

East Hall under construction - 1962

EA Renovation CSR#3

Integration Building 157 & 251

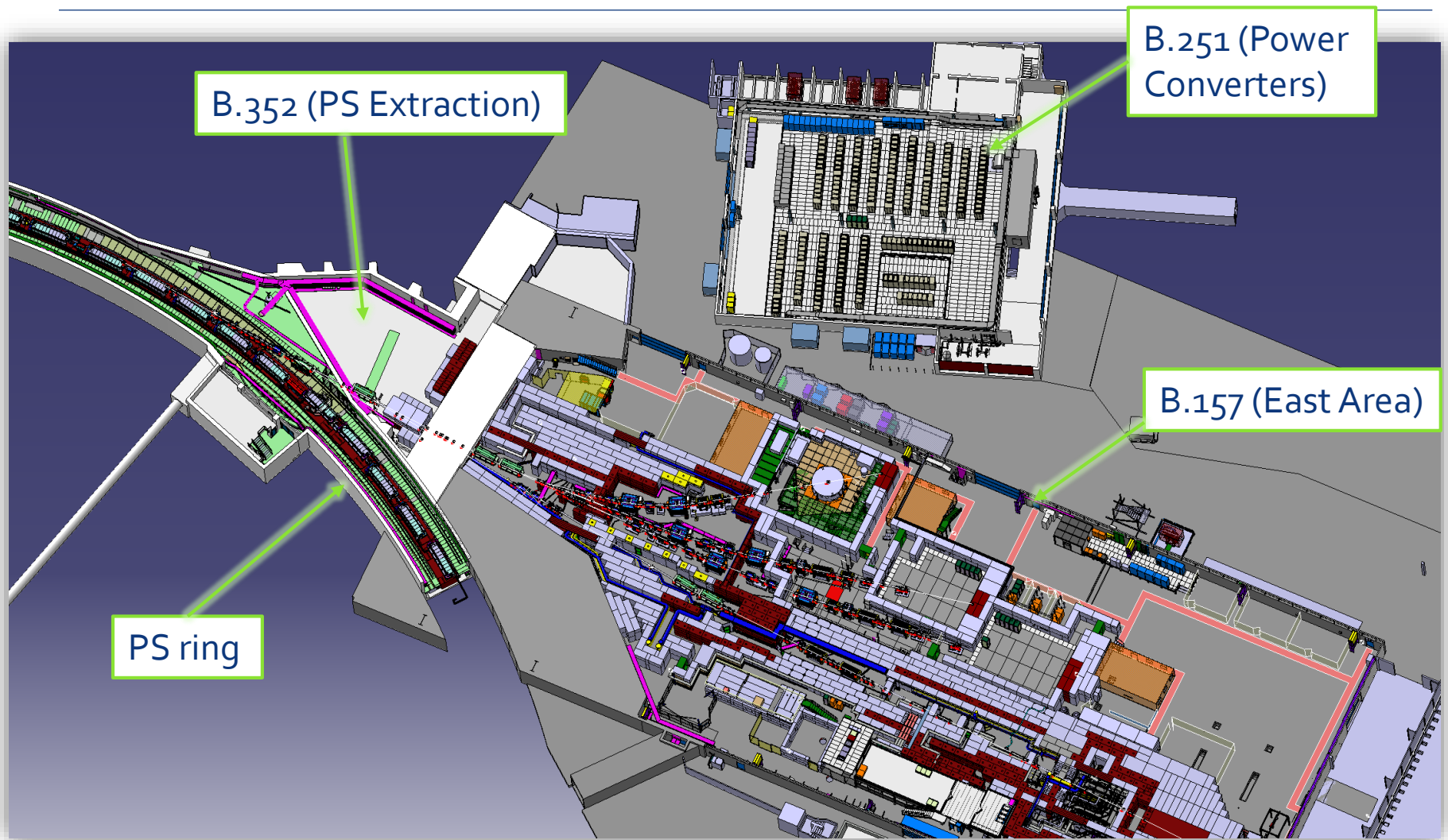
Michael Lazzaroni / EN-EA, 21-11-2019



ENGINEERING
DEPARTMENT



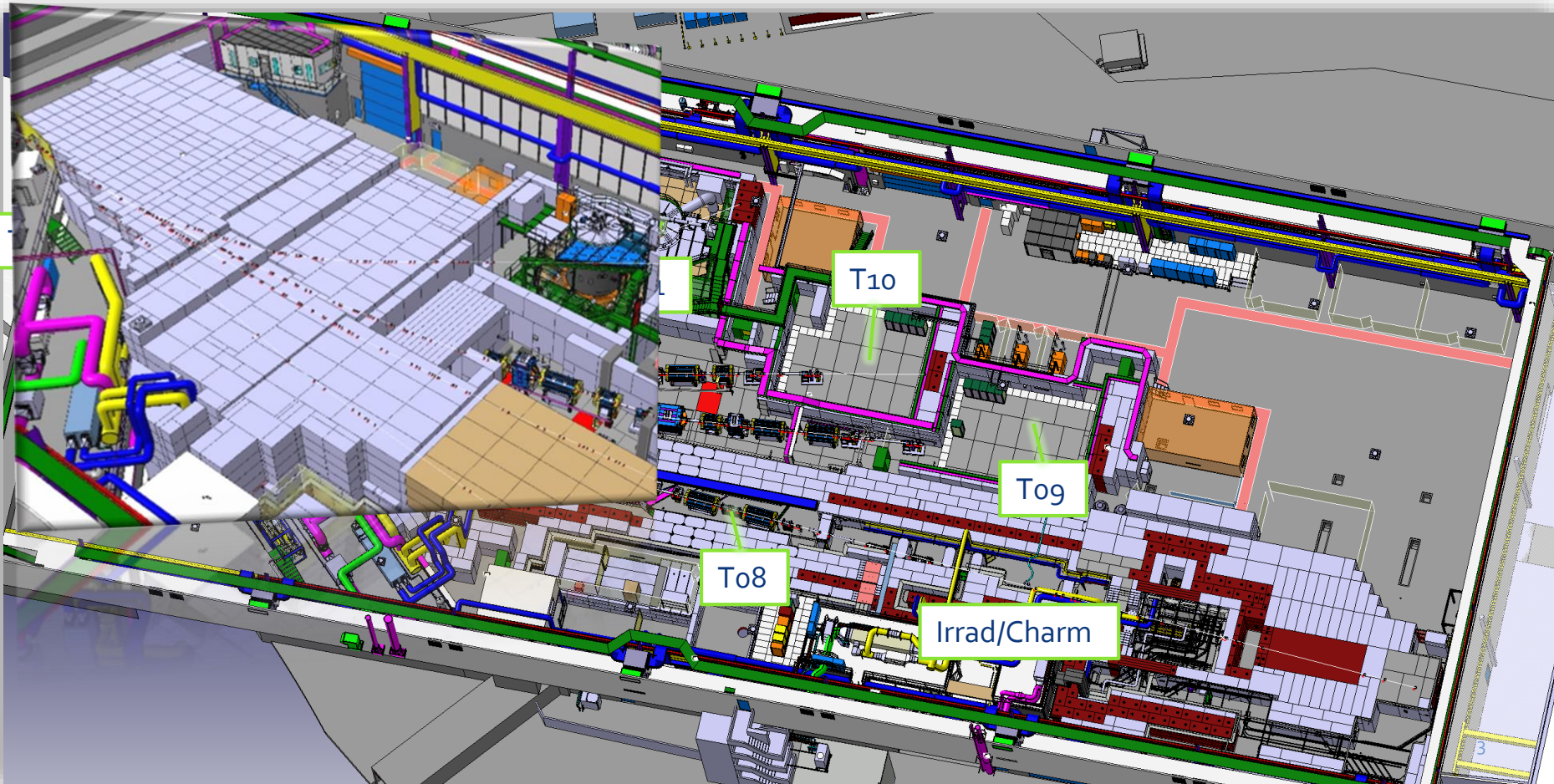
General Overview of EAR



B157 – New Layout Overview

Since last CSR, major evolutions:

- Shielding optimization (walls + roof) according RP simulations (to be validated by SMB);
- Beam Lines : Add BLMs, mechanical equipment detailed;
