187



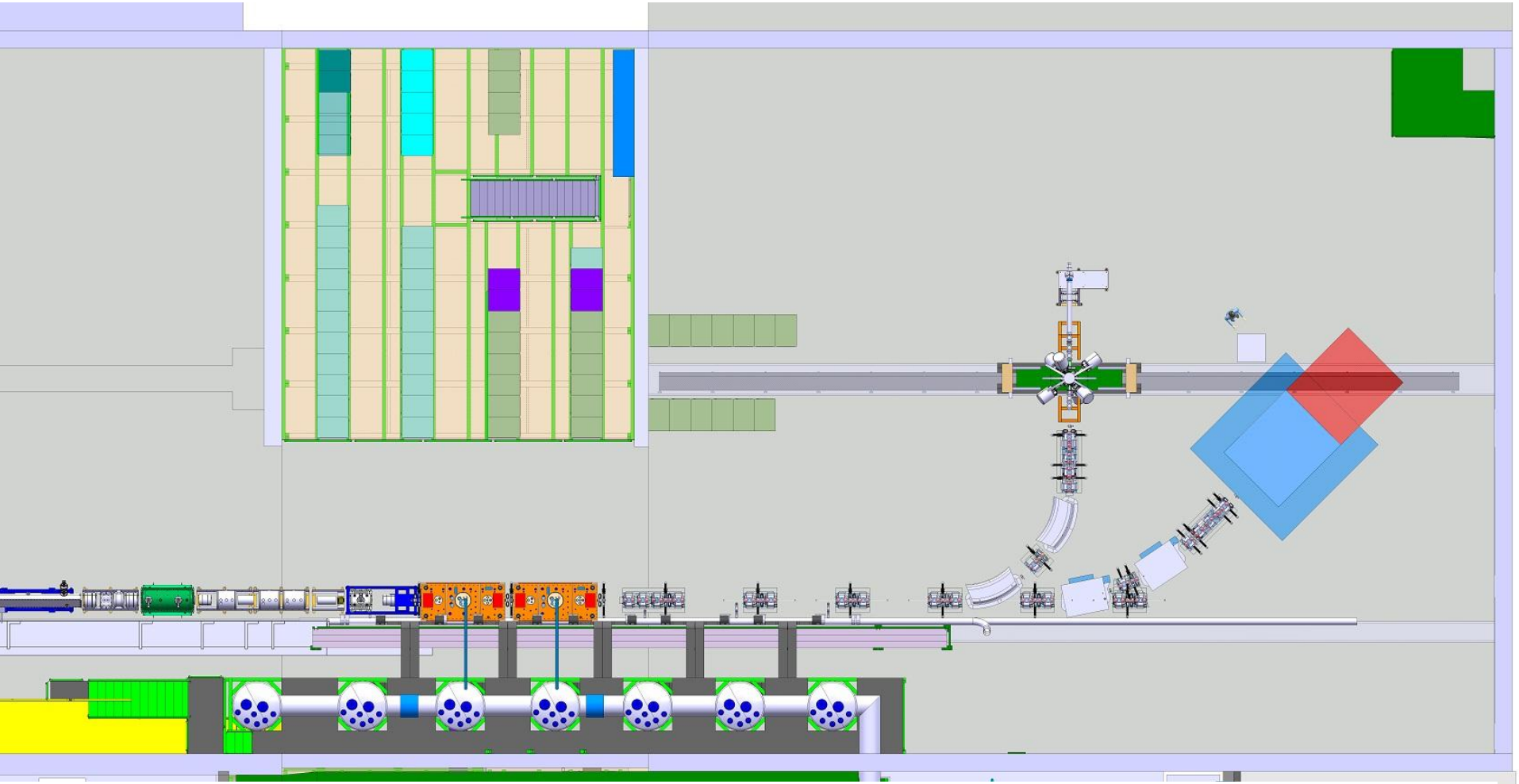
Cryo only commissioned June 2015

Racks sub systems



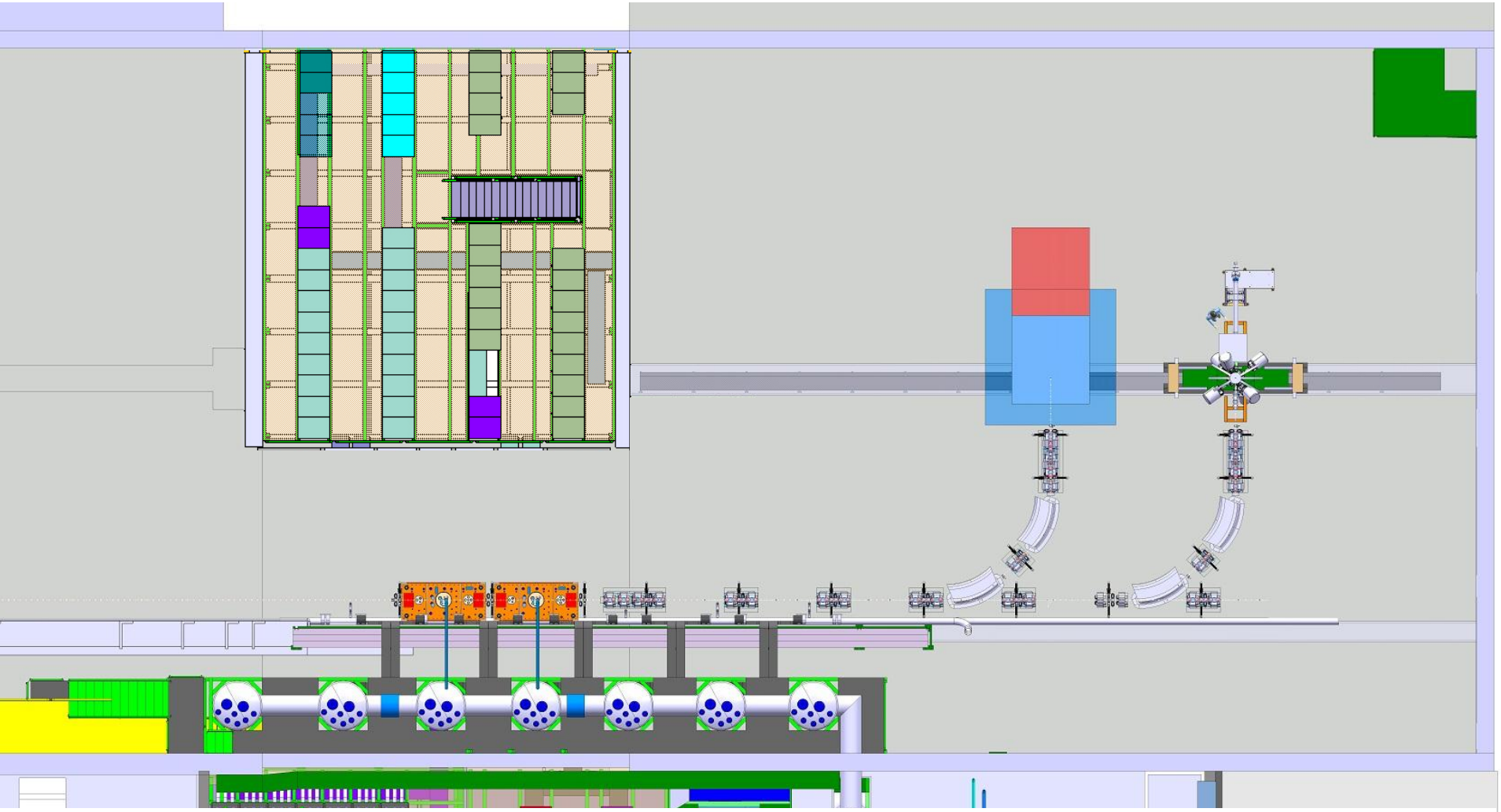
Cable trays and cabling March – Mai 2014

