



Belle II PXD Commissioning at DESY

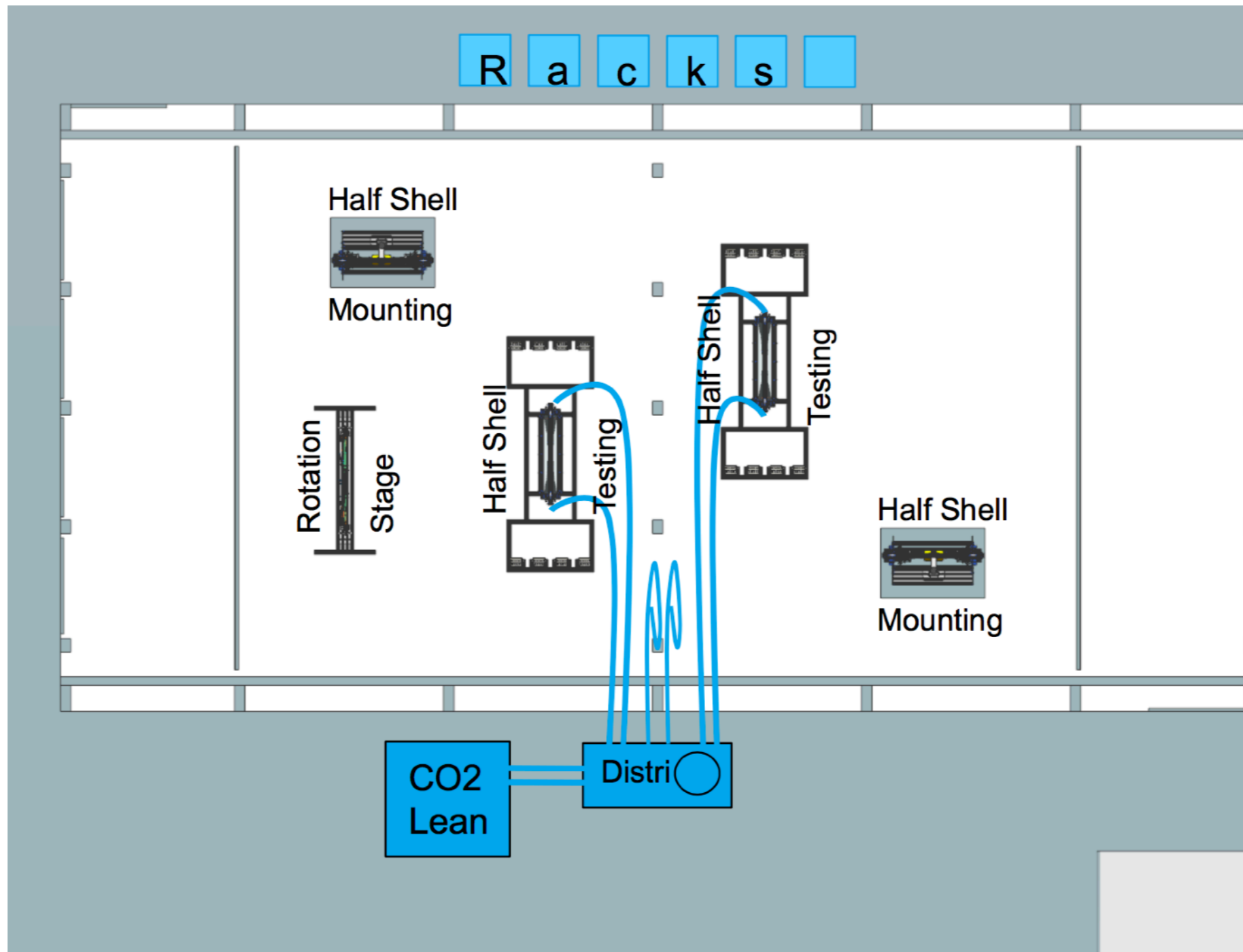
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On behalf of the DESY Belle II group

2018.05.08-11, 22th International Workshop on DEPFET Detectors and Applications

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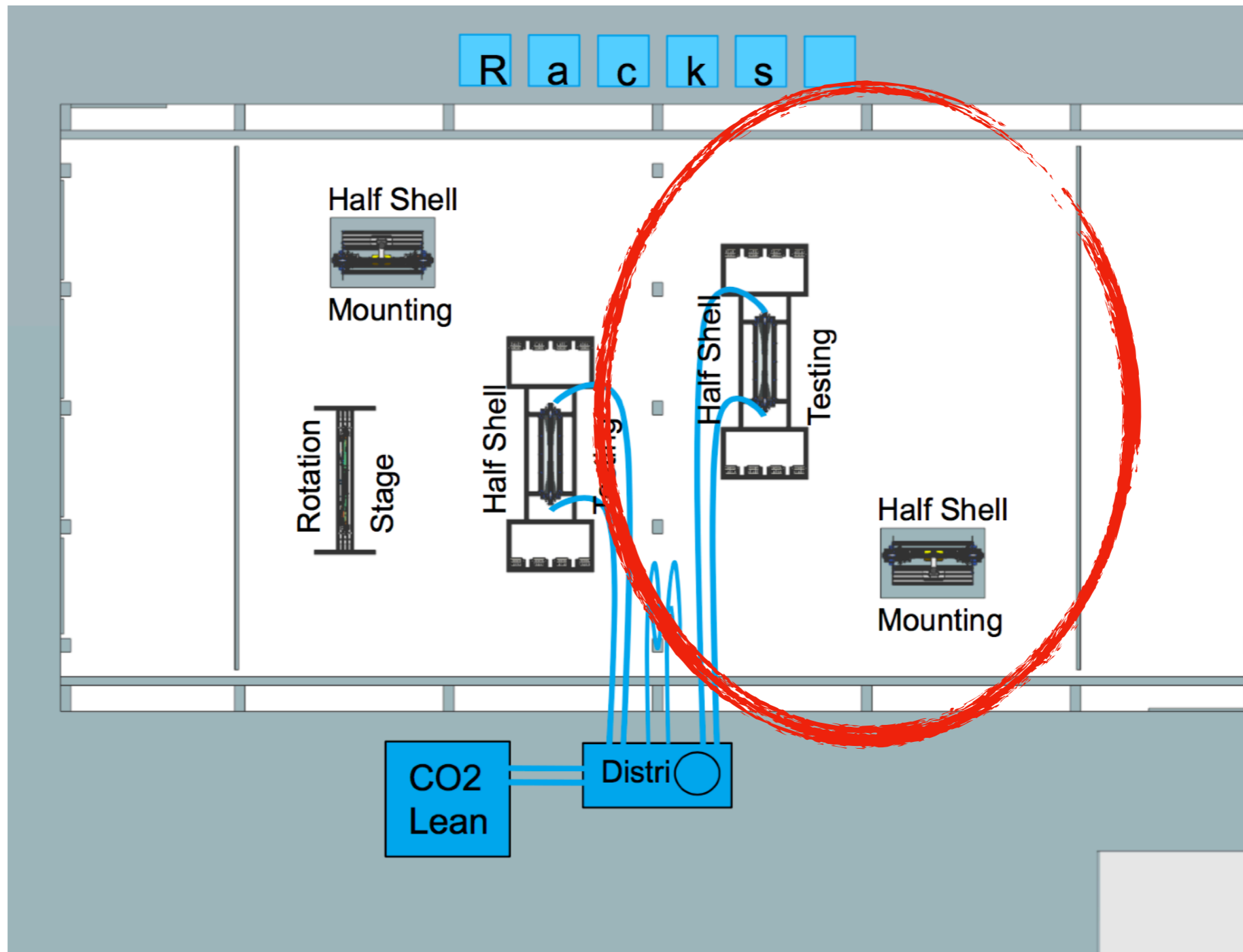
Floor plan for Clean Room



