schedule

Schedule - May

Holidays in Switzerland, Week Numbers

May 2016 (Paris)

Mon	Tue	Wed	Thu	Fri	Sat	Sun
25 Week 17 of 2016	26	27	28	29	30	1 May Day (regional
2 Week 18 of 2016	3	4	5 Ascension Day	6	7	8
9 Week 19 of 2016	10	11	12	13 **CRP Assembled in CR (Marco)**	14	15 Pentecost (regional
16 Pentecost Monday Week 20 of 2016	17 **HV flanges ready** hook CRP under top-cap	18	19	20	21	22
23 Week 21 of 2016	24	25 **5 SGFT inserted with Fake FE (Laura Z). Bath test area clear.**	26 Corpus Christi unhook CRP	27 **pulser system ready (Cosimo)**	28	29
SPFT fully operational (LAPP) hook CRP under top-cap	31 **SC racks + sensors cabled and operational (Nicolas B)**	1	2	3	4	5

LEM testing, preparation + selection. Check of extraction grid HV connection (CEA, Shuo).

CRP assembly (Adamo), connect anode grounds

prepare all cable to correct lengths

bath test

connections (LM, LEMHV, Pt, SIG, + SC testing + warm signal continuity check with pulser) Cosimo-Yann

Schedule - May

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30 SPFT fully operational (LAPP) hook CRP under top-cap	31 SC racks + sensors cabled and operational (Nicolas B) connections (LM, LEMHV, Pt, SIG, + SC testing + warm signal continuity check with pulser) Cosimo-Yann	1	2	3	4	5

was respected almost to the day (with minor modification that bath test performed on the 30th and LAPP test on the 1st)

Schedule - May

Thanks for all the (very important) help from the “non-CERN based” collaboration

Holidays i … 2016 (Paris)

Mo … Sun

Week 17 of 2016

1 May Day (regional

Marco Z. (CEA) at CERN

2 3 4 5 6 7 8

Marco Z. (CEA) at CERN

LEM testing, preparation + selection. Check of extraction grid HV connection (CEA, Shuo).

Eddy M. (CEA) at CERN

9 10 11 12 13 14 15

Week 19 of 2016

CRP Assembled in

Pentecost (regional

Javier (Ciemat) at CERN

CRP assembly (Adamo), connect anode grounds

16 17 18 19 20 21 22

Pentecost Monday

Week 20 of 2016

HV flanges ready

prepare all cable to correct lengths

hook CRP

Javier (Ciemat) at CERN

23 24 25 26 27 28 29

Week 21 of 2016

5 SGFT inserted with Fake FE (Laura Z). Bath test area clear.

Corpus Christi

unhook CRP

pulser system ready (Cosimo)

bath test

30 31 1 2 3 4 5

SPFT fully operational

SC racks + sensors cabled and operational

David (Ciemat) at CERN

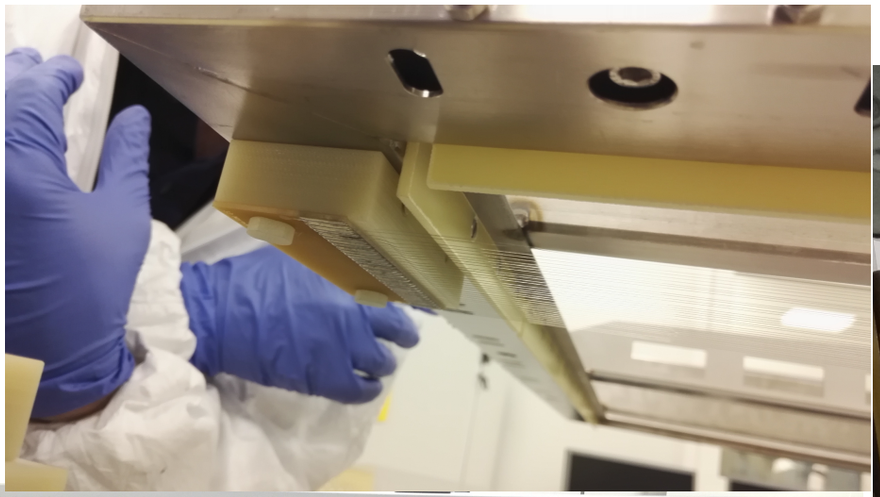
hook CRP

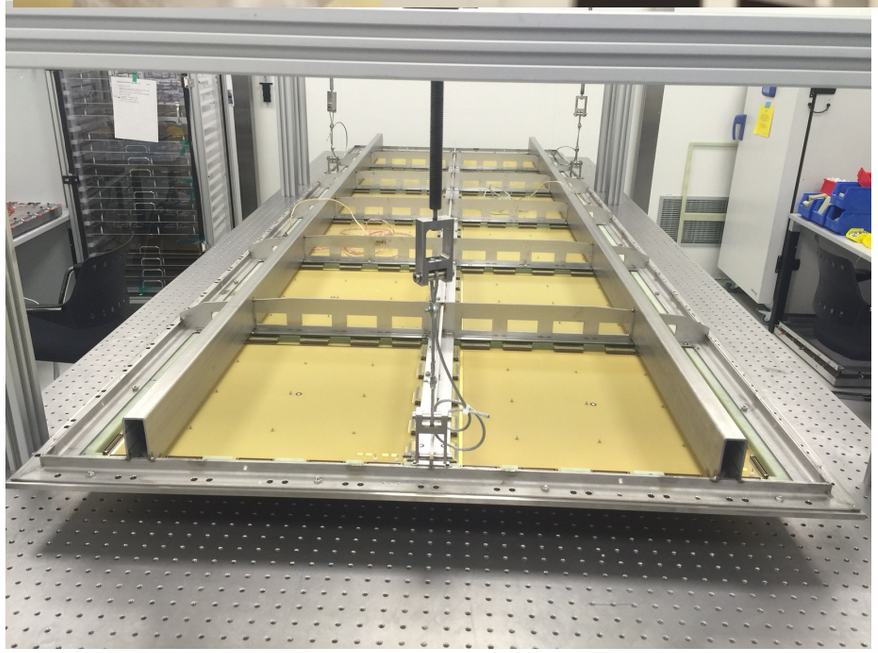
connections (LM, LEMHV, Pt, SIG) + SC testing + warm signal continuity

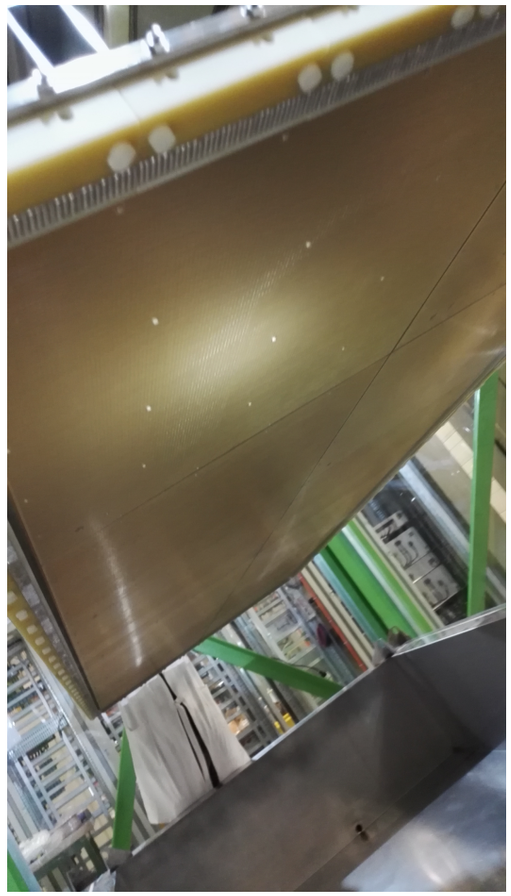
Javier (Ciemat) at CERN

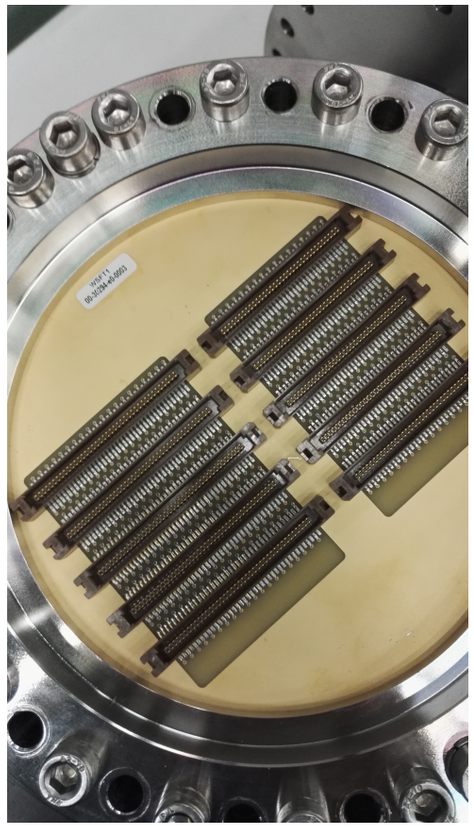
What was done in May

1. LEMs were tested, selected and CRP was assembled.
2. 3 SGFTs were cabled with fake FE and inserted on top-cap
3. Additional racks were brought to 182 and cabled. Slow control and PVSS was tested.
4. LN2 bath test was successfully performed under top-cap.
5. CRP was hung in its final position and SPFT movement tested.









Experimental zone

CRP under top-cap

Main activities planned for June

MILESTONE: Ready for top-cap lifting July 1st

cabling of CRP in final position.
->All HV connections (LEM+ grid). cutting+crimping to correct length
->All signal connections. KEL Cables are also all there.

