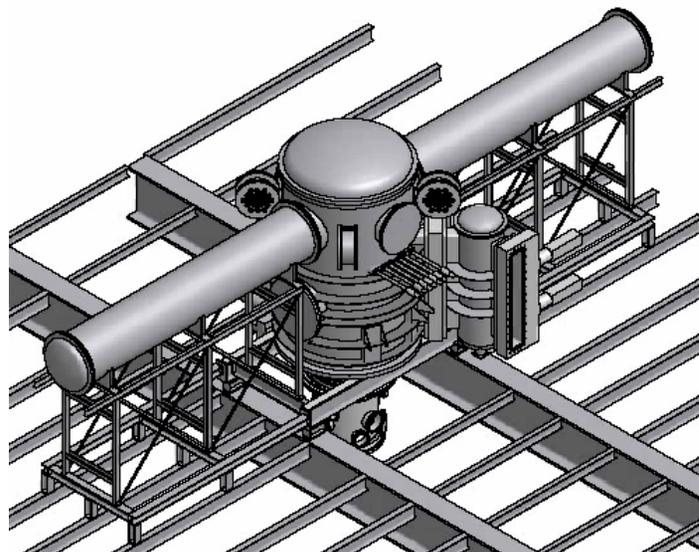
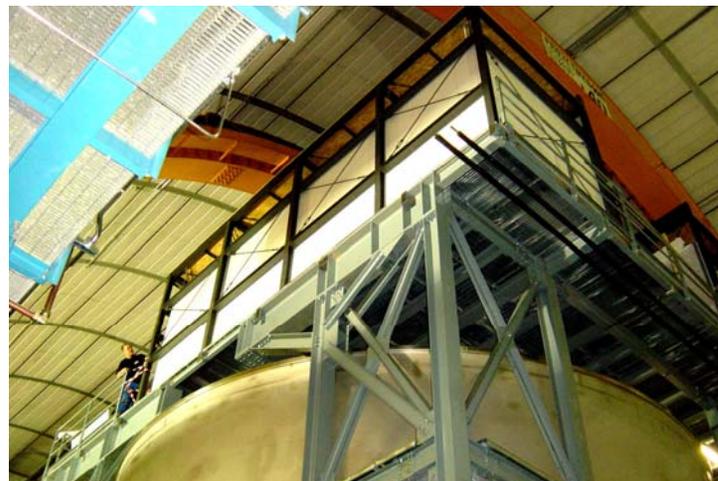




