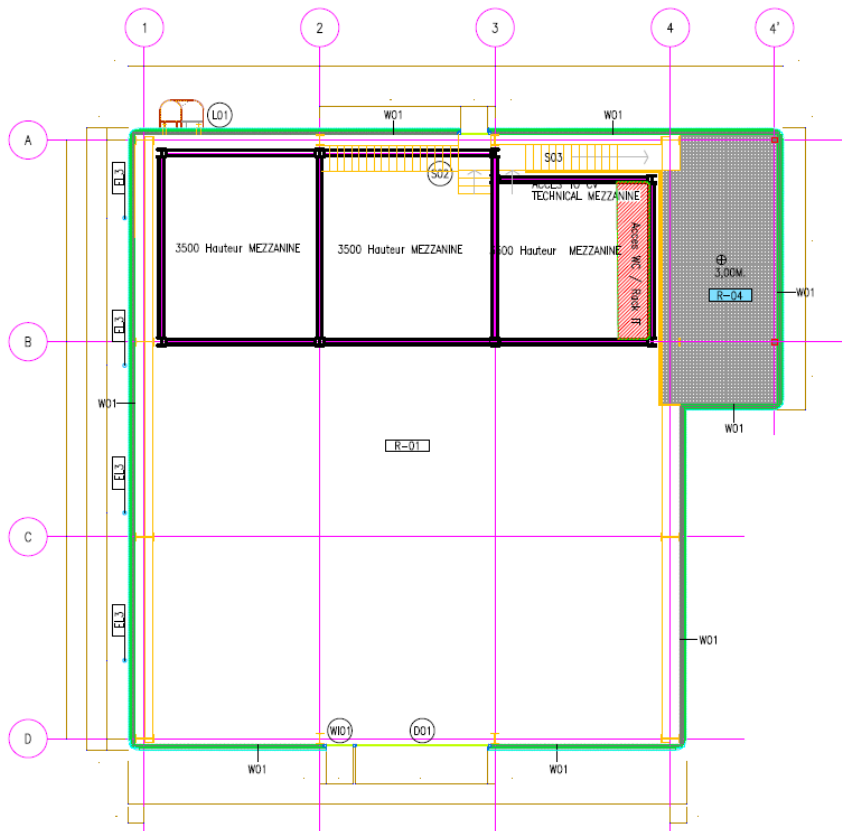


UT Integration

June 2, 2017

1. Area for UT assembling

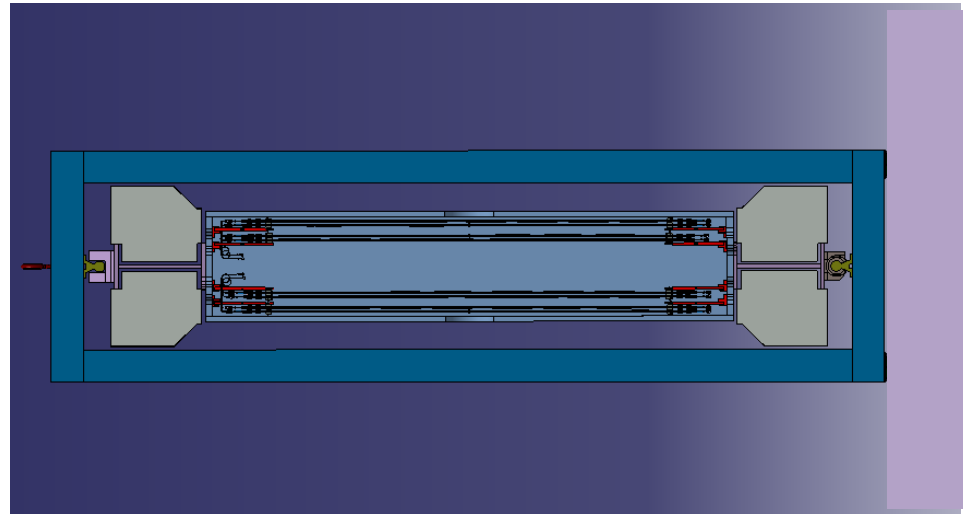
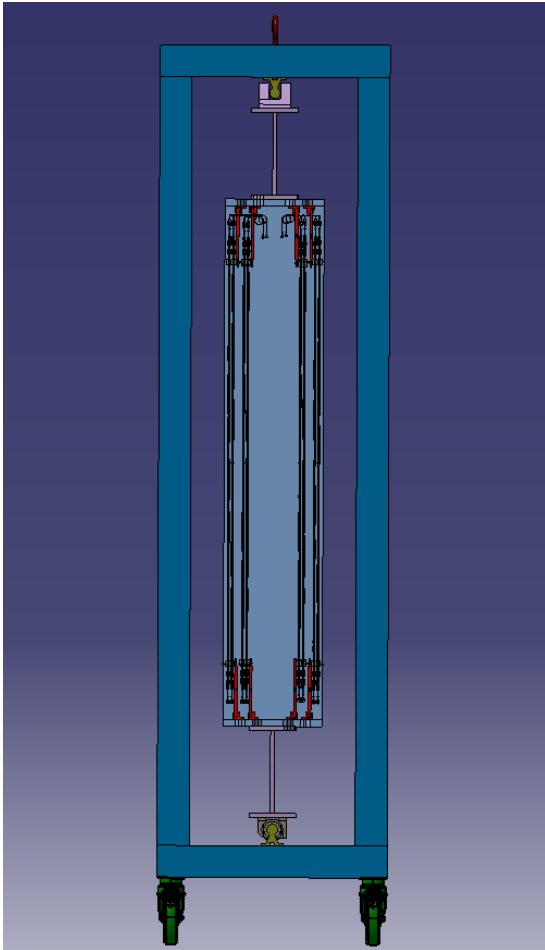


