

VXD-clean-room-activities

Equipment and helpful devices

DEPFET Meeting

Schloss Ringberg / Germany, 10.04.2018



MAX-PLANCK-GESELLSCHAFT



Max-Planck-Institut für Physik
(Werner-Heisenberg-Institut)



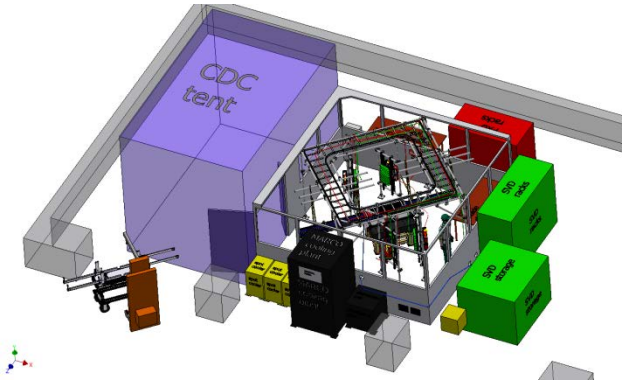
Speaker: David Kittlinger

Institute: Max-Planck-Institute for Physics, Munich/Germany

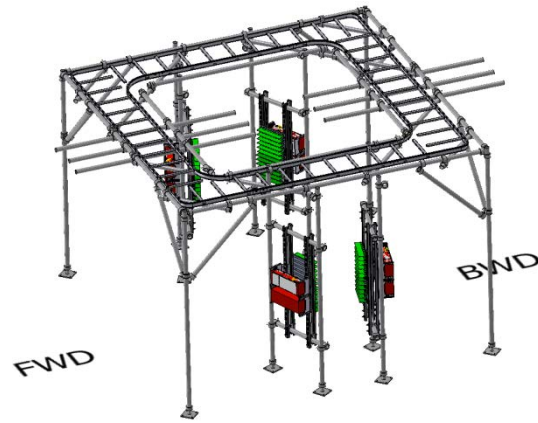
Contact: david.kittlinger@mpp.mpg.de

Overview

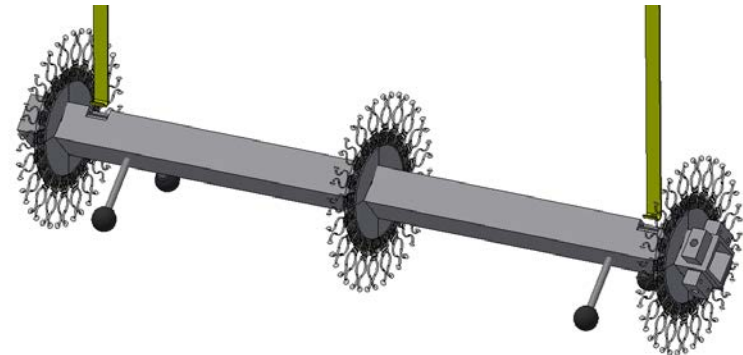
- Room disposition of VXD-clean-room area in B4