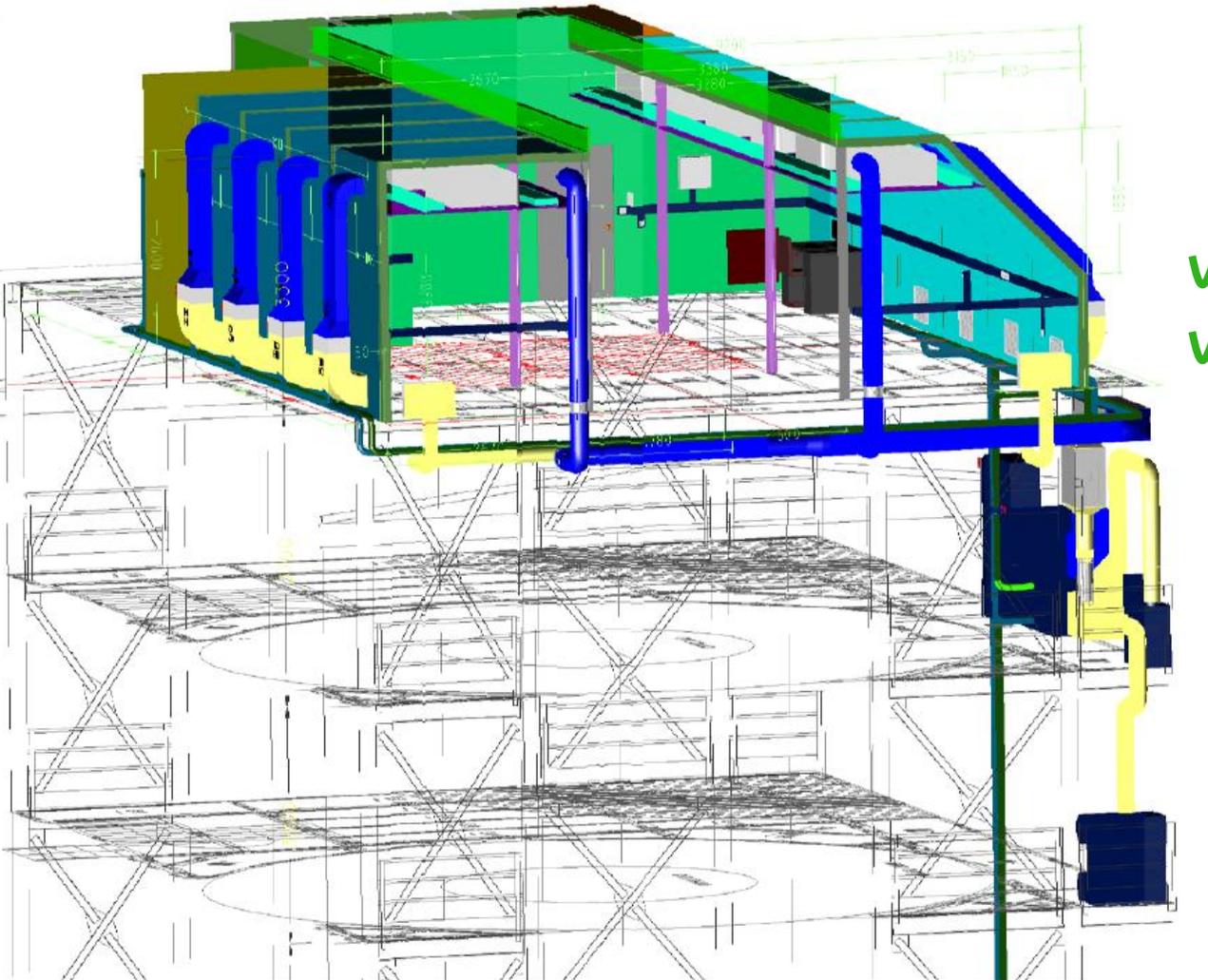
TG5 Review

- **Clean Room Status**
- **The Temporary Lock System**
- **The Final Lock System**





The Clean Room Status:



Milestones:

- ✓ •Build steel structure
- ✓ •Install clean room walls
- Integrate Ventilation system
- Finish clean room floor
- Install electric system
- Install PLC
- Close Clean room and clean
- Test run
- Approval by GERDA



The Clean Room Status:



First delivery of clean room beams on 2nd of Feb. 2009. Mounting of steel structure began on 3rd of February already (picture) .



The Clean Room Status:



Steel Structure status as of 4th of February 2009



The Clean Room Status:



Progress according to time schedule



The Clean Room Status:



Inside of clean room with ceiling removed. Status as of 4th of March 2009



The Clean Room Status:



Ventilation system on east side as of 6th of March 2009



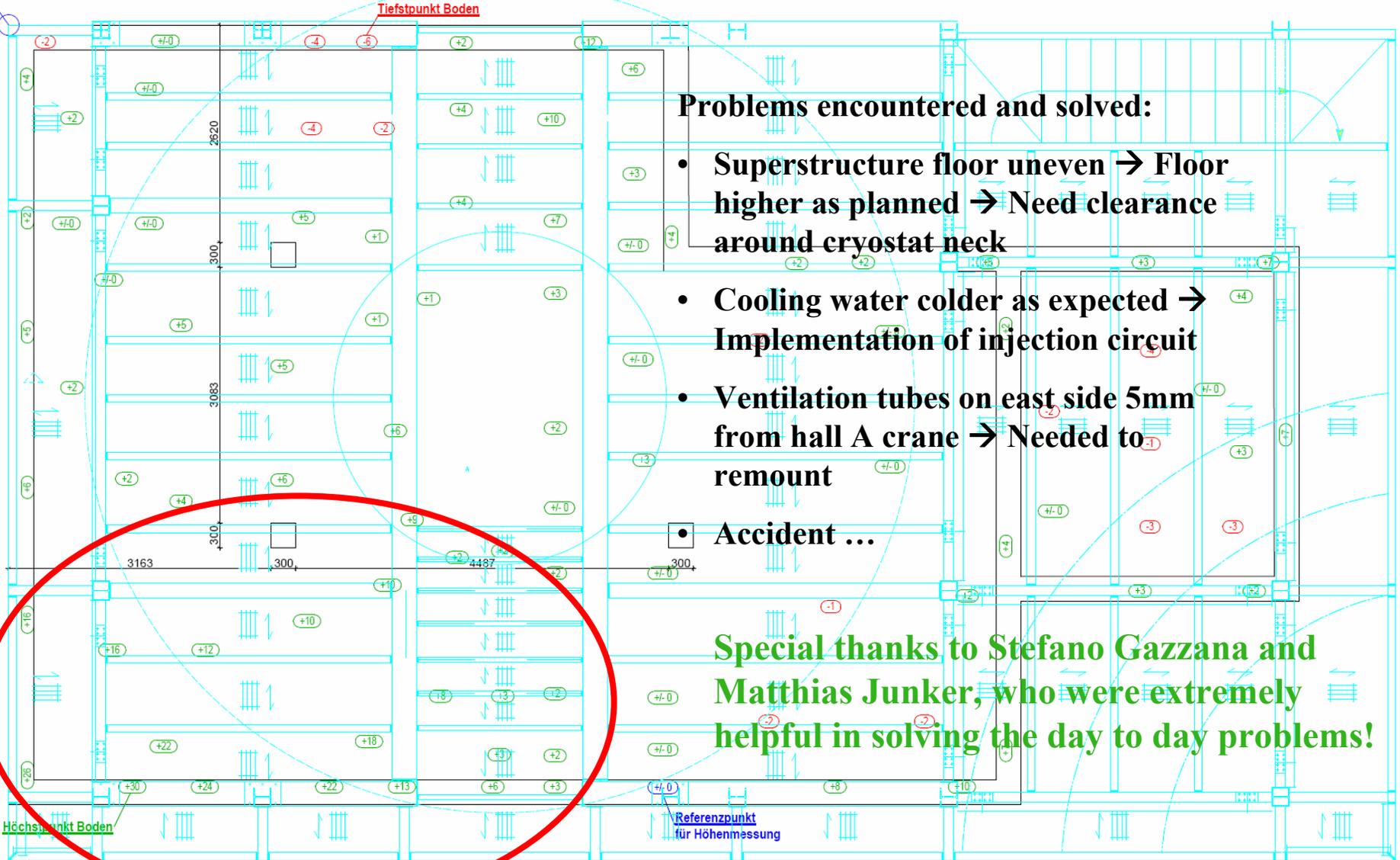
The Clean Room Status:



Ventilation system on west side as of 6th of March 2009



The Clean Room Status:



Problems encountered and solved:

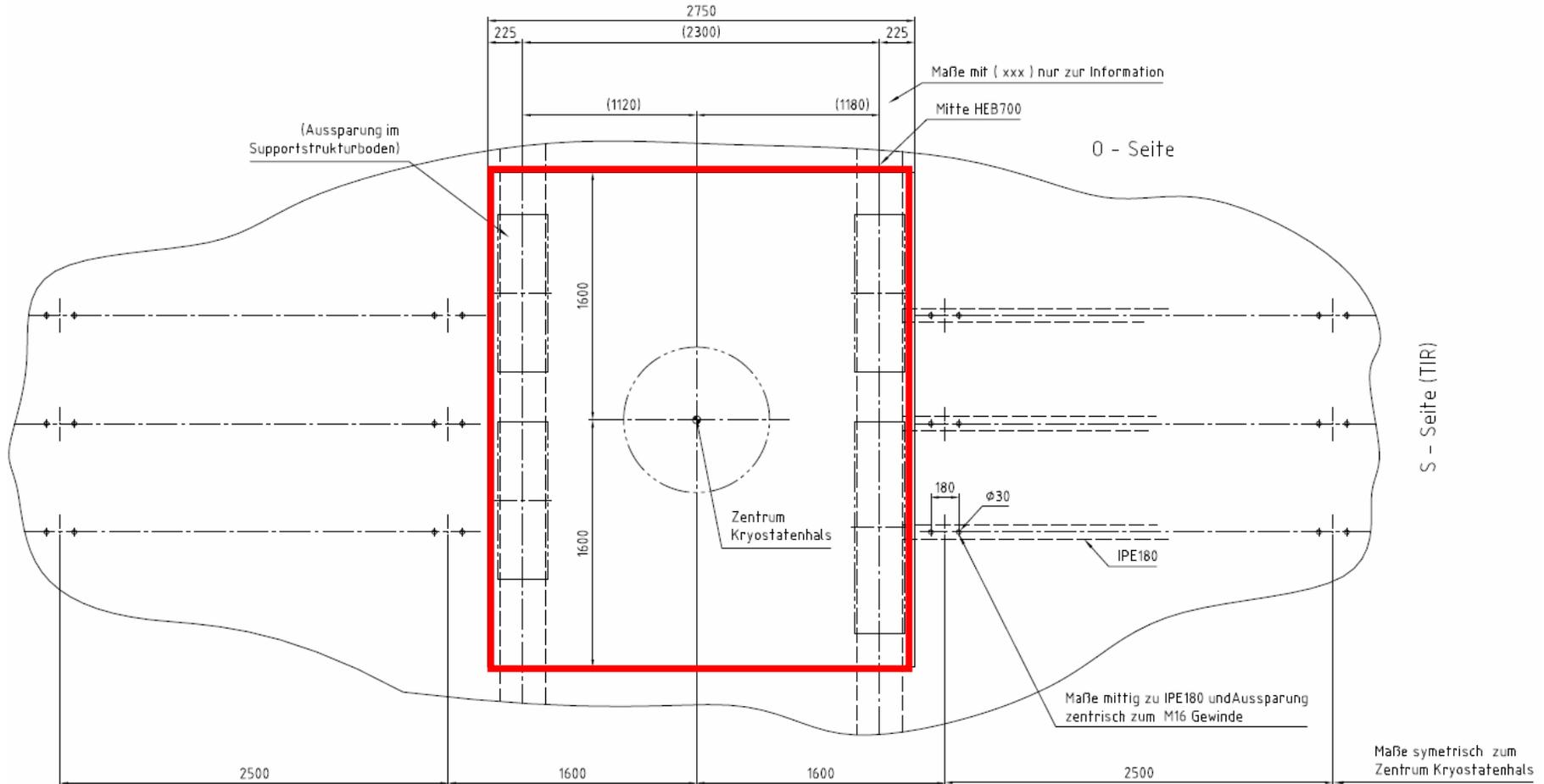
- Superstructure floor uneven → Floor higher as planned → Need clearance around cryostat neck
- Cooling water colder as expected → Implementation of injection circuit
- Ventilation tubes on east side 5mm from hall A crane → Needed to remount
- Accident ...

Special thanks to Stefano Gazzana and Matthias Junker, who were extremely helpful in solving the day to day problems!



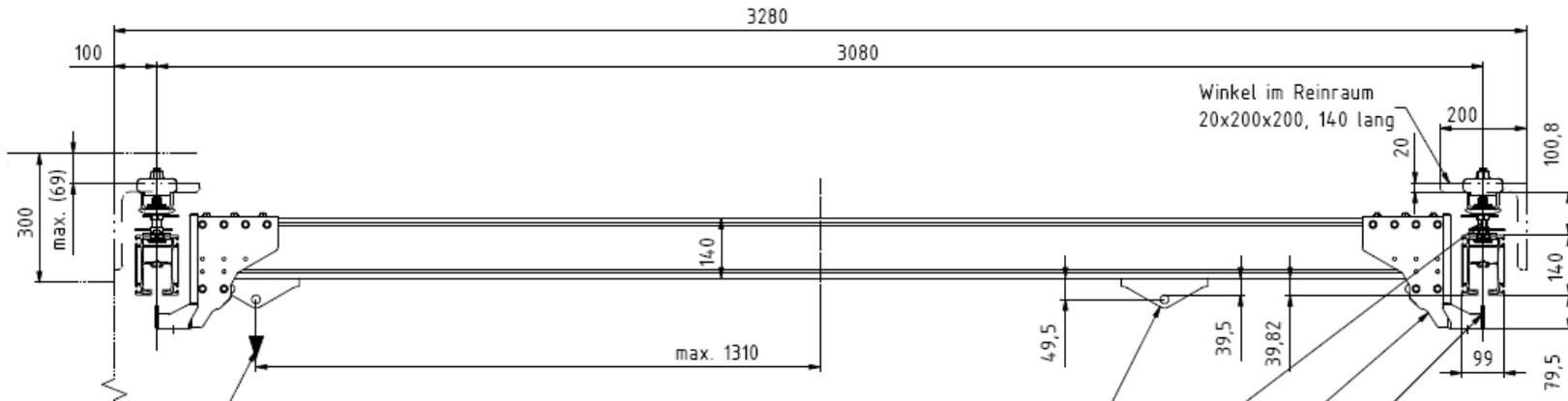
The Clean Room Status:

Clearing in the clean room floor will be 2.75m x 3.2m. This gives a clear interface between Becker company and GERDA collaboration.