- Integration of Services (EN-EL and EN-CV);
- Layout of CLOUD Experimental Area



Shielding Design in Primary Area

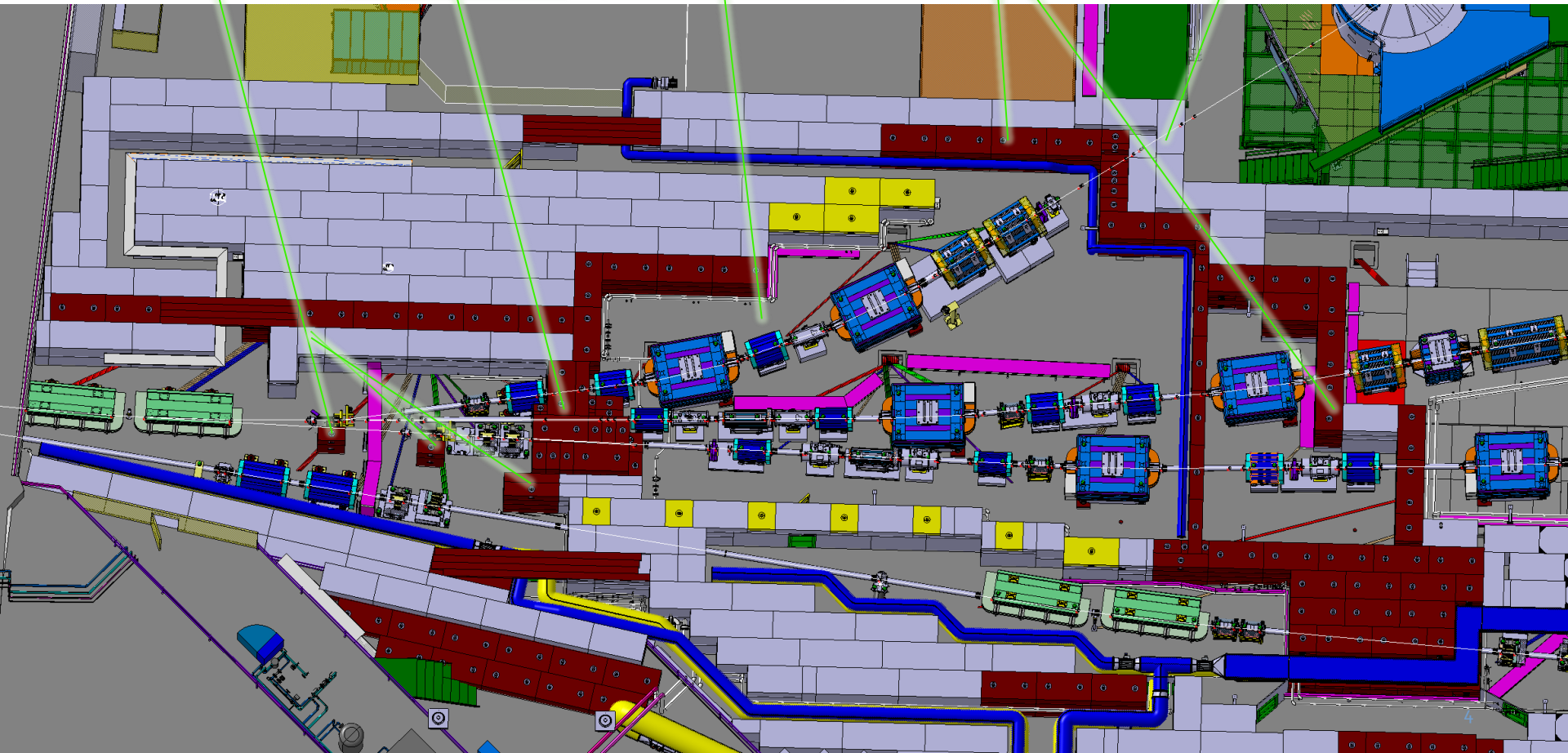
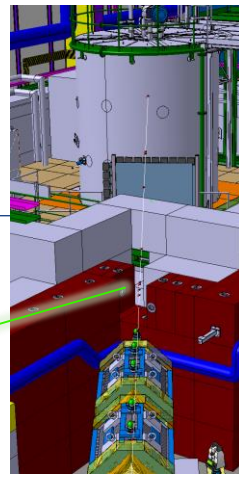
Add.
Shielding's

Beam Dump
optimized
(see slide#8)

Roof of the
mixed Area->
bigger than
expected
(see slide#7)

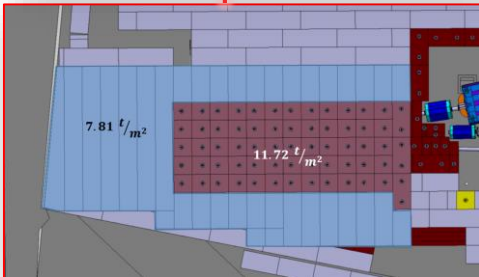
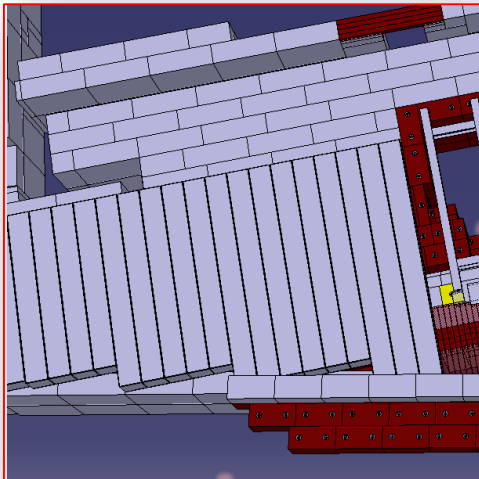
Reinforcement of
shielding