Outcome of previous discussions:

- The area between 1-2 and A-B (7m x 7.6m, 3.5m high) is considered for UT
 - It will be prepared as a semi-clean room for detector assembling, with slight overpressure, filters and an airlock to enter.
- Additional space for UT will be made available (e.g. between 1-2 and B-C, or 2-3 A-B).
- Also on top of 1-2 and A-B will be some space.
 - Will be needed for the LUCASZ cooling plant
 - Space will also be needed for material storage
 - Control room space outside the clean room
- **Our zone will be available for us after the summer (September 2017)**

Preparation of the zone is ongoing still

2. Cart for UT assembly

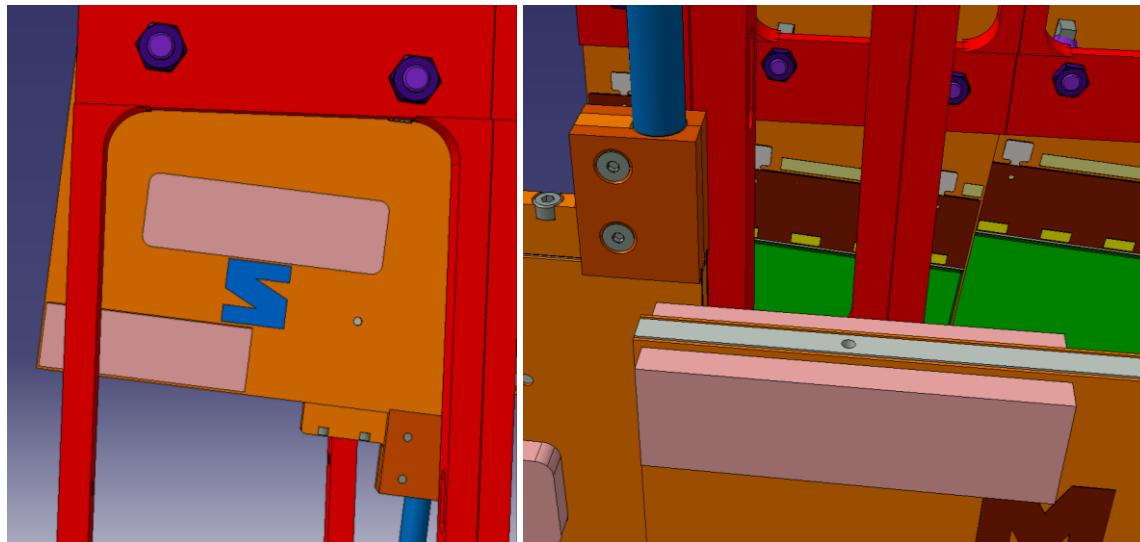
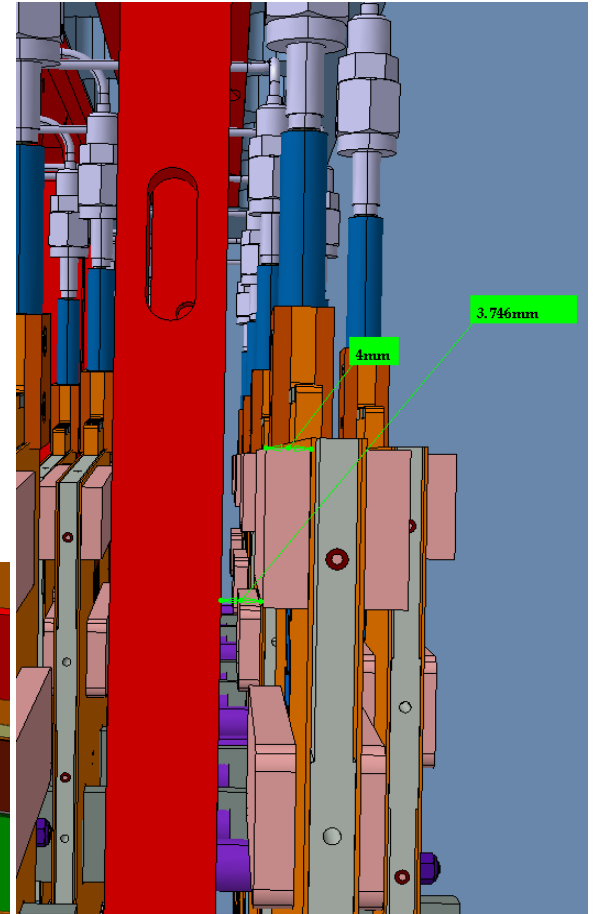
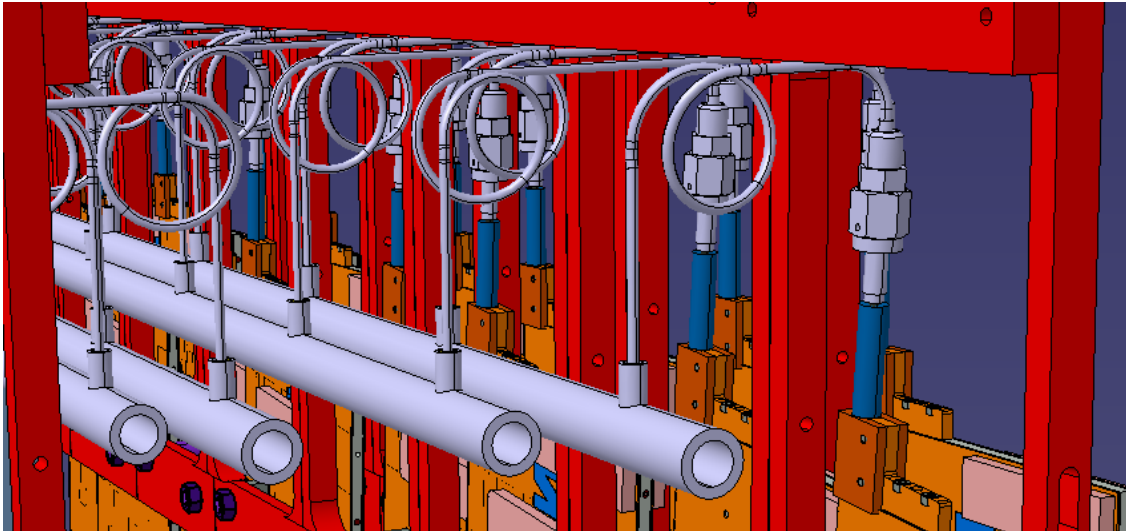


- Dimensions have to be tuned.
- We want to make sure the cart can be used on the surface and for installation in the detector.
- Most likely, we need to foresee also a horizontal position for the preparation of cabling in the PEPI volume.

