

XCET Detectors East Area Detailed Description

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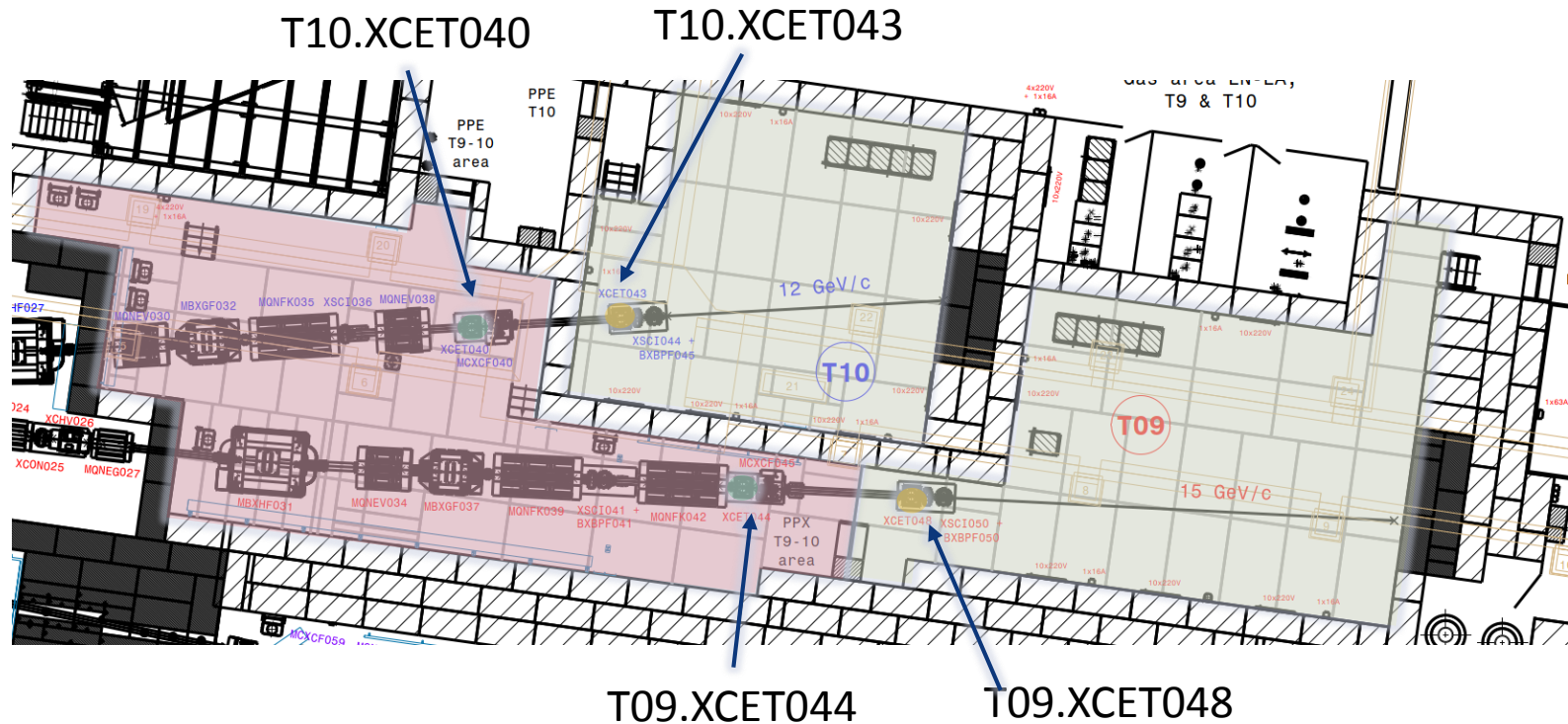