- Cable-Support-frame

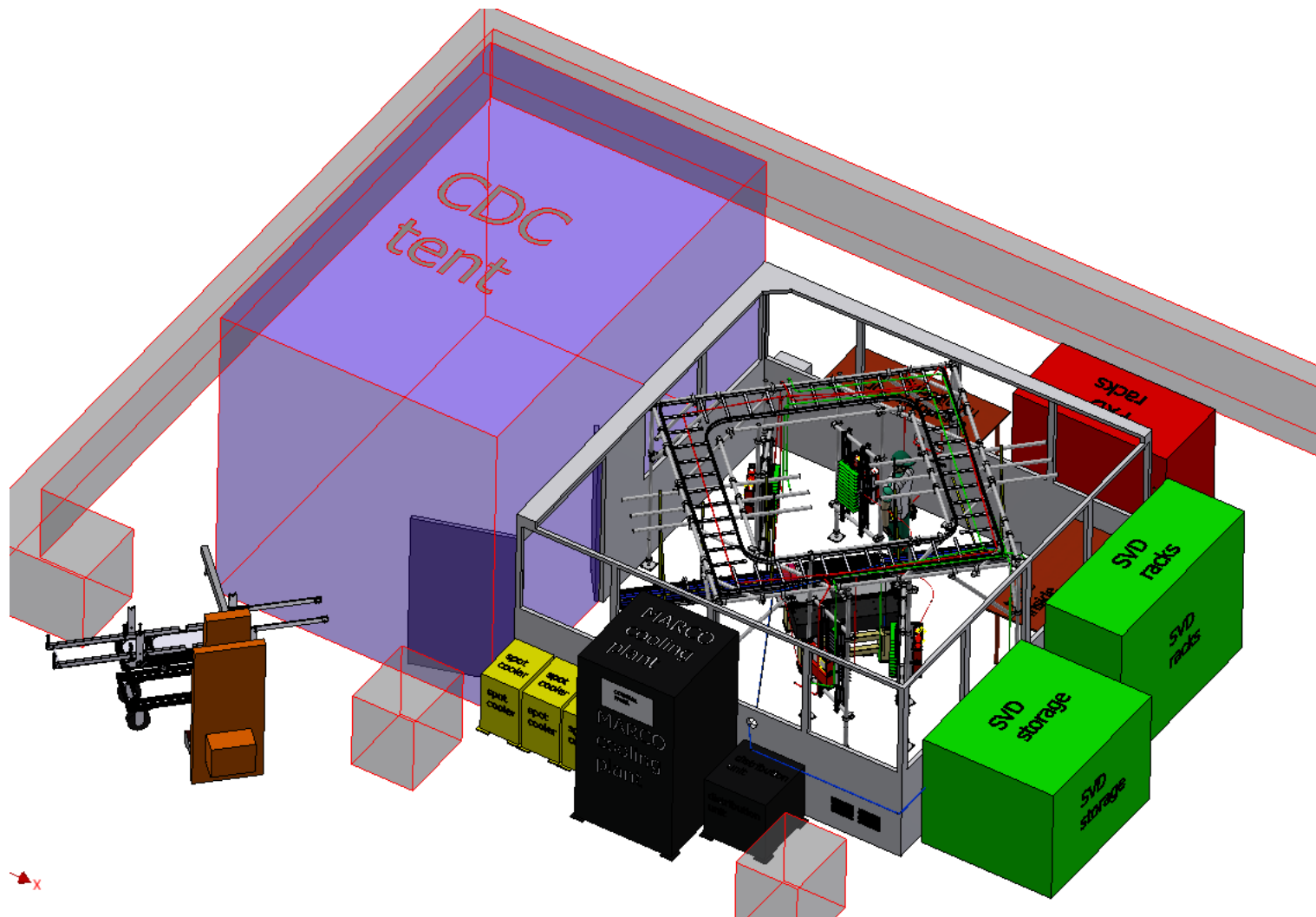


- Cable-holder-device



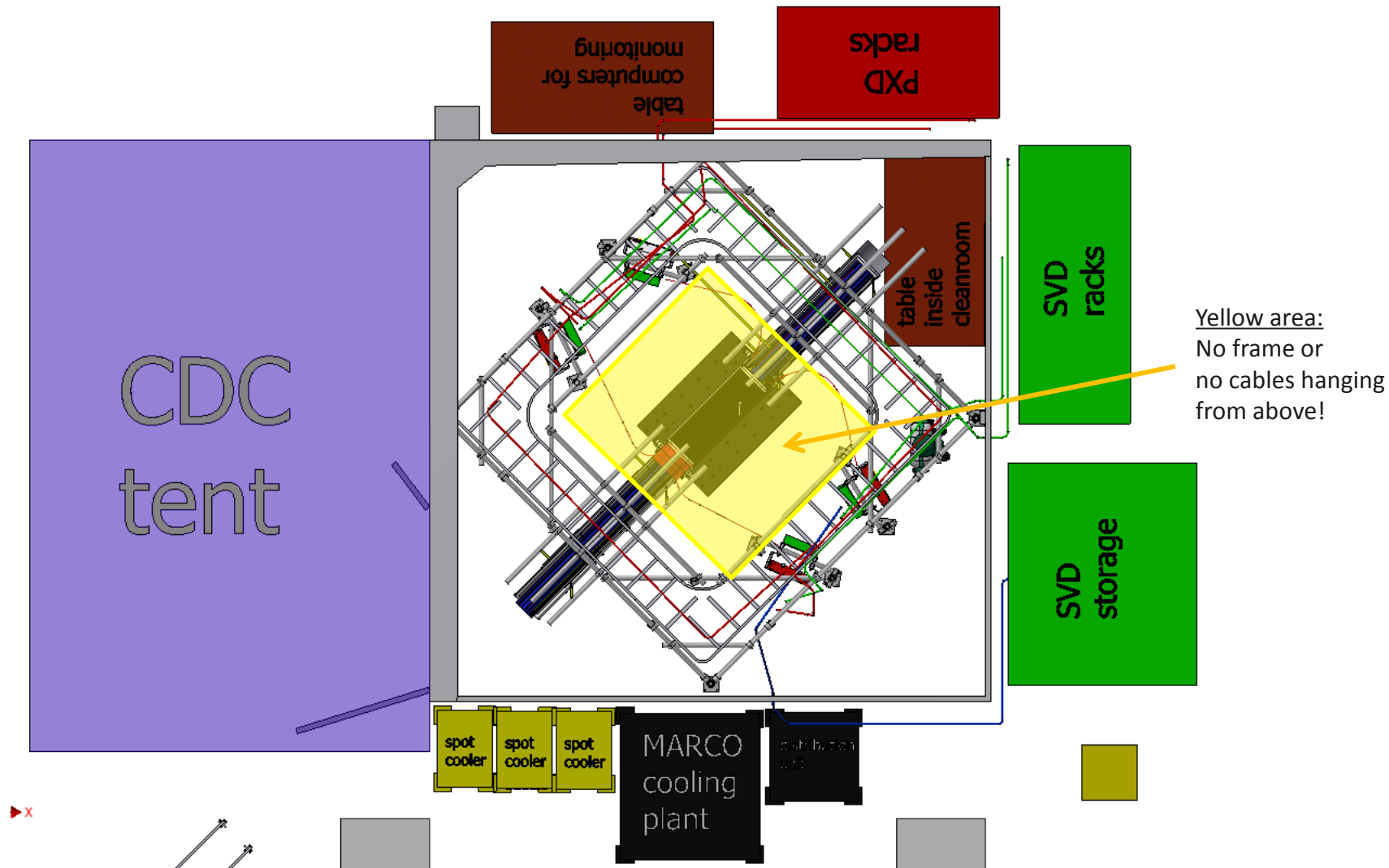
Room disposition

VXD-clean-room area in B4 – 3D-view



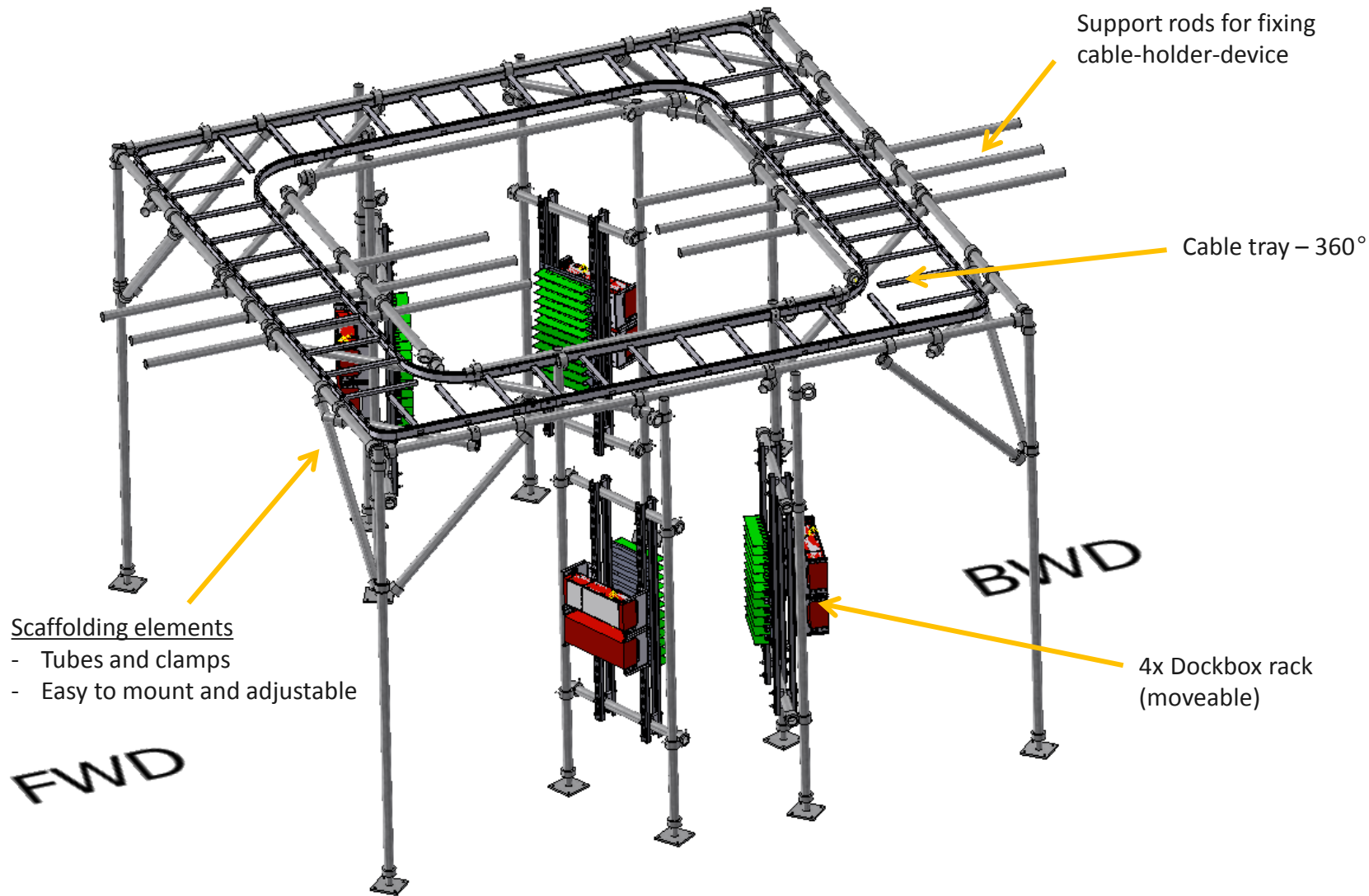
Room disposition

VXD-clean-room area in B4 – top-view