HEBT Stage 1



Straight line with 2 branches – Old baseline

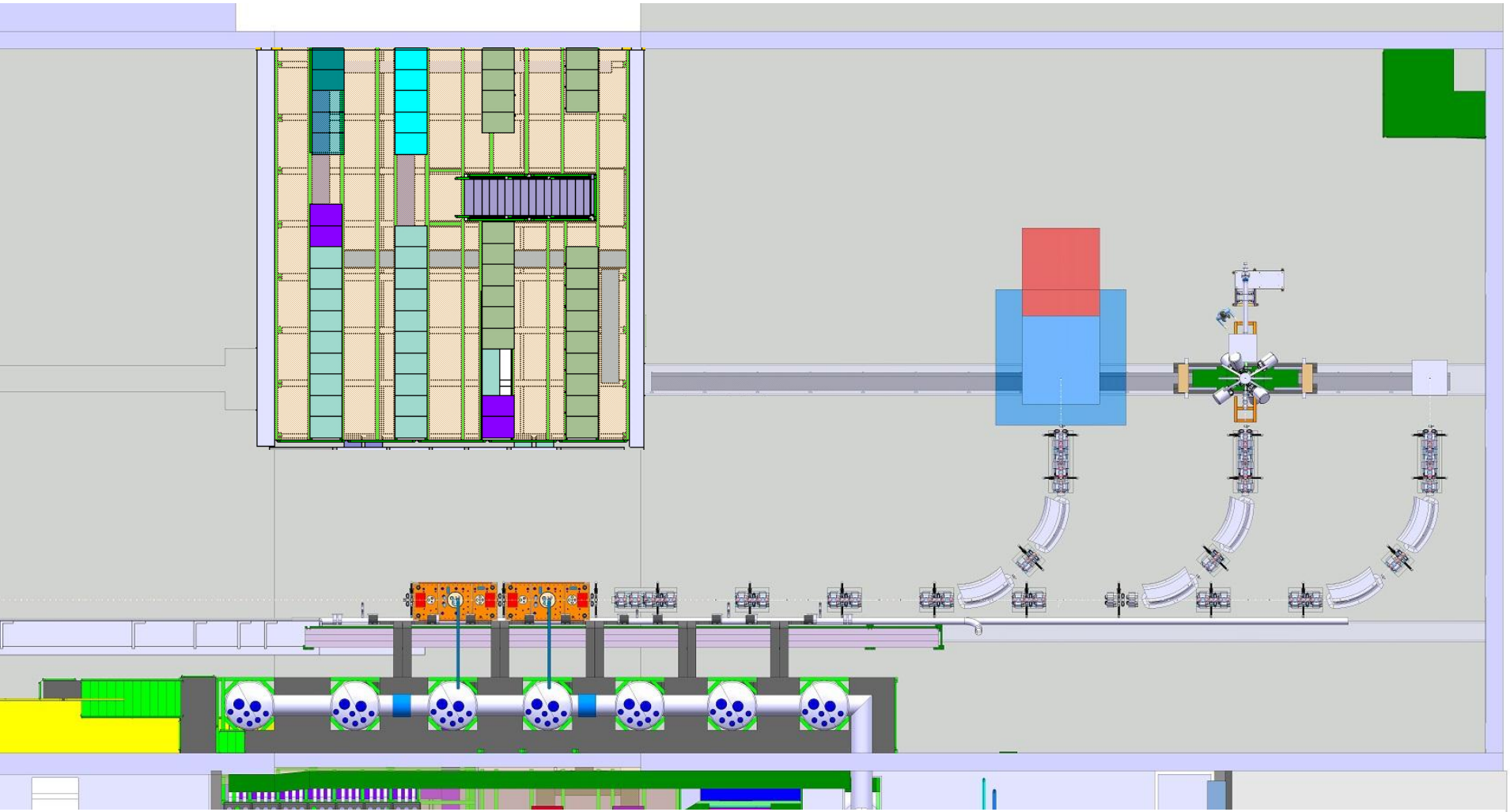
HEBT Stage 1



