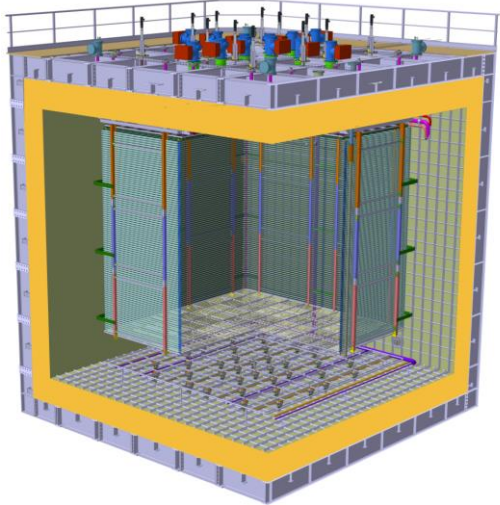


Design Overview, Cryostat Penetrations

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ETH zürich

01.02.2017



• Detector Design

- Detector Design is complete
- Position, Geometry, Detector components

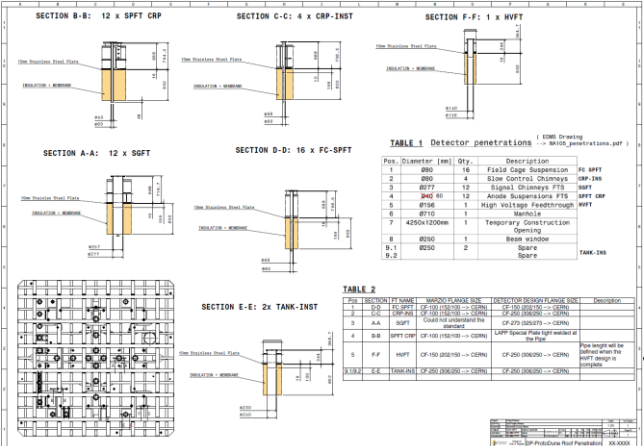
• Last Detector Details and Integration_31_01_2106.pdf

- Summary of the main Detector Items/details design status
- Pdf uploaded on the indico

• Cryostat Penetrations

- Received a proposal from Marzio concerning the length and diameter of the Crossing pipes
- Missunderstanding with the Diameter of the Crossing pipes
- Finalizing the design together with Marzio and Dimitar