ENGINEERING
DEPARTMENT



XCET East Area

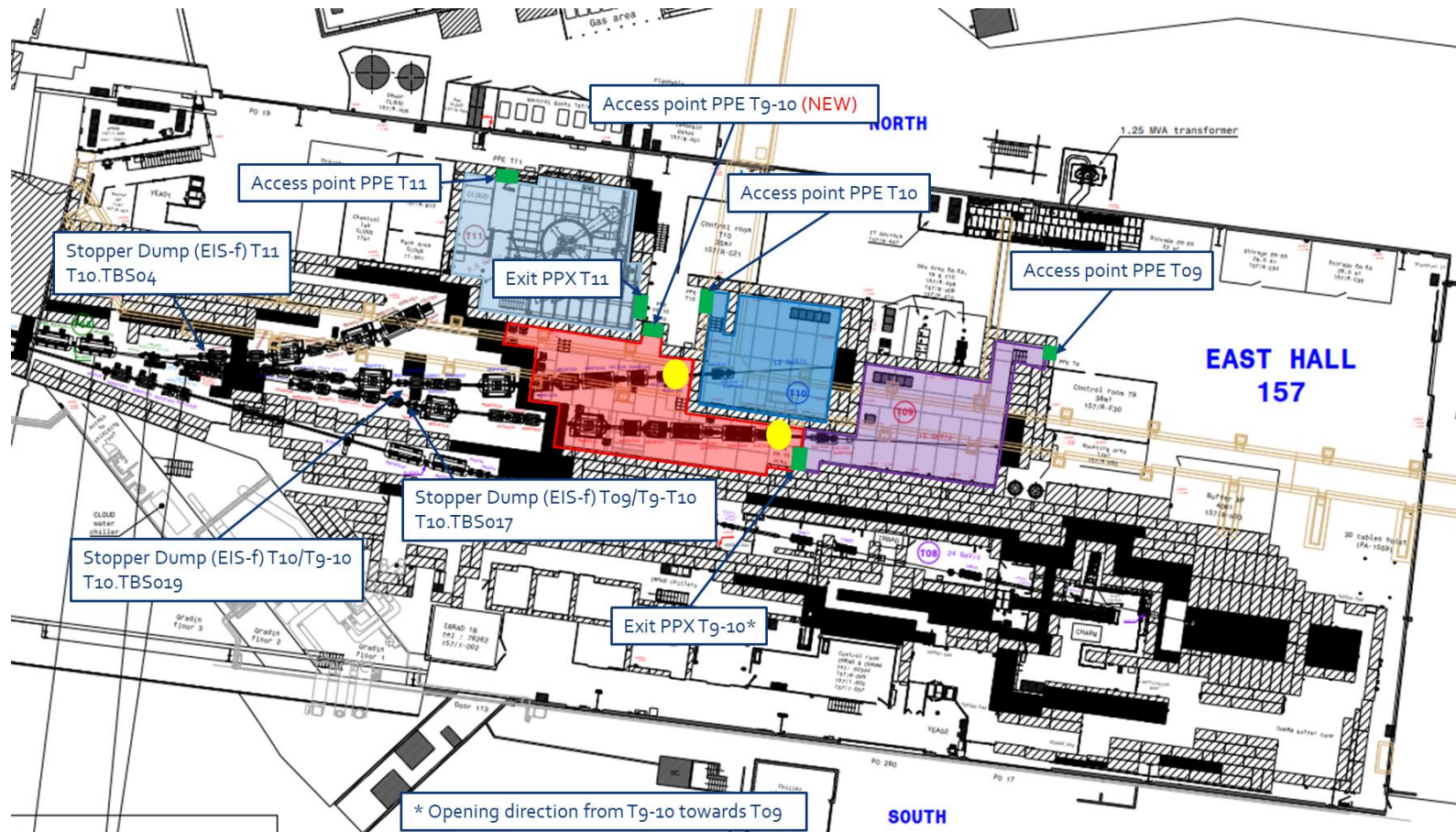
- XCET detectors *T09.XCET048* and *T10.XCET043* with limited pressure to 3.5 bar
- XCET detectors *T09.XCET044* and *T10.XCET040* with no access solution
- T09-10 area with no access while XCET ● under pressure
- Users areas with access while XCET ● under pressure



Access System

Modification of the Experimental Areas Access System and SUSI Systems Update

<https://edms.cern.ch/document/1948473/0.4>



Interlock with Access System

Needs to be identified with BE-BI and BE-ICS

- Variable of FESA class with internal pressure of XCET to be added to Tog-10 area access system
- If pressure is < 3.5 barg the access is ok ???
- If the pressure is higher, pressure should be reduced to < 3.5 barg.