Straight line with 2 branches – New baseline

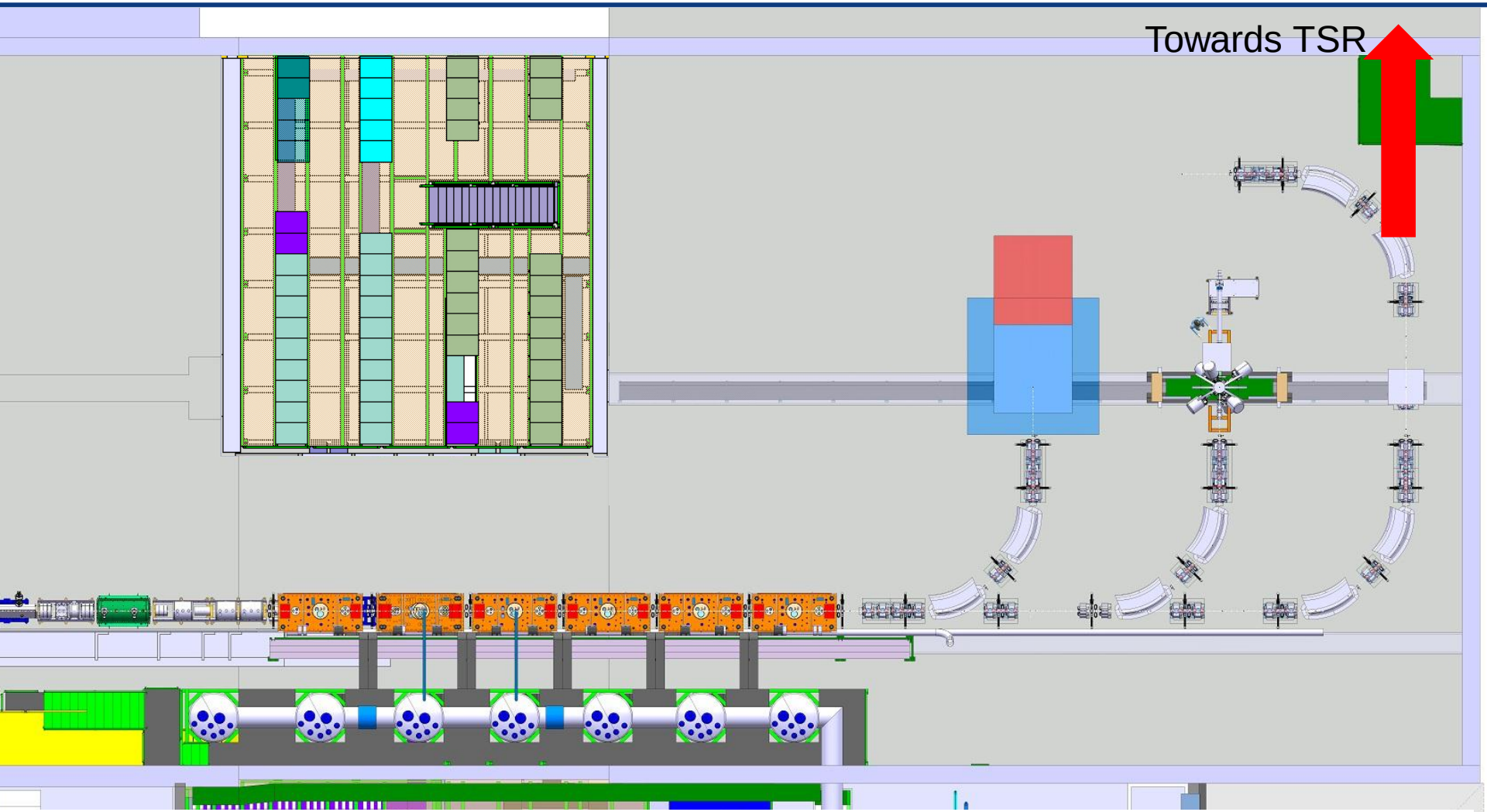
HEBT installation April 2014 – January 2015