T11 Beam
opening
validated
by RP



Shielding Design in Primary Area - Ceilings

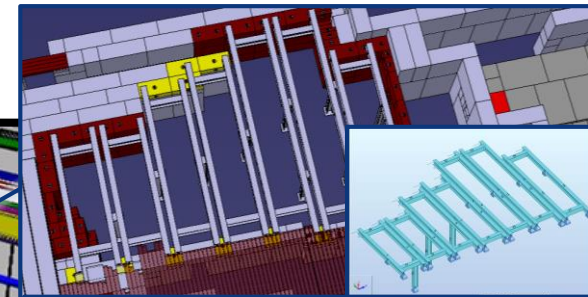
Target Area Ceiling/Roof



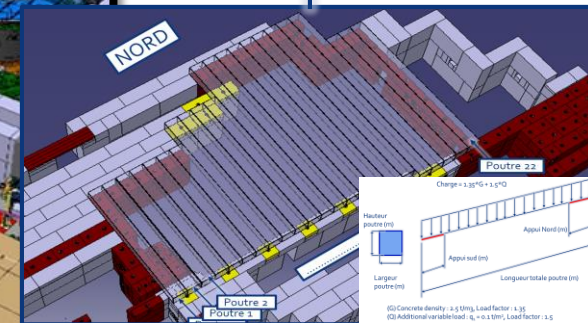
Primary Area with complete shielding roof



