ACCELERATOR INTEGRATION GENERAL PREMISES

1. When establishing the installation scenario, the EuroGammaS will also be consulted for all aspects related to installation, auxiliary equipment and utilities, operation during the commissioning phase, operation and maintenance will be analyzed;
2. In the available spaces adjacent to the tunnel where the accelerator will be installed, priority will be placed components for which the distance to the accelerator is important to be minimal. This category includes, for example, the heat exchangers that ensure thermal stability at the level of 0.1°C of the acceleration structures. For the radio frequency generators, the most convenient position is on the roof of the radiation protection tunnel;
3. In the analyzed scenarios, the electron accelerator installation configuration is very similar to the original one designed for the ELI-NP building, which ensures the possibility of recovering a large part of the already manufactured components without major changes resulting in a shortening of installation times and a reduction of related costs.
4. The utilities to be connected: air conditioning, cooling water, electric power, compressed air, will ensure the technical conditions necessary for the operation of the accelerator, as shown below:

- temperature inside the tunnel: 22 +/- 0.5 °C
- relative humidity inside the tunnel: 40-70%
- temperature in the other rooms: 24 +/- 3 °C
- maximum electrical power consumption: 500 kW
- total installed electrical power: 600 kW
- an electrical power required for UPSs in case of power failure: 20 kVA
- grounding conditions: according to EN 50310
- required cooling water: 470 kW
- required air cooling: 30 kW
- compressed air: 7 bar, without oil, intermittent consumption to actuate vacuum valves

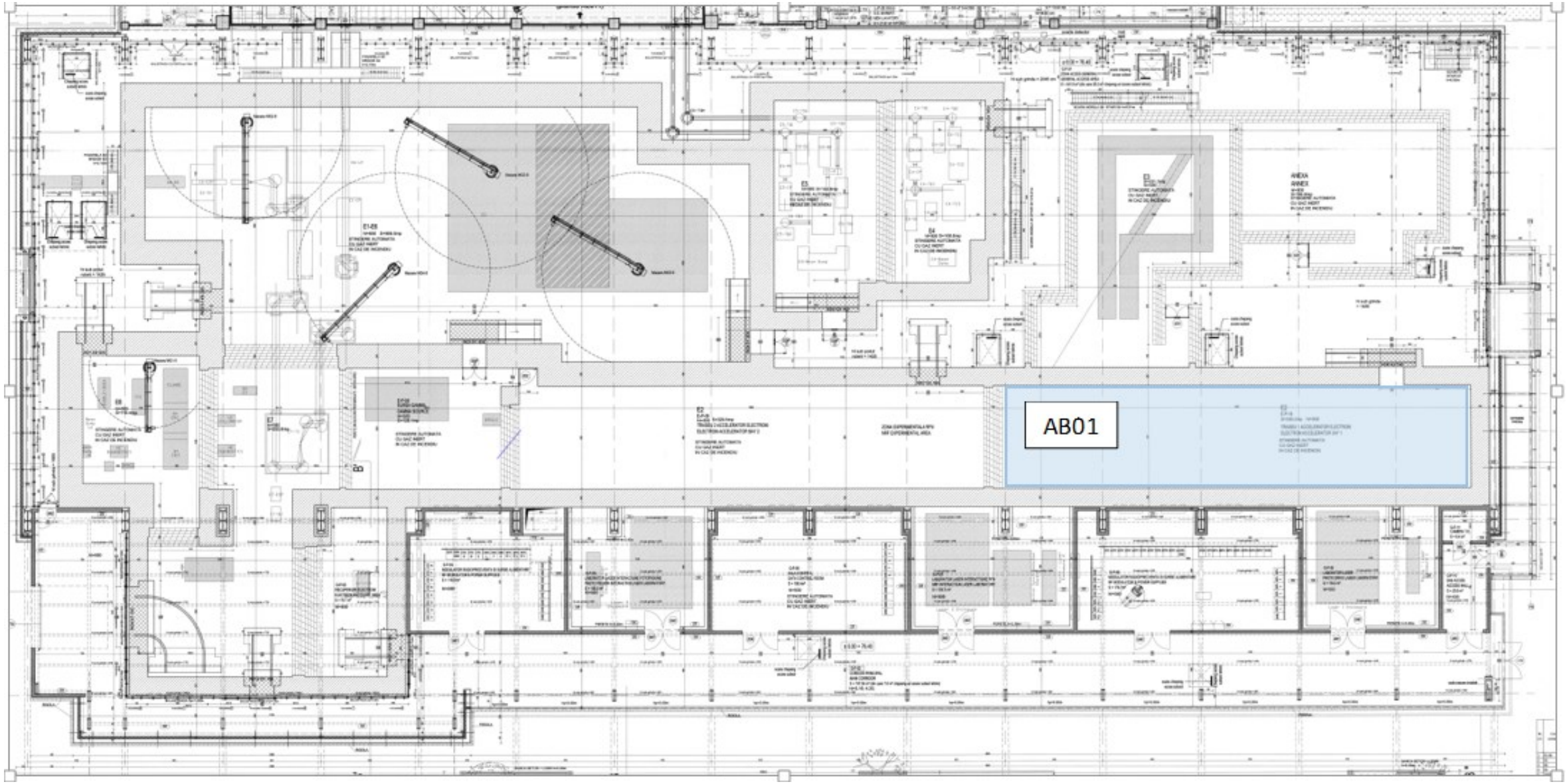
Installation in Ab1 area parallel to “VEGA” accelerator