3. C-frame design

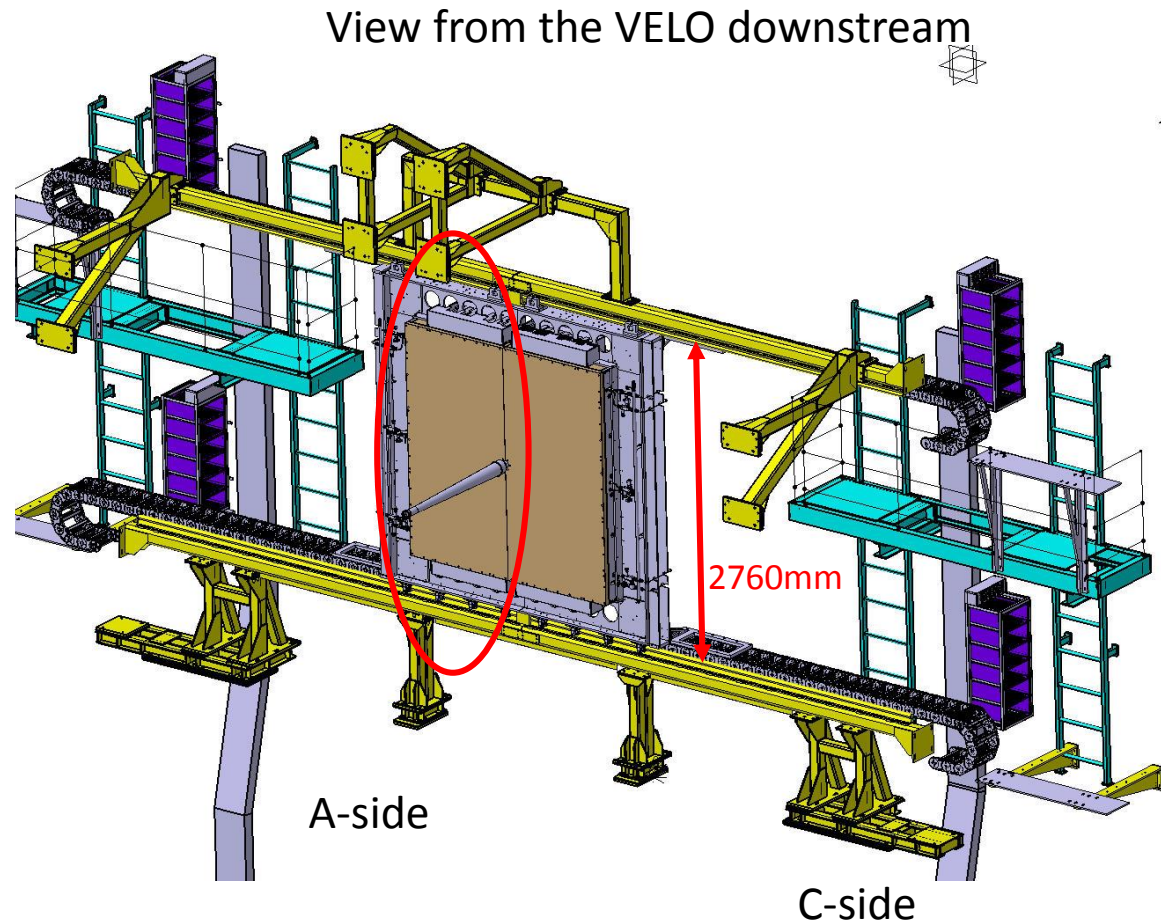
- The C-frame design will following closely the present TT design
 - A critical issue is the precision on the inner surface, required for the detector box, the frames and the staves.
- To be followed up by Joao and Michal
- **No news since the last meeting**

4. Integration in the UT box



5. Service Bays

- First iteration of the work on the mechanics and cooling for the service bays finished.
- To be resumed when the work on the PEPI has reached a similar level.