N. B. THE PRESSURE REDUCING AND FILLING UP WILL TAKE TIME!!!

Open points:

- What in case of emergency access?
- Special cases in which the area needs to be access with pressure on?

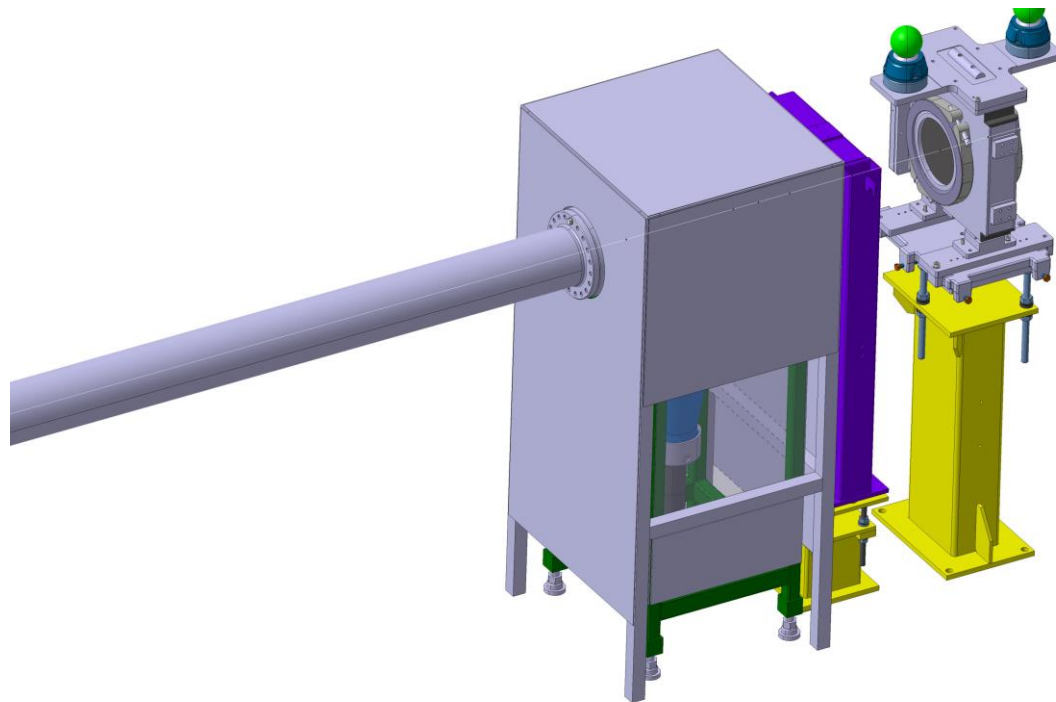
→ Request will be written into User Requirement (written by EN-EA)

Details will be present in access eng specification of the area. (written by BE-ICS)

XCET of Experimental Area

Preliminary design of Aluminum chassis pour protection of the XCET in the Experimental areas.