The Clean Room Crane:



The crane system has been ordered. Installation after approval of the clean room in May 2009.

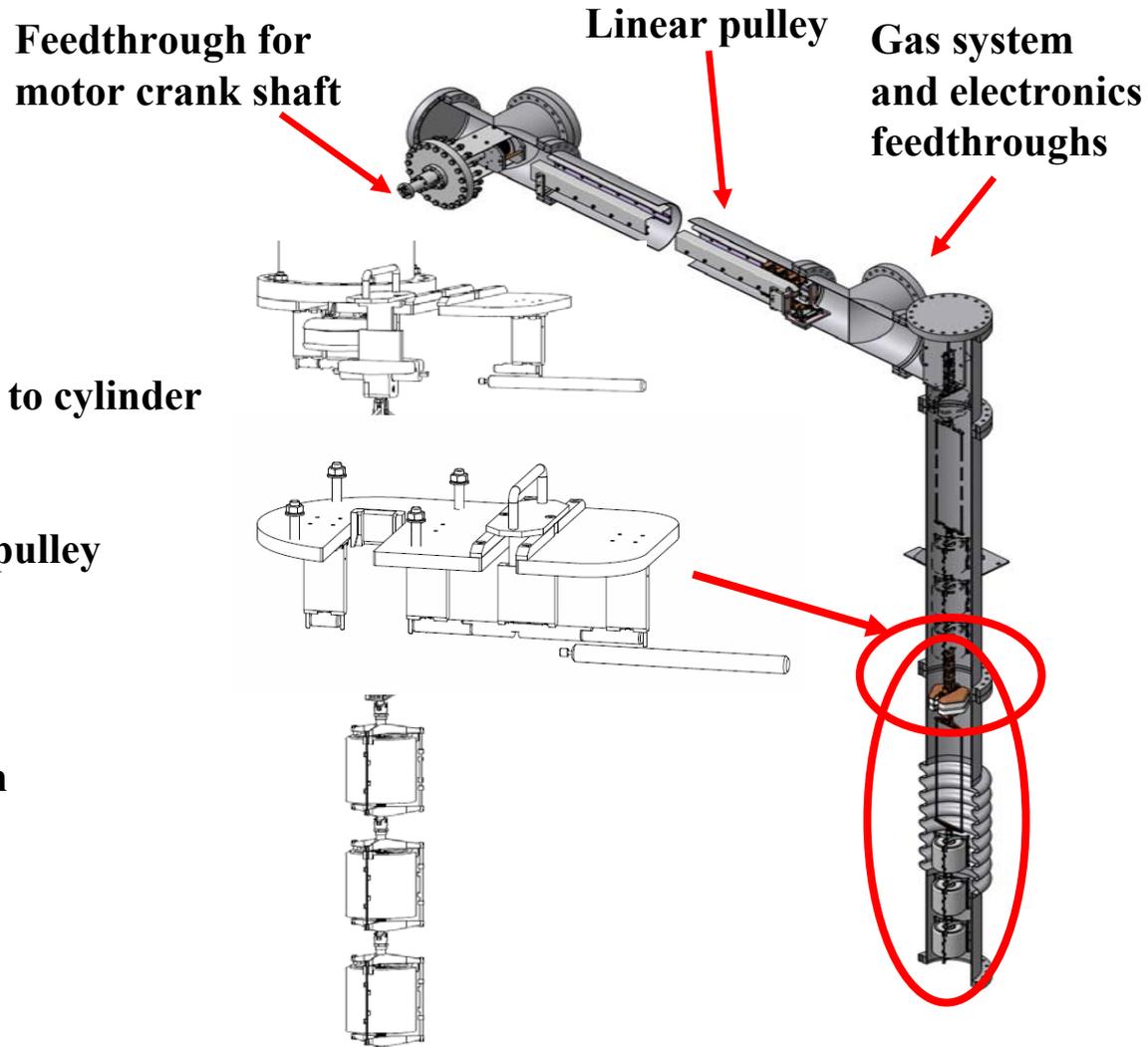




