XCET Detectors East Area General Overview

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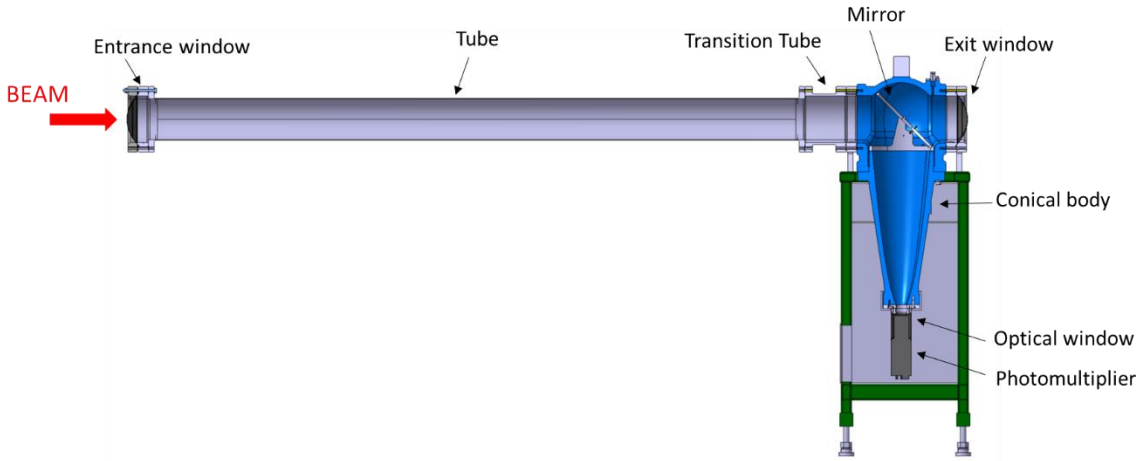
SCOPE of the REVIEW

EQUIPMENT READINESS REVIEW

The main scope of **production readiness reviews** is to assess the **production readiness** and the ability to start the **production** phase

- Introduction and explanation of the XCET in the context of the East Area
- Details of components and systems
- Review tests and studies done so far
- Find open points and eventual showstoppers
- Find missing information and documents

XCET Detector



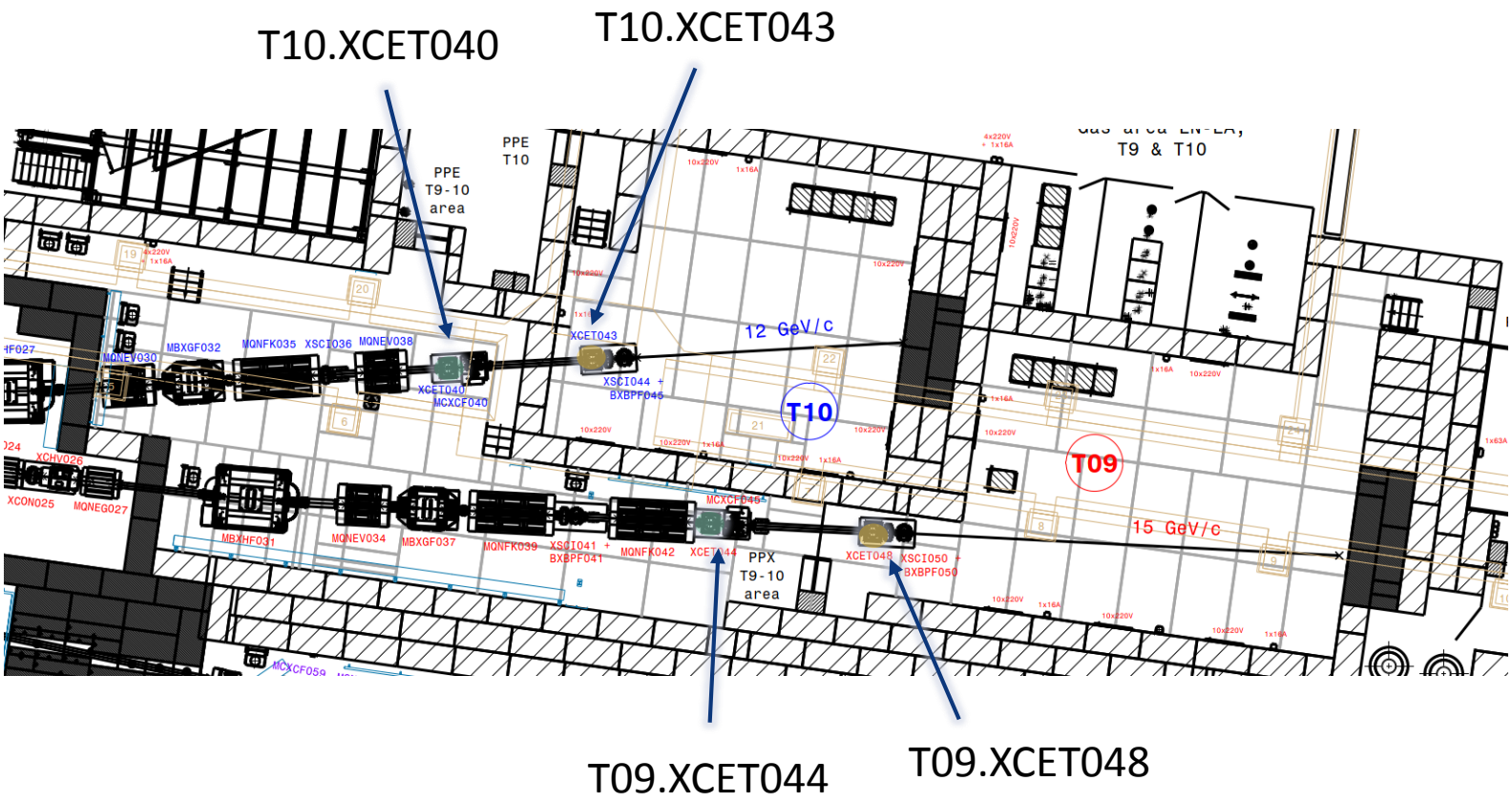
The threshold Cherenkov Detectors (XCET) is a detector used in the Experimental areas at CERN to count the number of selected particles in the beam.