DETECTOR ITEMS	ITEMS	Responsible Institute	Deadline	Status
Top FTs	ITEMS	Responsible Institute	Deadline	Status
	12 x CRP Suspension FTs	LAPP	2016 Nov.	DONE
	16 x FC Suspension FTs	ETHZ	2016 Nov.	Almost Done
	4 x CRP-ins. FT	not covered yet	2016 Nov.	Not Yet
	12 x SFT	ETHZ	2016 Nov.	Almost Done
	2 x Tank-ins FT	BERN	2016 Nov.	On Going
	1 x HVFT	ETHZ	2016 Nov.	Almost Done
1 x Manhole	CERN	2016 Nov.		
CRP	ITEMS	Responsible Institute	Deadline	Status
	Complete 3D design	LAPP	2016 Nov.	DONE
	CRP Cabling (Sensor to Patch Panel)	LAPP	2016 Nov.	DONE
	Slow Control Sensors	ETHZ/LAPP	2016 Nov.	DONE
	Transportation Box	ETHZ/LAPP	2016 Nov.	On going
	Assembly and Installation Procedure	LAPP	2016 Nov.	DONE
3x3 CRP Parts List and Total Weights	ITEMS	Responsible Institute	Deadline	Status
	Parts List and Total Weights	LAPP	2016 Nov.	DONE
	Structural Analysis	LAPP	2016 Nov.	DONE
DP-Field Cage	ITEMS	Responsible Institute	Deadline	Status
	Complete 3D Design	ETHZ	2016 Nov.	DONE
	Transportation Box for Modules	ETHZ	2016 Nov.	On Going
	Beam Plug Interface	ETHZ	2016 Nov.	Adapt From Single Phase
	Hanging System	ETHZ	2016 Nov.	DONE
	Electrical Components	LITA	2016 Nov.	On Going
	Assembly and Installation Procedure	LITA/ETHZ	2016 Nov.	DONE
	Parts List and Total Weights	LITA/ETHZ	2016 Nov.	DONE
	Structural Analysis	ETHZ	2016 Nov.	Preliminary done
	Cathode	ITEMS	Responsible Institute	Deadline
Complete 3D Design		ETHZ	2016 Nov.	DONE
Transportation Box for Modules		ETHZ	2016 Nov.	On Going
HVT connection		ETHZ	2016 Nov.	On Going
Assembly and Installation Procedure		ETHZ	2016 Nov.	DONE
Parts List and Total Weights		ETHZ	2016 Nov.	DONE
Structural Analysis	ITEMS	Responsible Institute	Deadline	Status
	Structural Analysis	ETHZ	2016 Nov.	Preliminary Done
	Ground Grid	ITEMS	Responsible Institute	Deadline
Complete 3D Design		ETHZ	2016 Nov.	DONE
Transportation Box for Modules		ETHZ	2016 Nov.	On Going
Assembly and Installation Procedure		ETHZ	2016 Nov.	DONE
Parts List and Total Weights		ETHZ	2016 Nov.	DONE
Structural Analysis		ETHZ	2016 Nov.	Preliminary Done
PARTS	ITEMS	Responsible Institute	Deadline	Status
	Complete 3D Design	CEMAT/IFAE	2016 Nov.	DONE
	Final Position of the PARTS	CEMAT/IFAE	2016 Nov.	1 Layout
	Firing System at the Membrane	CEMAT/IFAE	2016 Nov.	DONE
	Cable Route	CEMAT/IFAE	2016 Nov.	DONE
	Assembly and Installation Procedure	CEMAT/IFAE	2016 Nov.	DONE
	Parts List and 2D Drawings	CEMAT/IFAE	2016 Nov.	DONE
Internal Instrumentation	ITEMS	Responsible Institute	Deadline	Status
	Crab Cameras	ETHZ	2016 Nov.	DONE
	LEDs	ETHZ	2016 Nov.	DONE
	Purity Monitors	UCL	2016 Nov.	DONE
	4.4 FT Chain (Ear Level)	ETHZ	2016 Nov.	Not Yet
	Bottom Heaters	ETHZ	2016 Nov.	Not Yet
	Internal Cabling	ETHZ	2016 Nov.	Not Yet
Cryostat Interfaces	ITEMS	Responsible Institute	Deadline	Status
	Cable Trays on Top Cryostat	ETHZ	2016 Nov.	Preliminary
	Layout of Instrumentation Top of Cryostat	ETHZ	2016 Nov.	Not Integrated
	Cable Trays inside the Cryostat	ETHZ	2016 Nov.	DONE
Cable Routes inside the Cryostat	ETHZ	2016 Nov.	Preliminary	