Operation mode: in the same time

- premises-

1. Ab1 was an initial space in the project for the GBS installation;
2. Unlike the LINAC installation option in the Cyclotron building, the utility system of the Gama building is already functional and specially prepared for GBS operation;
3. It is expected that the duration of the implementation of LINAC in Ab1 will be significantly shorter than the already discussed option of installation in the Cyclotron building;
4. The free space available after the VEGA system is completely installed in the Ab1 area is large enough for the LINAC to be installed in parallel with it;
5. The available space, after VEGA and LINAC are installed, remains large enough to add additional modules and to direct the beam in the experimental area E3;
6. It is desirable that the LINAC installation be done after the VEGA modules are installed;
7. The new installation position of the LINAC will be determined by mutual agreement (ELI-NP team & EuroGammaS team analyses);
8. A "smart" solution should be thought of so that the chosen installation solution has an intermediate character until the Cyclotron building is completed, but can also be adopted as a longer term solution;
9. The proposal would be that the two systems can work simultaneous - from the beginning the cooling system of VEGA and LINAC GBS are separately. Also, the position of the precision chillers for LINAC GBS will inside Ab1 parallel with LINAC, and the racks will be placed on the roof, inside E3 and/or in the corridor – the utilities for both system will work independently. Penetrations foreseen in the original design will be used for cables and water cooling pipes. At a first evaluation it is not necessary to make new penetrations – TBD.
10. Control room for LINAC GBS, two options: one inside G-P-06 space shared with VEGA (recommended) and the other would be organized inside Annex – TBD.

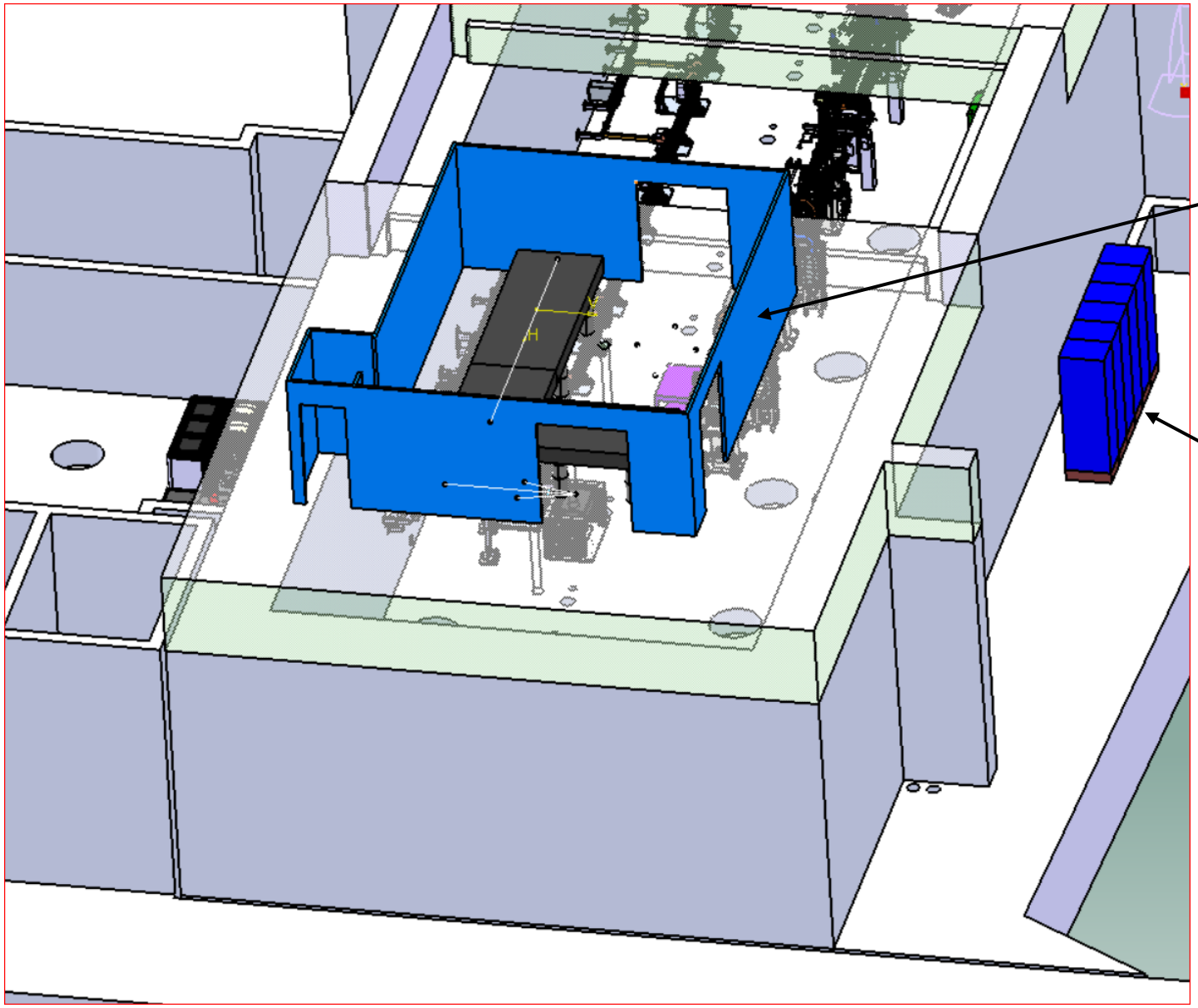
Proposed space for the installation: in AB1/EP10