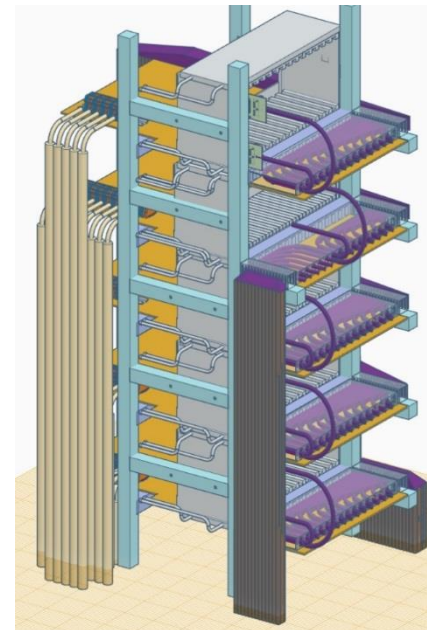


UT Service Bay cooling requirements

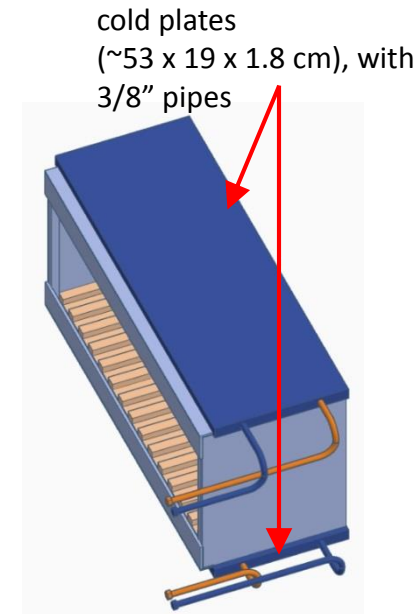
CERN, 24 April 2017

B. Schmidt(CERN), C. Abellan Beteta (UZH, Zurich) , [P. Gorbounov \(ITEP, Moscow\)](#)

- 4 Service Bay Chassis (SBC) with linear regulators
- Each SBC will dissipate ~ 2.9 kW of heat, most of which has to be removed by indirect water cooling (NB: a small fraction of it, like 10-15%, will be dissipated by air convection, but this fraction is difficult to assess before the SBC mechanical design has been finalized: board spacing etc)
- The SBC consists of 5 almost independent crates, each of which containing 14 boards cooled by conduction through the slots attached to the tubed cold plates
- Earlier CFD calculations showed that ΔT between the cold plate and the hottest spot (regulator chip) on the board won't exceed 7.4°C . The chip T should be, preferably, $< 40^\circ\text{C}$. Thus, the average cold plate temperature should be $\leq 33^\circ\text{C}$