Cable-Support-frame

Structure made out of scaffolding elements



- Scaffolding elements
- Tubes and clamps
 - Easy to mount and adjustable

Support rods for fixing cable-holder-device

Cable tray – 360°

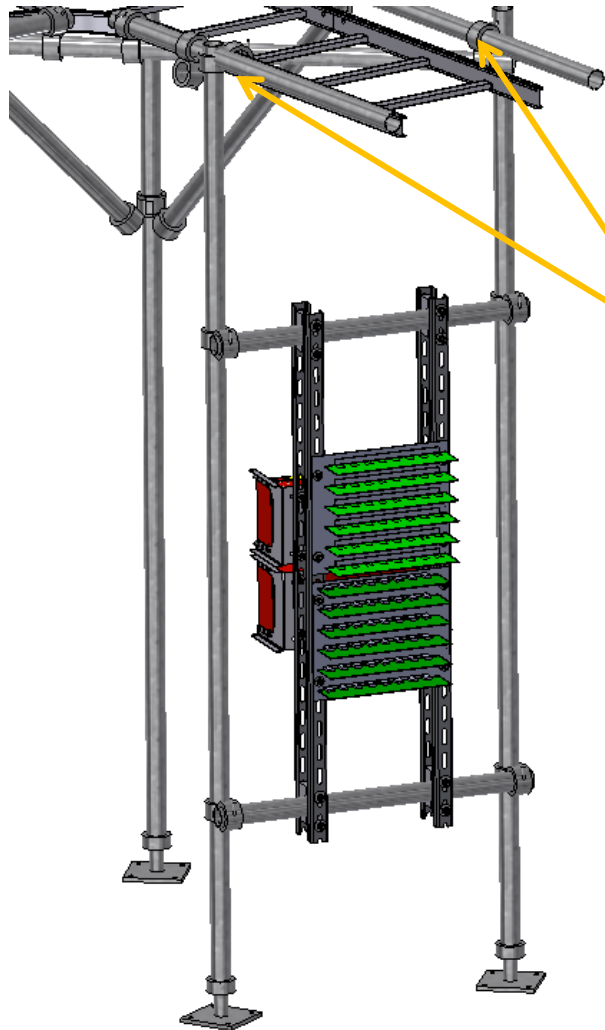
4x Dockbox rack (moveable)