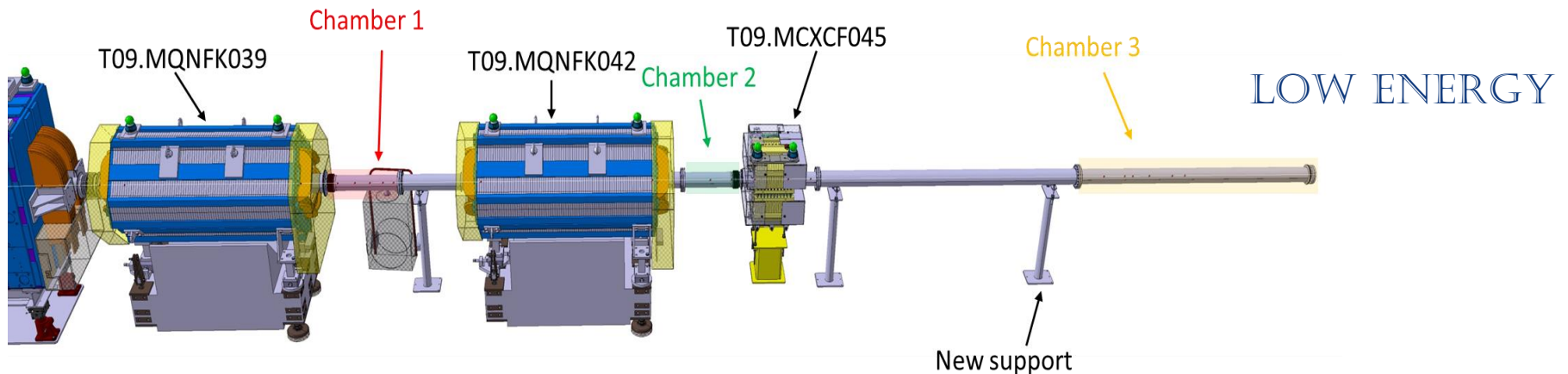
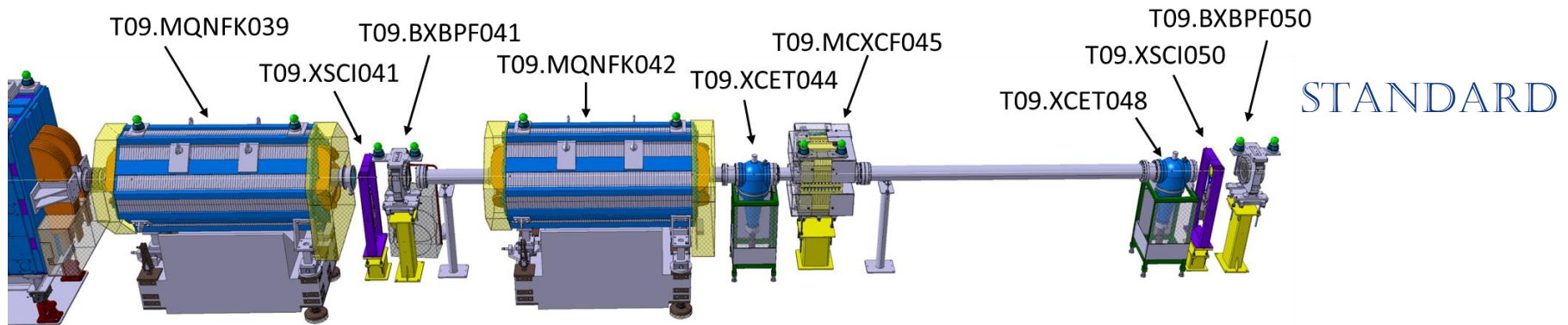
2 mm aluminum sheets