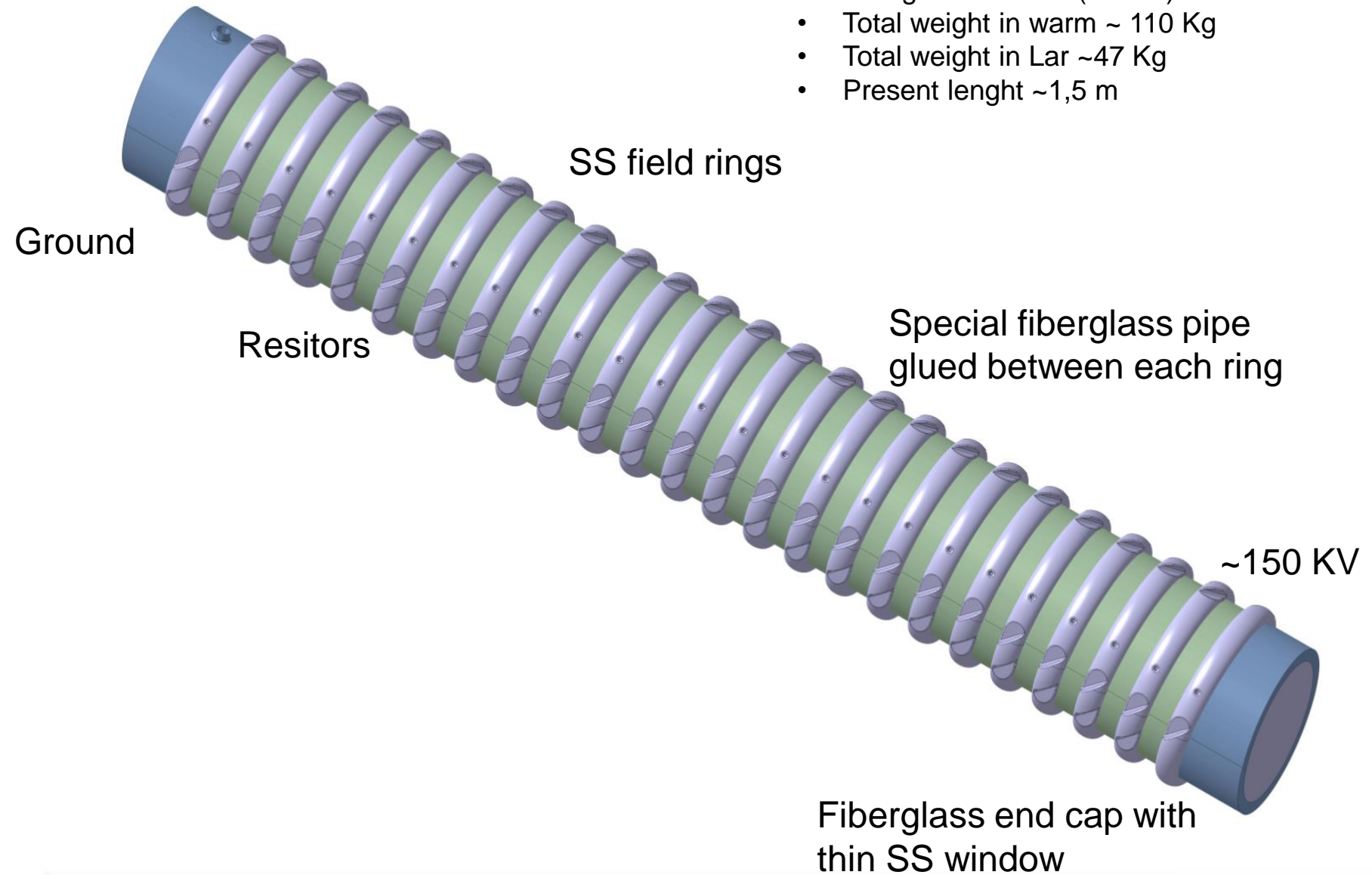
DETECTOR ITEMS	ITEMS	Responsible Institute	Deadline	Status
Top FTs				
	12 x CRP Suspension FTs	LAPP	2016 Nov.	Done
	16 x FC Suspension FTs	ETHZ	2016 Nov.	Almost Done
	4 x CRP-Ins. FT	not covered yet	2016 Nov.	Not Yet
	12 x SGFT	ETHZ	2016 Nov.	Almost Done
	2 x Tank-Ins FT	BERN	2016 Nov.	On Going
	1 x HVFT	ETHZ	2016 Nov.	Almost Done
	1 x Manhole	CERN	2016 Nov.	

CRP	ITEMS	Responsible Institute	Deadline	Status
	Complete 3D design	LAPP	2016 Nov.	DONE
	CRP Cabling (sensor to Patch Panel)	LAPP	2016 Nov.	DONE
	Slow Control Sensors	ETHZ/LAPP	2016 Nov.	DONE
	Transportation Box	ETHZ/LAPP	2016 Nov.	On going
	Assembly and Installation Procedure	LAPP	2016 Nov.	DONE
	3x3 CRP Parts List and Total Weight	LAPP	2016 Nov.	DONE
	Structural Analysis	LAPP	2016 Nov.	DONE

DP-Field Cage	ITEMS	Responsible Institute	Deadline	Status
	Complete 3D Design	ETHZ	2016 Nov.	DONE
	Transportation Box for Modules	ETHZ	2016 Nov.	On Going
	Beam Plug Interface		2016 Nov.	Adapt From Single Phase
	Hanging System	ETHZ	2016 Nov.	DONE
	Electrical Components	UTA	2016 Nov.	On Going
	Assembly and Installation Procedure	UTA/ETHZ	2016 Nov.	DONE
	Parts List and Total Weight	UTA/ETHZ	2016 Nov.	DONE
	Structural Analysis	ETHZ	2016 Nov.	Preliminary done