Mixed Area Ceiling/Roof

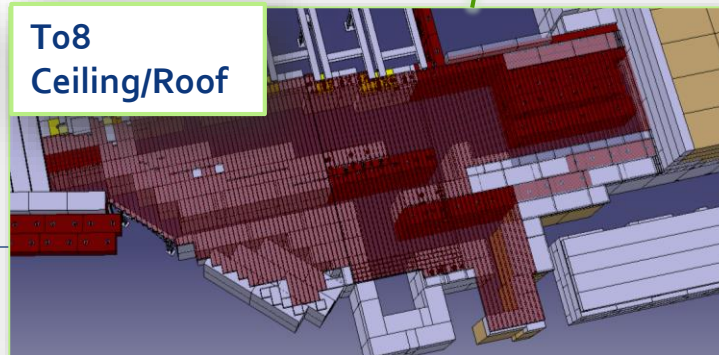


a/Solution with metallic structure

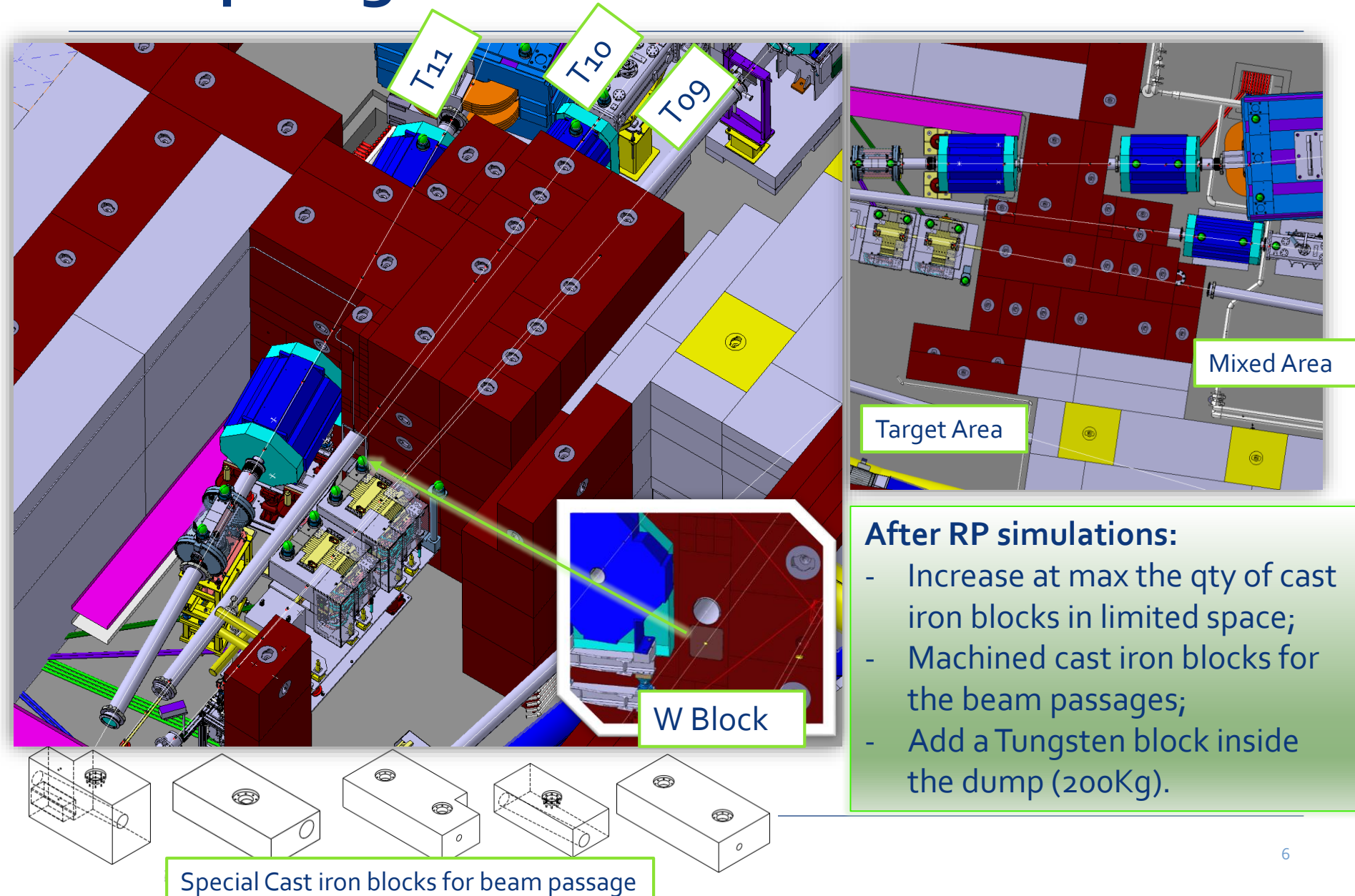


b/Solution with concrete beams on-going

To8 Ceiling/Roof



Dump Target Area/Mixed Area



T11

T10

T09

Mixed Area

Target Area

W Block

Special Cast iron blocks for beam passage

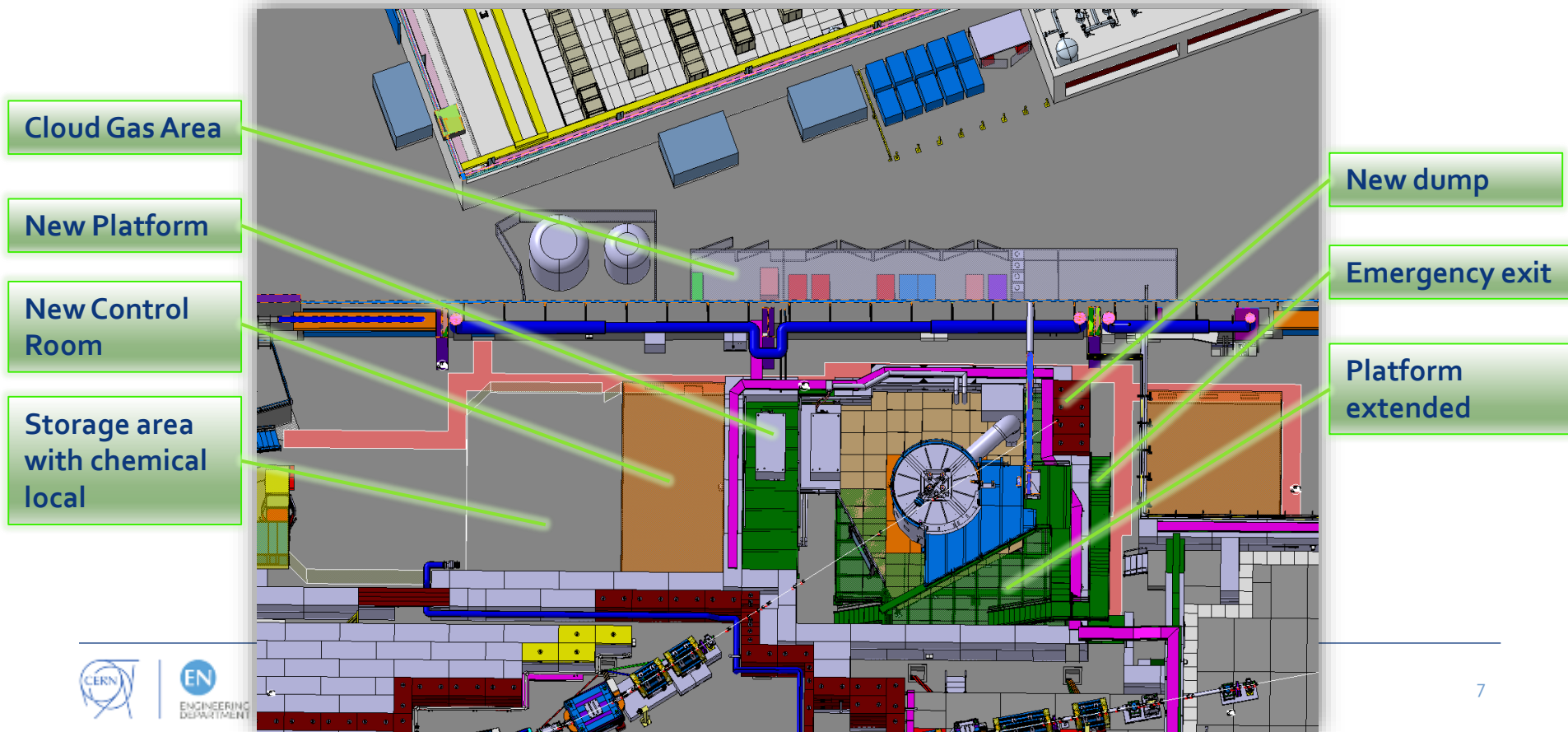
After RP simulations:

- Increase at max the qty of cast iron blocks in limited space;
- Machined cast iron blocks for the beam passages;
- Add a Tungsten block inside the dump (200Kg).

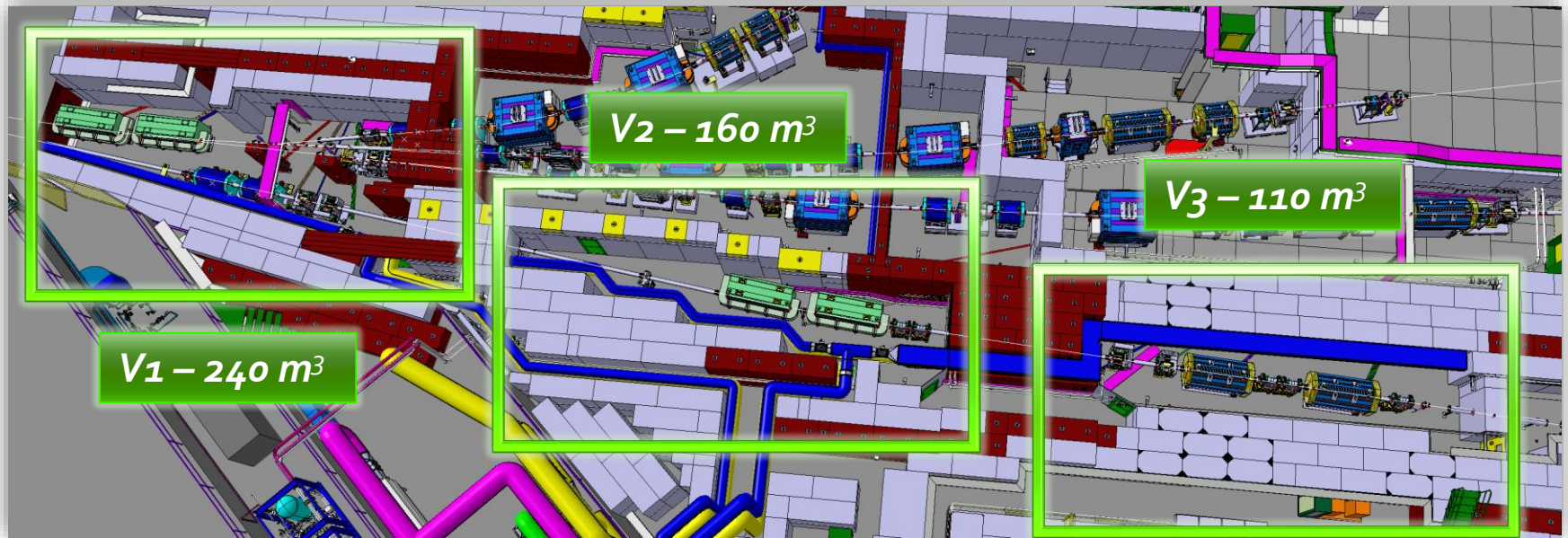
New Layout CLOUD

Major evolutions:

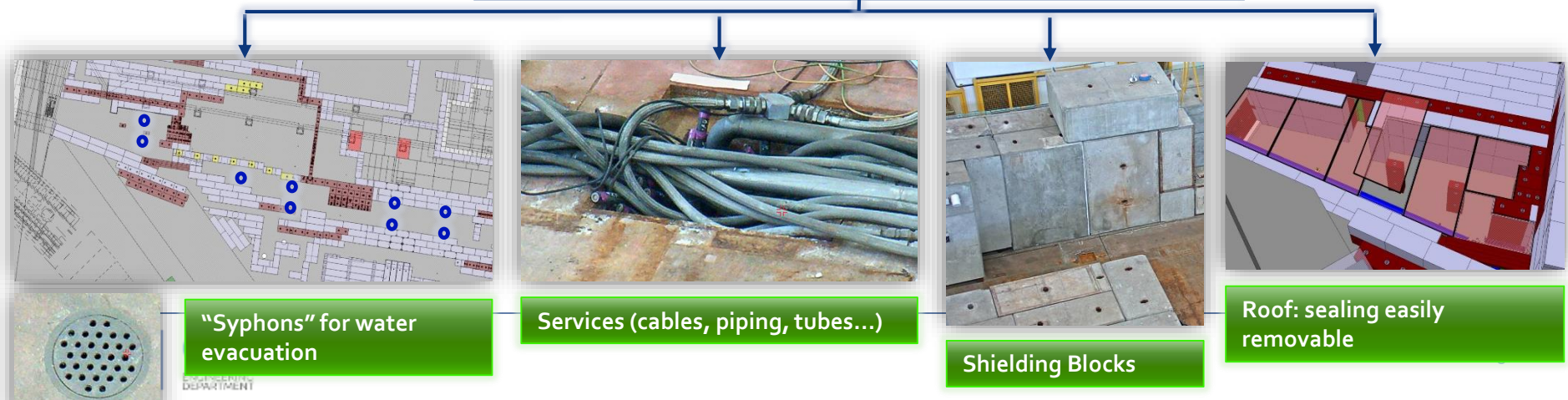
- 1- Exp. Area extended (+ 85 m²) : new footprint, new platforms;
- 2- Gas area modified and optimized;
- 3- Storage Area closer with a chemical local;
- 4- Beam Dump optimized.



Airtightness of the Primary Area



A real challenge to seal the primary area!



Airtightness of the Primary Area

- **Safety requirements**

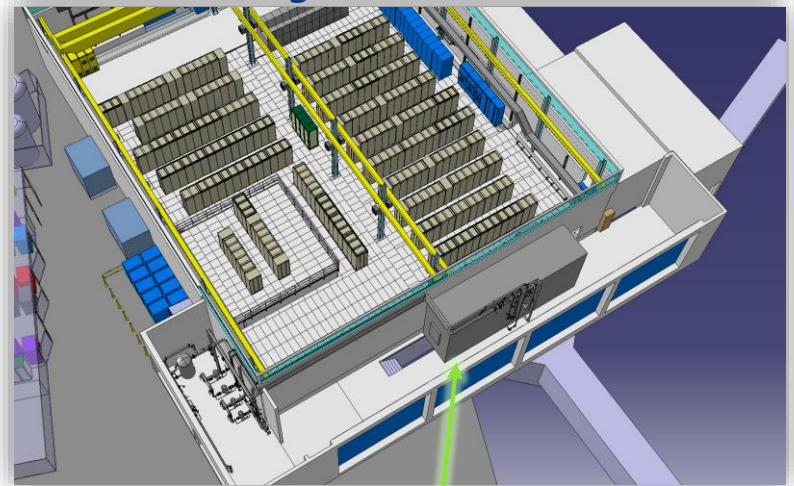
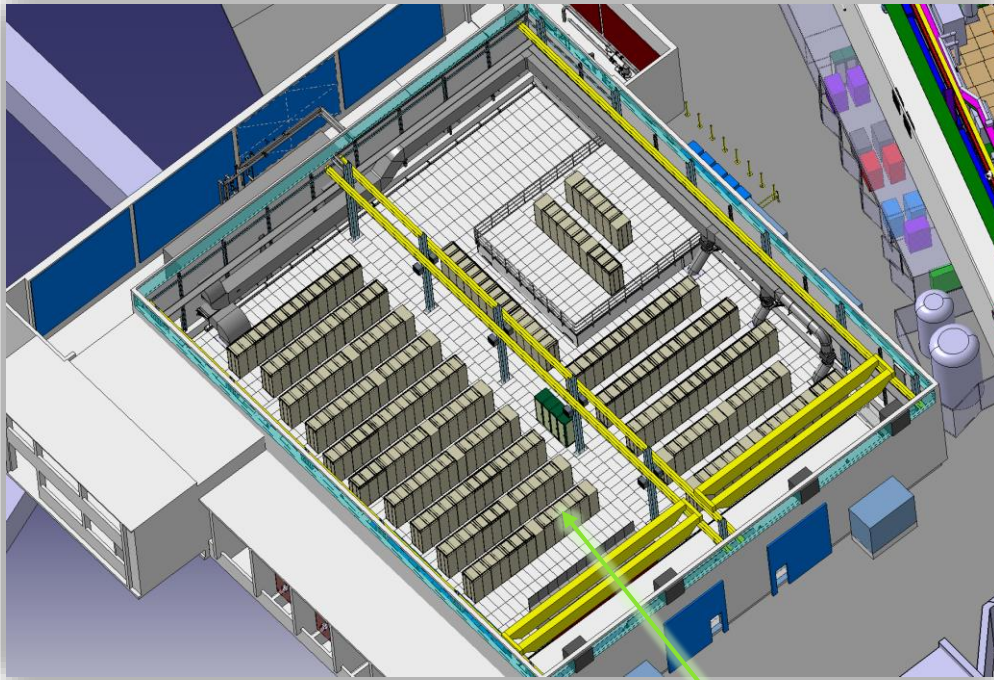
- Ensure a -20 Pa under pressure in the whole volume of the primary area (510 m³) to avoid activated air release outside the primary area

- **Study on-going**

- Consultation of 2 companies from the framework contract “cleaning and dismantling in radioactive environment”, expert in nuclear power plants
 - Achievable requirement in NPPs when included in civil engineering works
- By experience, this requirement has never been reached at CERN
 - LHC experimental caverns are slightly under pressure
 - HiRadMat tunnel is slightly under pressure
 - CHARM and IRRAD are also slightly under pressure
- First quotations received ranging from 150 to 450 kCHF without any guarantee to reach the required under pressure, exceeding available budget (70 kCHF)

B.251 - New Layout Overview

- 1- All Power Converters (PC) in one building;
- 2- New metallic structure + false floor compliant with actual norms;
- 3- Converters are grouped following beam lines;
- 4- Cooling of PC under false floor: water + ventilation;
- 5- Re-use of the bldg. extension to implement CV cooling stations (hot/chilled water station+AHU);
- 6- EL: New transformers, cables and old AC infrastructure cleaning.