HEBT extended



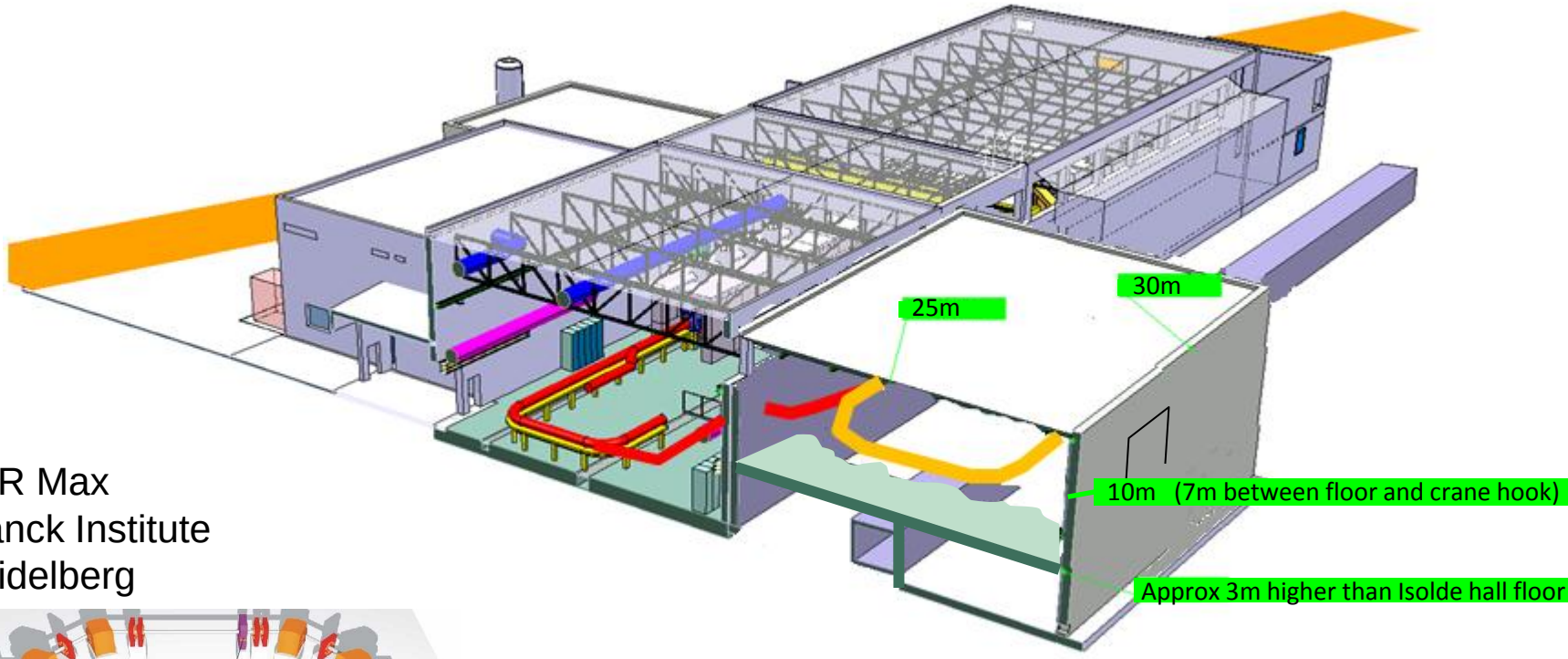
Possible 3rd branch

HEBT extended

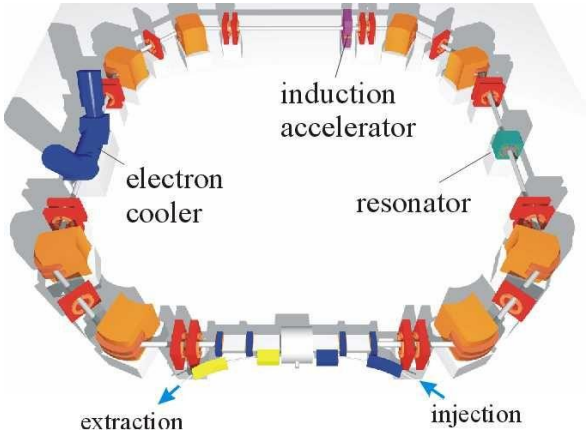


U-Bend for 3rd station if the TSR storage ring comes to Isolde

TSR@HIE-ISOLDE



TSR Max
Planck Institute
Heidelberg