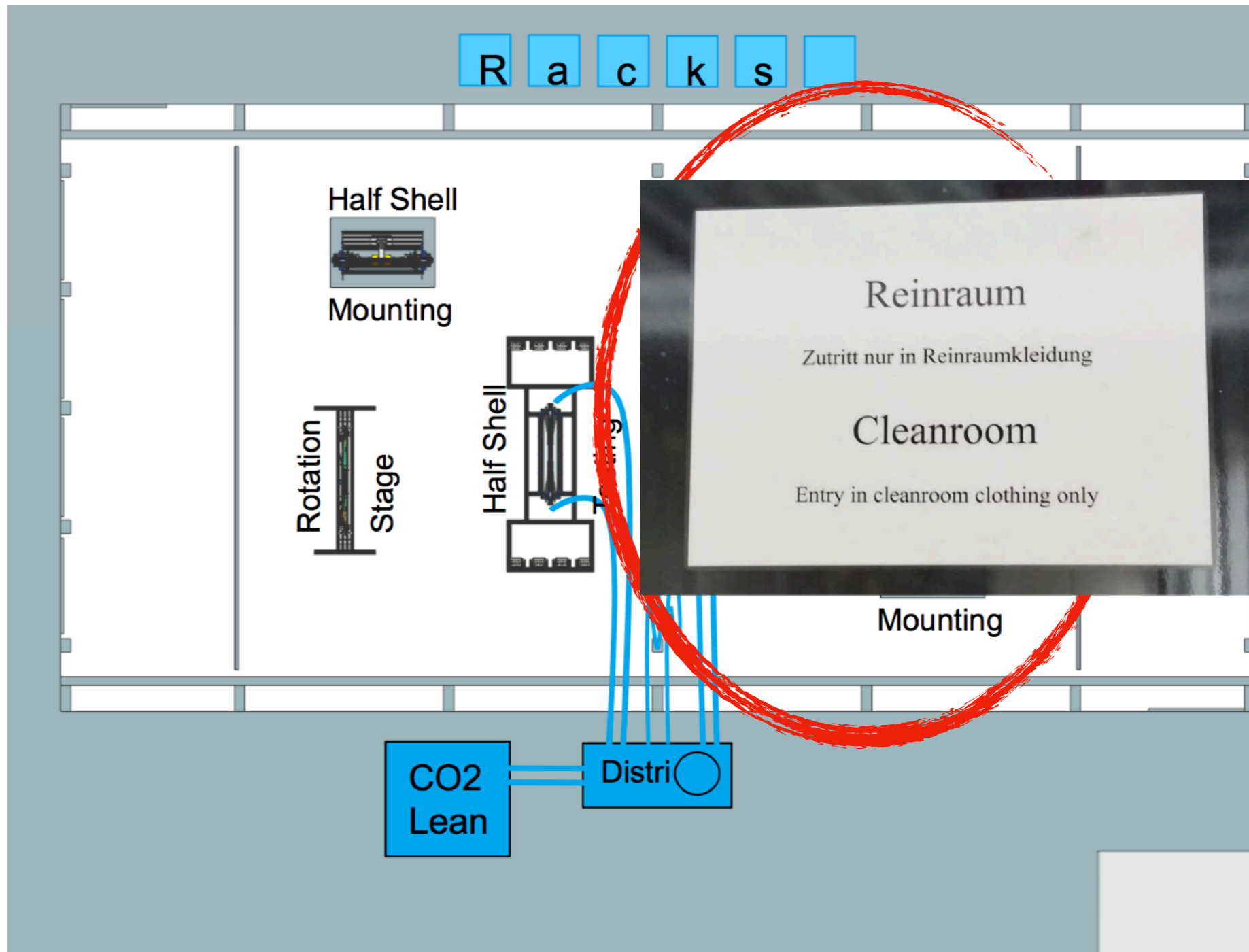
Floor plan for Clean Room



Clean Room for Half-shell Commissioning



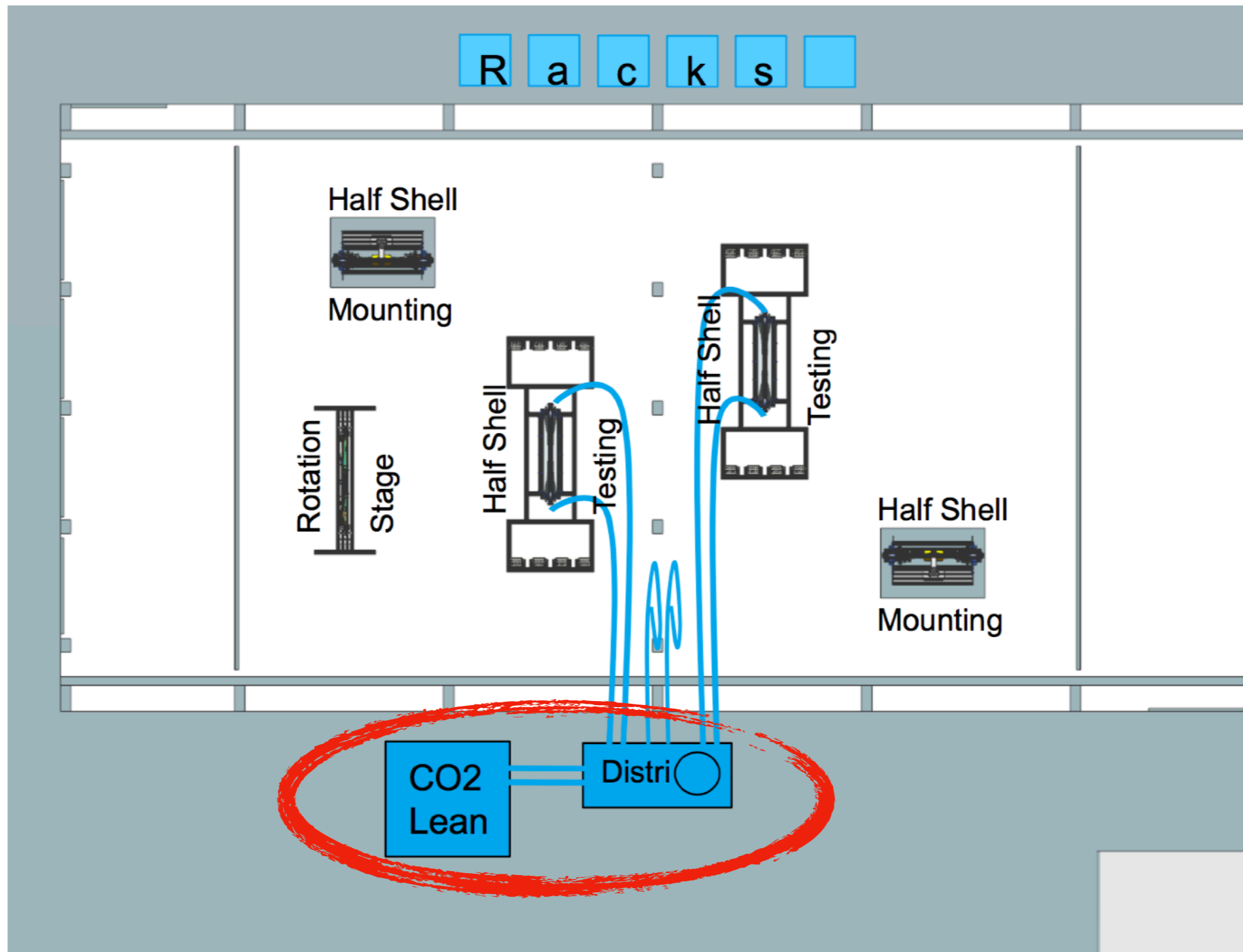
Clean Room for Half-shell Commissioning



Clean Room for Half-shell Commissioning



Floor plan for Clean Room