Extension of b.251 – CV Plant room

Power Converters on the new false floor in b.251

Thanks for your attention !

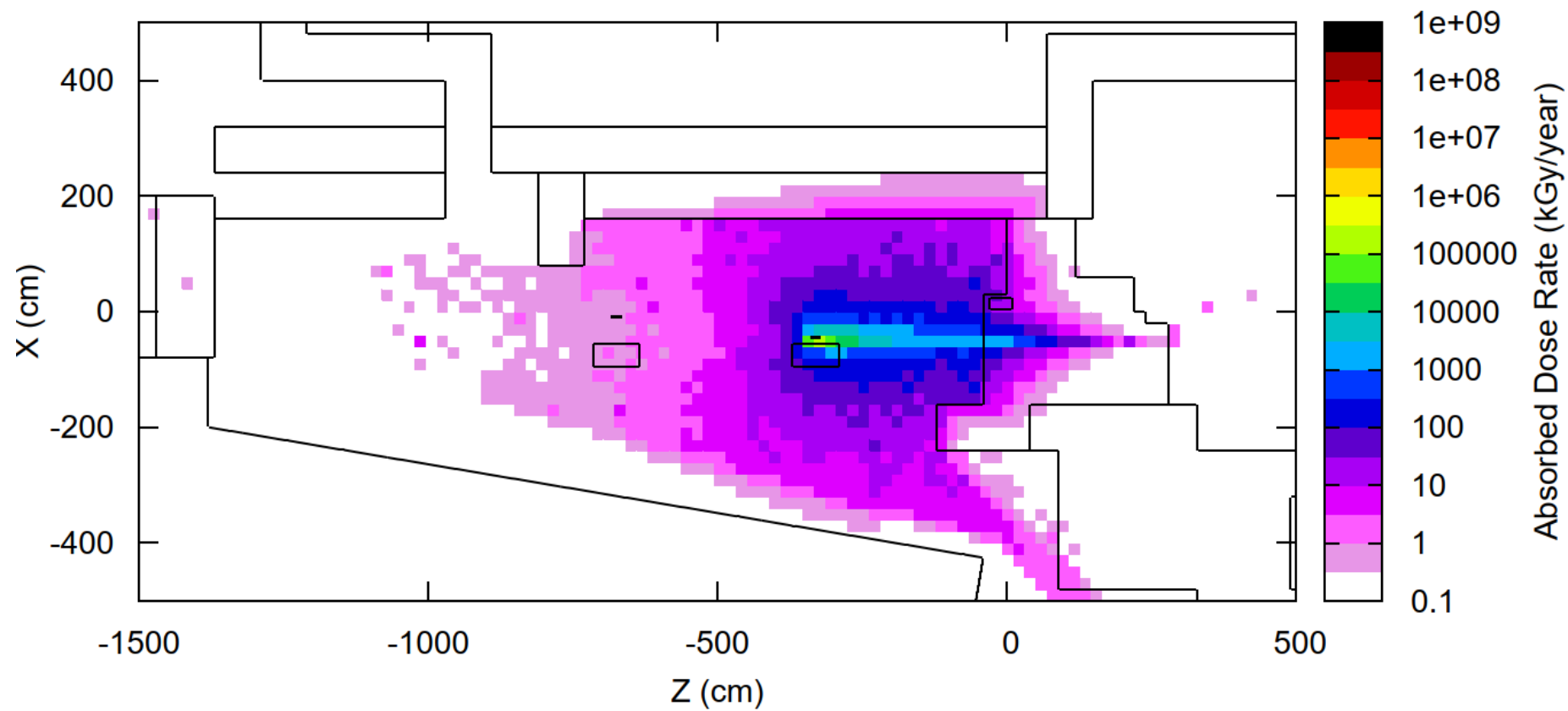


EAST AREA RENOVATION

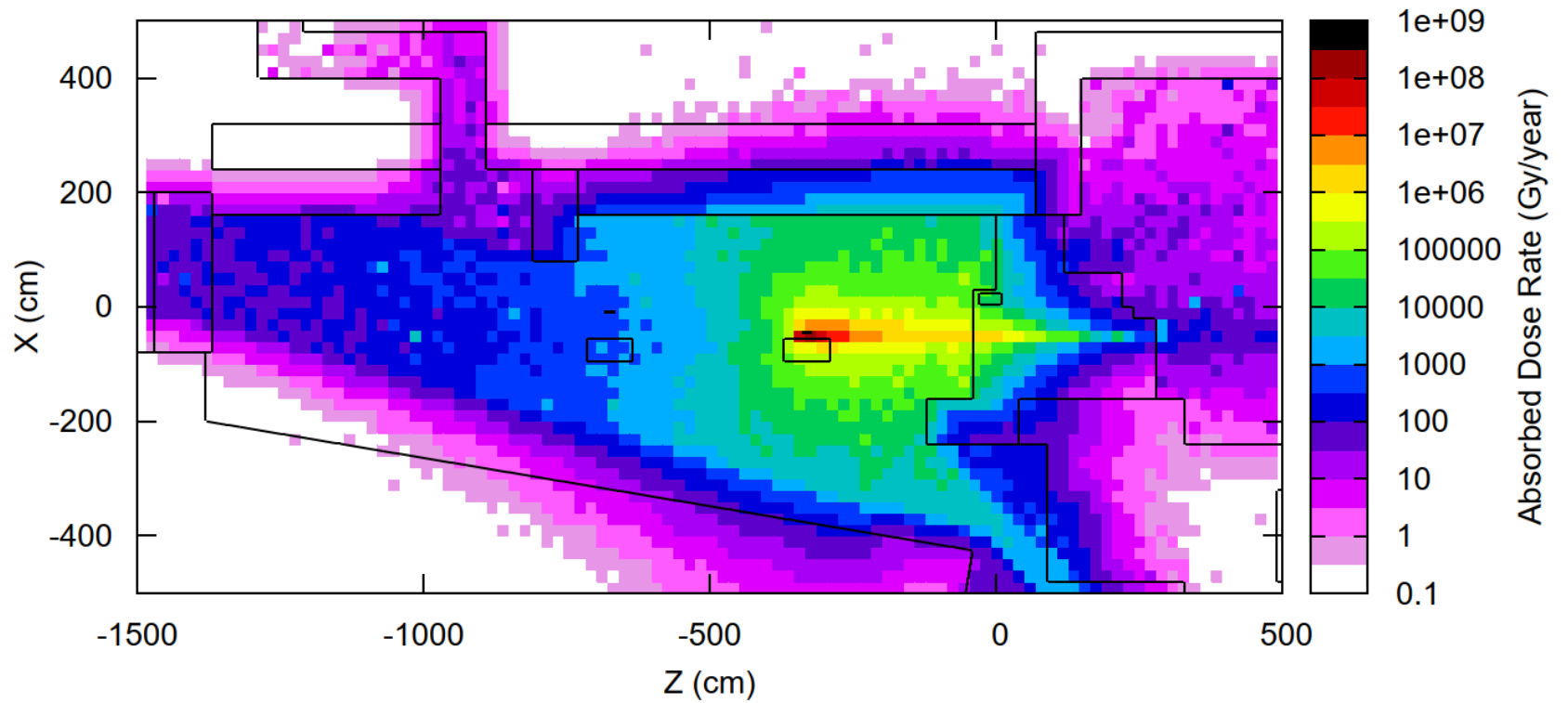


ENGINEERING