CRP testing
->HV test of LEMs in air (external SHV cables being manufactured)
->Signal Continuity testing (same method as for bath test, See Cosimo Laura for details)

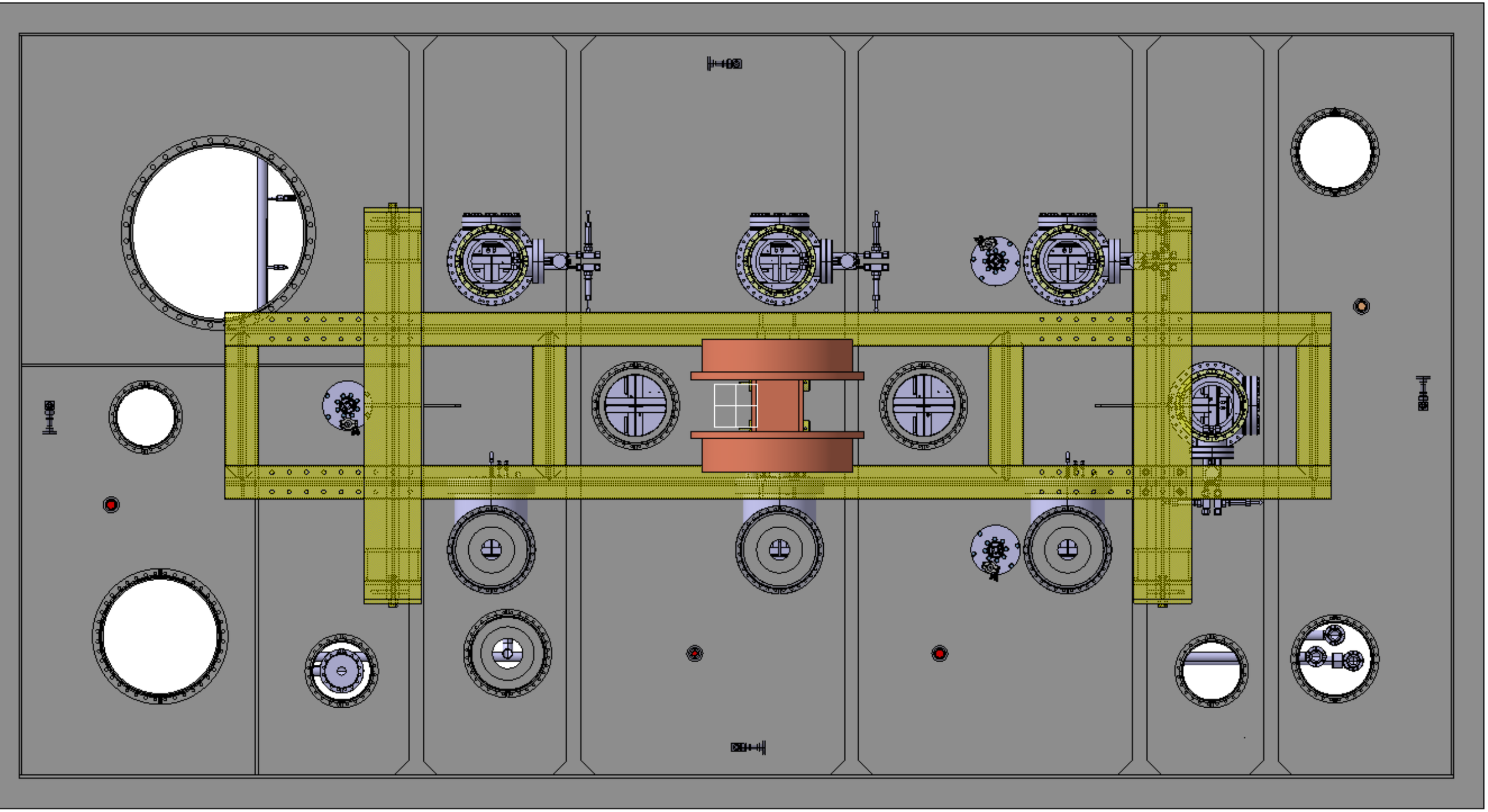
Drift cage fixation
-> bring drift cage under top-cap and fix under top-cap (exact procedure under discussion)
->fix cameras, coax capacitor, cable trays
-> fix PMTs (details discussed with Ciemat)

FE insertion testing
->test insertion or real FE and check signal continuity with pulser (details see Dario's slides)

HVFT insertion.
->pb at manufacturing. Cannot be inserted in TAS as planned. Will be inserted when detector in cryostat. (See Adamo/Laura slides)

top-cap lifting

important: orientation of chimney for lifting



Schedule June

Holidays in Switzerland, Week Numbers

Jun 2016 (Paris)

Mon	Tue	Wed	Thu	Fri	Sat	Sun
30 Week 22 of 2016	31	1	2	3	4	5
6 Week 23 of 2016	7 **platform construction starts**	8	9	10	11	12
13 Week 24 of 2016 **CRP ready and cabled (Cosimo)** Fix drift cage	14	15	16	17	18	19
20 Week 25 of 2016 **Pulser system ready (Cosimo)**	21	22	23	24	25	26
27 Week 26 of 2016	28	29 St. Peter and St.	30	1	2	3

connections (LM, LEMHV, Pt, SIG, + SC testing + warm signal continuity check with pulser) Cosimo-Yann

install cameras, coax capacitors, cable trays for PMTs)

test of FE insertion + pulsing (Lyon)

install PMTs (connection+ test) Spain

install internal piping (Shuo)

buffer + final testing

Main activities for July

MILESTONE: Ready for cryogenic installation in August

Insert detector in cryostat
->Lift top-cap from TAS (top-cap lifting device ready and tested).
->enter manhole to make visual check (procedure to enter manhole under discussion with safety
->Solder top-cap (under discussion with Dimitar)

Install all racks, grounding strips + cables
->move TAS racks to final area
->ship remaining racks from 21 to 182
->install remaining cable trays, grounding strip
->final cabling on top-cap

FE noise measurement
->test noise with detector in final configuration
->improve grounding/electrical scheme if needed (see Dario, also Yann)

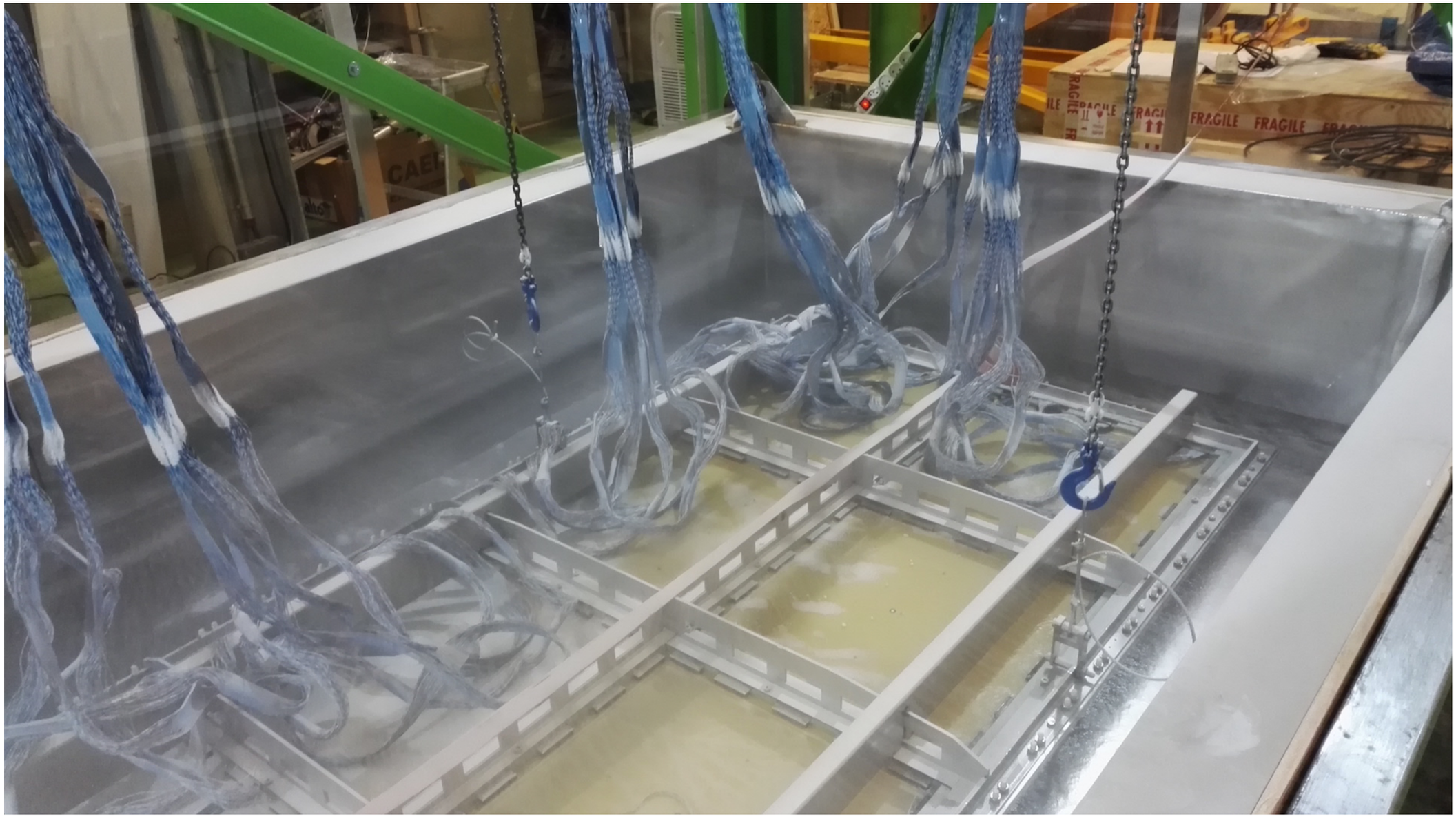
July

Holidays in Switzerland, Phases of the Moon, Week Numbers

Jul 2016 (Paris)

Mon	Tue	Wed	Thu	Fri	Sat	Sun
27 Last quarter 20:19 Week 26 of 2016	28	29 St. Peter and St.	30	1	2	3
4 New moon 13:01 Week 27 of 2016 **LIFT TOP-CAP + DETECTOR**	5 visual inspection inside cryostat **platform ready**	6 soldering of top-cap bring racks in position + install cable trays on platform	7	8	9	10
11 Week 28 of 2016 install purity monitor (Laura M)	12 First quarter 02:52 install cable trays, copper grounding plates and cable all racks	13	14	15	16	17
18 Week 29 of 2016	19	20 Full moon 00:57 FE noise measurements (Lyon)	21	22 **HVFT insertion**	23	24
25 Week 30 of 2016 install cable trays, copper grounding plates and cable all racks	26	27 Last quarter 01:00	28	29 **ready for cryogenic installation**	30	31

Bath test



Goals:

✓Mechanical test of extraction grid

✓Electrical continuity test of anode connections in cold

but also was useful for:

- Safety aspects: sets a precedent and simplifies the procedure for the 3x3 CRP cold-testing next year.
- test of slow control system (temperature was recorded)

He test of top cap

While the top-cap is in the TAS. We would like to quantify the leak rate of its insulation space (hopefully zero).

Why:

->He testing was done at Gabadi but not quantified after the travel to CERN.

->once the drift cage is fixed might modify the bottom invar plate, good to check for leaks a last time before filling.