Low Energy Profile

Low-energy Beams in the Tog Beamline of the New CERN East Area

<https://edms.cern.ch/document/2370892>



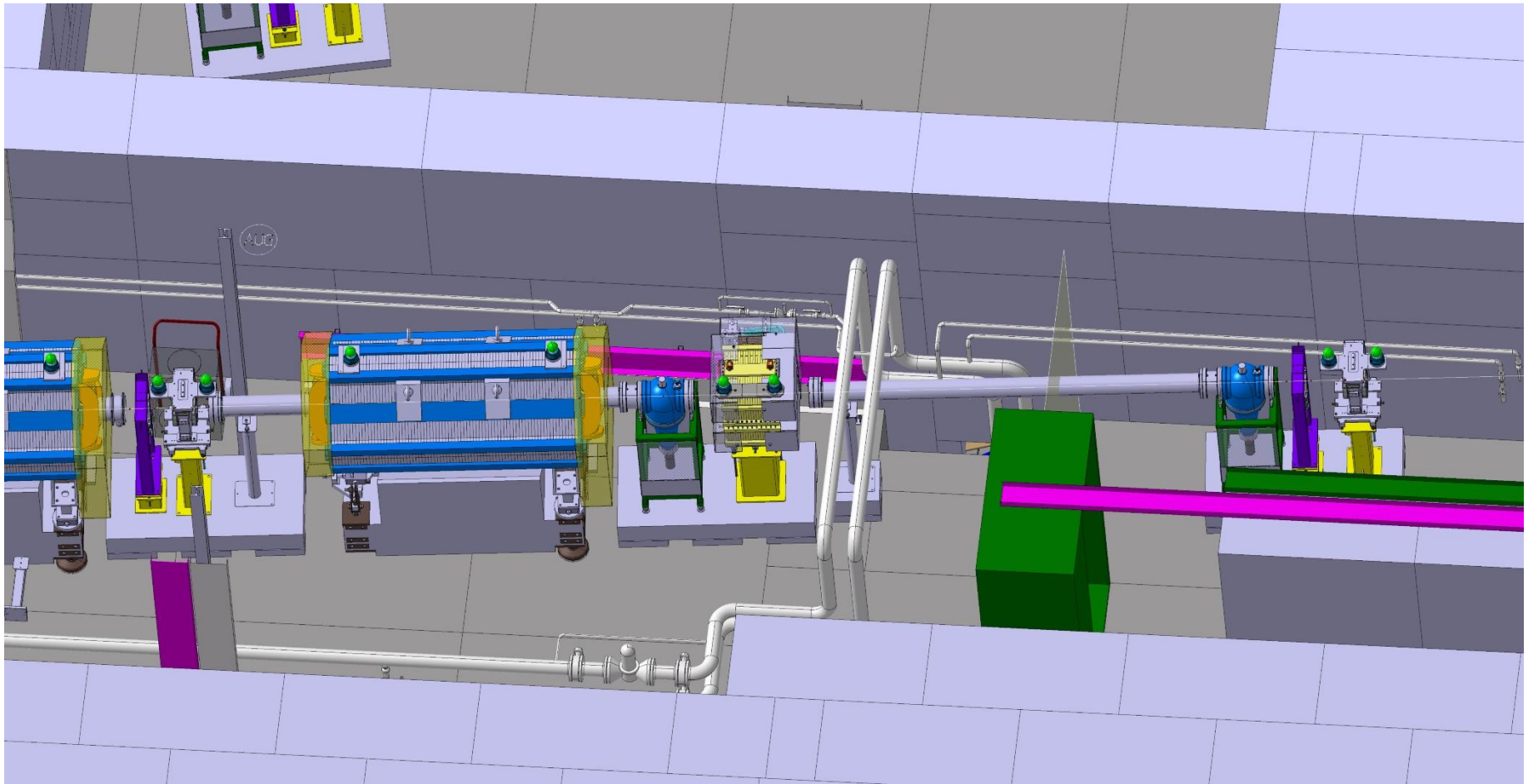
Implications for XCET

The implication of the low energy configuration changes* will be:

- The XCET detectors will partly stay in place and partly be removed: the tubes will stay on the beamline and be connected to the vacuum sector, while the beam windows and the bodies will be removed.
- The XCET gas system station need to be detached from the gas panel of the XCET to allow the removal of this from the beamline
- The XCET flanges, windows and bodies will be well identified in such a way that they will re-assembled back with the proper tubes. A special storage space will be reserved for them next to the beamline.
- Every time the standard configuration is reinstalled, the two XCET don't need the intervention of the survey group since they will be aligned with the "fil a plomb" following the marks on the ground and the 2 XSCI have plug-In supports.

*The change will happen few times per year on request of the user/physicists with a one-month prior notice to allow the organization of the changes. The change will happen during the Wednesdays beam break.