DEPARTMENT

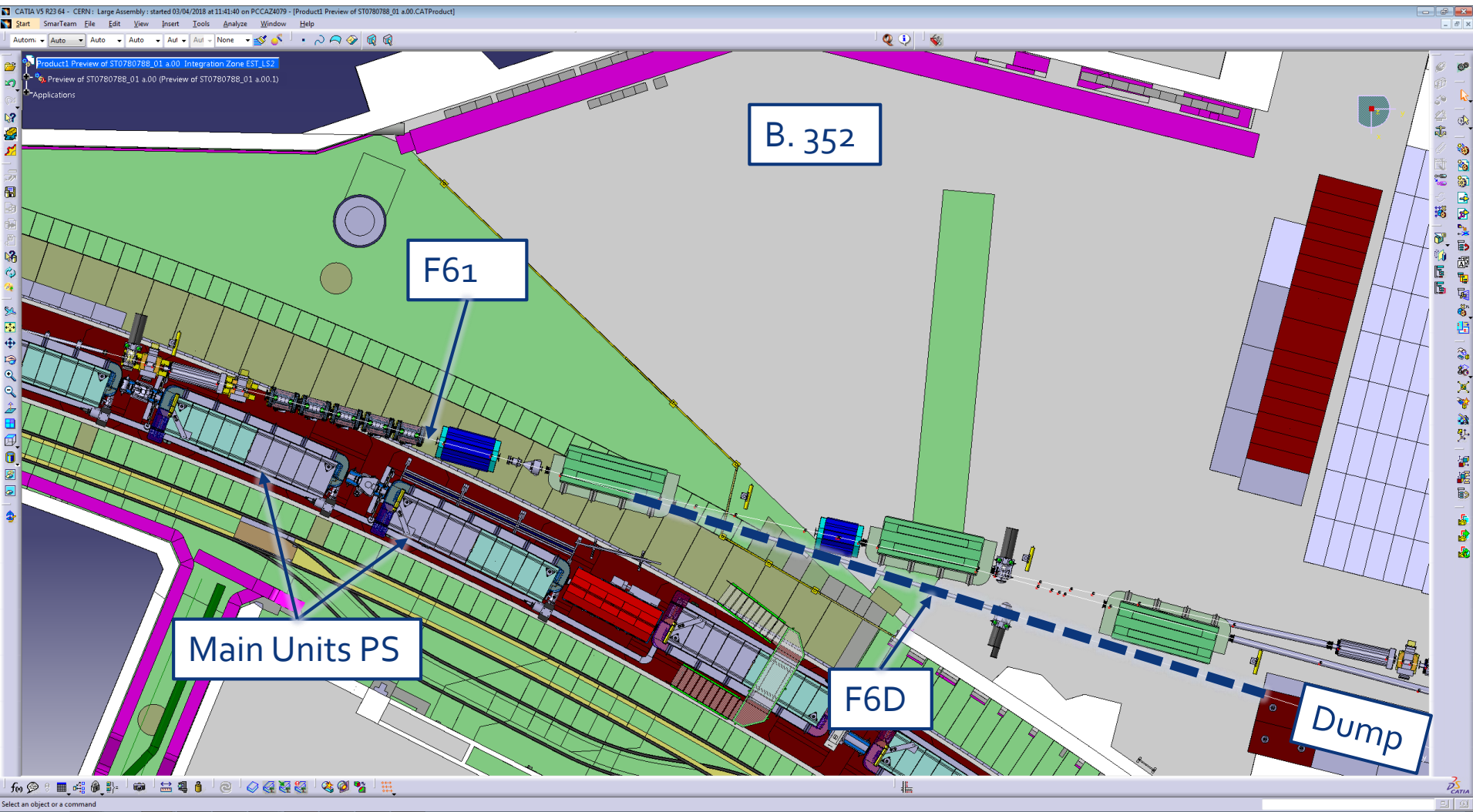
Absorbed dose T9 - Y125



Absorbed dose T9 - Y125



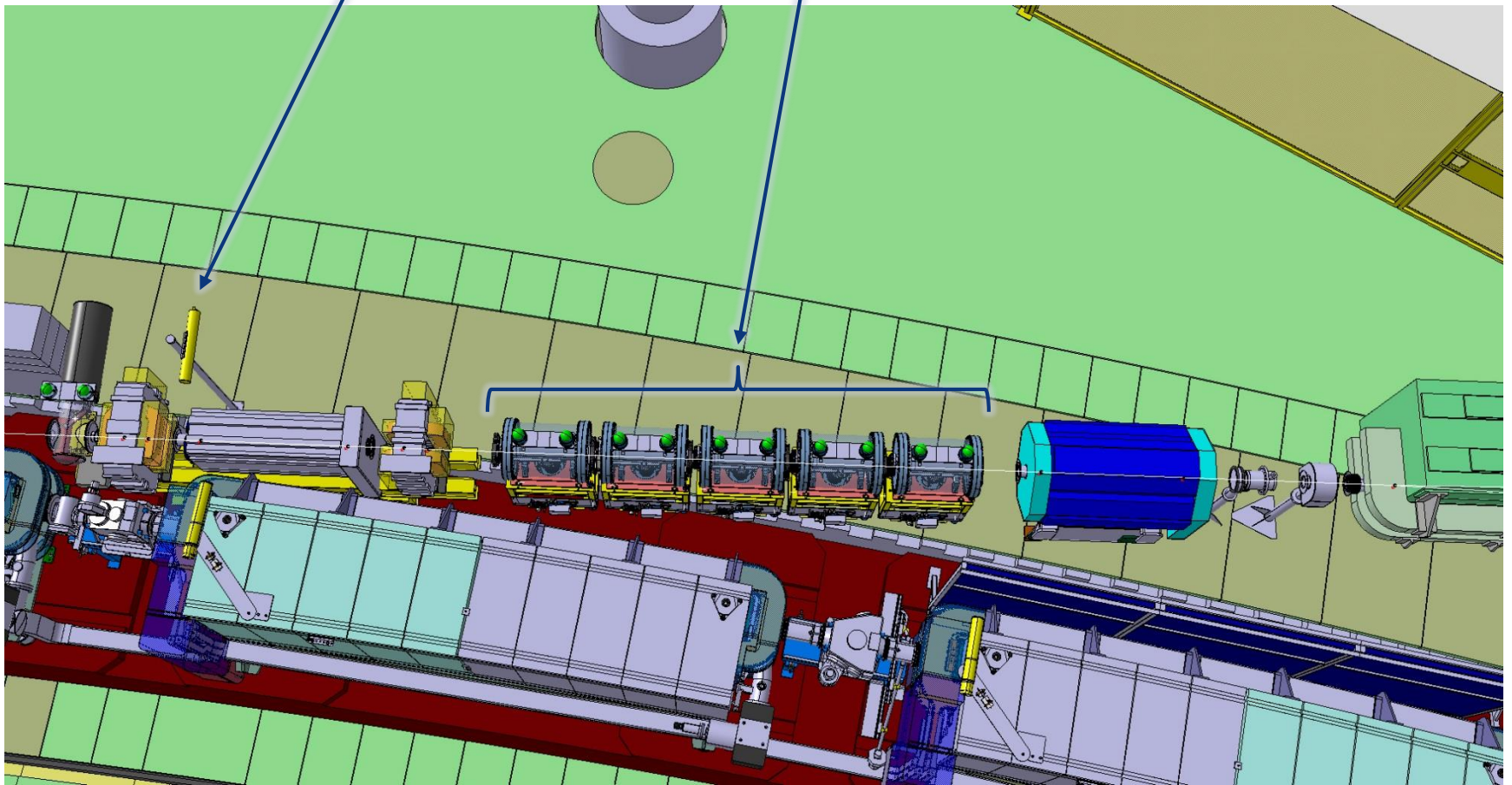
F6D (dump) beam line to keep



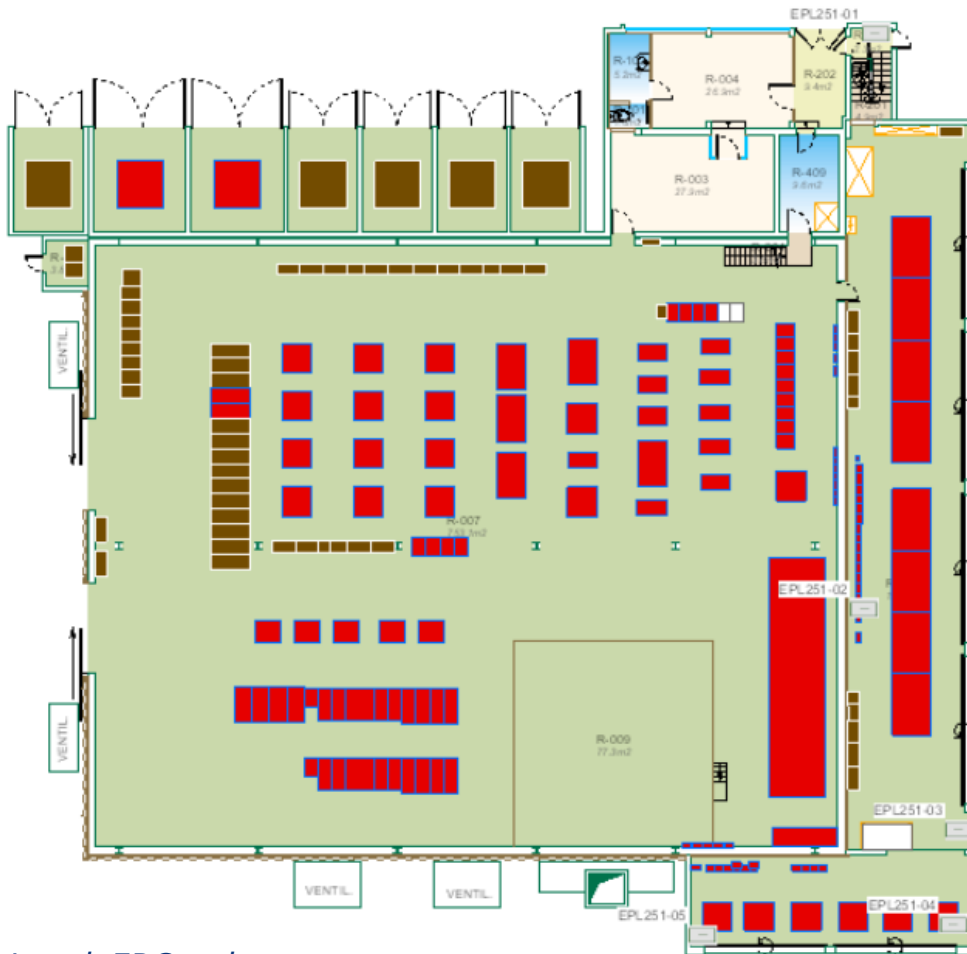