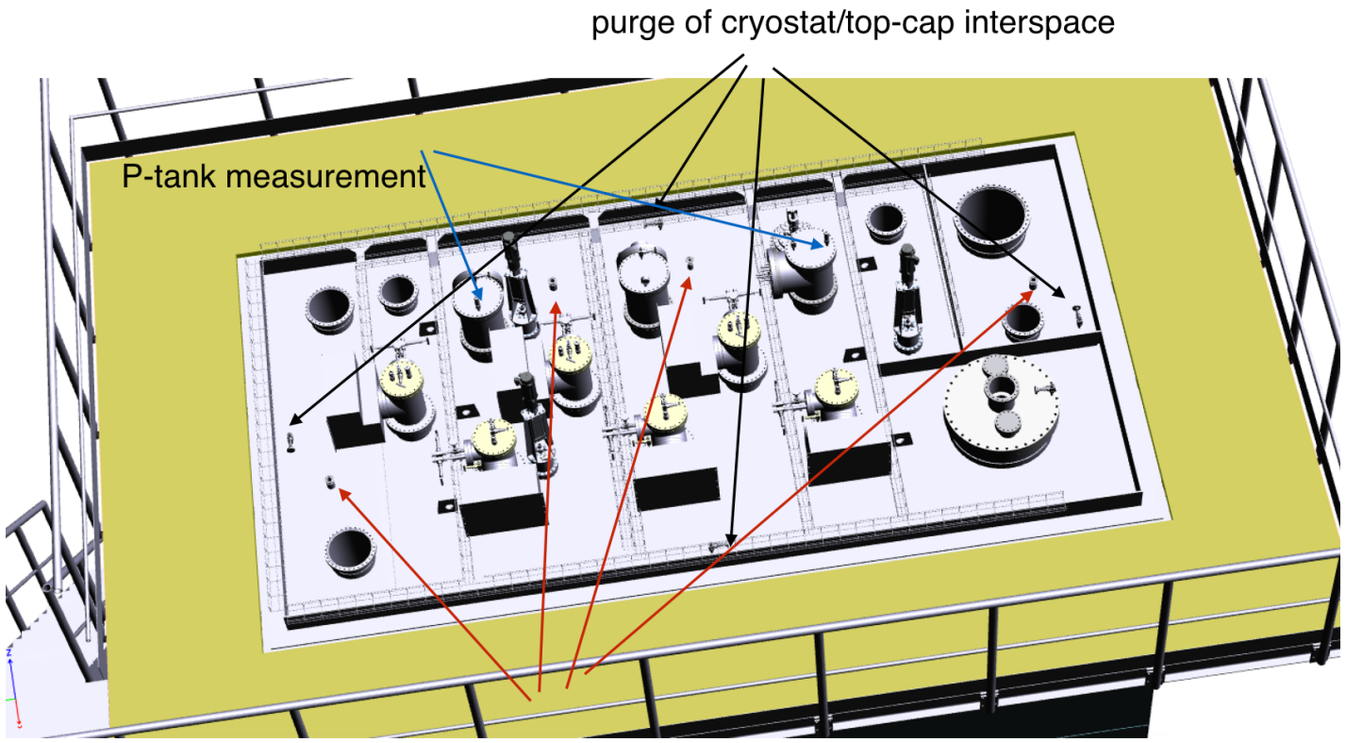
How: repeat similar measurement to that of Jae/Yannis on the cryostat. I.e fill with a known small overpressure of He and let decay.

What is needed:

->We have everything, just need minor pipping. Hopefully start end of next week.

->Good opportunity to test/tune the slow control pressure monitoring.

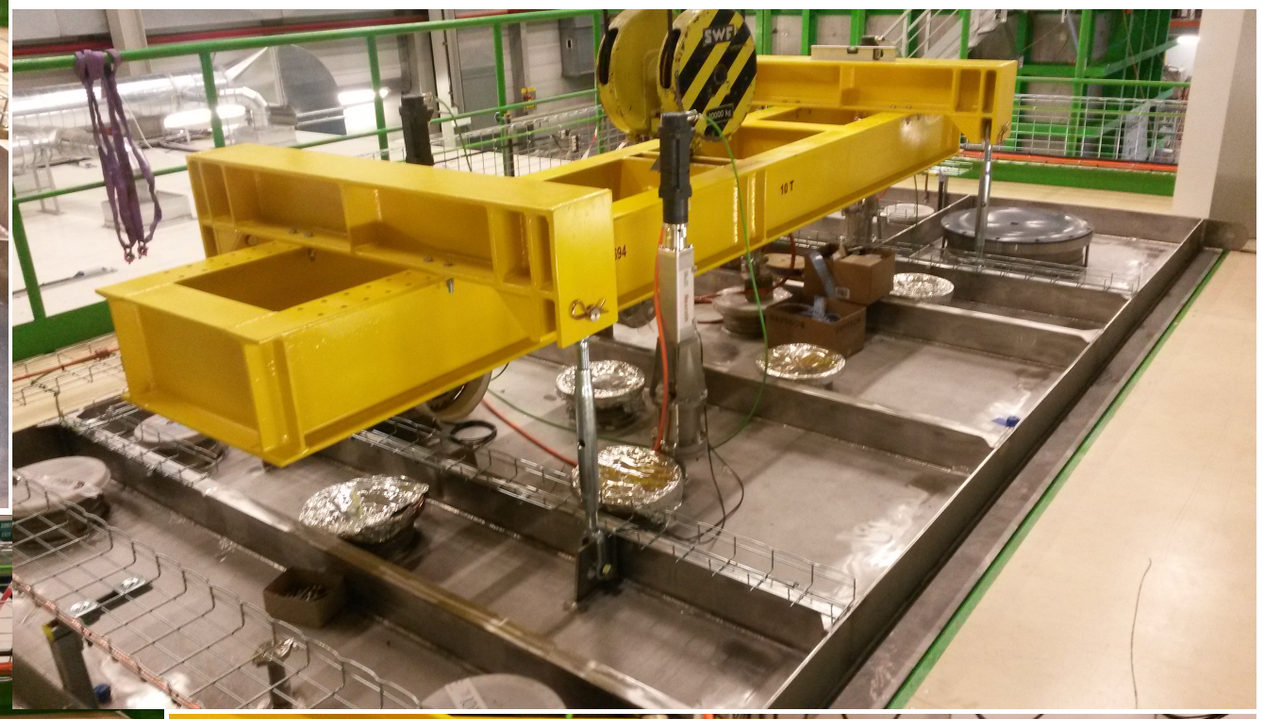
->Jae?

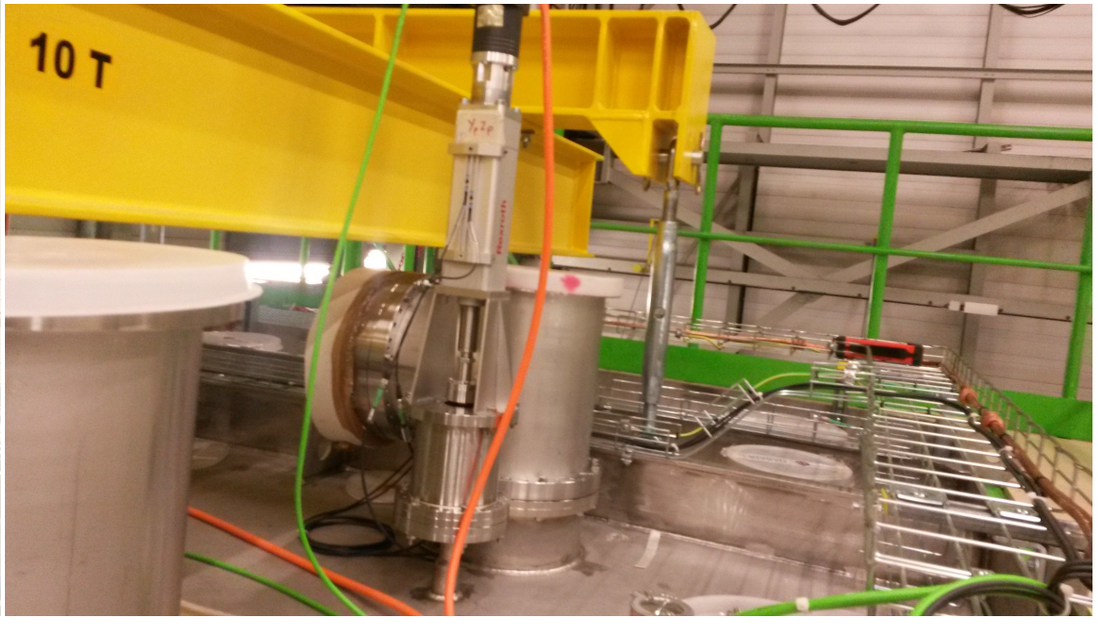


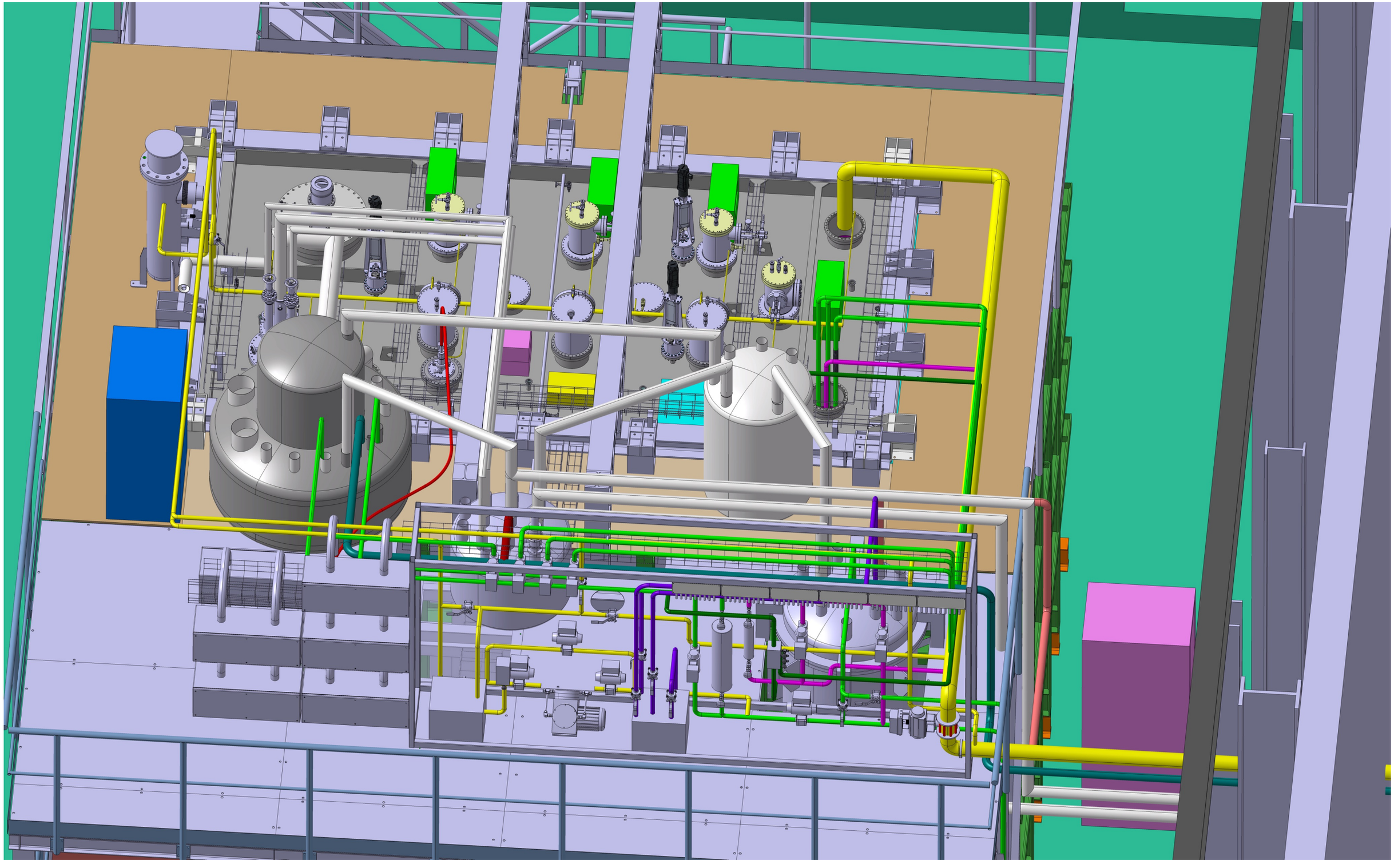
4 KF ports connected to the top-cap IS which are free.