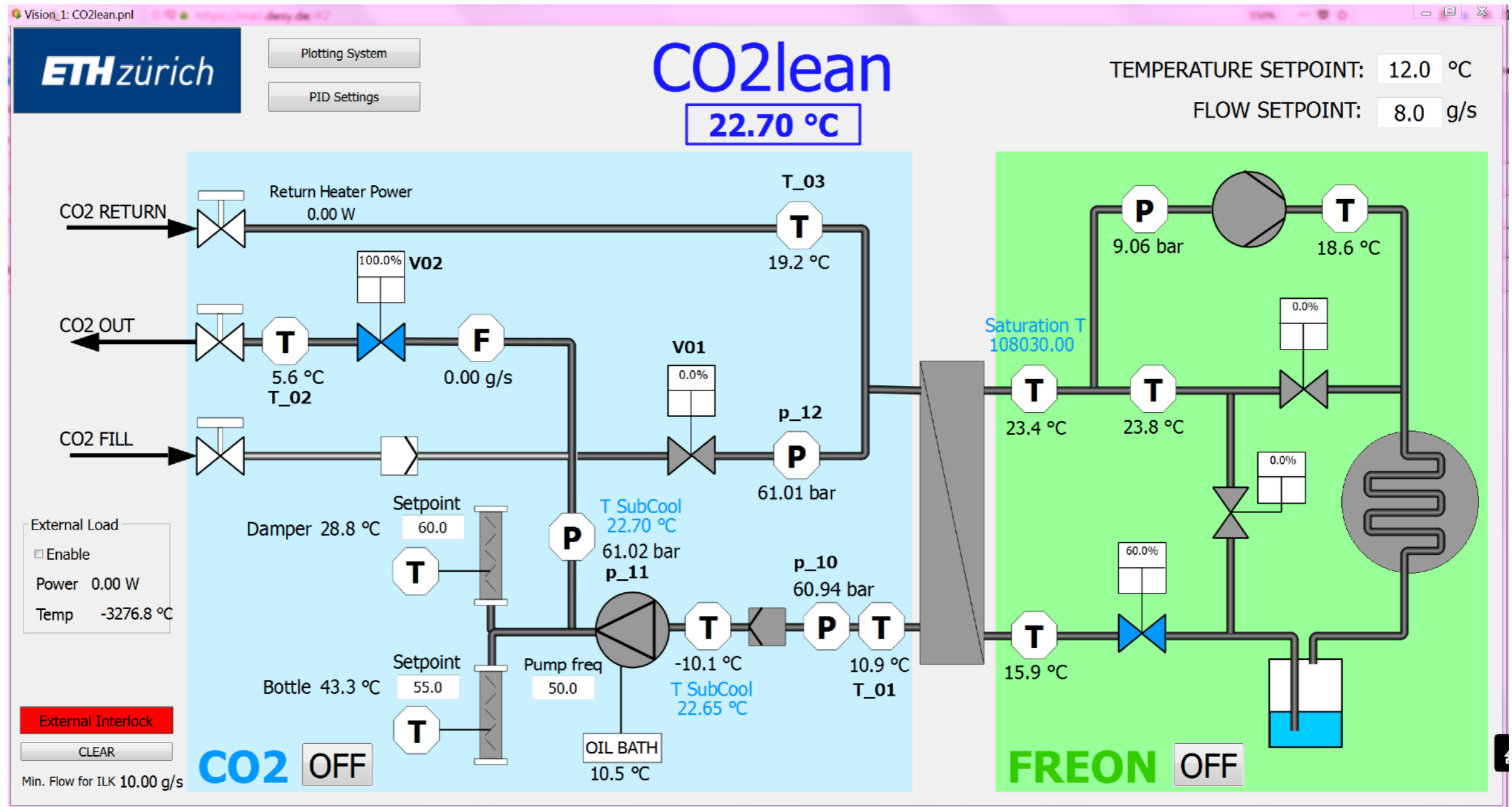


Floor plan for Clean Room

CO2lean system from ETH



Floor plan for Clean Room



❖ Missing temperature sensor at distributor, pressure sensor at supply line, will be added.

Floor plan for Clean Room

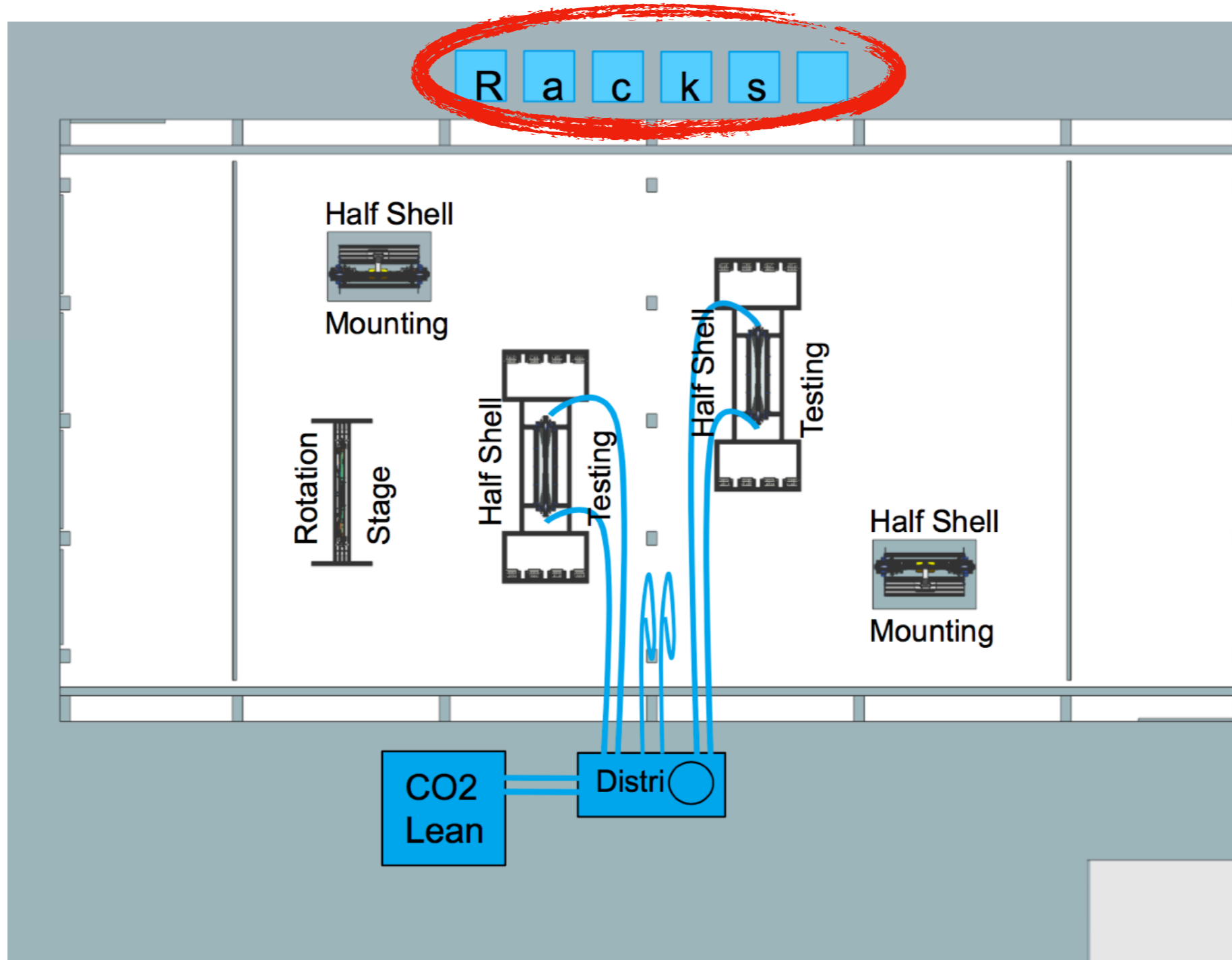
Temperature set point at -20°C

CO2 supply temperature
CO2 return temperature



- ❖ Mass flow has to stay above 4g/s.
- ❖ Big temperature oscillation in CO2 line, under investigation.

Floor plan for Clean Room



Floor plan for Clean Room



❖ Onsen & PocketDaq racks will stay downstairs.