Beam line - Extraction line F6₁

BLM (6x in total)

5x Beam Stoppers

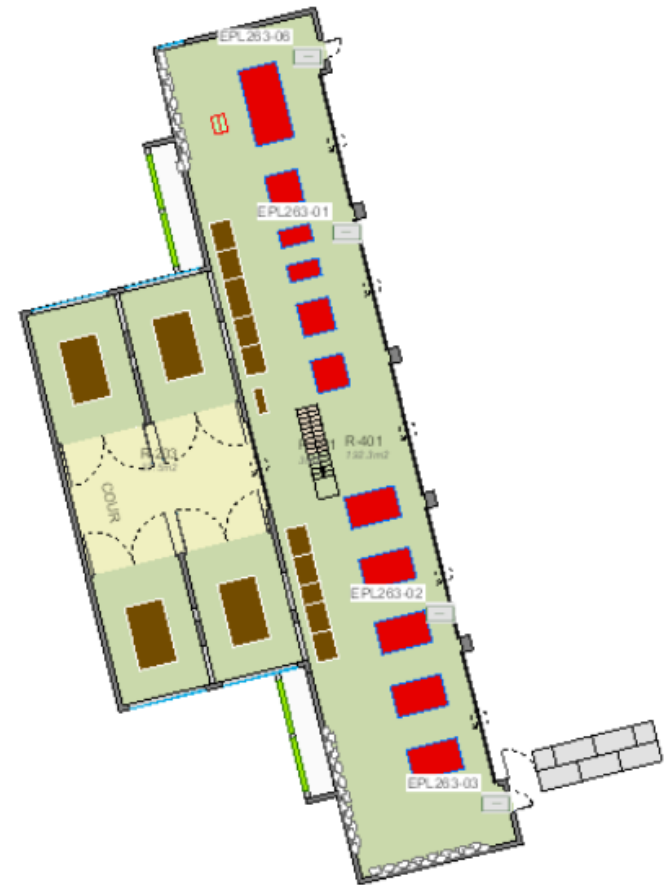


Actual situation: B251 & B263 house Power Converters for East Hall



In red: EPC racks
In Brown: EL racks

B.251



B.263