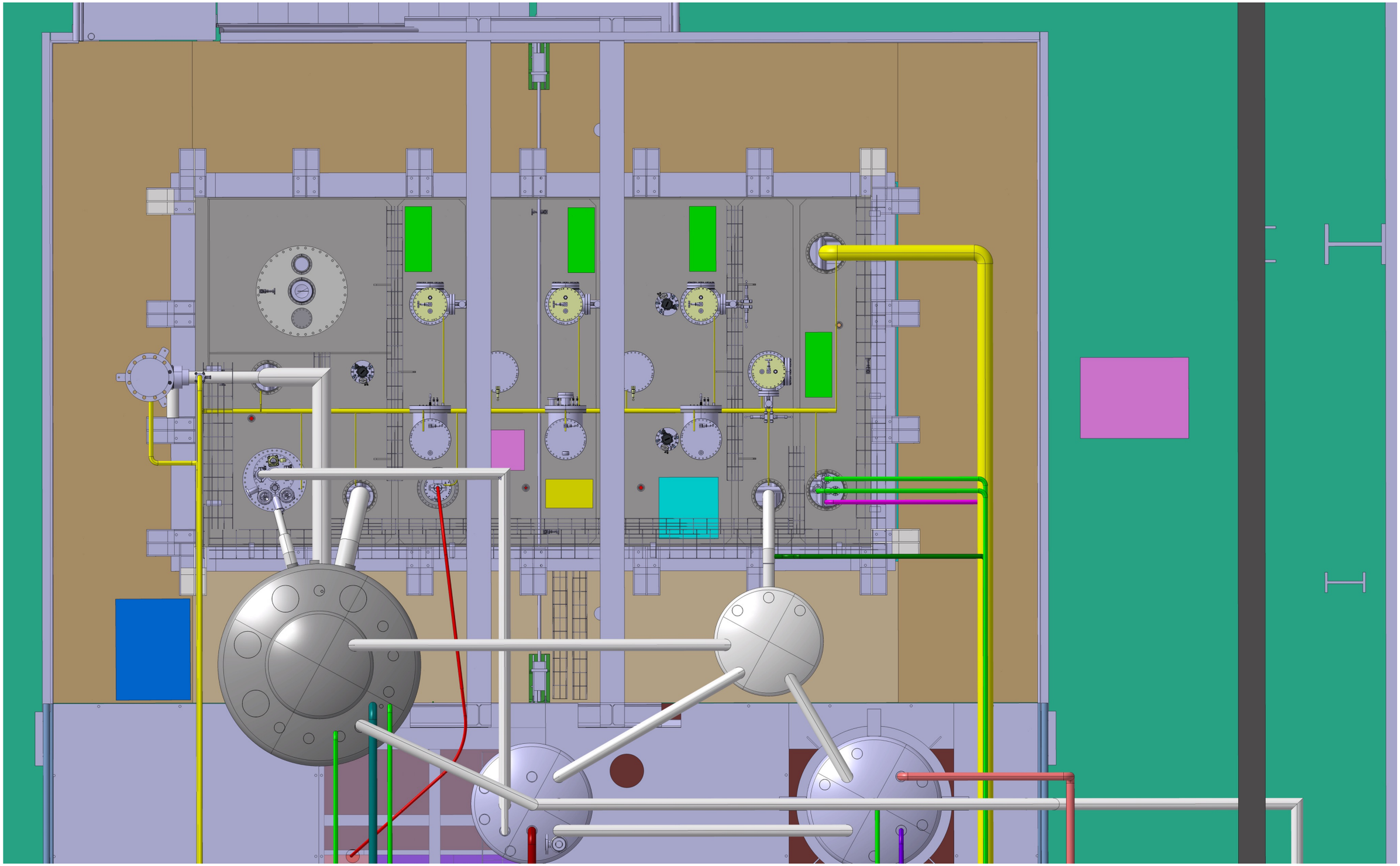
Extra slides

test of top-cap lifting device



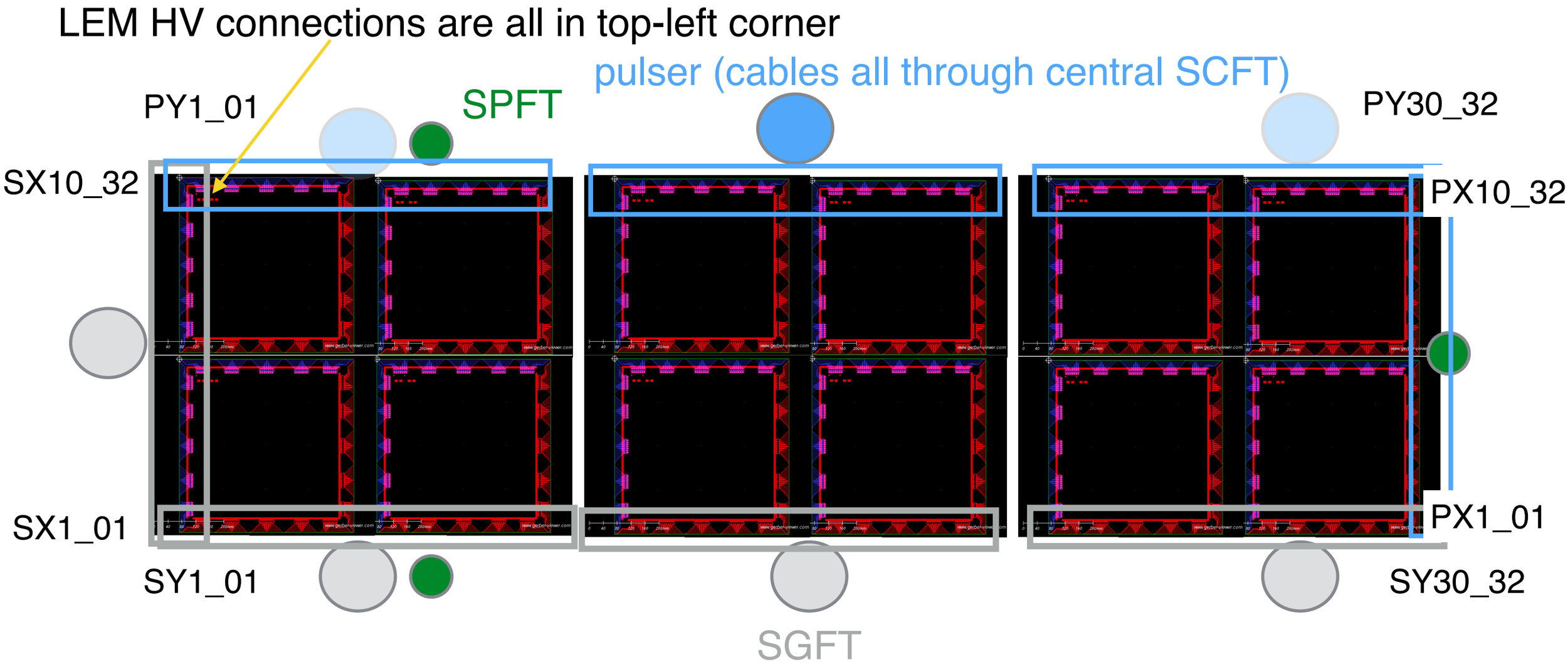






Layout (reminder please check!)

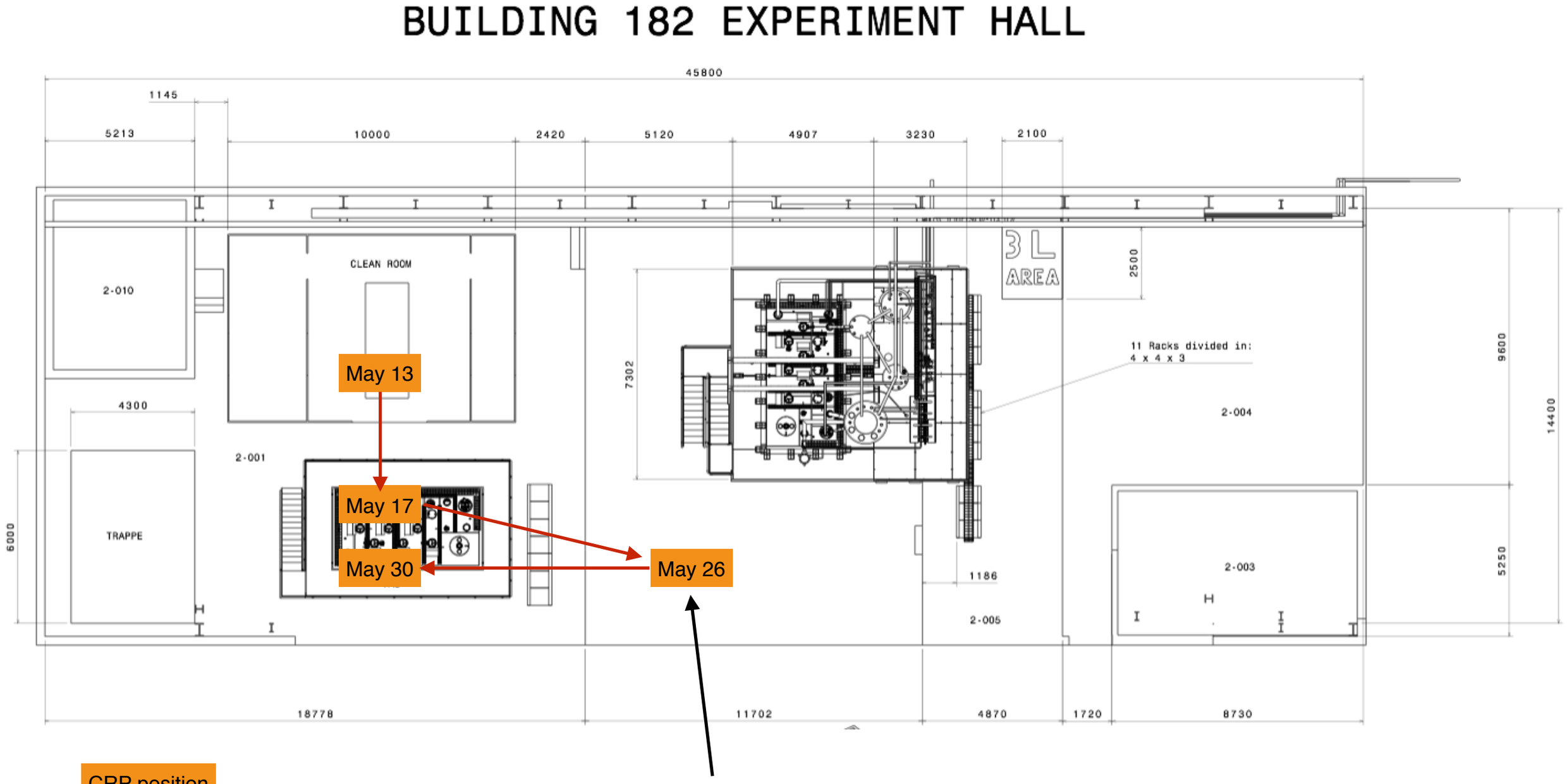
This is how the CRP will be mounted and LEM-HV cables cut to match this layout.
After next week- No going back!