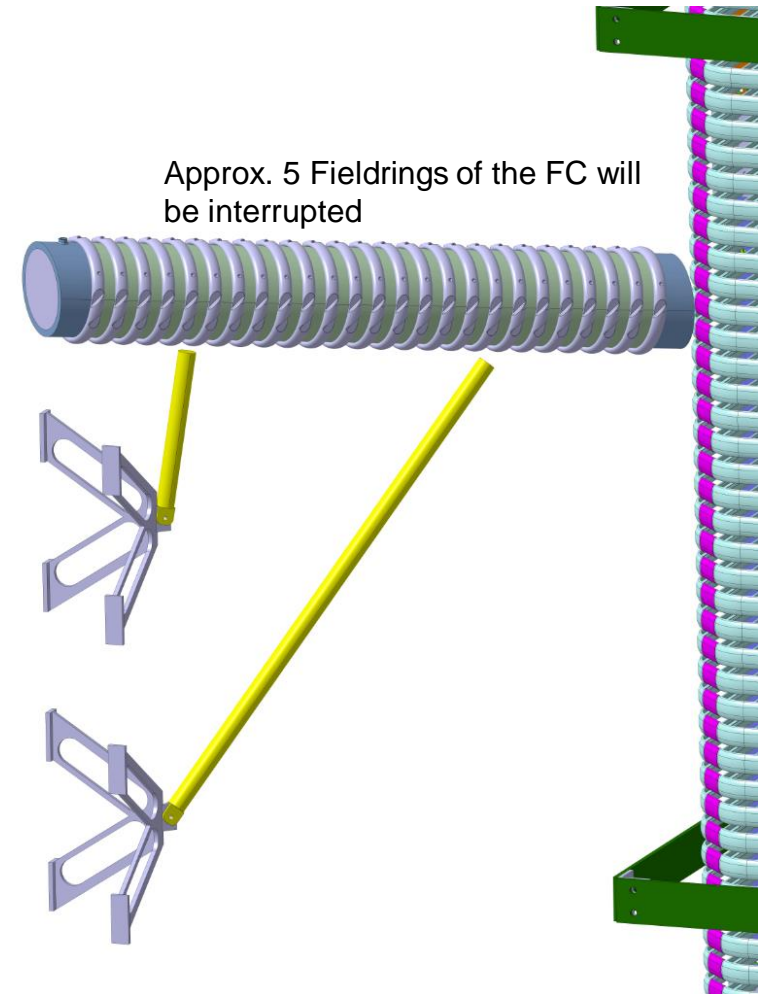
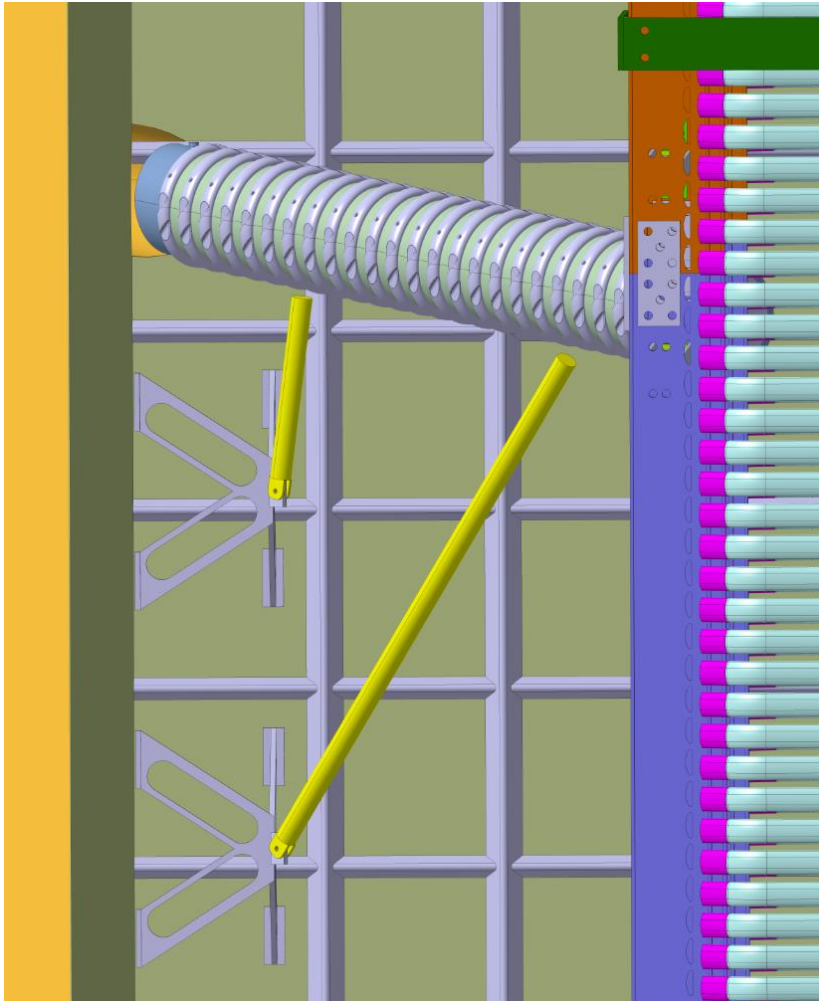
Cathode	ITEMS	Responsible Institute	Deadline	Status
	Complete 3D Design	ETHZ	2016 Nov.	DONE
	Transportation Box for Modules	ETHZ	2016 Nov.	On Going
	HVFT connection	ETHZ	2016 Nov.	On Going
	Assembly and Installation Procedure	ETHZ	2016 Nov.	DONE
	Parts List and Total Weight	ETHZ	2016 Nov.	DONE
	Structural Analysis	ETHZ	2016 Nov.	Preliminary Done