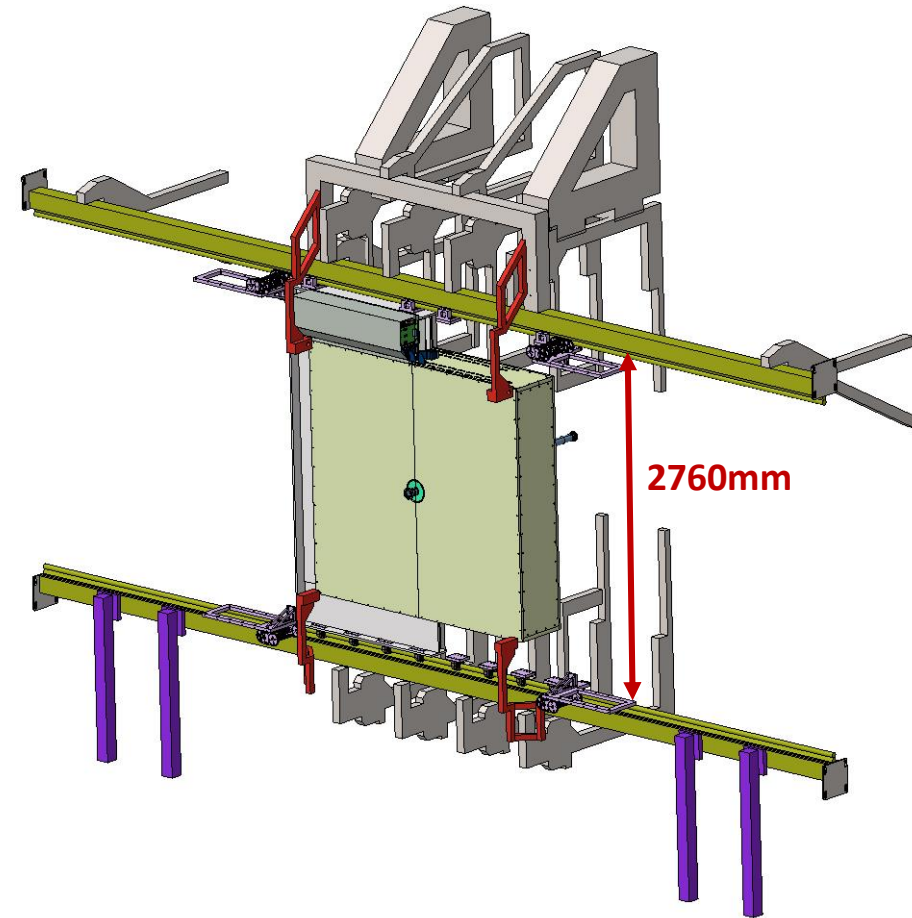


SBC: 5 crates, total: 2.9 kW