1. if we link the anode copper ground tracks as proposed in previous slide, then pulser/ signal have common GND
2. Do we agree on this layout and naming convention? (S,P)-(X,Y)-connector#_pin#

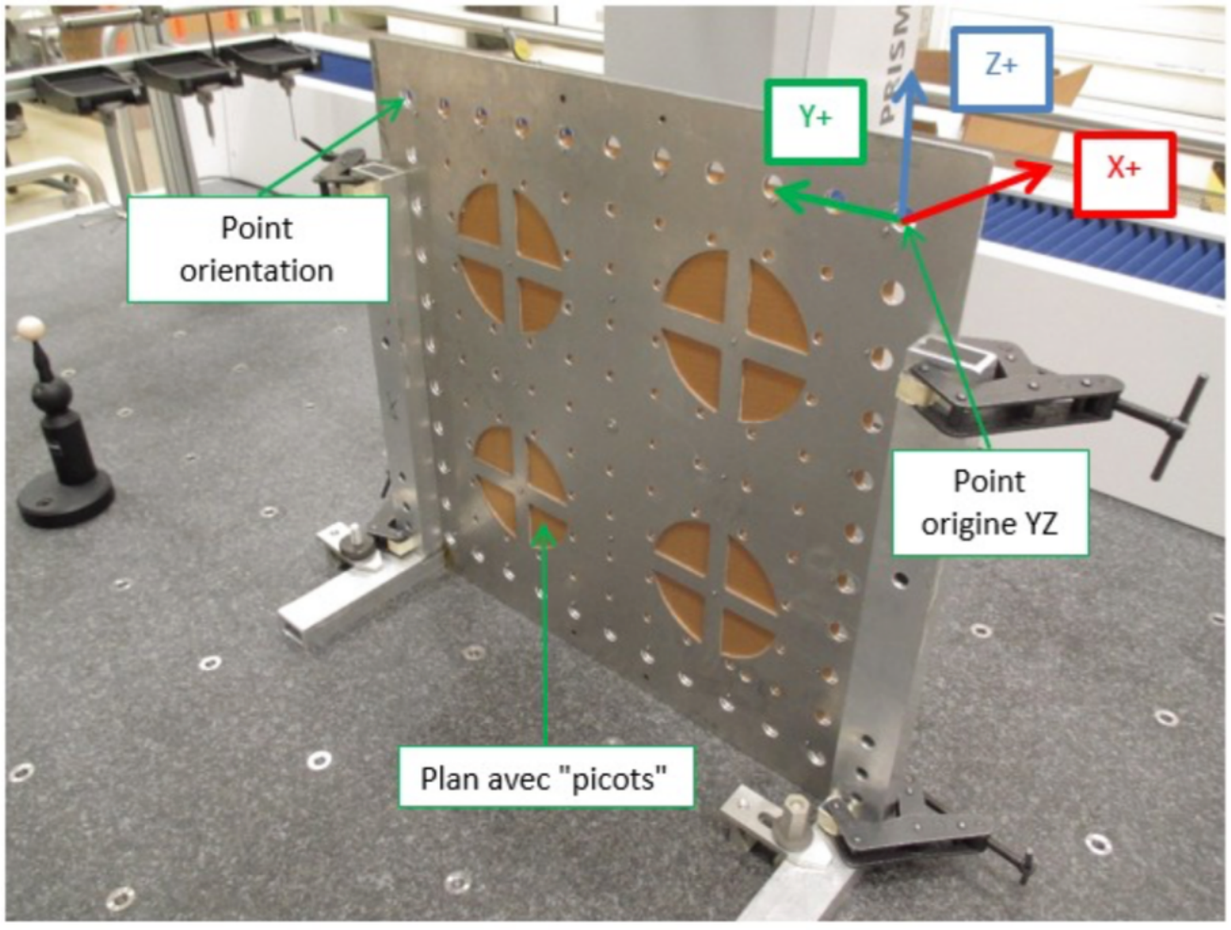
Bath test

Goal: test extraction grid and anode signal continuity in cold (check that the anode jumpers contact are ok)



May 13th CRP ready in CR
May 17th CRP under TC for one week (cut and prepare cables)
May 26-27: TC in open bath test (Warning on cleanliness during transport and bath test)
May 30th: CRP under TC final resting place.

A few pictures- LEMs



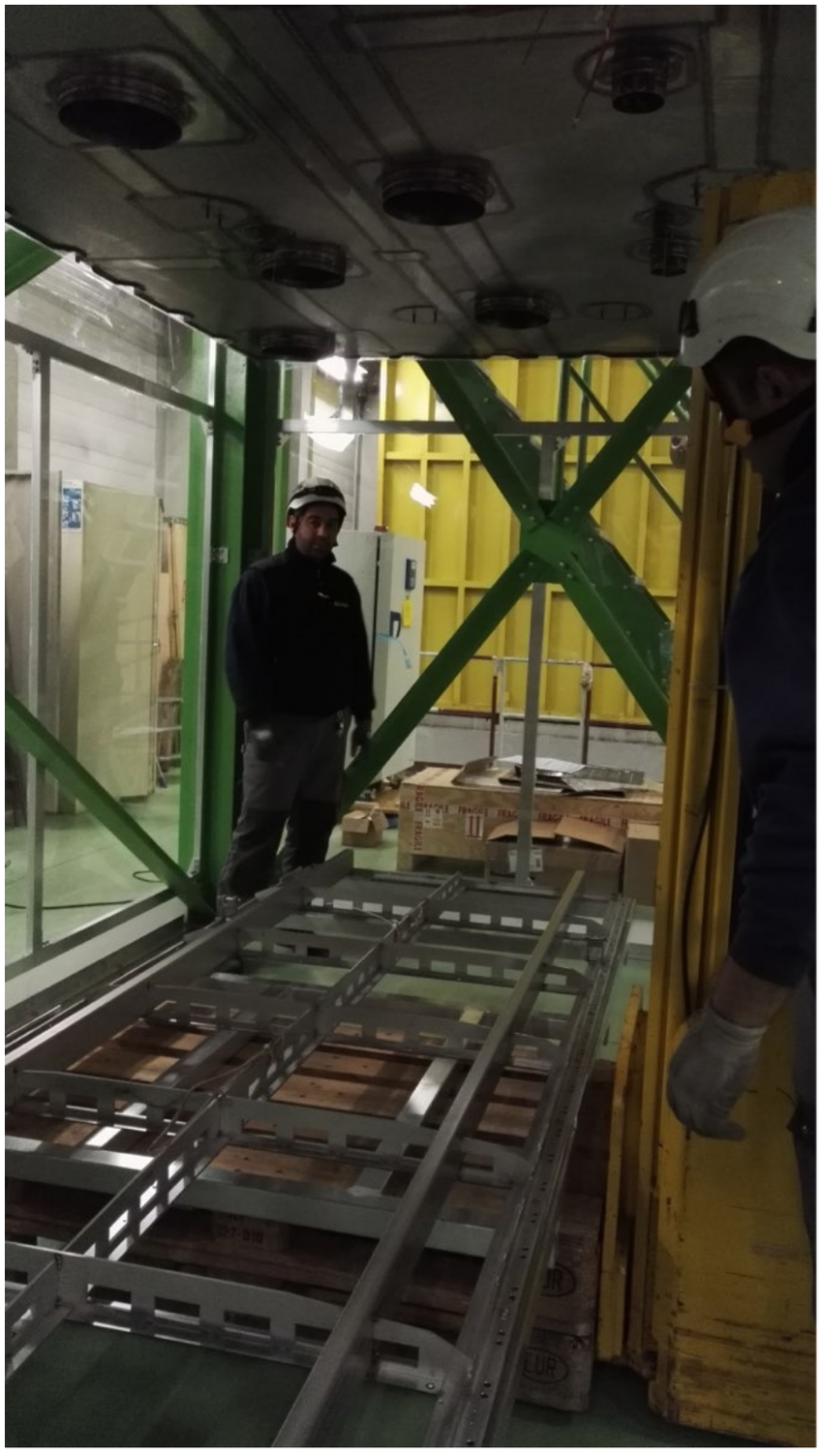
LEMs thickness measured (precision of about 3 microns TBC). automatically 100 points with step of 5cm in x-y.
All files available on https://edms.cern.ch/document/1682958/1.
in pdf, xls, txt..
Distributions for each LEM need plotting

Then LEMs have been cleaned and first HV tested at Rui. They are been shipped this morning to 182 CR.
(see Marco)

A few pictures

CRP frame was hooked under top-cap for first test (lifting+suspension test, + first check of cable lengths)

A few pictures



extra slides

Ongoing activities by category

All OK/On schedule. late critical/delayed

Tank & top-cap

- **Membrane leak test:** Finished. Membrane needs cleaning (procedure under discussion)
- **Top cap:** arrived inside of the pipes cleaning in progress (see slide)
- Platform: design finalised and ordered ready for June 1st (see Adamo).

CRP

- **mechanical frame:** Bath test done, being cleaned, see Adamo (+ LAPP at TB yesterday) for results from photogrammetry.
- extr. grid: shorter 3m wire pads have been re-soldered in clean room. Shortened by 1 cm.
- **LEMs**: see slide

Ongoing activities by category

Chimneys an FT

- **Suspension FT:** installed.
- **Signal feedthrough:** cabling ongoing see Laura Z.
- **HV Feedthrough.** still delayed. See Laura M.
- **HV testing:** Planning setup on big dewar, see Laura M.
- **slow control T's:** installed
- **slow control flange:** See update Cosimo
- **Manhole:** flange at Zurich will be sent to PSI

Cryogenics

- **proximity cryogenics (cold-CERN 90%):** Demaco design ongoing.
- **internal piping:** layout and installation procedure finalised, Criotec is manufacturing the parts. See Shuoxing
- pump tower: manufacturing at Criotec. Test and detailed design ongoing. See Shuoxing
- instrumentation and slow control: hardware and software links between the two systems being defined (regular meetings). Meeting tomorrow.