FWD

BWD

Cable-Support-frame

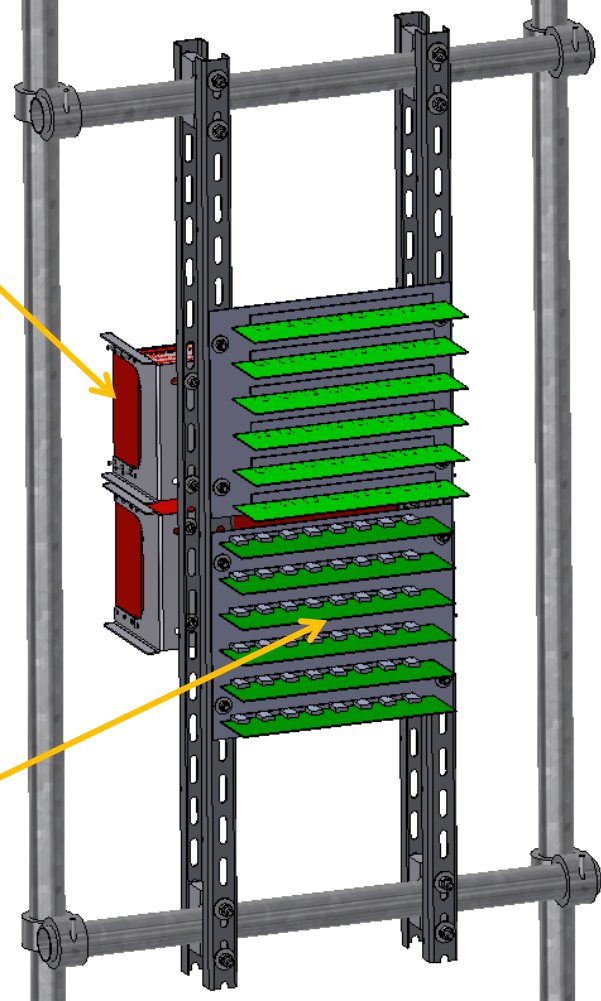
Dockbox pedestals



Fixed with
the frame

PXD dock boxes

SVD dock boxes



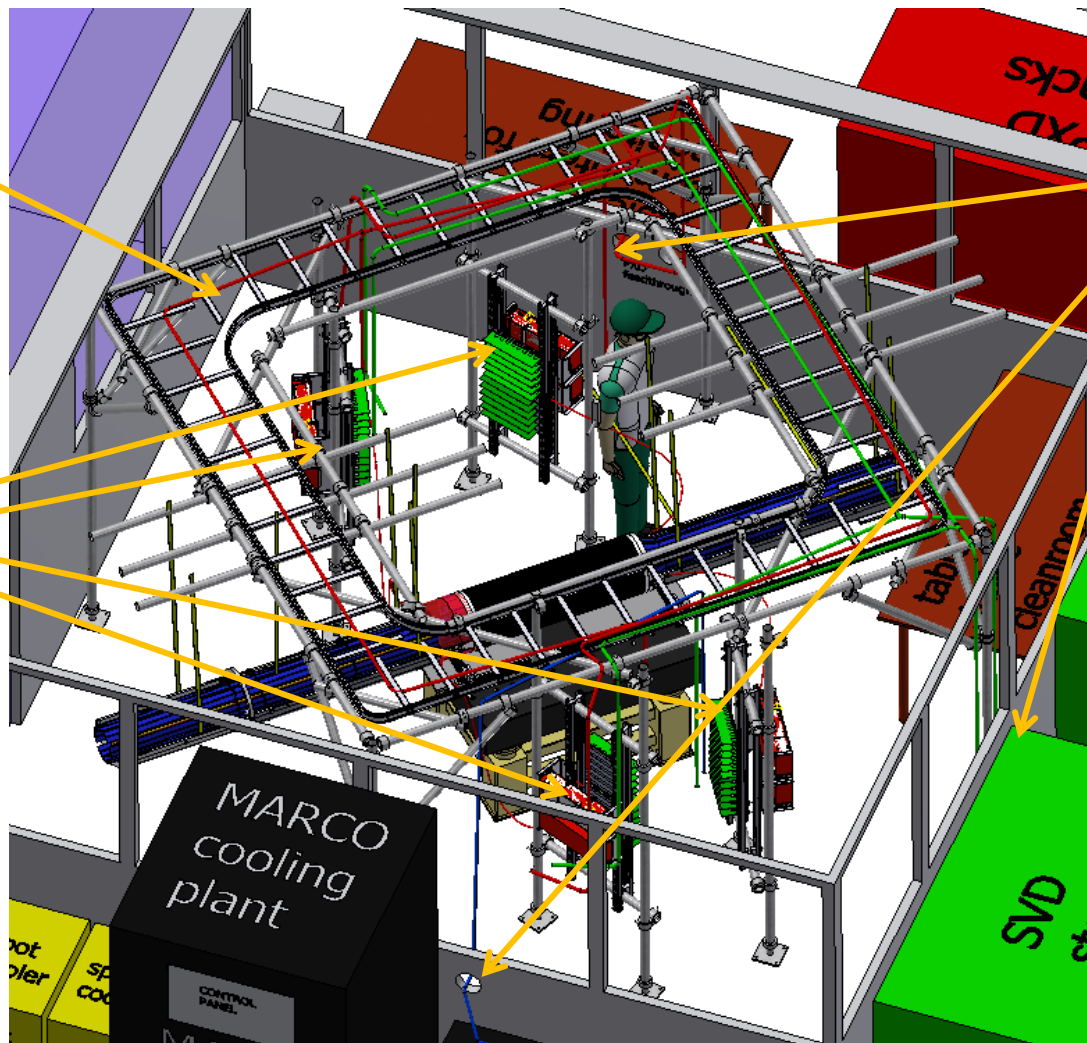
Cable-Support-frame

The structure inside the clean-room

Cable trays on top will guide the cables

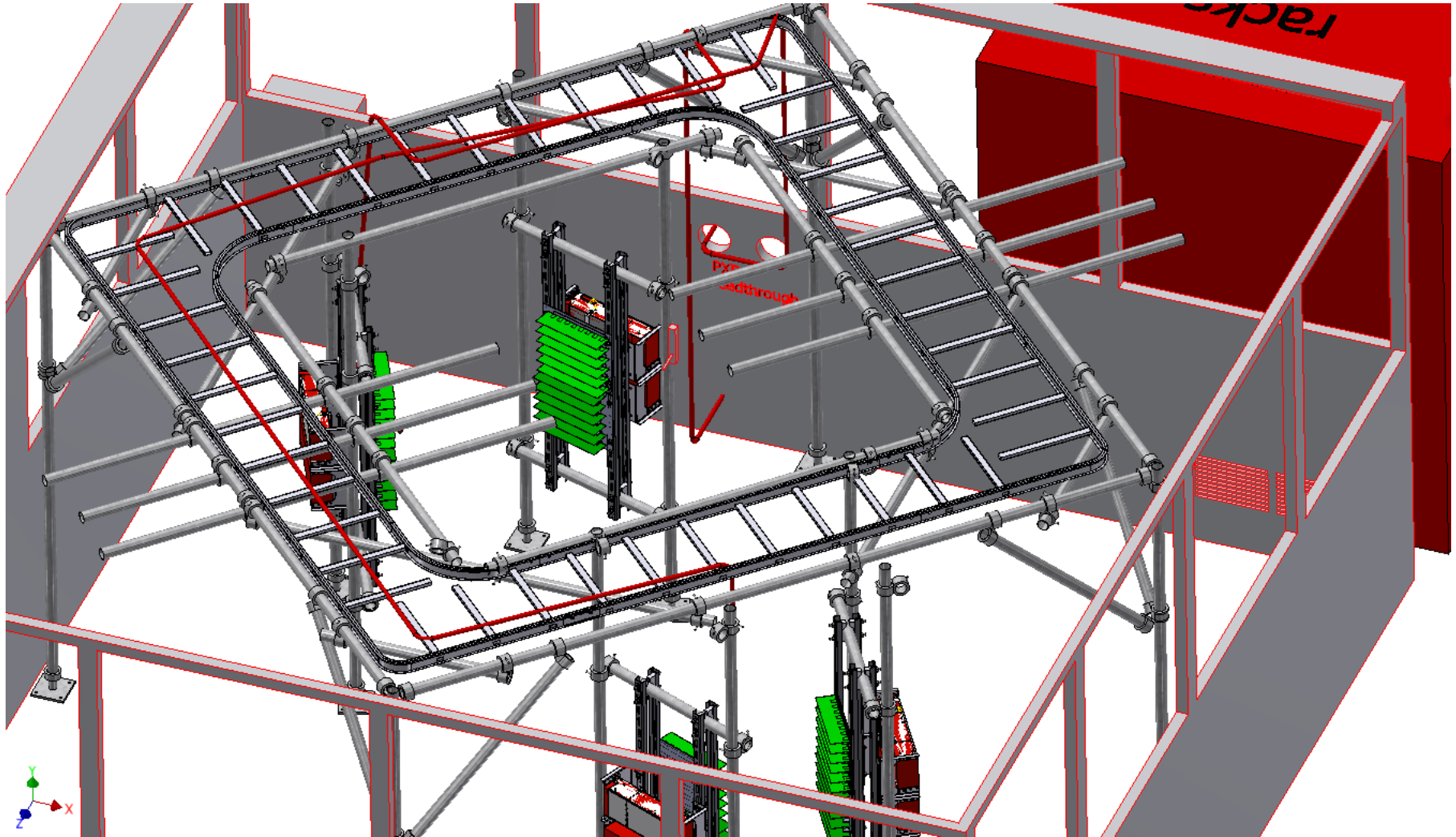
Four dock box racks will hold the dock boxes

Three cable-feed-throughs into the clean-room from the racks



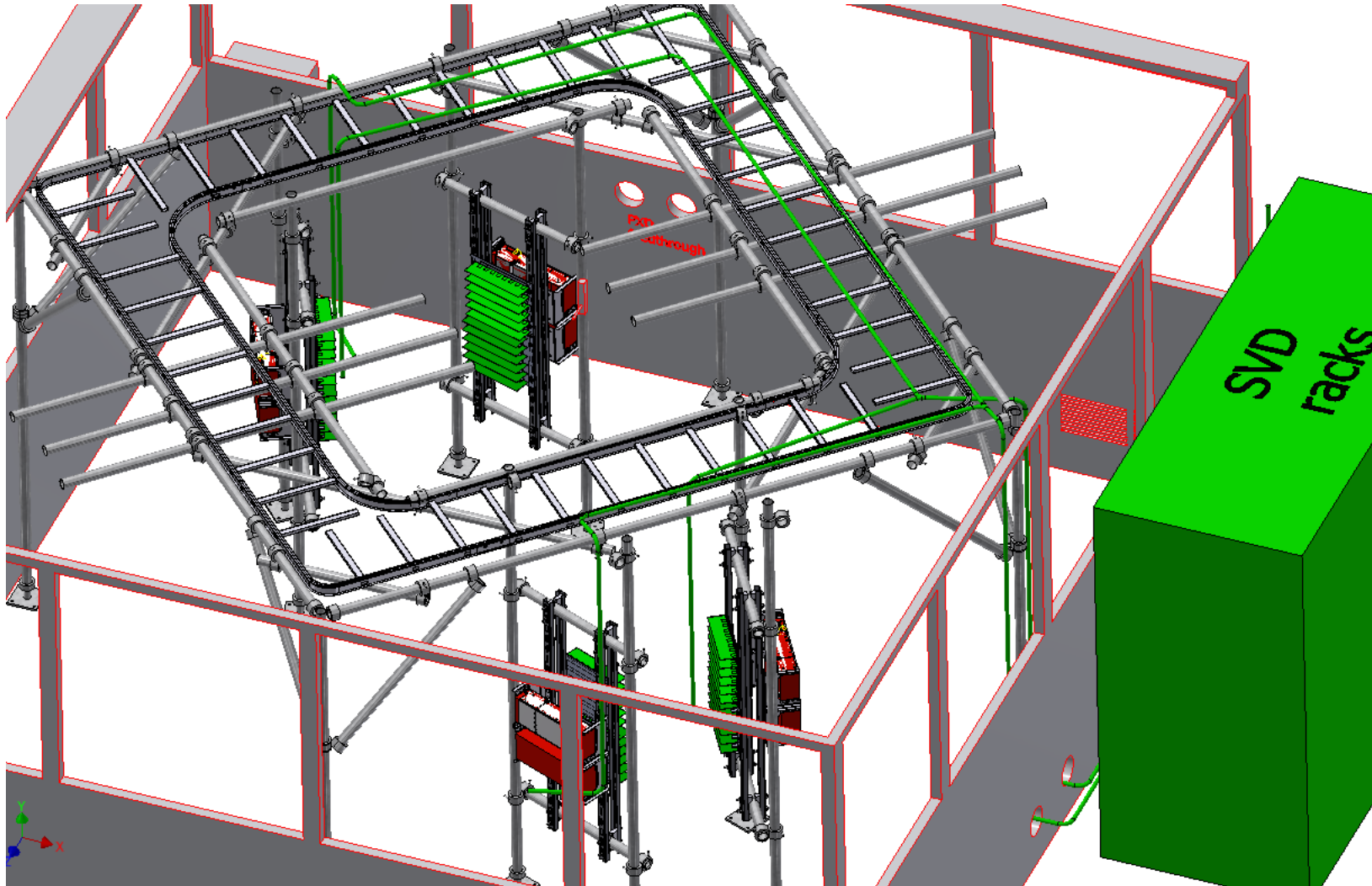
Cable-Support-frame

Cable-routing for PXD (red cables)