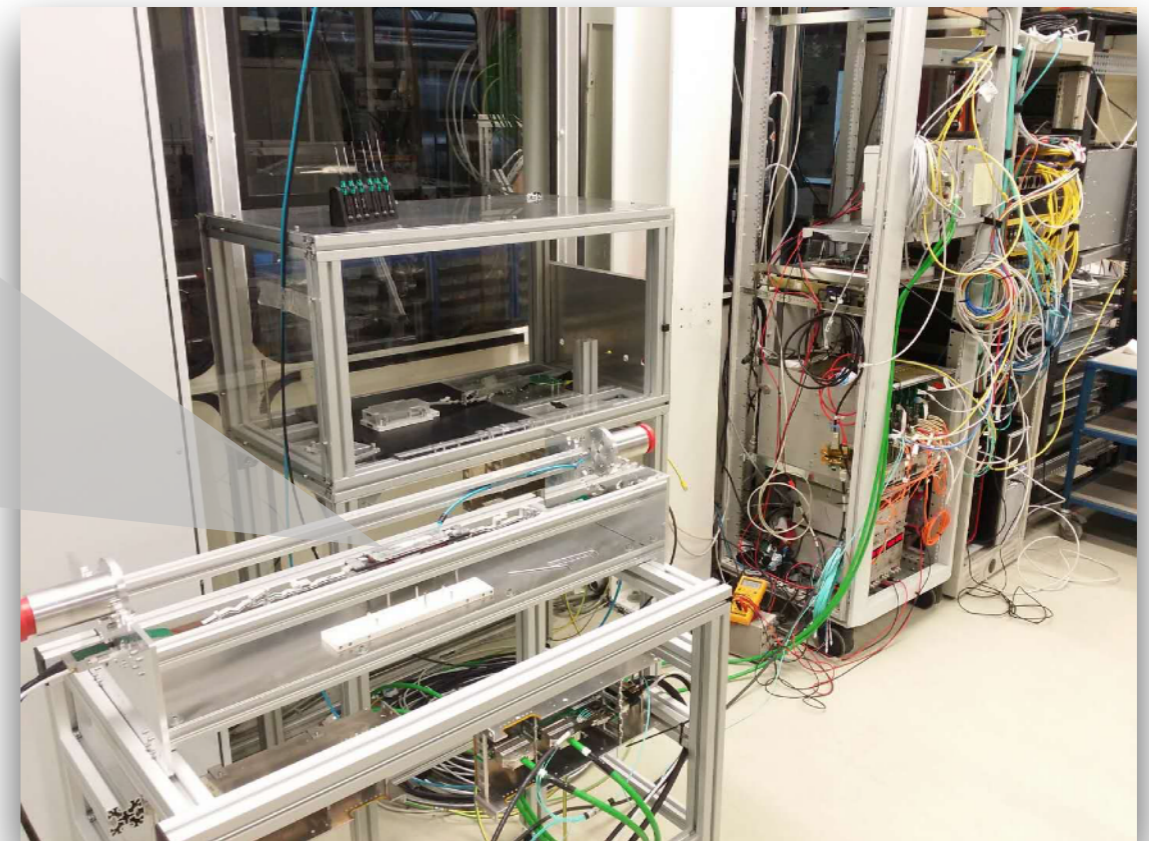
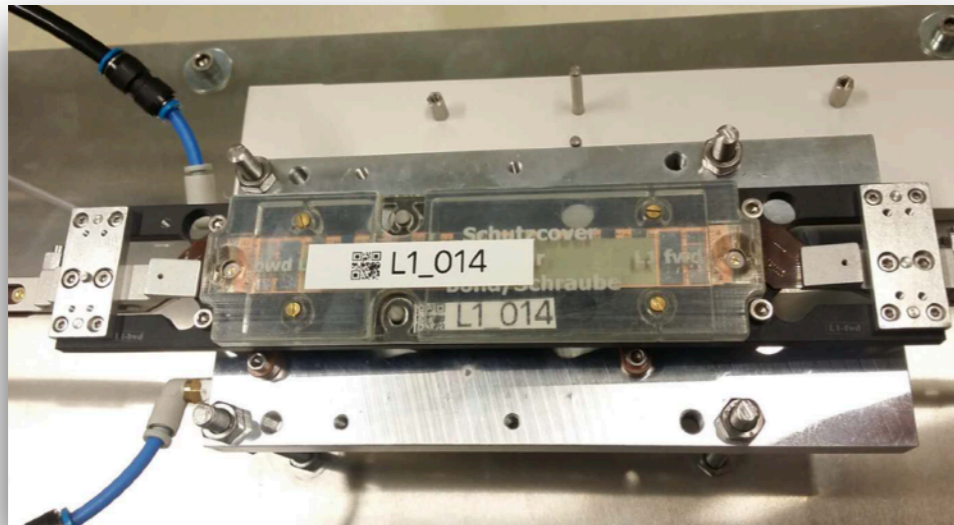
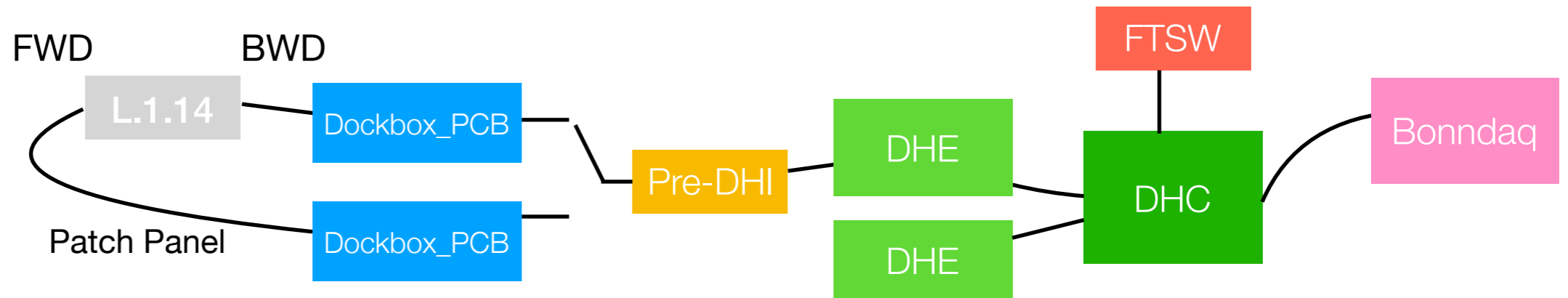
PXD Services at DESY

<https://docs.google.com/spreadsheets/d/1wX7EsoOibJZUGI0UCF7luk97o2xttZIG4hueYpgkHQU/edit#gid=0>