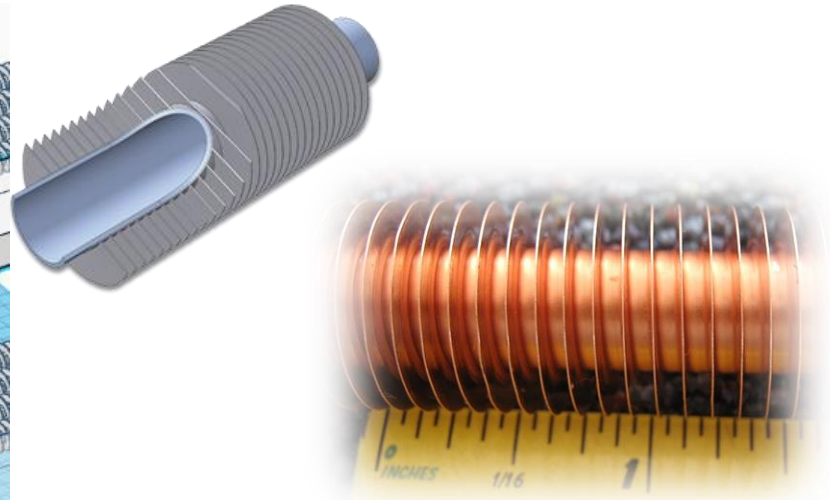
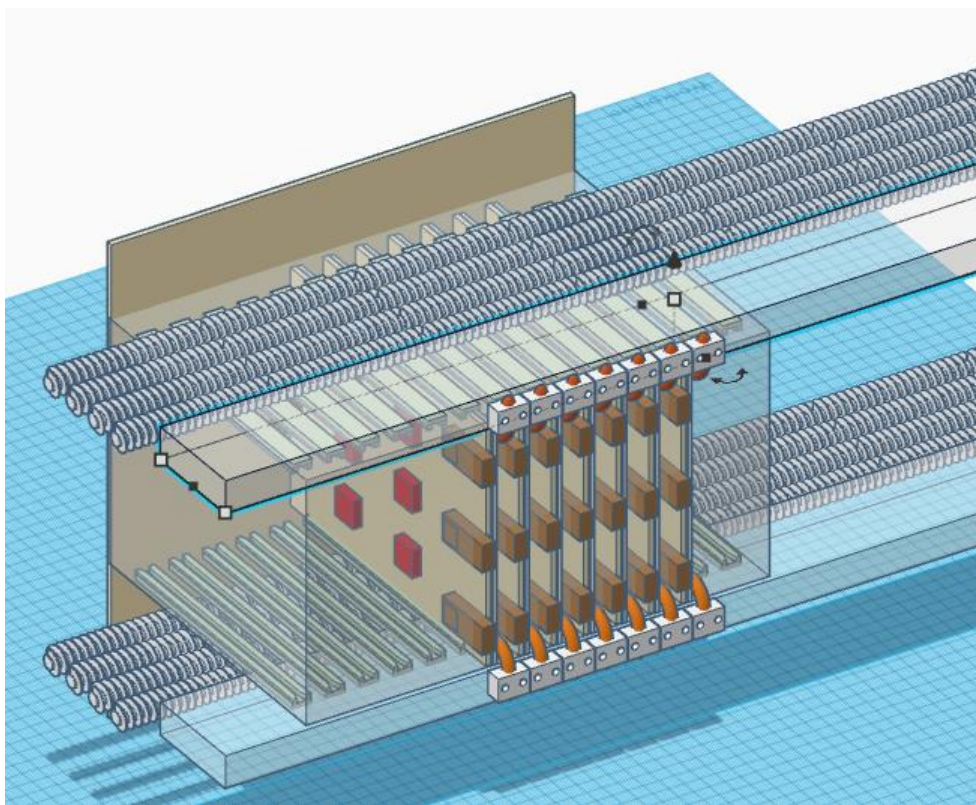