XCET Line Tog



XCET East Area Details

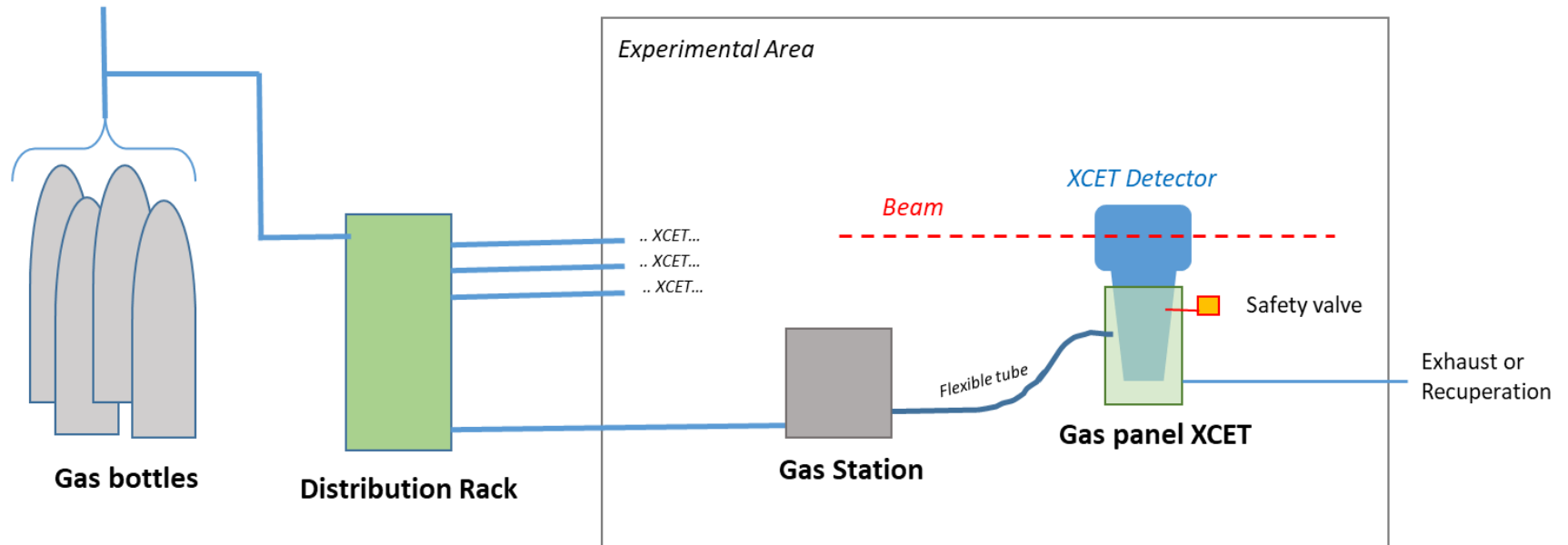
Beamline	Functional Position	Technical Drawing	Pressure (bar (g))	Diameter (mm)	Length Chamber* (mm)	Pressure Category**	Gas Type
T9	T09.XCET044	SPSXCET_0007	15	DN150 (168.3mm)	3280	III	N2/CO2/R134a/R218
T9	T09.XCET048	SPSXCET_0008	3.5	DN150 (168.3mm)	3115	II	N2/CO2/R134a/R218
T10	T10.XCET040	SPSXCET_0009	15	DN150 (168.3mm)	2975	III	N2/CO2/R134a/R218
T10	T10.XCET043	SPSXCET_0010	3.5	DN150 (168.3mm)	2595	II	N2/CO2/R134a/R218

* For the total length of the XCET: the length of the upstream window flange (104 mm) and the downstream conical body + window (576 mm) should be added.

** The Pressure Equipment Directive (PED) is a European Union Directive applicable to the design, manufacture and conformity assessment of pressure equipment and assemblies of pressure equipment with a maximum allowable pressure greater than 0.5 barg. The higher the level of hazard, the more extensive the level of quality assurance required during the design, manufacture and testing of the equipment.

Gas System

Gas network of building



XCET Requirements EDMS 2114239 and EDMS 2192779

The technical requirements for the gas supply of the XCET are the following:

- Maximum gas pressures 3.5 bar(g) / 15 bar(g)
- Precision: ± 20 mbar
- Average leak rate: ≤ 0.034 mbar l/s
- Filling speed: ≤ 1 hour for 15 bar(g)
- Vacuum level: $\leq 5 \cdot 10^{-2}$ bar
- Gas quality/purity: Experimental quality or better

Thank you!