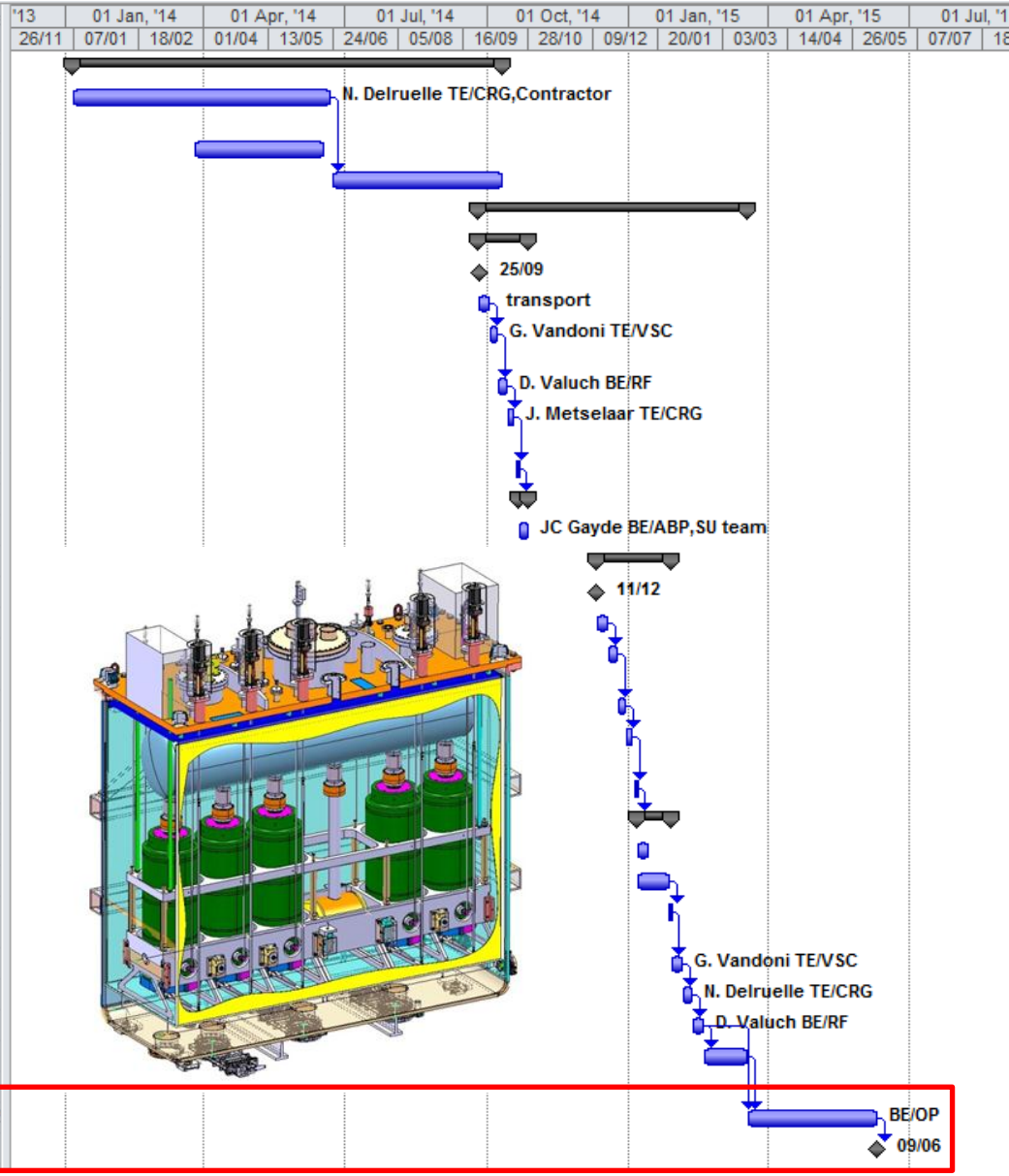


Proposed layout to fit the TSR:
Installation above the CERN service-tunnel
Tilted beamline coming up from the machine.

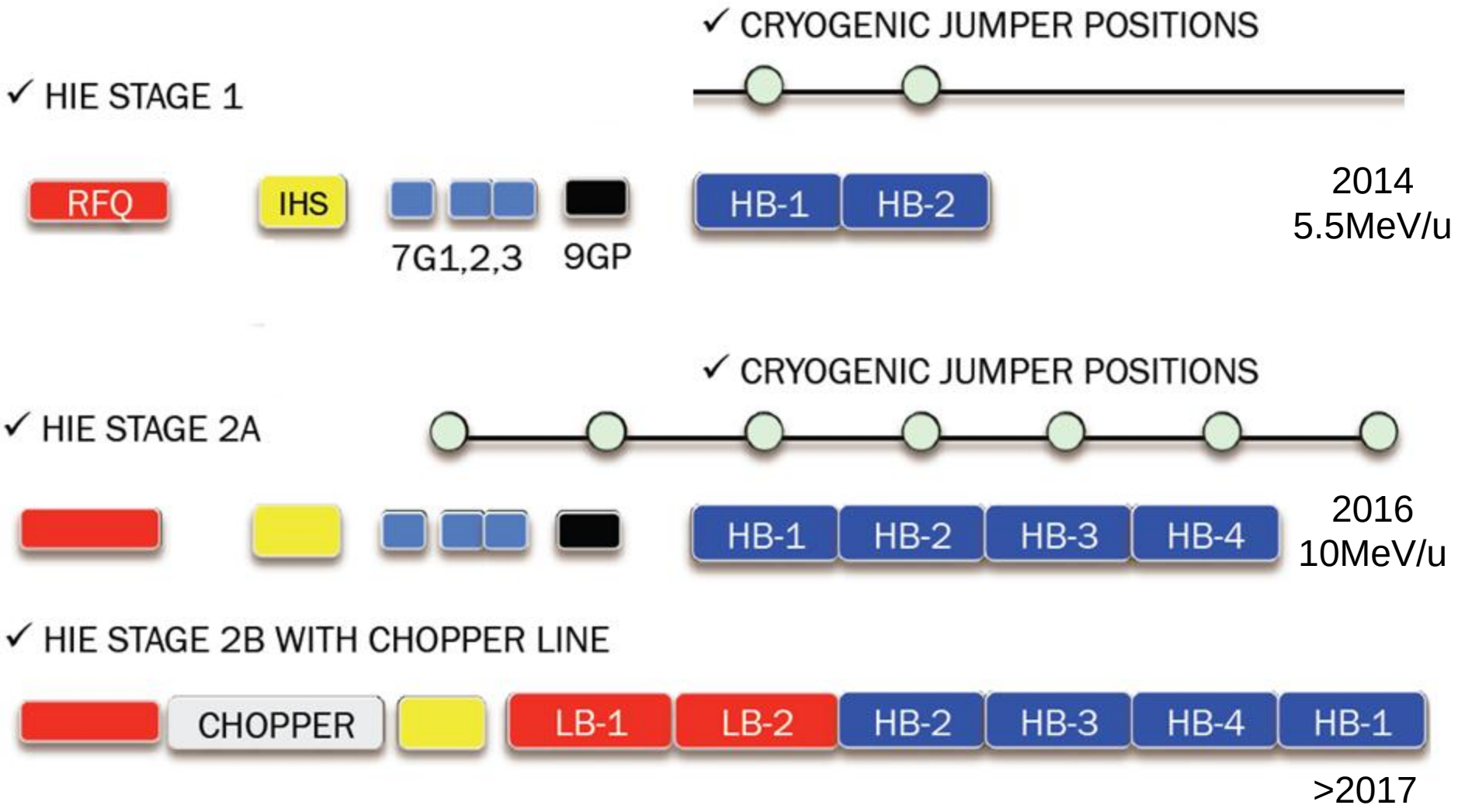
Building design & cost study:
Eliseo Perez-Duenas GS/SE