Ongoing activities by category

Drift cage and LRO

- Drift cage mechanical: ready, see updated drawings for coax capacitor fixation by Adamo.
- voltage divider: resistors ready insertion tested at Cinel.
- PMTs: ready and tested. Assembly sequence TBD.

Slow control & instrumentation

- **cabling external/internal:** cable trays installed. Cable boxe in progress. **Next step start making external cables. Need exact lengths**
- rack internal cabling and layout: racks all cabled in PH-DT lab will ship them to 182 once top-cap is there.
- **cameras:** Raspberry pi tested in LEM cold test. Will be tested during HV test. Mechanical fixations needs to be made.
- process: continuing filling template to define alarms, process and so on. First discussion with Sylvain R.
- **level meters electronics:** first proto tested in LEM cold test. Design ongoing see Cosimo.

Ongoing activities by category

All OK/On schedule. late critical/delayed

FE & DAQ

- **Front ends (Lyon):** still on schedule installation in June.
- uTCA crates: offers received will place the order now.
- DAQ: processing and storage discussed with CERN.
- Front ends (KEK): see update Ken.

Experimental installation & safety

- **Lab space and clearing:** need lots of storage for pieces arriving and space is getting limited. Cleaned the platform above WA104 offices for storage.
- **cryo platform:** Still on schedule end of May.
- **power requirements and grounding:** making a list with total power needs (DAQ, SC, cryo-SC) Nicolas already brought a 2 kW UPS for the TAS tests.
- ODH: .Safety analysis done. In the hands of Olga and HSE
- Grounding: see dedicated slide.

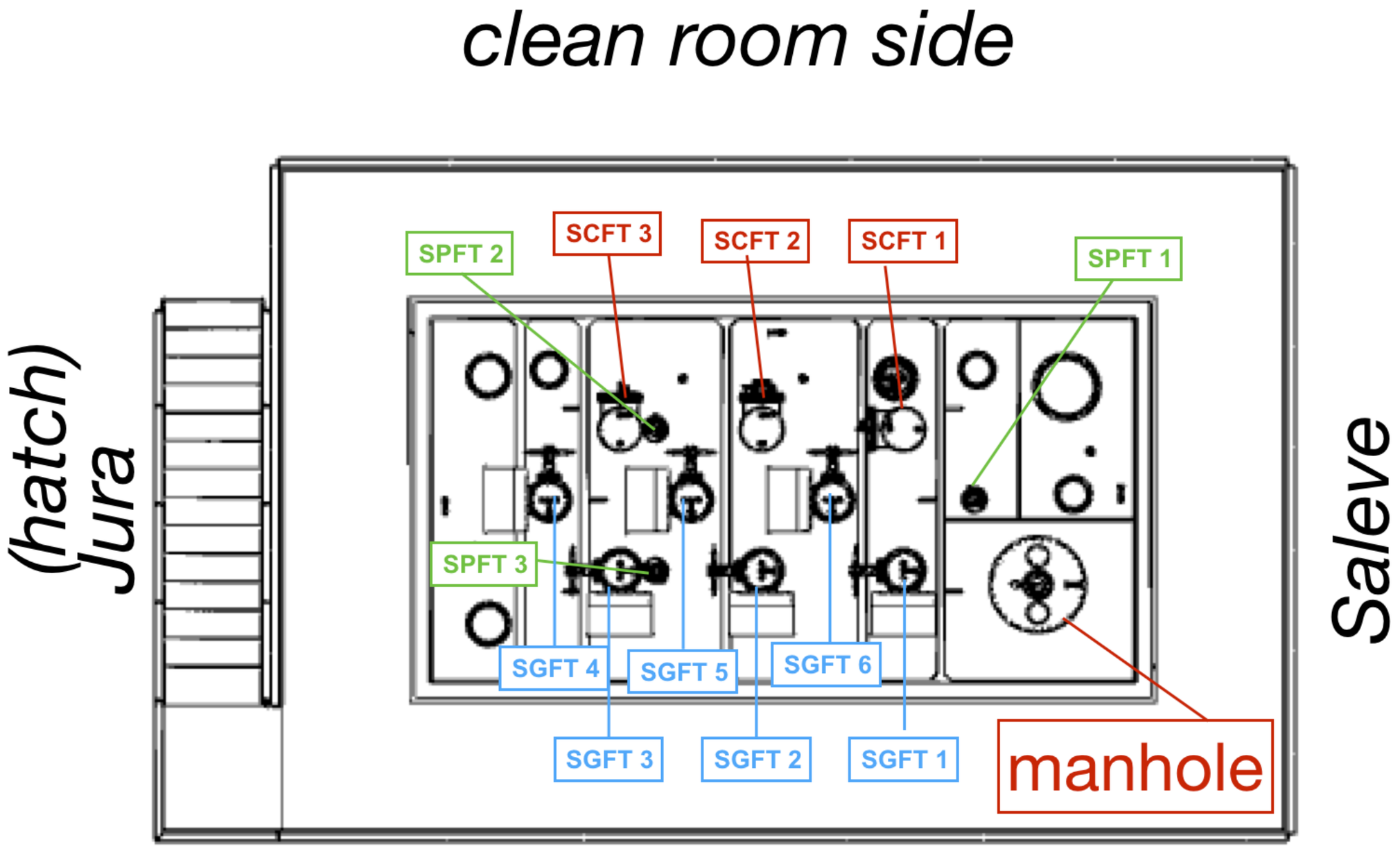
Immediate activities

Activity	period	who	status/remark
~~1.install slow control cable trays~~	~~March (1st half)~~	~~CERN-DT (FSU)~~	~~ordered~~ **DONE**
~~2. Bring racks from 21 to 182~~	~~March (2nd half or April)~~	~~CERN-DT + LAPP~~	~~LAPP rack at CERN b.21~~
~~insert SPFT + commissioning~~	~~April (1st half)~~	~~LAPP~~	~~at LAPP ready~~
outside slow control cabling	April (1st half)	CERN-DT + LAPP	Derivation box ok. All cables ok, see Cosimo for details
test mockup PCB insertion + insert SGFT	March/April	IPNL	see fr… ongoing
~~Bath test CRP~~	~~March~~	~~ETHZ+CERN-DT~~	**DONE**
fix SCFT flange + chimney on top cap	April	WA105	SCF… proto test ok. On schedule
inside cabling	April	WA105 + CERN-DT	start next week
hook CRP + complete test (including bath test)	May (1st half)	WA015 + LAPP	
fix drift cage+ cameras + coax capacitor	June	WA105	
HVFT testing	April	WA105	delay in HVFT production.
insert HVFT	June (1st half)	WA105	
install internal piping	June (2nd half)	WA105	
fix PMTs	June (2nd half)	Spanish groups	
10 FE cards (Lyon) inserted	June	IPNL	
lift top-cap+ detector	1st July	WA015-CERN	

Top-cap

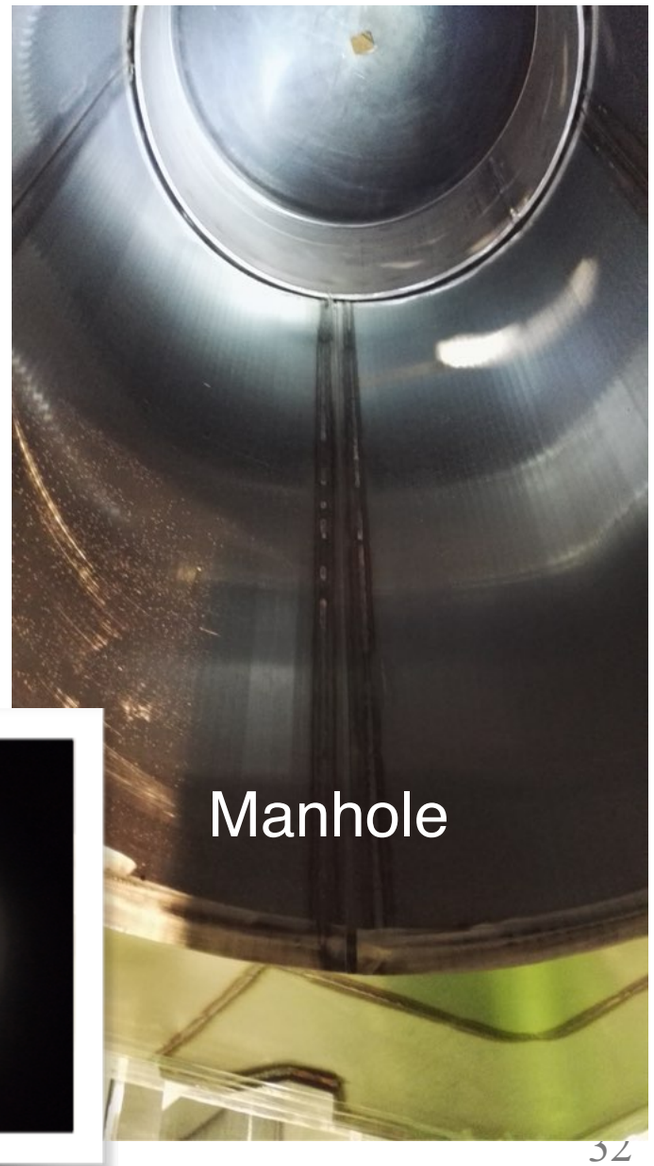
last week SPFT and Slow control Ts were installed.