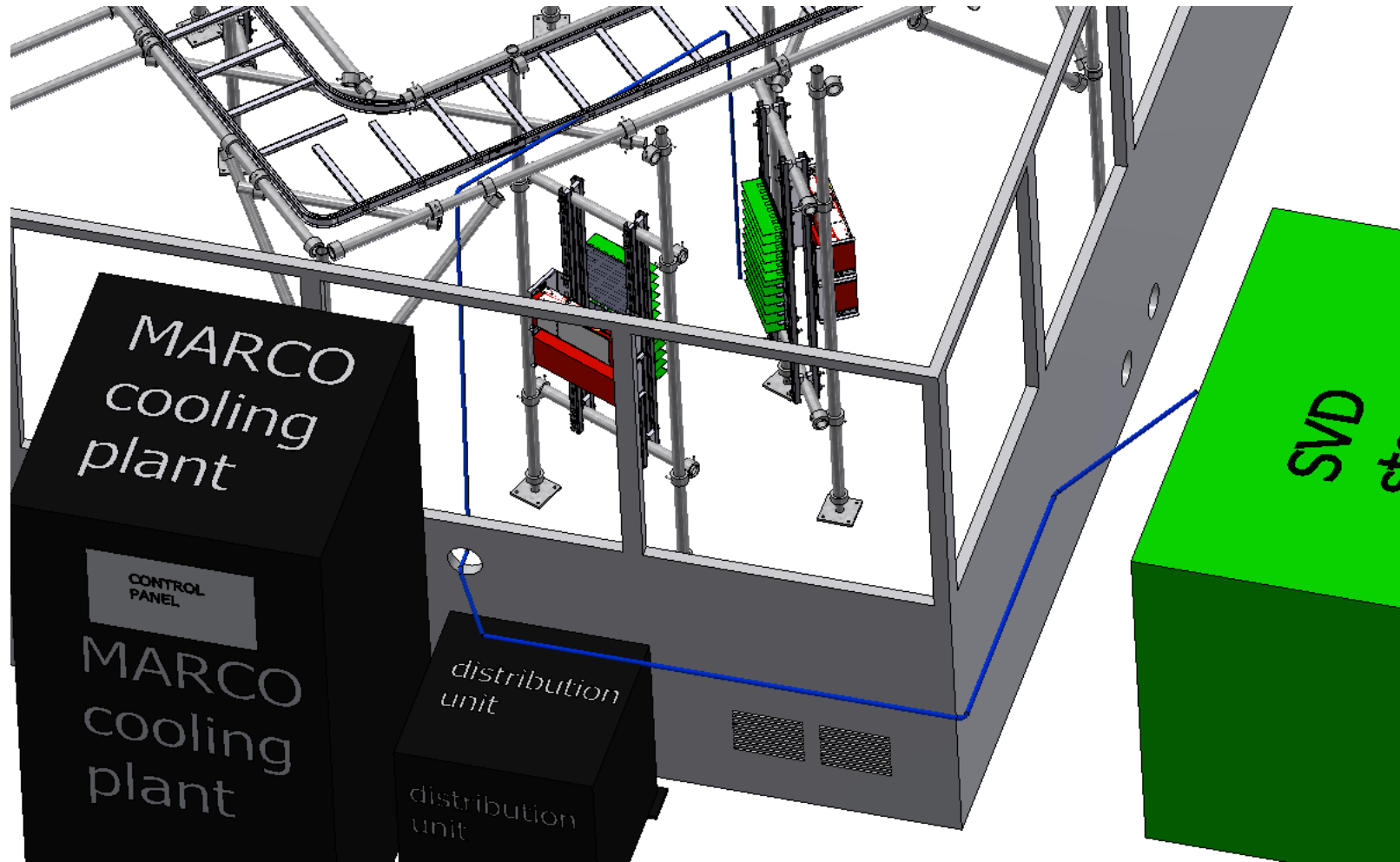
Cable-Support-frame

Cable-routing for SVD (green cables)



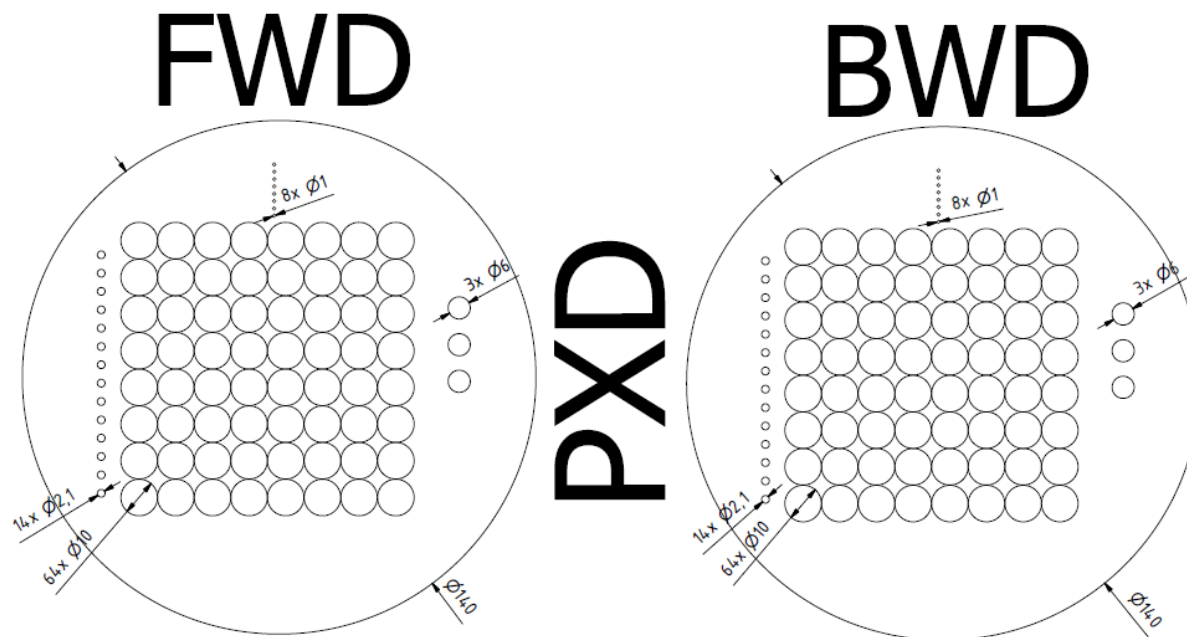
Cable-Support-frame

Flexline-routing for CO2 (blue lines)



Cable-Support-frame

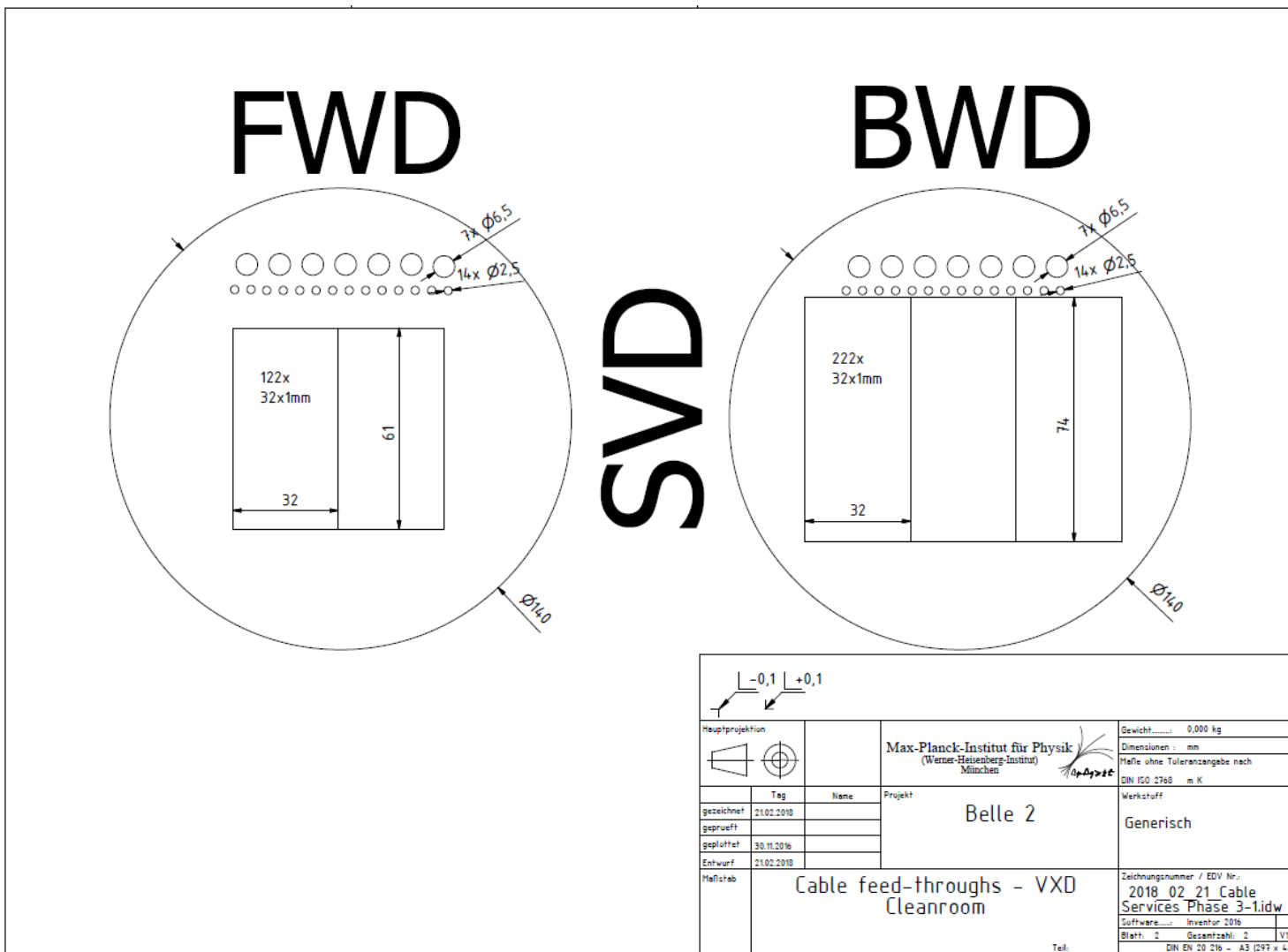
Feed-throughs with cables for PXD



				Gewicht: 0,000 kg	
		Max-Planck-Institut für Physik (Werner-Heisenberg-Institut) München		Dimensionen: mm Maße ohne Toleranzangabe nach DIN ISO 2768 m K	
	Tag	Name	Projekt	Werkstoff	
gezeichnet	21.02.2018		Belle 2	Generisch	
geprüft					
geplant	30.11.2016				
Entwurf	21.02.2018				
Maßstab	Cable feed-throughs - VXD Cleanroom			Zeichnungsnummer / EDV Nr.: 2018_02_21 Cable Services Phase 3-1.idw Software: Inventor 2016 Blatt: 1 Gesamtzahl: 2 V16.c DIN EN 20 216 - A3 (297 x 420)	