CM1 & 2, beam at Stage 1

Task Name	Duration	Start	Finish	Predecessors
Cryogenics	**200 days?**	**Mon 06/01/14**	**Fri 10/10/14**	
cold transfer line on tunnel installation (original plan)	120 days?	Mon 06/01/14	Fri 20/06/14	
jumper boxes installation (original plan)	3 mons	Tue 25/03/14	Mon 16/06/14	
Cryo commissioning	4 mons	Mon 23/06/14	Fri 10/10/14	187
Cryo Modules	**124 days?**	**Thu 25/09/14**	**Tue 17/03/15**	
CM1 ready for installation	**23 days?**	**Thu 25/09/14**	**Mon 27/10/14**	
roof part open for installation	0 days	Thu 25/09/14	Thu 25/09/14	
CM1 arrival in hall, handling and mounting	5 days	Thu 25/09/14	Wed 01/10/14	
Vac. Connections (pumps, intertank sector, etc)	4 days	Thu 02/10/14	Tue 07/10/14	193
Electr. Connections (RF, motor cntrl, etc)	4 days	Wed 08/10/14	Mon 13/10/14	194
Cryo connections (flexibles, thermo cpls, etc)	4 days	Tue 14/10/14	Fri 17/10/14	195
close roof part	1 day?	Mon 20/10/14	Mon 20/10/14	196
Survey alignment work	**5 days**	**Tue 21/10/14**	**Mon 27/10/14**	**197**
adjust CM1 for stage 1	5 days	Tue 21/10/14	Mon 27/10/14	
CM2 ready for installation	**34 days?**	**Thu 11/12/14**	**Tue 27/01/15**	
roof part open for installation	0 days	Thu 11/12/14	Thu 11/12/14	
CM1 arrival in hall, handling and mounting	5 days	Thu 11/12/14	Wed 17/12/14	
Vac. Connections (pumps, intertank sector, etc)	4 days	Thu 18/12/14	Tue 23/12/14	202
Electr. Connections (RF, motor cntrl, etc)	4 days	Wed 24/12/14	Mon 29/12/14	203
Cryo connections (flexibles, thermo cpls, etc)	4 days	Tue 30/12/14	Fri 02/01/15	204
close roof part	1 day?	Mon 05/01/15	Mon 05/01/15	205
Survey alignment work	**16 days?**	**Tue 06/01/15**	**Tue 27/01/15**	**206**
adjust CM1 for stage 1	5 days	Tue 06/01/15	Mon 12/01/15	
commissioning monitor alignm system	15 days	Tue 06/01/15	Mon 26/01/15	
follow-up cav. Sol. Position during vac pumping	1 day?	Tue 27/01/15	Tue 27/01/15	209
Vacuum pumping CM1 & 2	5 days	Wed 28/01/15	Tue 03/02/15	210
Cryo cooldown tests CM1 & 2	5 days	Wed 04/02/15	Tue 10/02/15	211
RF power tests with CM1 & 2	5 days	Wed 11/02/15	Tue 17/02/15	212
Linac commissioning - all systems go	1 mon	Wed 18/02/15	Tue 17/03/15	213
Beam commissioning for 5.5MeV/c	3 mons	Wed 18/03/15	Tue 09/06/15	213,2
Physics at 5.5 MeV/c	0 days	Tue 09/06/15	Tue 09/06/15	216