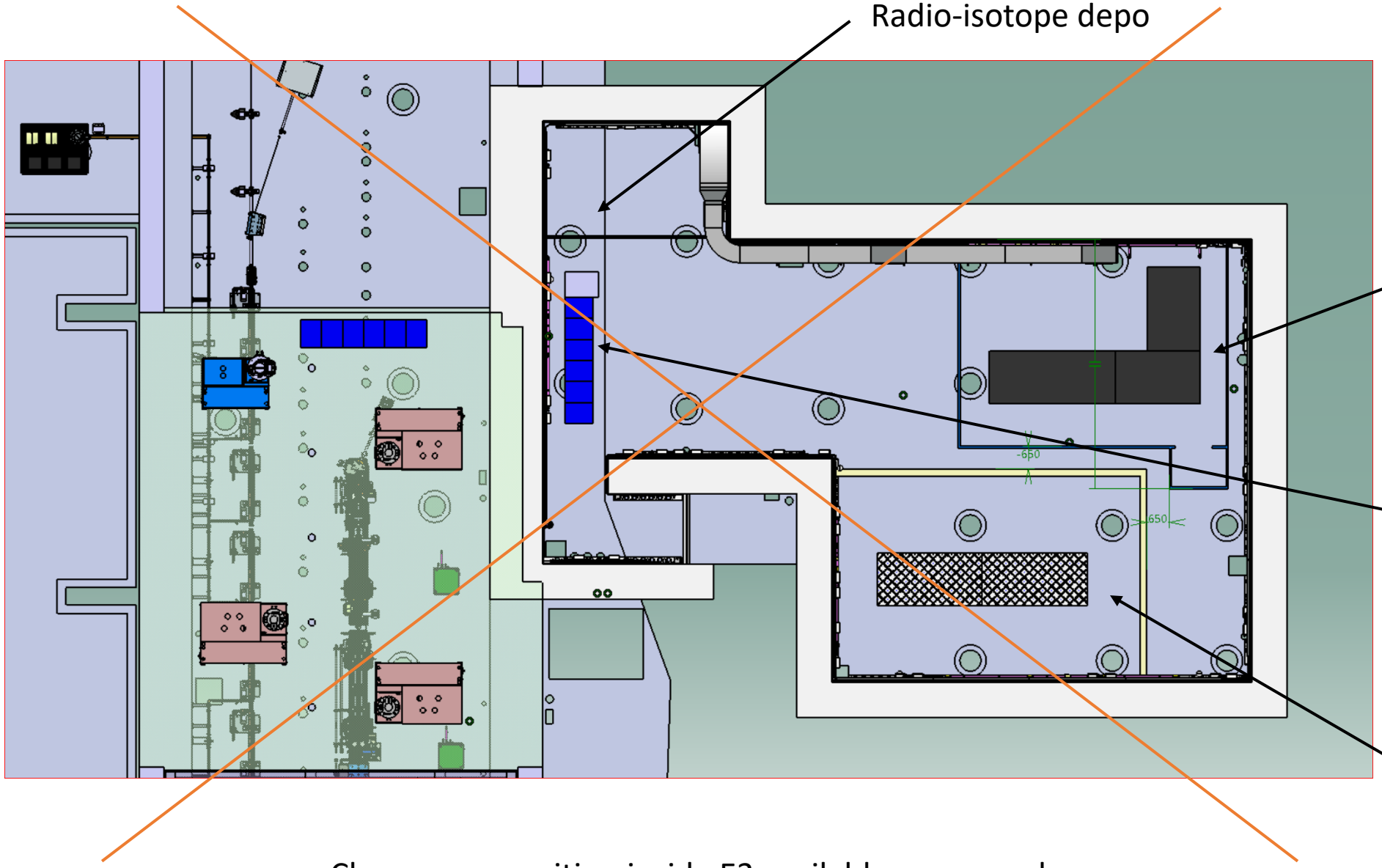
For the position of the modulators: on the second monolithic area of the Ab1 roof,