- Design from SP
- Removed connection Flange at the FC
- Nitrogen Gas Inlet (~1 bar)
- Total weight in warm ~ 110 Kg
- Total weight in Lar ~47 Kg
- Present length ~1,5 m



Beam Plug Proposal

- Supports Points at the Membrane same as for the Internal Piping
- 110 Kg supportet in 8 points at the membrane → ~14 Kg each (Internal pipe ~30kg)
- Still need to be discussed with Marzio
- Length of the Beam Pipe still need to be defined (how much should enter through the Field Cage)



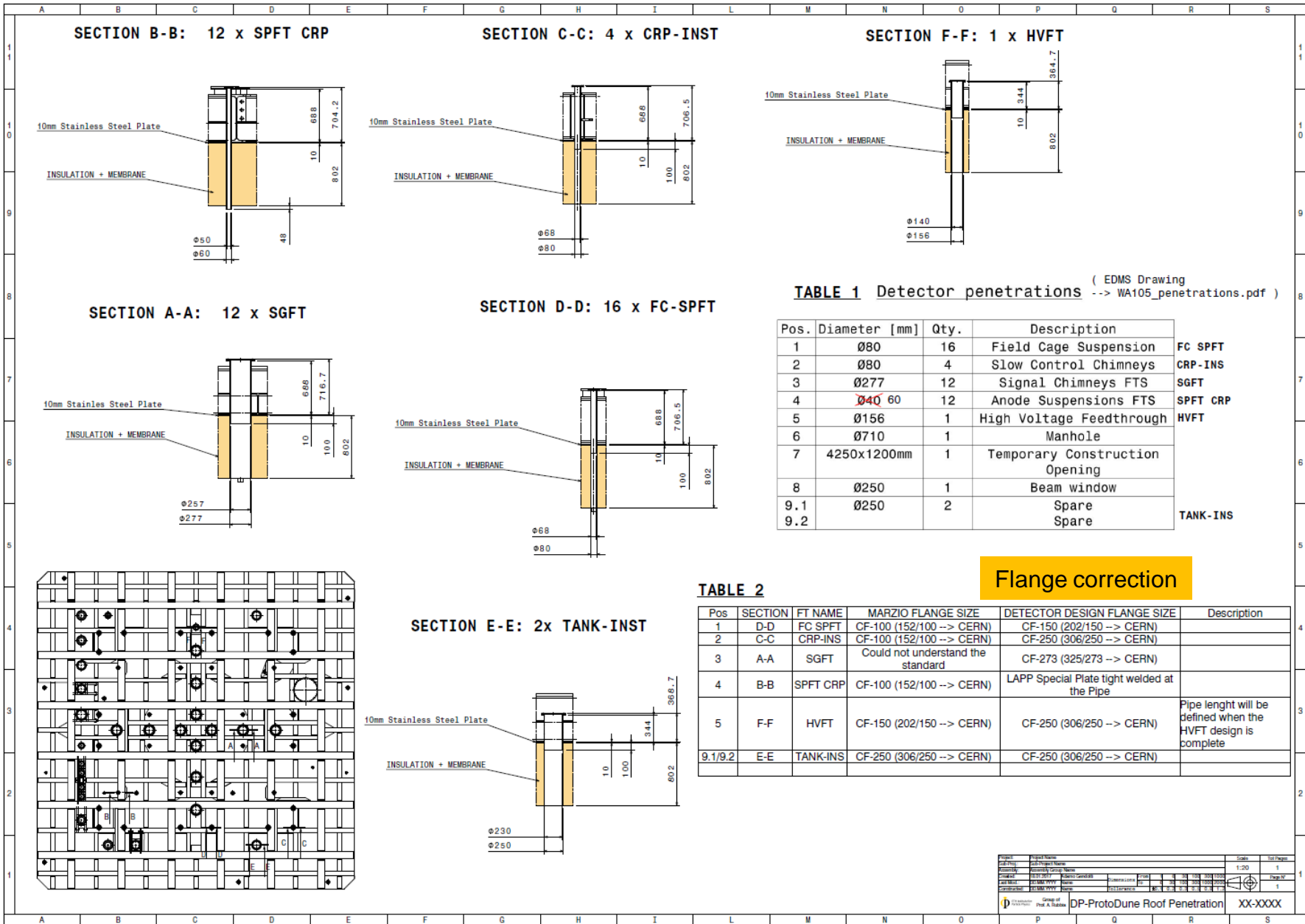
Ground Grid	ITEMS	Responsible Institute	Deadline	Status
	Complete 3D Design	ETHZ	2016 Nov.	DONE
	Transportation Box for Modules	ETHZ	2016 Nov.	On Going
	Assembly and Installation Procedure	ETHZ	2016 Nov.	DONE
	Parts List and Total Weight	ETHZ	2016 Nov.	DONE
	Structural Analysis	ETHZ	2016 Nov.	Preliminary Done