Cable-Support-frame

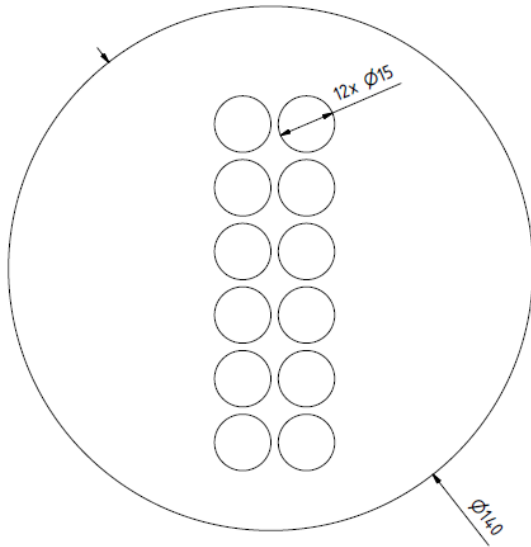
Feed-throughs with cables for SVD

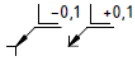
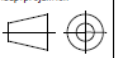


Cable-Support-frame

Feed-throughs with flexlines for CO2

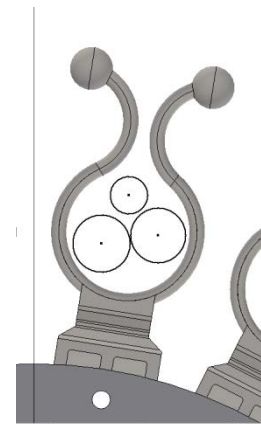
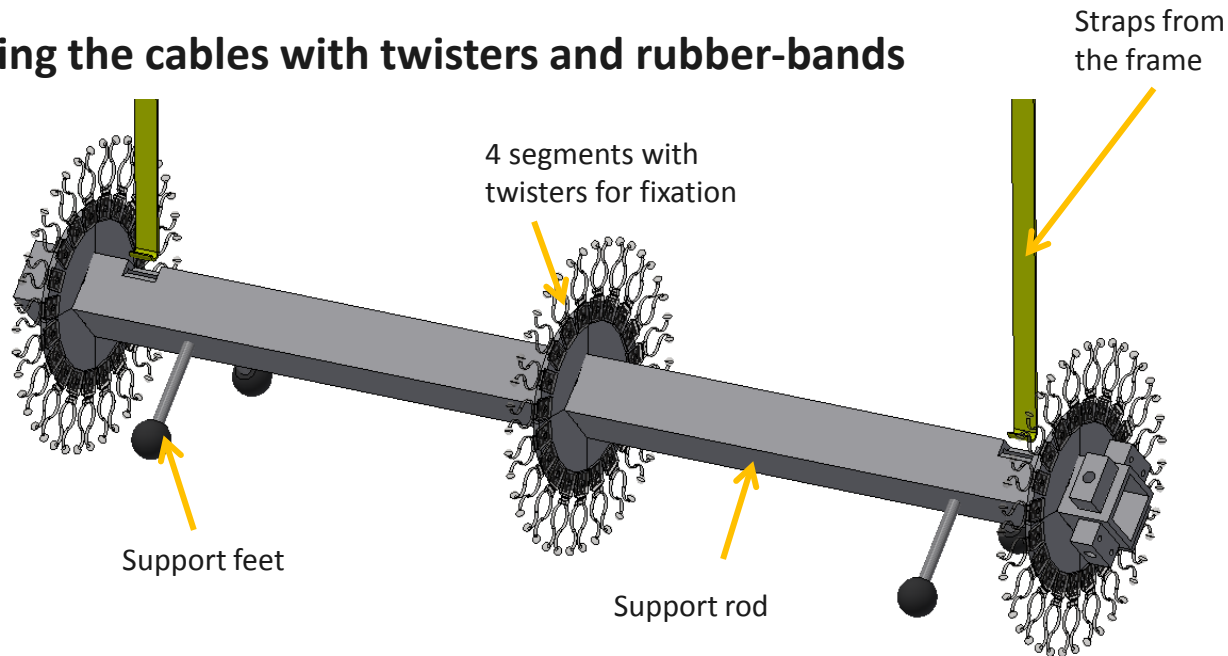
CO2



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				Software: Inventor 2016 Blatt: 3 Gesamtzahl: 3 V18.c DIN EN 20 216 - A3 (297 x 420)	
Teil:					

Cable-holder-device

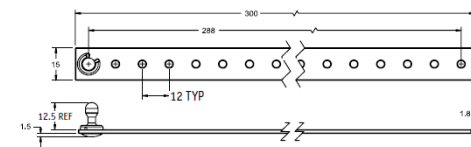
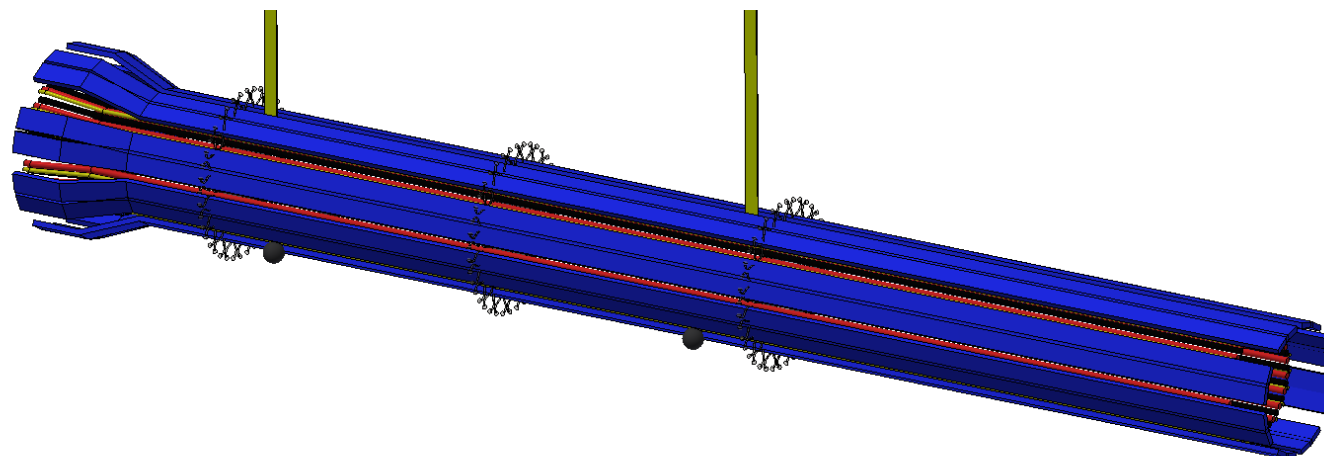
Fixing the cables with twistors and rubber-bands