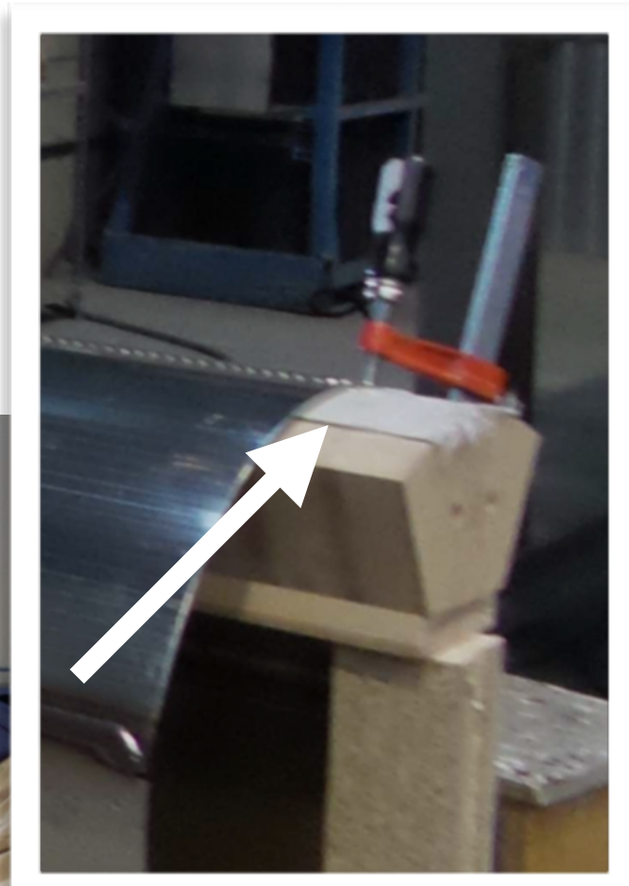
Nomenclature



pipes

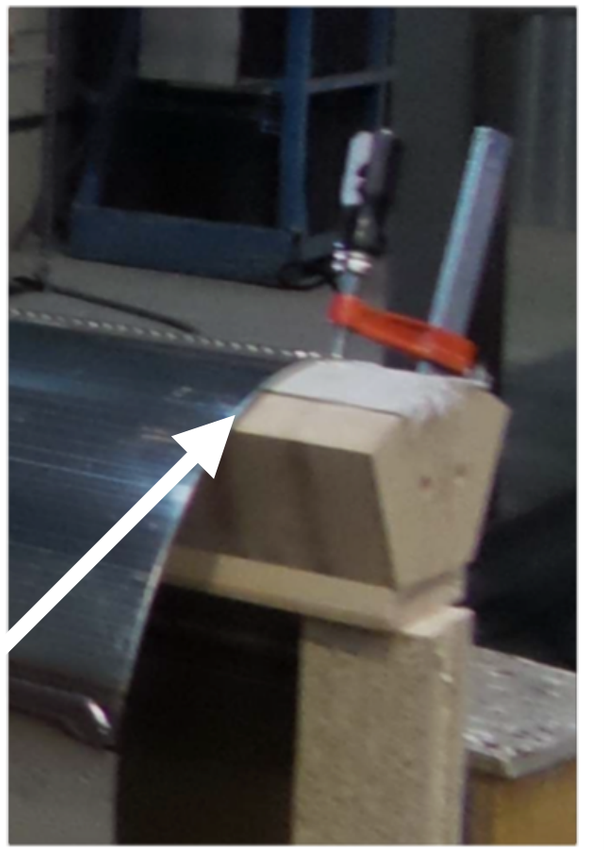
Started to clean inside the chimneys. Paraffin comes of easily with acetone. However some residue are more difficult. These are residues from the thermal insulation they used during the welding of the pipes. Looks like glass fibber. Managed to remove most of it, we have help from experts at CERN to remove the rest. Tomorrow we will finish cleaning the SPFT pipe in time for assembly on Friday.





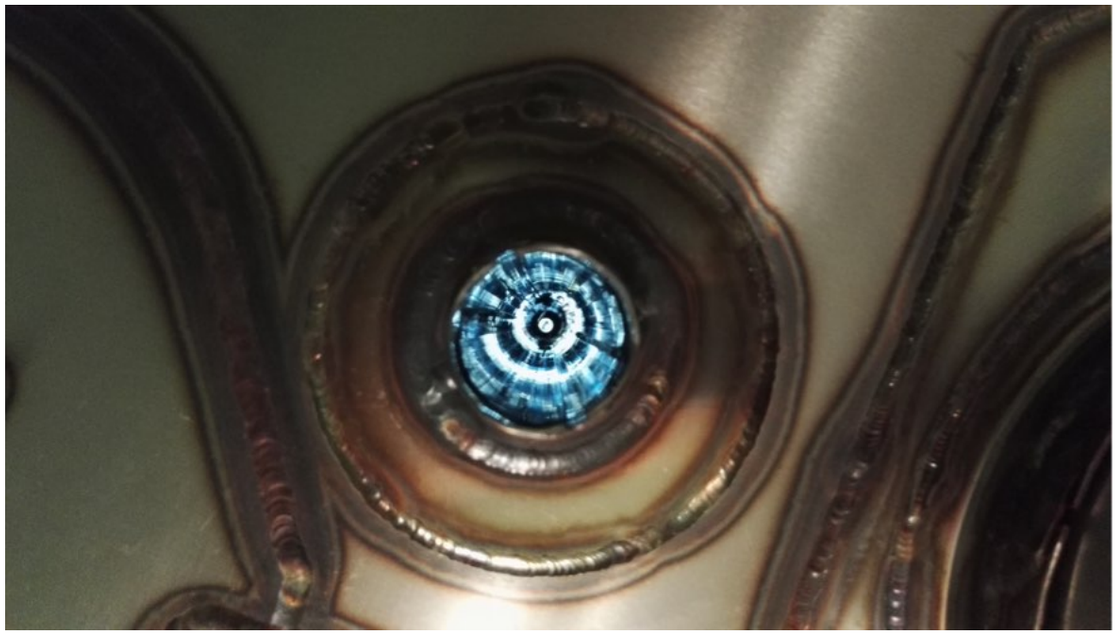
Top cap pipes

- All chimneys had residue from thermal protection of the welding of the invar tubes.
- (Tubes in invar do not exist and had to be assembled at their workshop).
- In addition the invar surface were covered with paraffin for transport.



Top cap pipes

Discussed with experts at CERN (also keeping GTT informed).
made an extension and brushed inside the pipes, then clean with acetone.
Visual inspection ok.



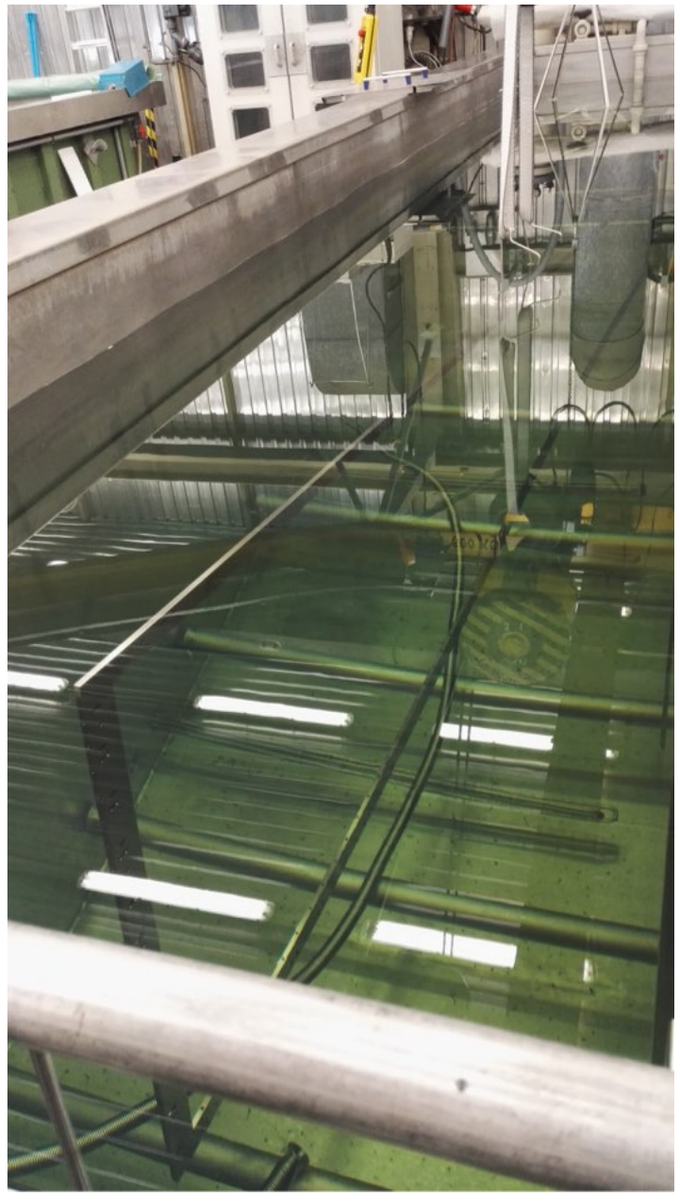
CRP assembly

CRP frame

The CRP components have been cleaned, this includes:

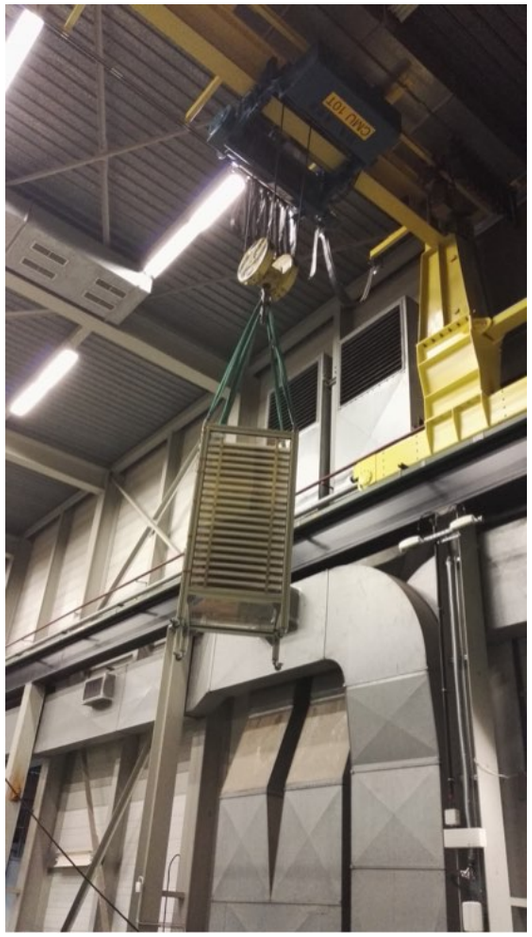
- The main frame (lessive + ultra sounds)
- All the anodes (alcool+ ultra sounds)
- The 1m2 G10 frames (lessive + ultra sounds)