It is based on the detection of Cherenkov radiation emitted by a relativistic charged particle traversing a medium with a speed higher than the speed of light in that medium.

The XCET detector is composed of a horizontal tube filled with the required gas, thin entrance and exit windows traversed by the particle beam, a mirror at 45°, a body made of a spherical head and a conical part (in blue in the picture) leading to an optical window followed by a photomultiplier. The Cherenkov light is produced inside the tube by the interplay between the gas and the particles. At the end of the gas volume, a thin mirror is deflecting the light towards the optical glass window behind which the photomultiplier is located.

XCET East Area

In the framework of the East Area Renovation Project, the 4 XCET detectors of the East Area beamlines have been dismounted. Together with the reinstallation of the beamlines, the 4 XCET will be reinstalled in the lines after a complete renovation.



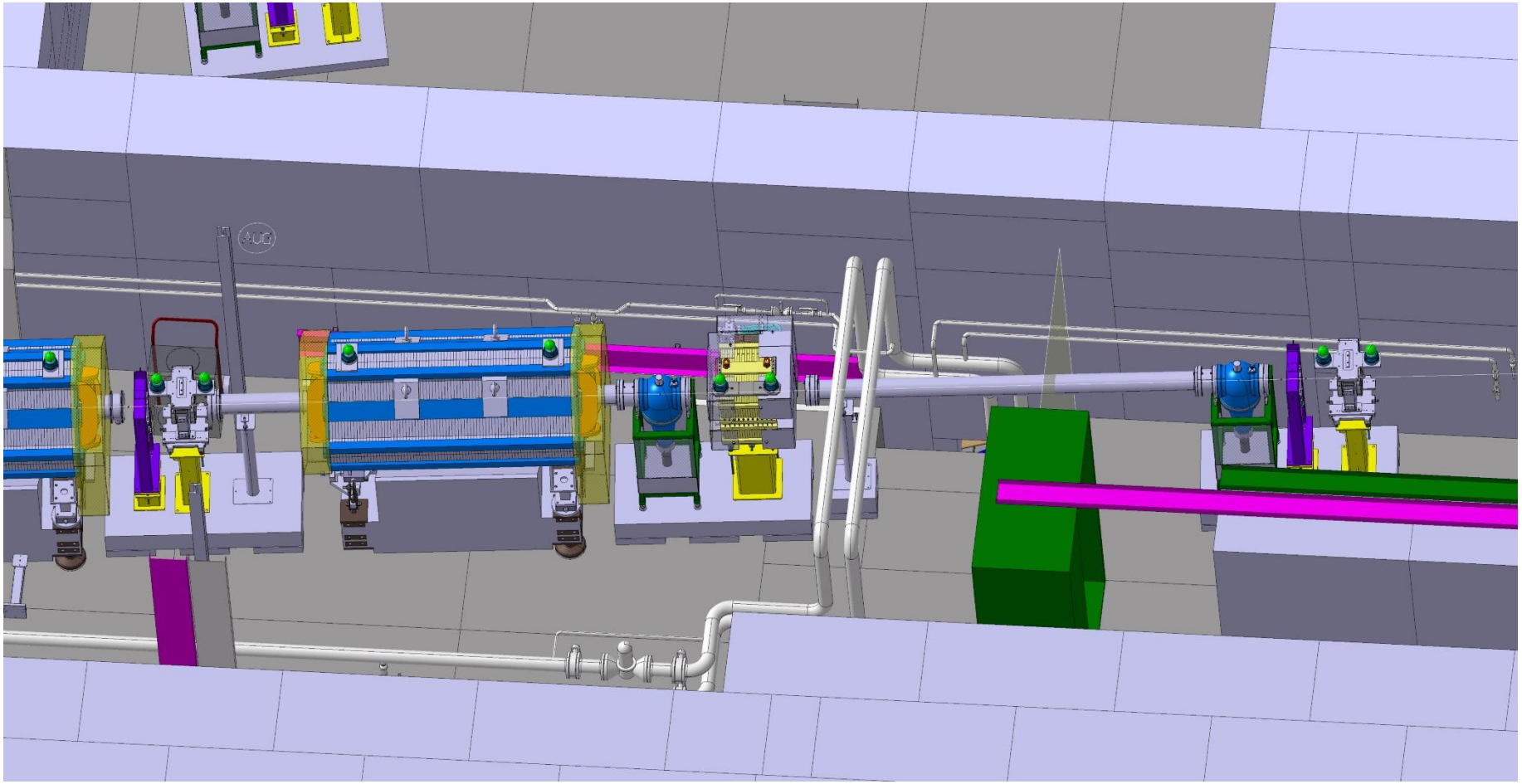
XCET East Area Details

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

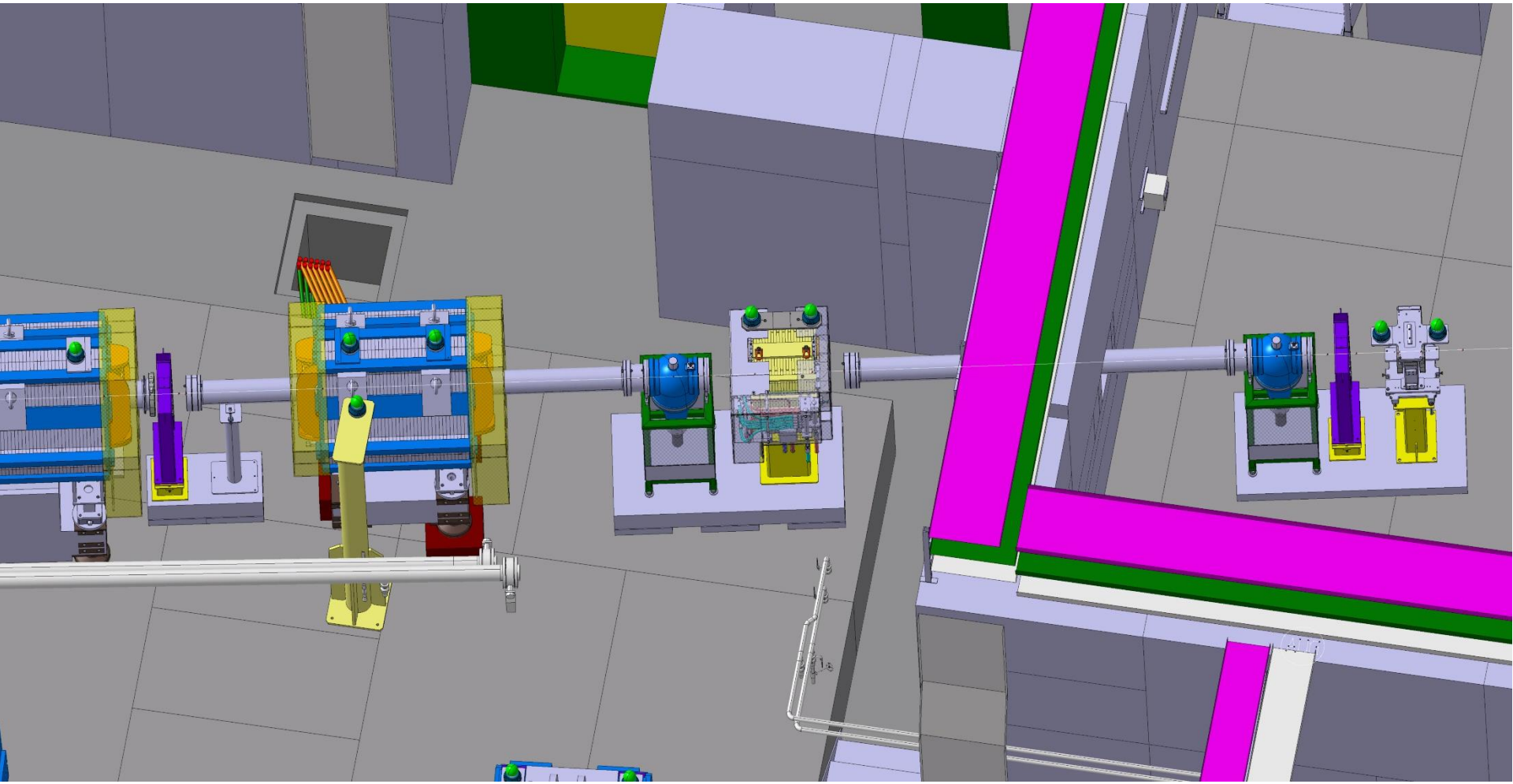
* For the total length of the XCET: the length of the upstream window flange (104 mm) and the downstream conical body + window (576 mm) should be added.

** 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.

XCET Line To9



XCET Line T10



Thank you!