One twister can contain three cables

Adjustable rubber band for SVD-cables

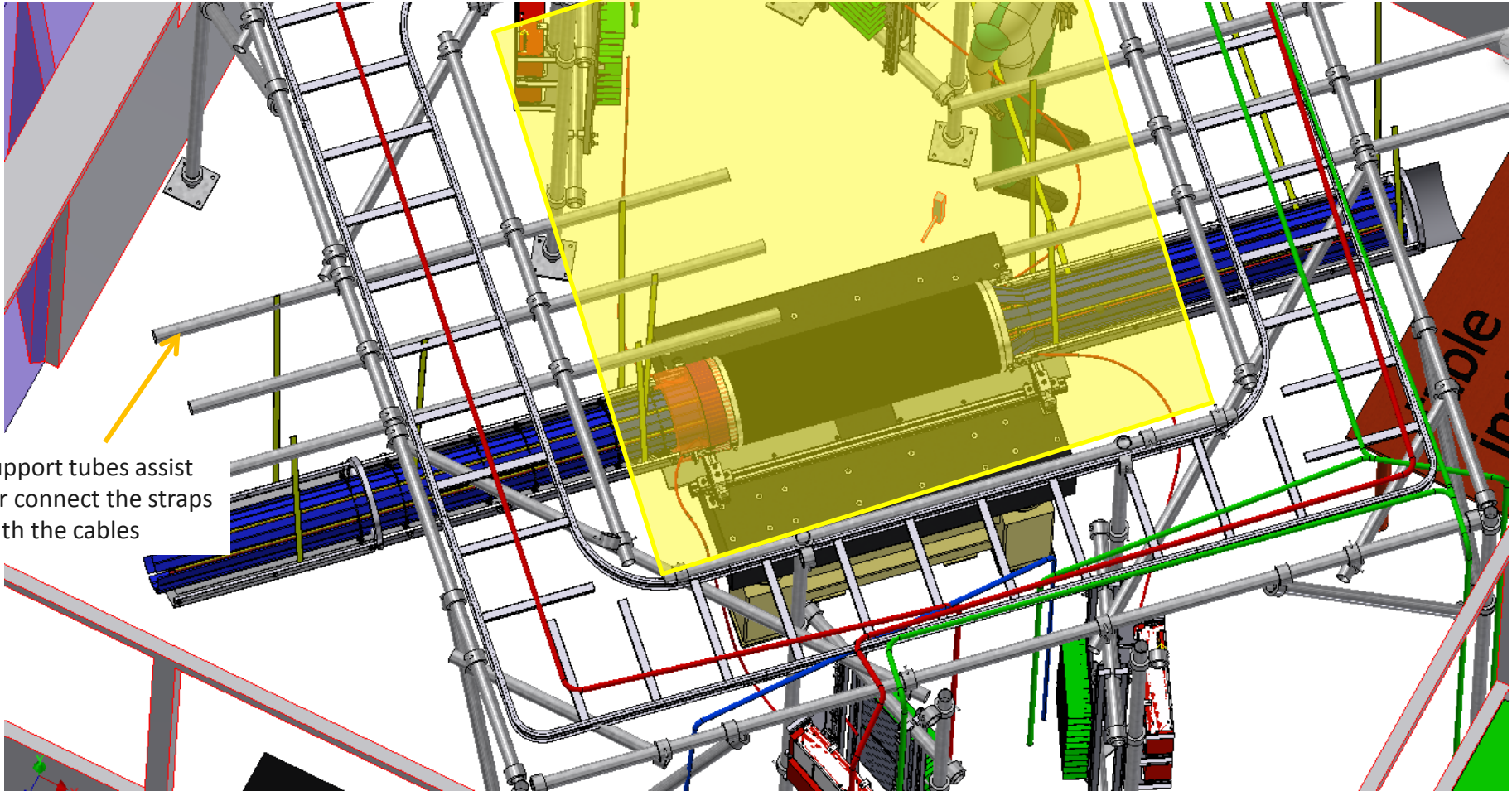
Pin: UL94 HB Nylon 6/6, RMS-148, schwarz



Cable-holder-device

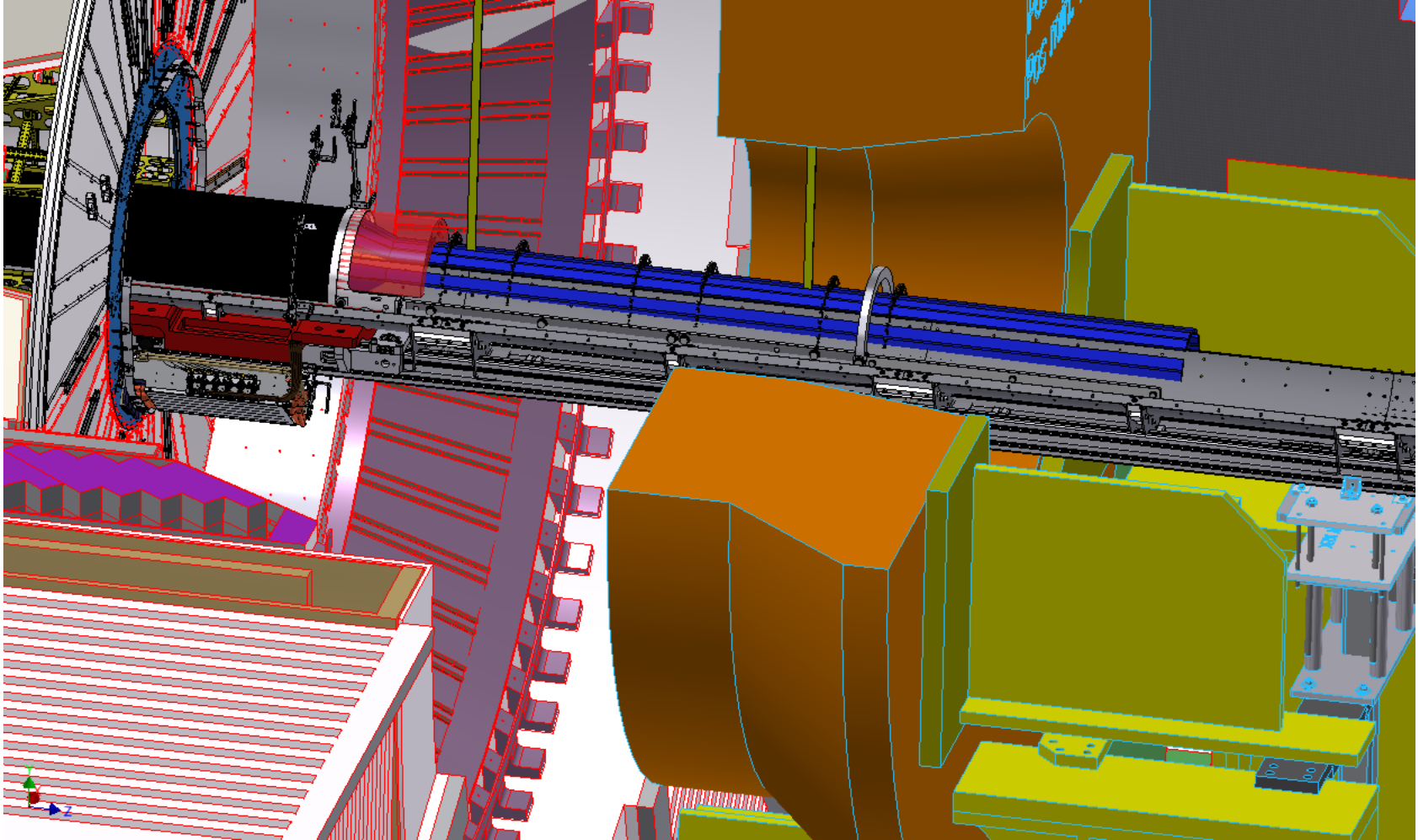
In the VXD-clean-room

Yellow area:
No frame or
no cables hanging
from above!