without the need to make new holes for the wave guides!

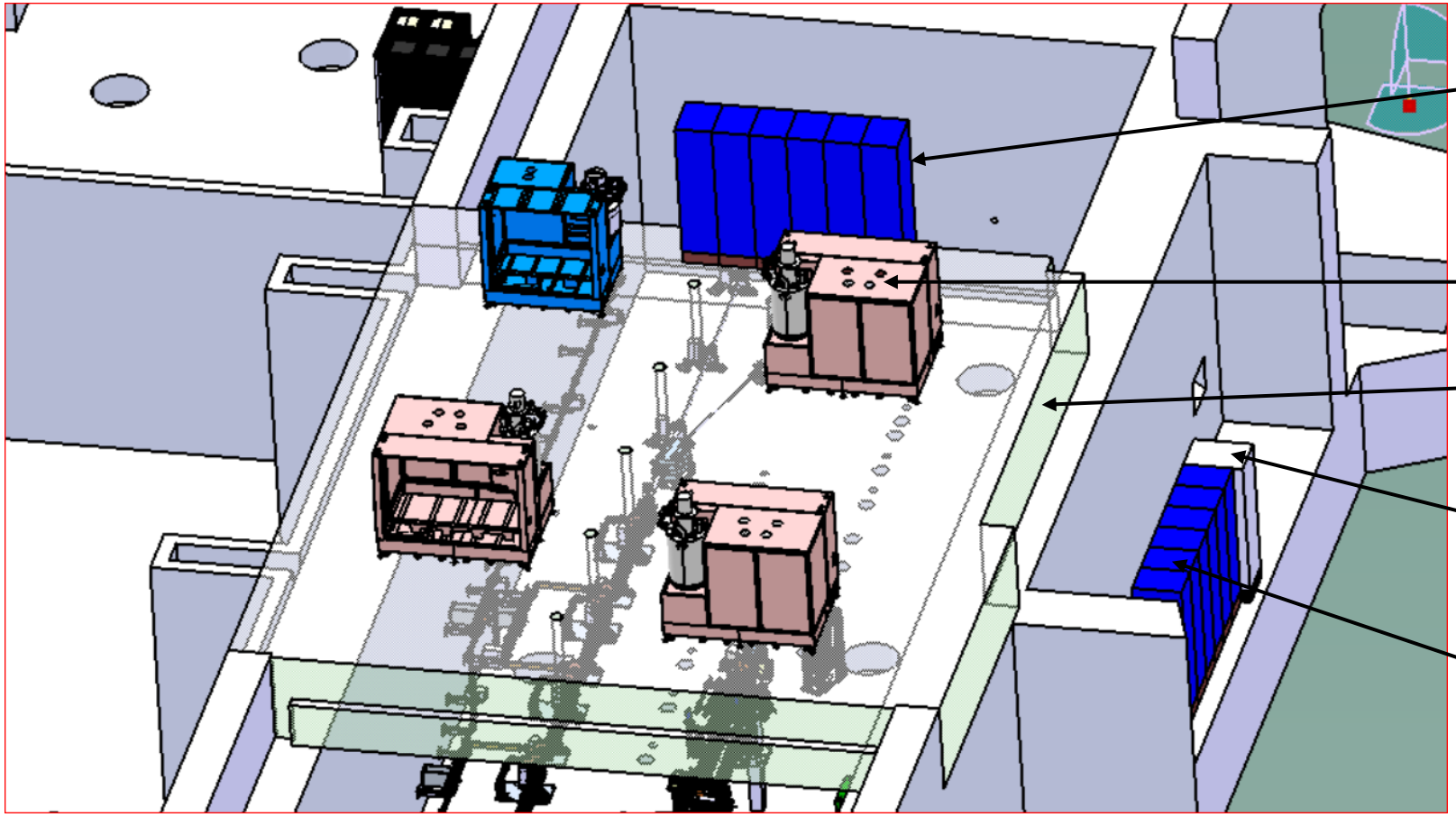
The position of the CLEAN ROOM will be on the roof on the first monolithic area.