	Device	Responsible Person/Institute	Needed number	At DESY	At KEK	In Stock
Mechanics						
	Racks	DESY	2	2	0	-
	Crates	DESY/LMU	14	14	0	-
Power Supplies						
	Primary PS	LMU	3	1	1	2
	LMU PS with final OVP	LMU	40	28		
	LMU PS w/o final OVP	LMU	0	0	6	
	Backplane	LMU	14	11	4	
	Crate Controller	LMU	14	9	4	
	Network cables crate controllers	DESY	14	0	0	0
	Network cables LMUPS	DESY	40	0	0	0
	ethernet switch (@PS rack)	DESY/Heidelberg	42 ports at least	0	1	
Cables						
	power cables	LMU	80	65	16	
	optical fibres (8 channels)	LMU	8?	2	2	40
	optical fibres (12 channels)	LMU	8?	9		
	camera link cable	LMU	40	52	8	
	patch panel	LMU	40	4	8	-
Dockbox						
	dockbox	LMU	8	17	4	-
	dockbox pcb	LMU	40	21	4	-
Readout						
	dhe		40	0		
	dhc		8	0		
	dhi ?		8?	0		
	acta crate		?	0		
Onsen						
	ATCA shelf	JLU Giessen	1	1		1
	Carrier Boards	JLU Giessen	5	2	3	3
	AMC Cards	JLU Giessen	17	17	10	12
	ethernet switch	JLU Giessen	2	1		2
	RTMs	JLU Giessen	5	5	2	3
	optical fibres	JLU Giessen	40	??		40
	ethernet cables	JLU Giessen	40	??		40
	JTAG programmers	JLU Giessen	3	2		3
	USB cables	JLU Giessen	6	??		6

Service Qualification at DESY

The setup:



- ❖ Water cooling
- ❖ pre-DHI, the DHE&DHC served in TB & PERSY.
- ❖ FTSW runs in local mode.
- ❖ Finalized PP, Dockbox, LMU_PS (“new” firmware).

Service Qualification at DESY

Patch panels, dockbox_PCBs, single LMU_PSSs.

❖ Testing procedure:

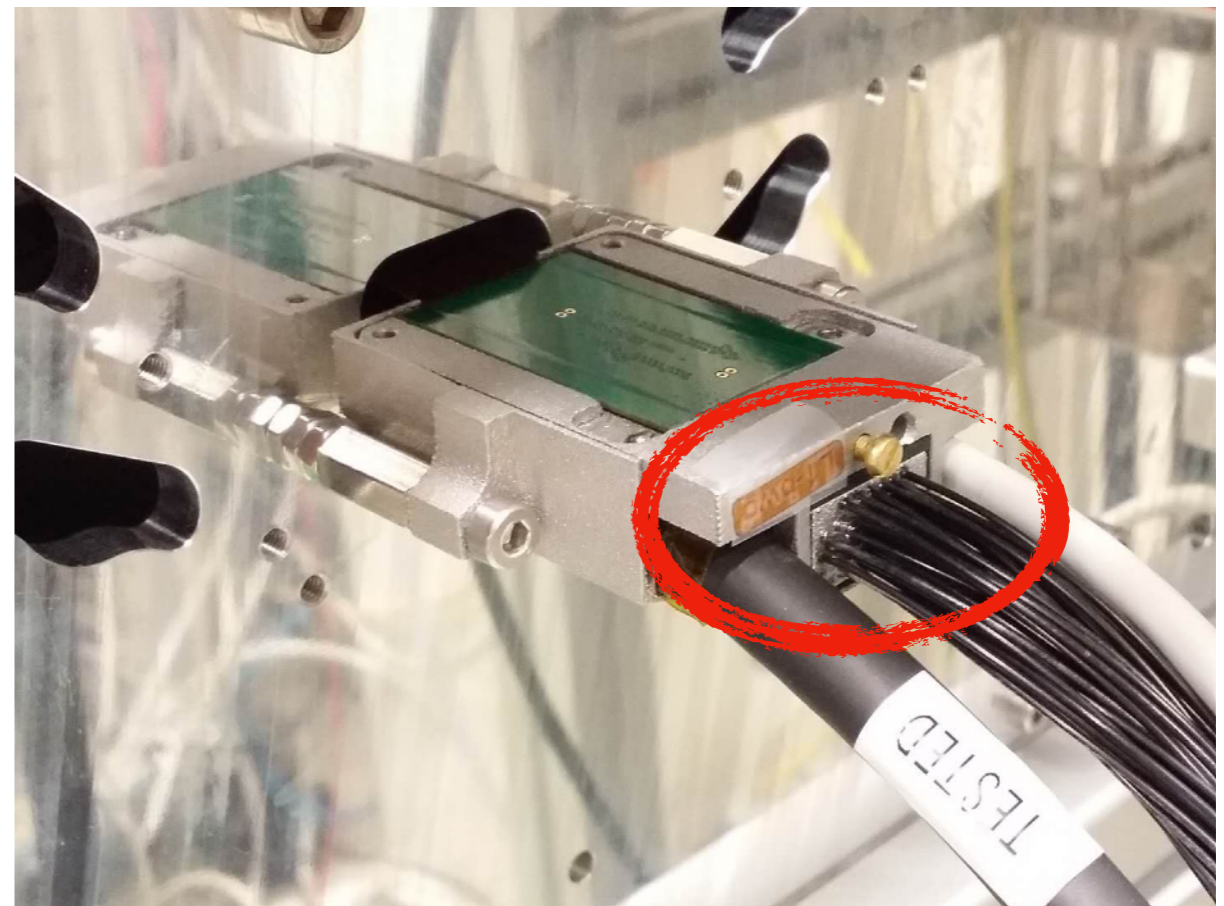
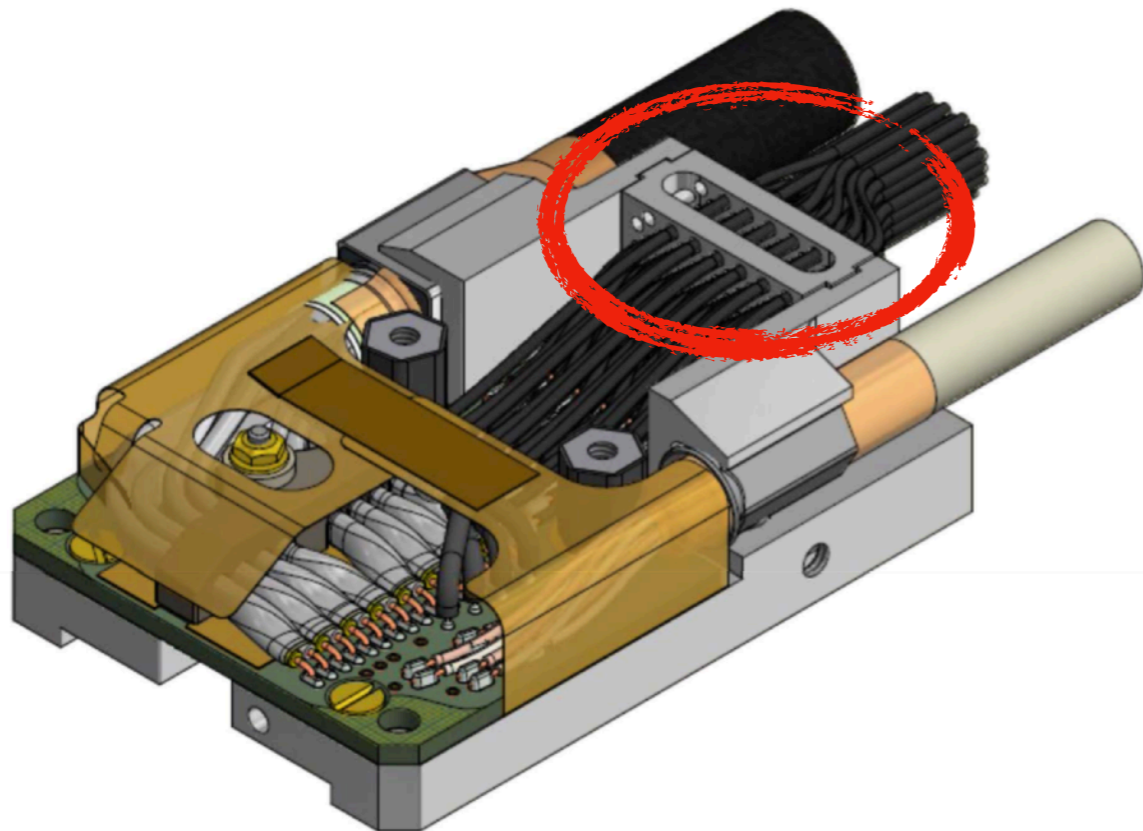
- ❖ Ramping up the module
- ❖ Take pedestals