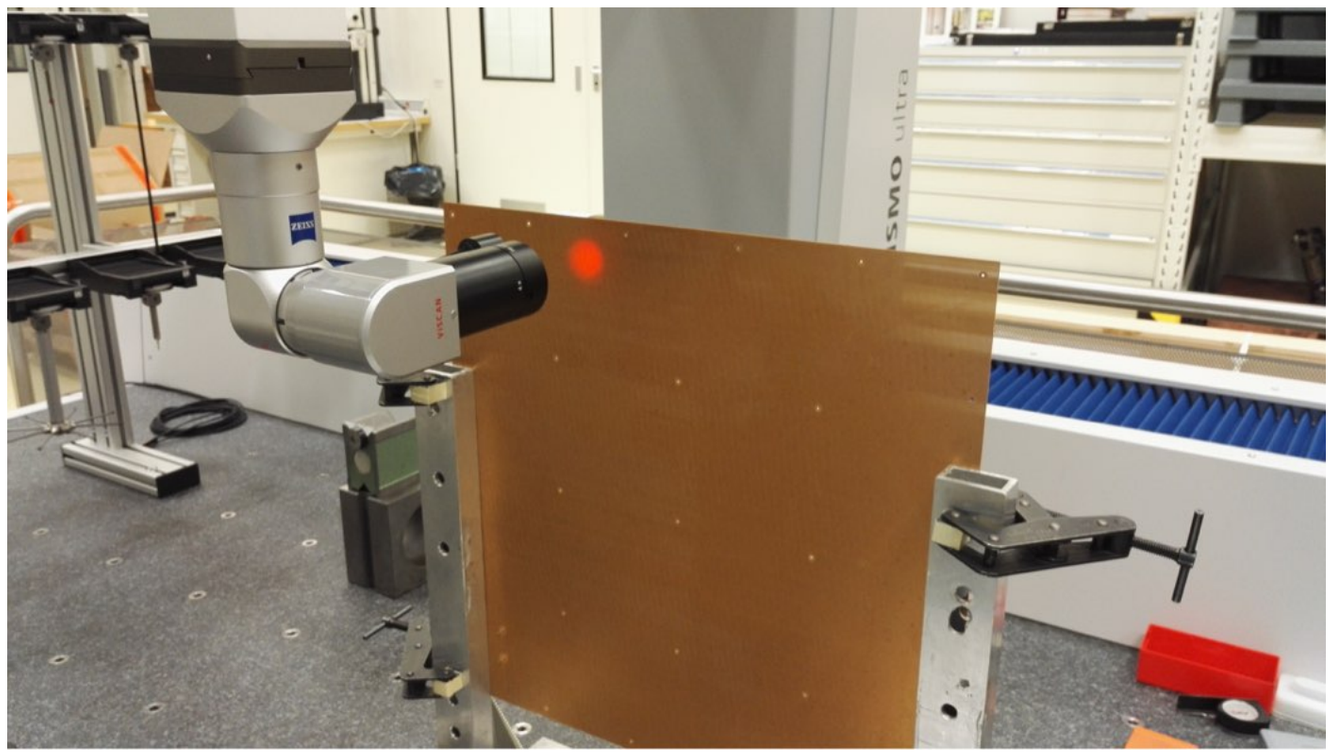
All shipped back to 182 tomorrow



LEMs

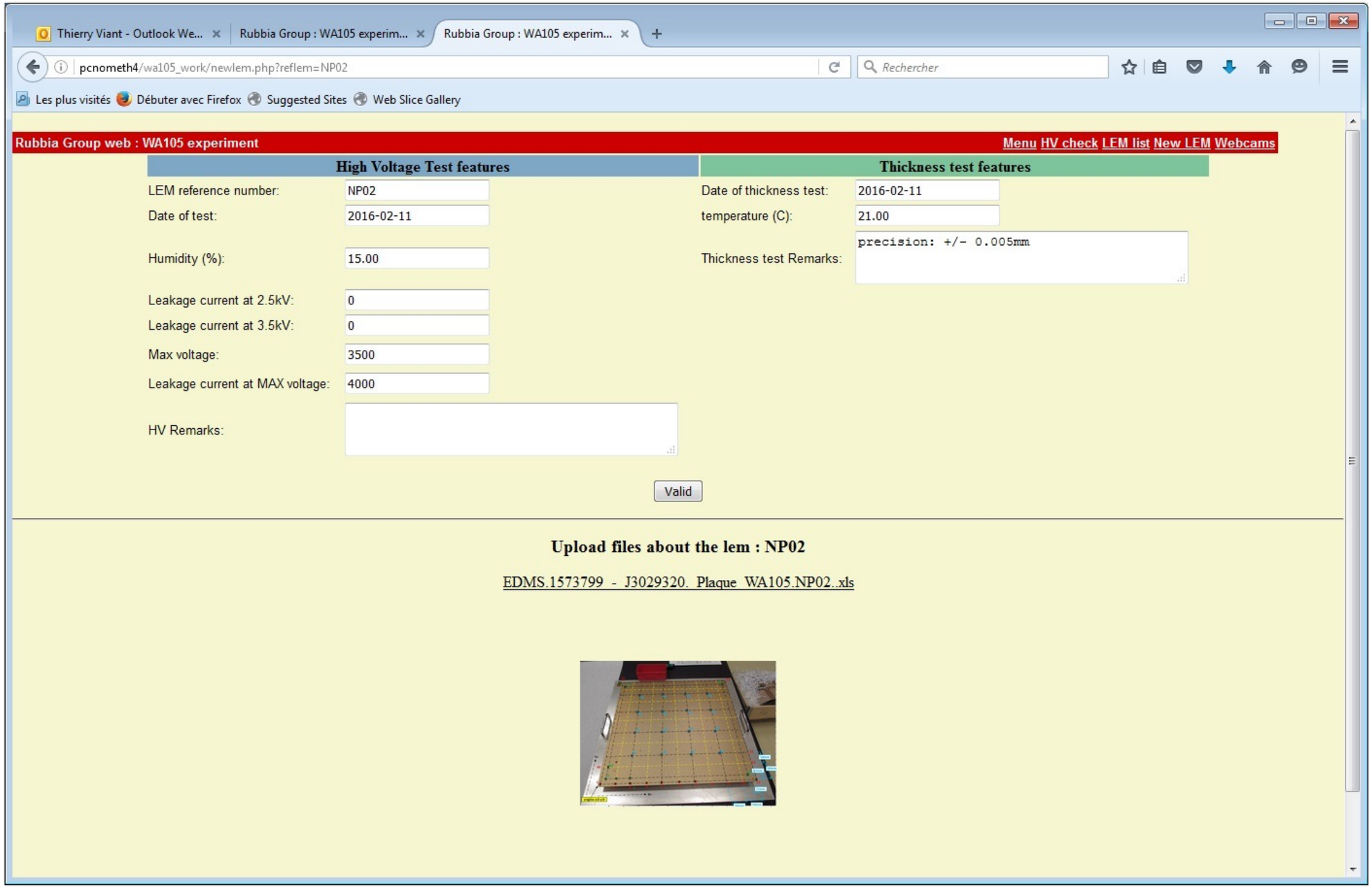
- LEMs were all checked, inventoried and packed by Laura Z. & Alain D.
- last week they were shipped to metrology lab for thickness measurement. They found a method for automatic scanning of thickness. Precision 5 microns TBC.
- All 20 should be done by the beginning of next week.
- Next week: cleaning and HV test at Rui.
- Week of April 25th: shipment back to 182 for assembly.



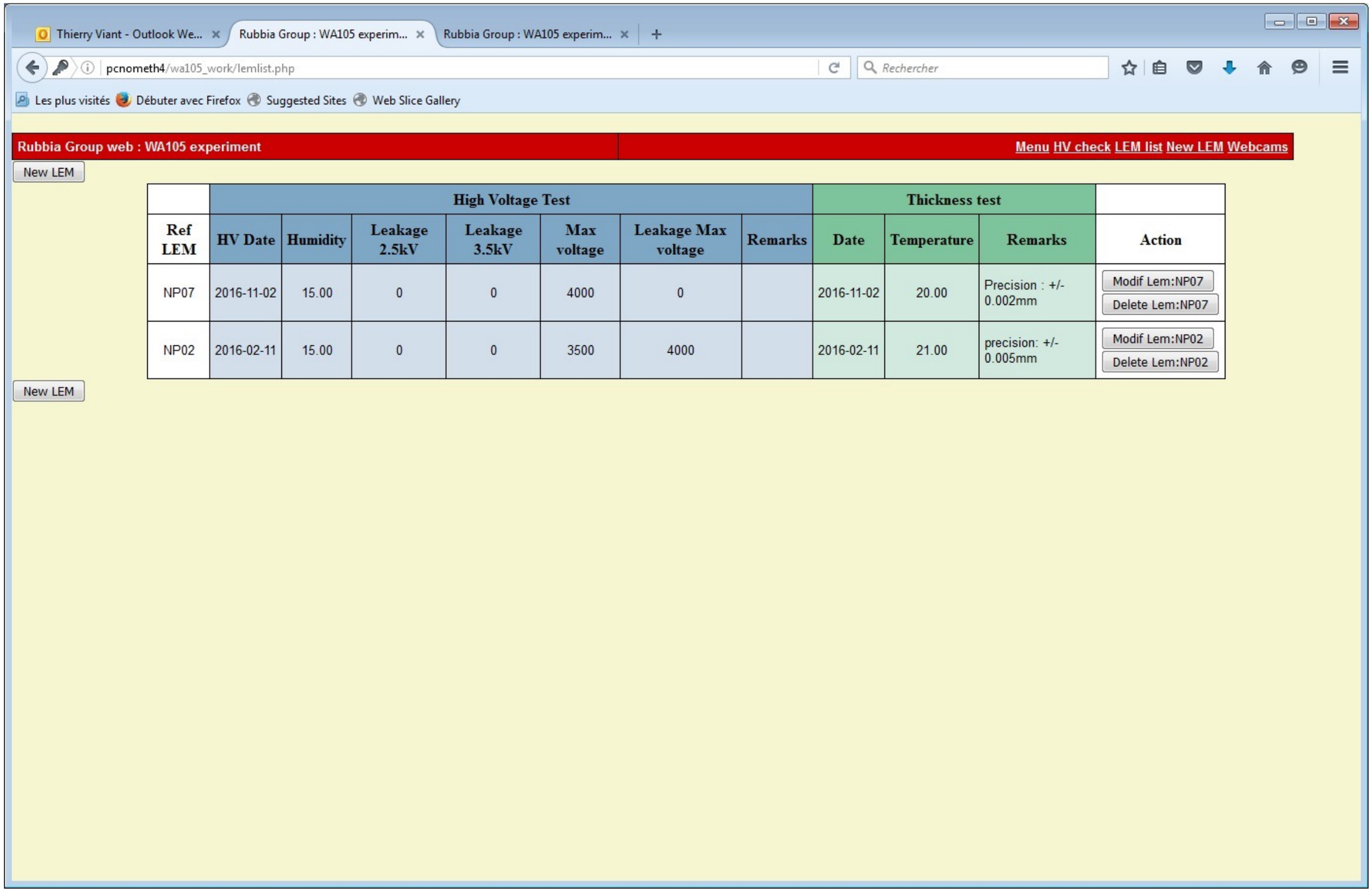


LEM DB (Thierry)

Keep track of the data on each LEM (pictures, HV-test and metrology results, etc…).
Ready to receive upcoming data on the 20 LEMs



LEM DB (Thierry)



	High Voltage Test							Thickness test			
Ref LEM	HV Date	Humidity	Leakage 2.5kV	Leakage 3.5kV	Max voltage	Leakage Max voltage	Remarks	Date	Temperature	Remarks	Action
NP07	2016-11-02	15.00	0	0	4000	0		2016-11-02	20.00	Precision : +/- 0.002mm	Modif Lem:NP07 Delete Lem:NP07
NP02	2016-02-11	15.00	0	0	3500	4000		2016-02-11	21.00	precision: +/- 0.005mm	Modif Lem:NP02 Delete Lem:NP02

CRP mounting

1. next week we will mount the CRP frame (with fake anode) underneath the top-cap.
   => test SPFT with CRP (Wendesday).
   => cut all internal cables to the correct length.

2. As discussed last time we plan to make a bath test under the top-cap of the fully assembled CRP
   - main objective:
     =>test that no wires brakes
     =>test contacts in cold
   - we need:
     - a bath and two dewars for filling.
     - extension to the LAPP cables.
     - check safety aspects.
   - Goal: end of May once CRP is fully assembled underneath top-cap