PMTs	ITEMS	Responsible Institute	Deadline	Status
	Complete 3D Design	CIEMAT/IFAE	2016 Nov.	DONE
	Final Position of the PMTs	CIEMAT/IFAE	2016 Nov.	2 Layout
	Fixing System at the Membrane	CIEMAT/IFAE	2016 Nov.	DONE
	Cable Route	CIEMAT/IFAE	2016 Nov.	DONE
	Assembly and Installation Procedure	CIEMAT/IFAE	2016 Nov.	DONE
	Parts List and 2D Drawings	CIEMAT/IFAE	2016 Nov.	DONE

Internal Instrumentation	ITEMS	Responsible Institute	Deadline	Status
	Cryo Cameras	ETHZ	2016 Nov.	DONE
	LEDs	ETHZ	2016 Nov.	DONE
	Purity Monitors	UCL		DONE
	4 x PT Chain (Lar Level)	ETHZ	2016 Nov.	Not Yet
	Bottom Heaters	ETHZ		Not Yet
	Internal Cabling	ETHZ		Not Yet

Cryostat Interfaces	ITEMS	Responsible Institute	Deadline	Status
	Cable Trays on Top Cryostat	ETHZ		Preliminary
	Layout of Instrumentation Top of Cryostat	ETHZ		Not Integrated
	Cable Trays inside the Cryostat	ETHZ	2016 Nov.	DONE
	Cable Route inside the Cryostat	ETHZ		Preliminary

Cryostat Penetrations



Drawing uploaded on the indico

Cryostat Penetrations

- Length of the Crossing pipes on top of the Cryostat checked OK
- Flange of each Crossing pipes checked → Corrections sent OK
- HV feedthrough → Length of the HVFT Crossing pipe not yet defined

Diameter that could be changed

- Anode suspension FTS (position 4, section BD) --> 60 mm
- Slow Control Chimneys (position 2, section CC) --> 80 mm
- HV feedthrough (position 5, section FF) --> the inner diameter should be at least 148 mm

Diameter that could not be changed

- The signal chimneys FTS (position 3, section AA) Need to reduce the thickness of the pipe in order to gain 2mm
- Tank instrumentation FTS (positions 9.1, 9.2, section EE) OK
- Field cage suspension (position 1, section DD) OK

Thank you.....