Tested components								
Patch Panel	status / date	comments	Dockbox_PCB	status / date	comments	LMU_PS	status / date	comments
L.1.5 fw Preproduction	Good 19/03/2018	Wrong length, w/o Kapton rem	No. 3.1.0	Good 19/03/2018		Unit. 70	Good 28/03/2018	/Data/pedestal_scan/2018_03_28_006/H1041/pedestals_plot.pdf
L.1.5 bw Preproduction	Good 19/03/2018	Wrong length, w/o Kapton rem	No. 3.1.2	Good 19/03/2018		Unit. 87	Good 28/03/2018	After module is off, the current of PS (displayed from TTI) stays at 0.59A for ~ 1.
L.1.7 fw Preproduction	Good 16/03/2018	Wrong length, w/o Kapton rem	No. 3.1.3	Good 19/03/2018		Unit. 84	Good 29/03/2018	After switching on, the current (from TTI) is 0.347A, normal value should be 0.33
L.1.7 bw Preproduction	Good 16/03/2018	Wrong length, w/o Kapton rem	No. 3.1.5	Good 19/03/2018		Unit. 86	Good 29/03/2018	No Jtag connector attached on front, the frame deform slightly. After switching o
L.1.2 fw Preproduction	Good 19/03/2018	Wrong length, w/o Kapton rem	No. 3.1.7	Good 19/03/2018		Unit. 81	Good 28/03/2018	/Data/pedestal_scan/2018_03_28_007/H1041/pedestals_plot.pdf
L.1.8 bw	Good 06/04/2018	/Data/pedestal_scan/2018_04_	No. 3.1.8	Good 19/03/2018		Unit. 69	Good 29/03/2018	/Data/pedestal_scan/2018_03_29_004/H1041/pedestals_plot.pdf
L.1.9 bw	Good 06/04/2018	/Data/pedestal_scan/2018_04_	No. 3.1.9	Good 19/03/2018		Unit. 74	Good 29/03/2018	/Data/pedestal_scan/2018_03_29_003/H1041/pedestals_plot.pdf
L.1.12 bw	Good 06/04/2018	/Data/pedestal_scan/2018_04_	No. 3.1.4	Good 20/03/2018		Unit. 38	Good 03/04/2018	Same problem as #61, worked after restarting epics service for dhe1041 /Data/p
L.1.11 bw	Good 06/04/2018	/Data/pedestal_scan/2018_04_	No.3.1.10	Good 20/03/2018		Unit. 37	Good 03/04/2018	/Data/pedestal_scan/2018_04_03_004/H1041/pedestals_plot.pdf
			No.3.1.11	Good 20/03/2018		Unit. 79	Good 03/04/2018	/Data/pedestal_scan/2018_04_03_005/H1041/pedestals_plot.pdf
			No.3.1.1	Good 20/03/2018		Unit. 61	Good 04/04/2018	dhp io current goes up from ~190mA to ~270mA when trying to measure temper
			No.3.1.17	Good 21/03/2018		Unit. 75	Good 04/04/2018	dhp io current goes up from ~190mA to ~270mA when trying to measure temper
			No.3.1.15	Good 26/03/2018		Unit. 68	Good 29/03/2018	/Data/pedestal_scan/2018_03_29_005/H1041/pedestals_plot.pdf
			No.3.1.19	Good 26/03/2018	/Data/pedestal_scan/2018_03_	Unit. 73	Failed 04/04/2018	OVP is red, after remove the jumper, OVP is green.
			No.3.1.18	Good 26/03/2018	/Data/pedestal_scan/2018_03_	Unit. 80	Good 04/04/2018	dhp_io goes up from ~190mA to ~270mA after measuring temperature. After sw
			No.3.1.6	Good 28/03/2018		Unit. 82	Good 04/04/2018	dhp_io goes up from ~190mA to ~270mA after measuring temperature. After sw
			No.3.1.12	Good 28/03/2018	power cables changed	Unit. 71	Good 04/04/2018	dhp_io goes up from ~190mA to ~270mA after measuring temperature. At peak,
			No.3.1.16	Good 28/03/2018	power supply changed to #87 (l	Unit. 52	Good 05/04/2018	/Data/pedestal_scan/2018_04_05_006/H1041/pedestals_plot.pdf
			No.3.1.20	Good 28/03/2018	power supply #70, /Data/pedes	Unit. 34	Good 05/04/2018	/Data/pedestal_scan/2018_04_05_005/H1041/pedestals_plot.pdf
			No.3.1.13	Good 29/03/2018	power supply #84/Data/pedesta	Unit. 77 + PPL.1.	Good 06/04/2018	changed power cables, camera link and optical fibres, test also new PP. dhp_io
			No.3.1.14	Good 29/03/2018	power supply #86 /Data/pedest	Unit. 83 + PPL.1.	Good 06/04/2018	changed power cables, camera link and optical fibres, test also new PP. dhp_io
						Unit. 60 + PPL.1.	Good 06/04/2018	changed power cables, camera link and optical fibres, test also new PP. dhp_io
						Unit. 53 + PPL.1.	Good 06/04/2018	new PP. dhp_io at ~200mA at STANDBY before dvdd. After switch off PS, OVP