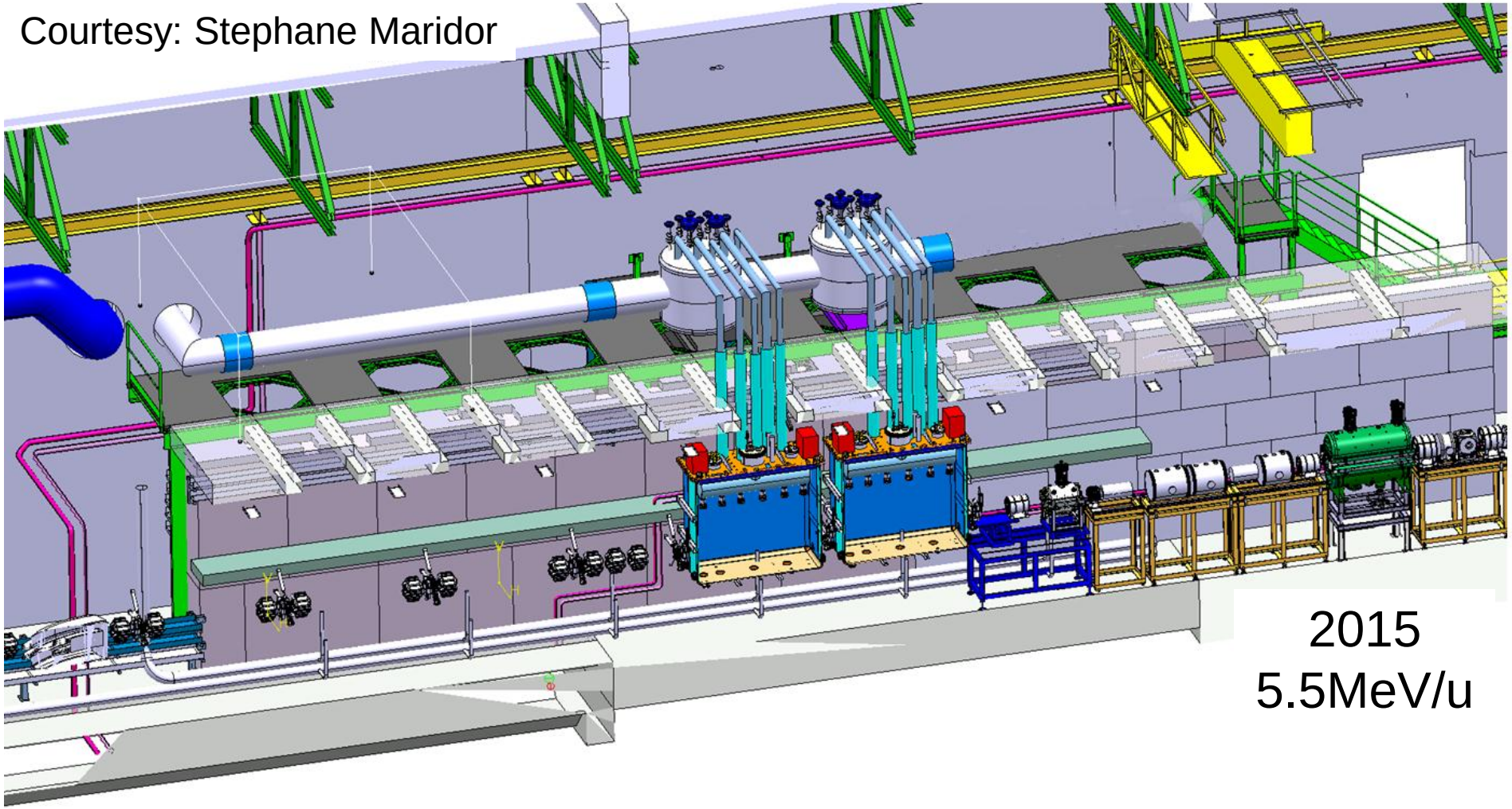


Staging the HIE Linac



Modular Linac & Cryo Line

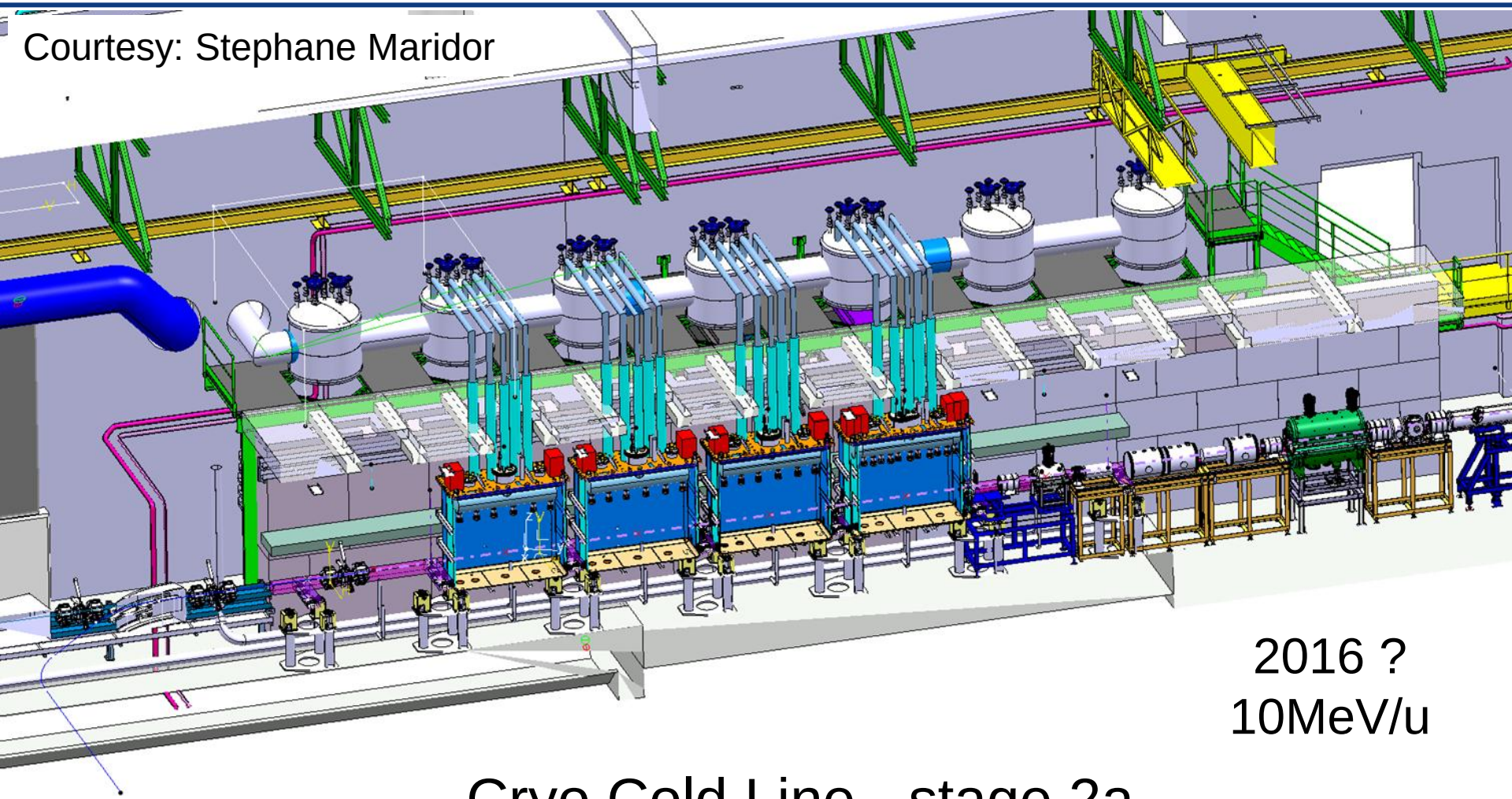
Courtesy: Stephane Maridor



Cryo Cold Line - stage 1
Linac CM 1&2

Modular Linac & Cryo Line

Courtesy: Stephane Maridor



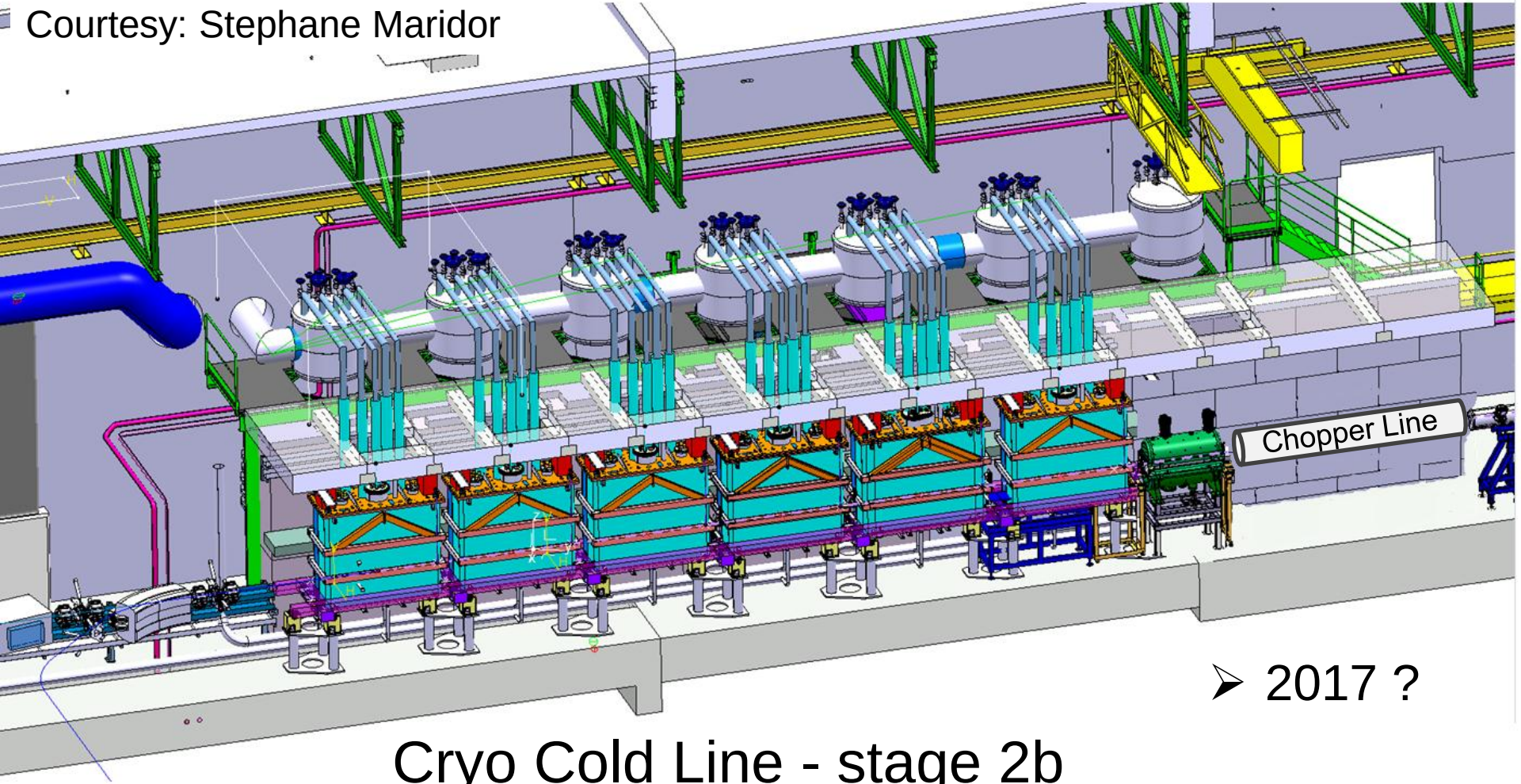
2016 ?
10MeV/u

Cryo Cold Line - stage 2a

Linac CM High-β 1,2,3&4

Modular Linac & Cryo Line

Courtesy: Stephane Maridor



- 2017 ?

Cryo Cold Line - stage 2b

Linac CM High-β 1,2,3 & 4, Low-β 1&2 and Chopper Line

Conclusions

HIE ISOLDE Installation work:

- In the ISOLDE experimental hall: As of March 2013 installation work for HIE ISOLDE will start with Civil Engineering followed by Cabling, Infrastructure, the installation of the High Energy Beam Transfer Lines, Cryogenics and the Cryo Modules
- HIE ISOLDE services and infrastructure will be ready in time to guarantee the 2014 ISOLDE Low Energy run
- HIE ISOLDE work will continue in parallel with the Low Energy part of ISOLDE running as of Q3 2014 (end of LS1)
- First Physics at 5.5MeV/u foreseen June 2015. This will most certainly be delayed by late arrival of the Cryogenics systems to the autumn of 2015

Safety first

For all users and staff entering the ISOLDE hall

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Safety shoes & helmet mandatory for LS1 (and after?)

Thank you for your attention