Crate: ~ 600 W

6. PEPI mechanics



- Work on the PEPI mechanics and cooling is in full swing.
- Done in close interaction with our Maryland colleagues.
- **Continue the discussion today**
- **Might need a dedicated meeting with all people involved**



Finned tubes

- Stainless steel tube with Alu or copper fins
- Scalable solution (cut to length)
- Best possible convective heat transfer

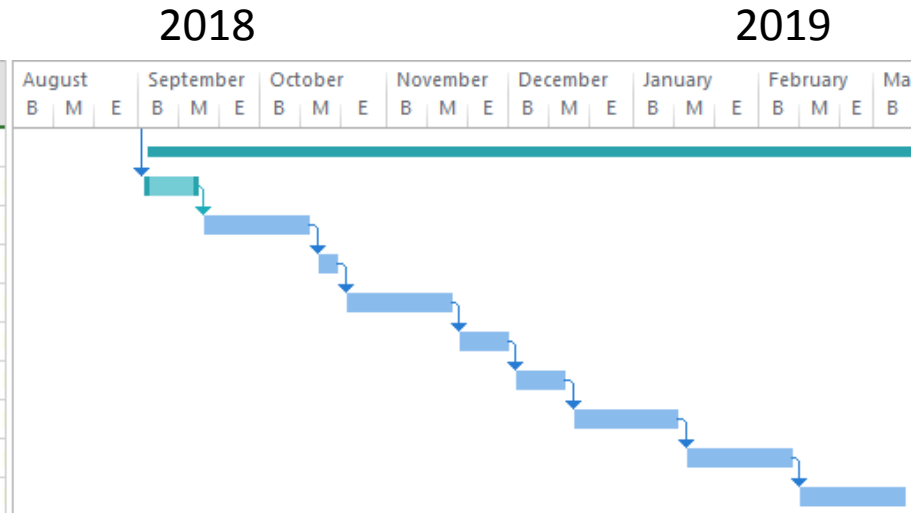
Conclusions

- We are on track in relation to our commitments for UT integration
- A few critical items need close attention
 - Cabling in the PEPI volume
 - HV connector on the staves
- **Will follow up on both today**

Backup

Preparatory work for stave mounting

Task Name	Duration
▣ Preparation of UT C-side on the surface	
Installation and alignment of C-frame	2 wks
Test assembly of UT-box in C-frame	1 mon
Alignment of top/bottom plate	1 wk
Installation and alignment of rails for frames/staves	1 mon
Installation of 4 chassis for PEPI (top/bottom; front/back)	2 wks
Installation of PEPI backplanes	2 wks
Installation of pigtails	1 mon
Electrical tests of pigtails after installation	1 mon
Mouting of PEPI boards and testing	1 mon



➤ Some tasks could be anticipated, if material arrives early enough

Some milestones assumed in the following

- First batch of staves arrives at CERN February 2019
- Second batch of staves arrives at CERN October 2019
- C-side detector half ready for installation November 2019
- A-side detector half ready for installation June 2020