https://docs.google.com/spreadsheets/d/1AkNNWYi__HD7syoZy-WXzROwWVAaKO4jJJRgHMGXvH4/edit#gid=0

Service Qualification at DESY

Glue the Patch panels:



Service Qualification at DESY

Multiple-LMU_Ps test.

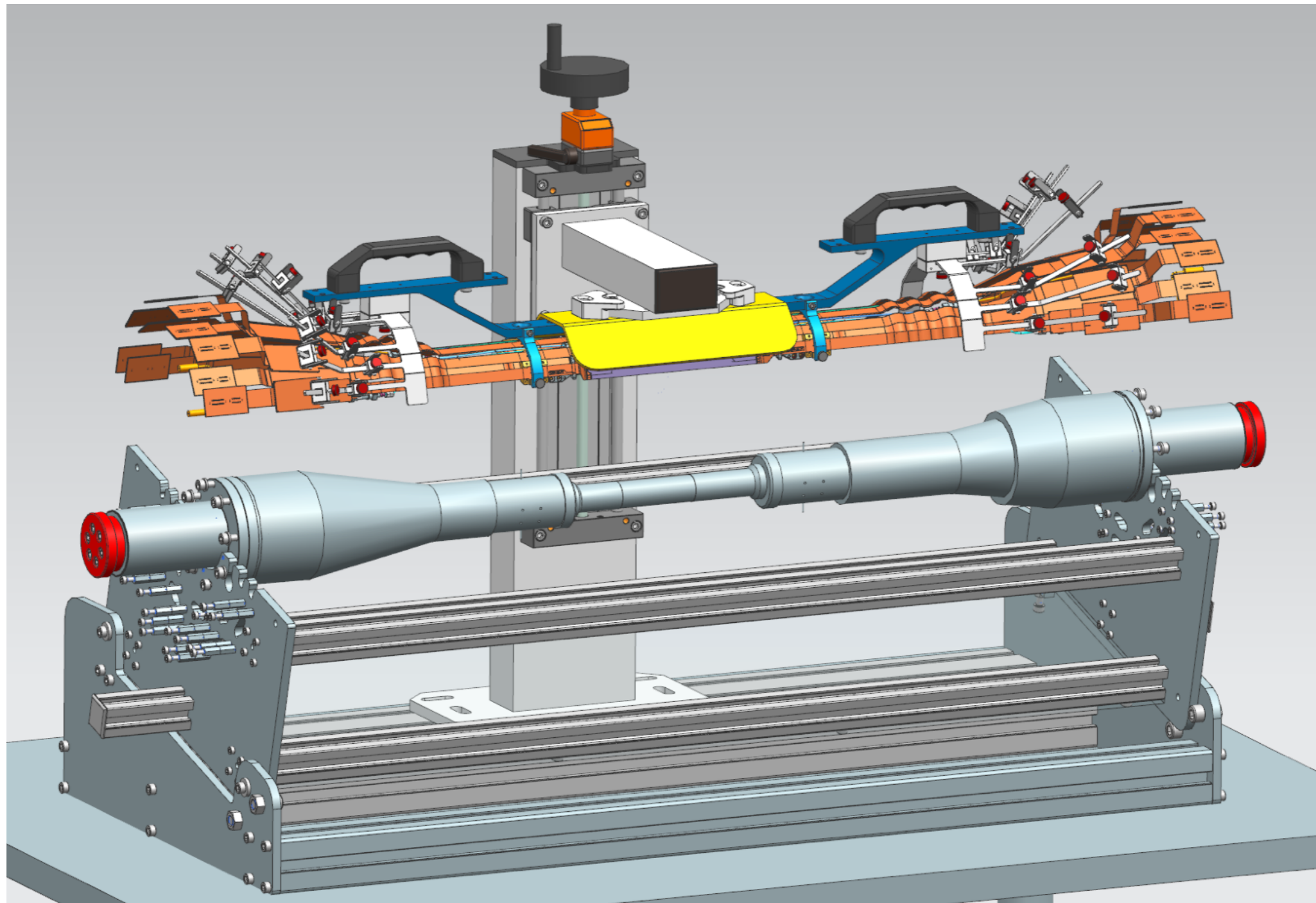
- ❖ Issues observed at KEK: lost packages (~ ‰)
- ❖ Testing procedure:
 - ❖ >1 PSs connected and powered up, long term test
- ❖ Test at DESY:
 - ❖ Unexpected lost connection occurred. Switch issue?
 - ❖ Will further confirm with the PS rack.

OVP test.

- ❖ Risk to damage the module.
- ❖ In plan, need discussion.

Practice of Half-shell Mounting

Transport and mounting practice with L.1 dummy ladders.



Summary

- ❖ Half-shell commissioning:
 - ❖ Clean room & Mechanical frame are almost ready.
 - ❖ Plan to practice with L.1 dummy ladders after Ringberg meeting.
- ❖ Service qualification:
 - ❖ Keep receiving and testing devices.
 - ❖ 4 L.1 BW PP, 21 Dockbox_PCBs, 22 LMU_PSSs, ~10 pairs of green power cables, ~10 camera link cables, 3 optical fibres are verified.
- ❖ DESY setup is more similar to the Phase2 PXD system. We are willing to do tests if there are requests.

Thank you!