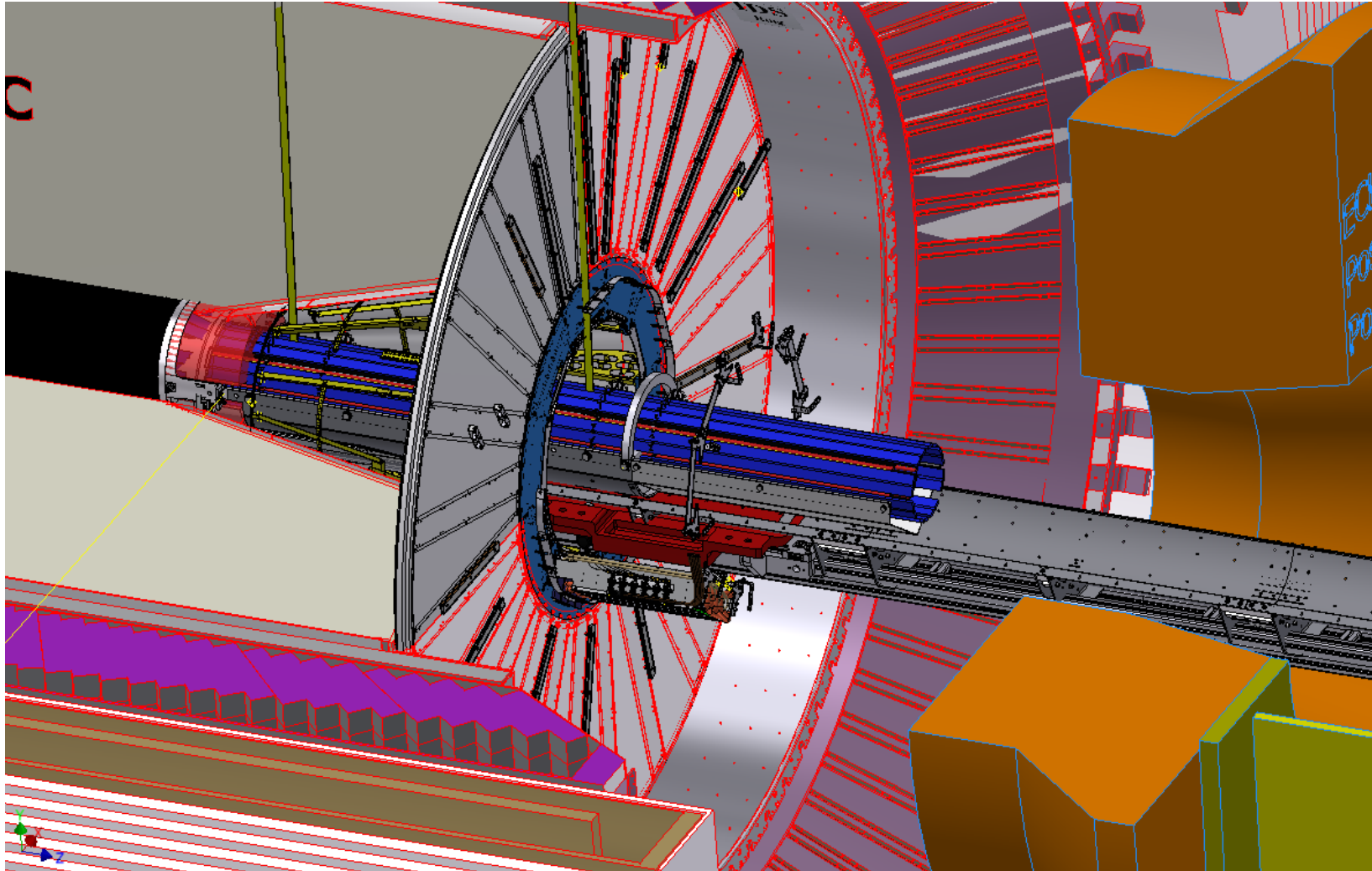
Cable-holder-device

In the Belle II-Detector-Area – before insertion



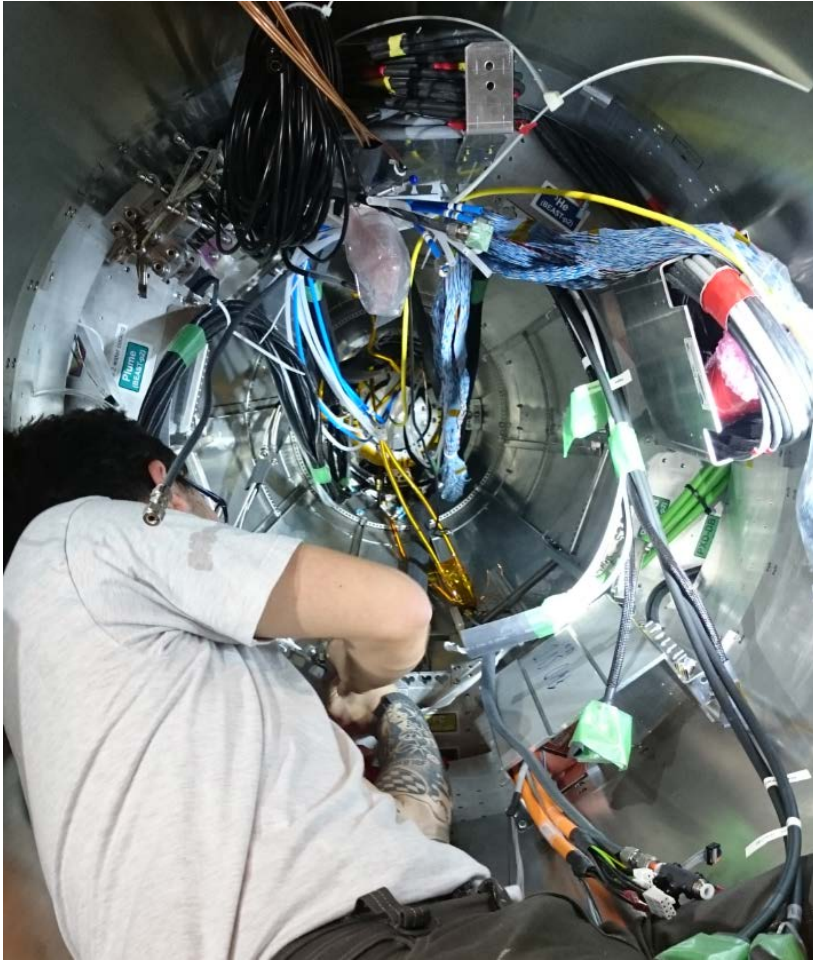
Cable-holder-device

In the Belle II-Detector-Area – after insertion



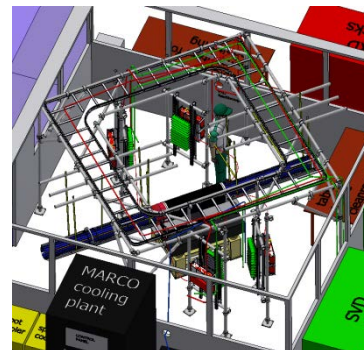
Cable-holder-device

In the Belle II-Detector-Area – not much space for laying cables



Cable-holder-device

Sequence of cable-handling-steps



IN THE CLEAN ROOM

1. Plug in cables in patch-panel
2. Plug in cables in dock-boxes
3. Test the system
4. Install cable-holder-device -> Attach it on the frame
5. Unplug cables from dockbox
6. Fix cables on cable-holder-device
7. Split cable-holder-device and distribute quarters -> accessibility to bellow-area
8. Install bellows
9. Unite cable-holder-quarters
10. Wrap cable-holder-device incl. cables in a foil
11. Install cable-support-mounting-tube
12. Guide the cables through the VXD-Installation-ring
13. Mount VXD-installation-ring at the VXD
14. De-install cable-support-mounting-tube
15. Split cable-holder-device and distribute quarters -> accessibility to bellow-area
16. Spread SVD-cables outside & bundle PXD-cables inside
17. Install the patch-panel-cable-cage
18. Unite cable-holder-quarters
19. Attach cable-holder-device on the frame
20. Shift in cable-trays
21. Install cable-support-mounting-tube
22. Touch down the crane-tool on the granite-table

Cable-
Installation &
System-Test

Bellow-
Installation

VXD-
Installation-ring
installation

Patch-panel-
cable-cage
installation

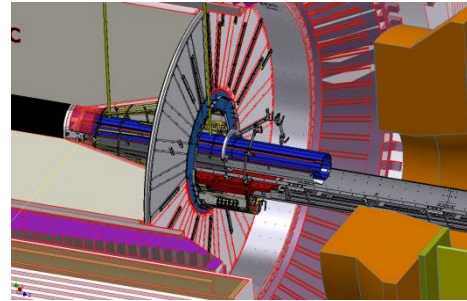
Cable-tray and
crane tool
Installation

Cable-holder-device

Sequence of cable-handling-steps

IN THE DETECTOR-AREA

1. Touch down VXD on the mounting-tube
2. Remove the twister-fixations in the front-part
3. Insert VXD in the CDC
4. Remove cable tray
5. Fix cable-holder-device on a fixed point
6. Remove mounting-tube
7. Remove cables from cable-holder-device and plug in the cables in the dockboxes
8. Remove cable-holder-device
9. Install Installation-Panel “Bugatti”
10. Lay cables on the CDC-inner-wall



Thank you for your attention!

Do you have any questions?



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