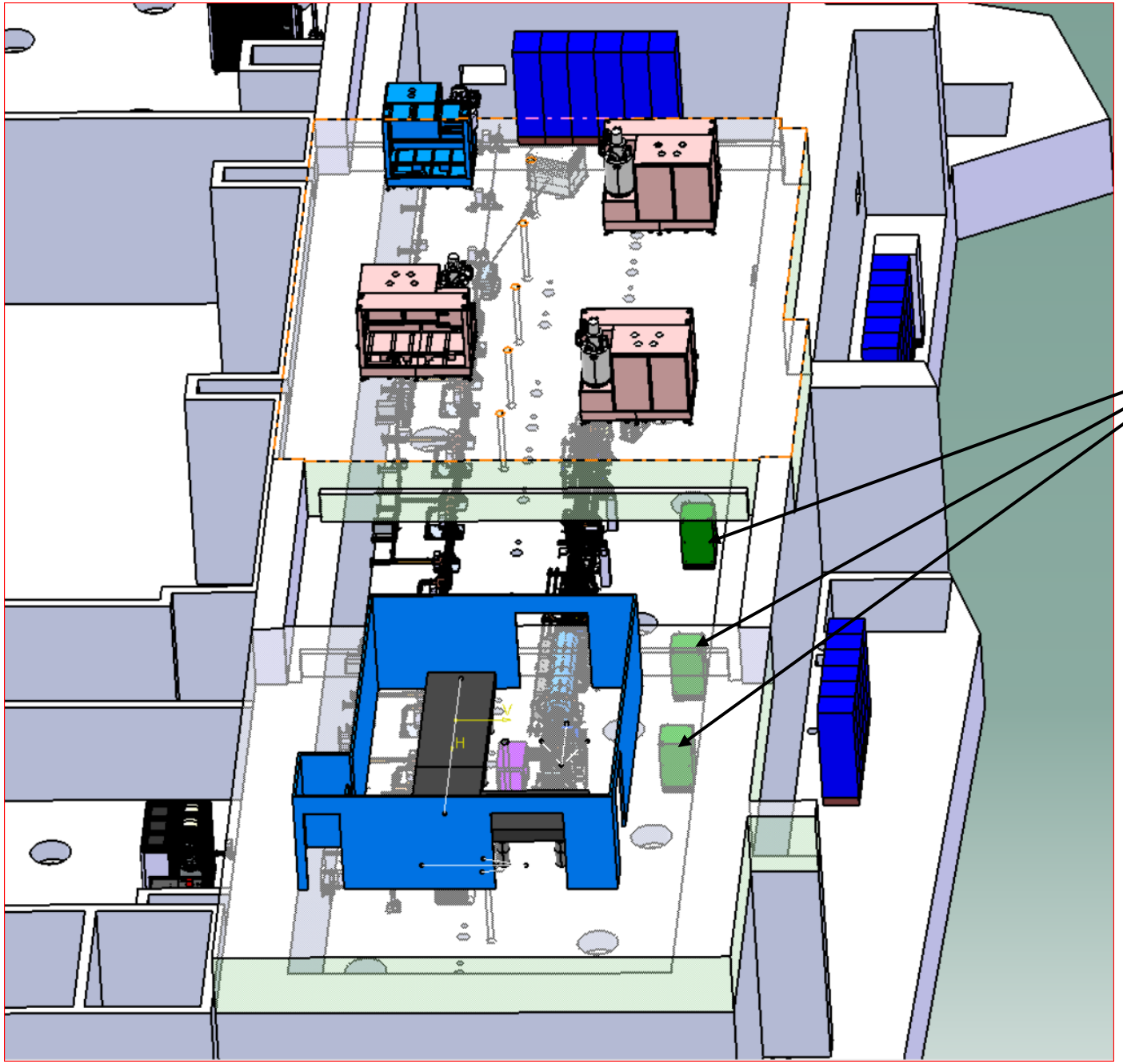
TBD: to install all racks inside E3 on two rows



Clean room position inside E3 available space analyses



TBD: to install all racks inside E3 on two rows



Precision chillers for LINAC GBS inside Ab1