The Commissioning Lock: Design

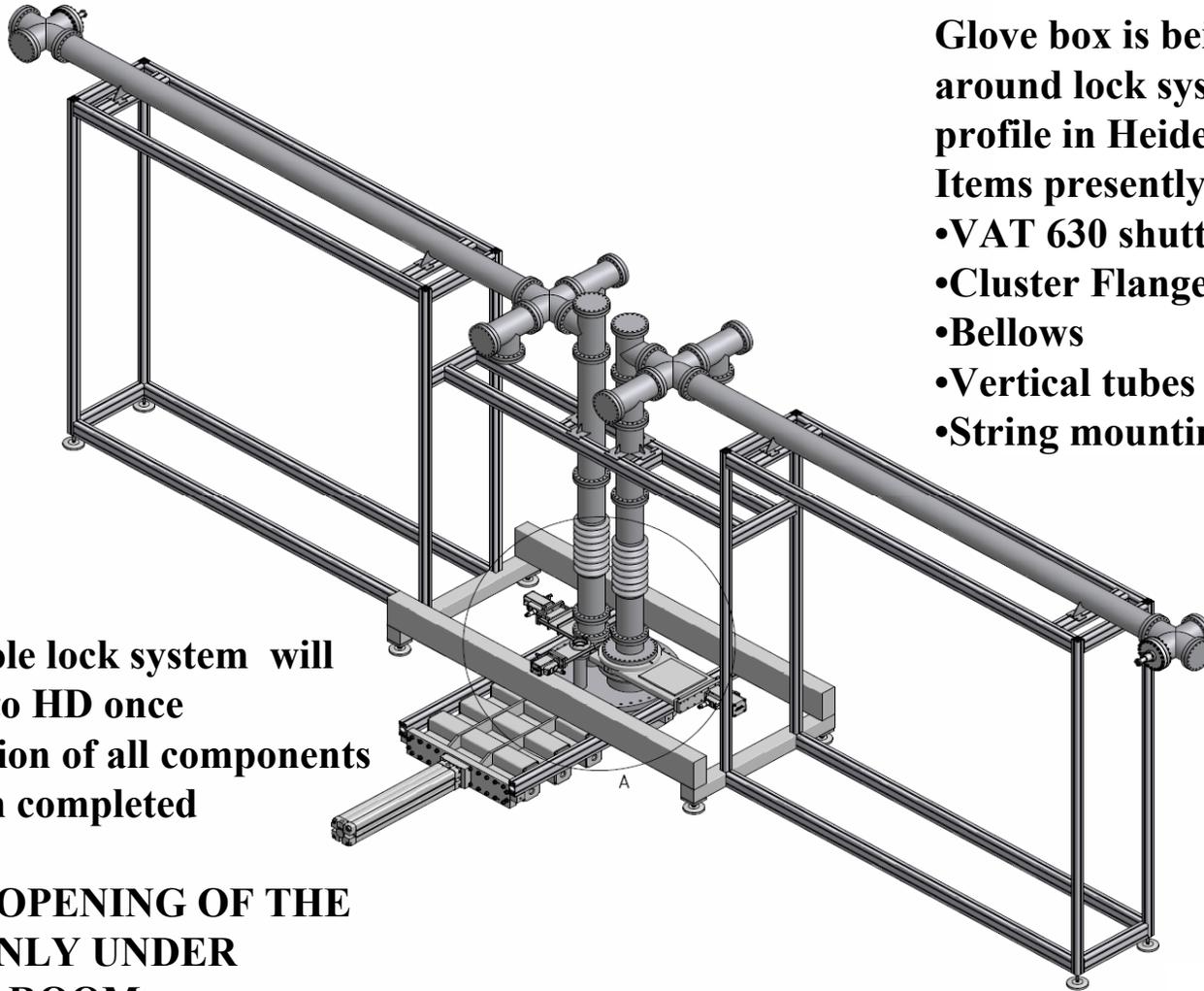
Linear Pulley – String Adapter:

- Linear pulley in upper position
- Uninstall removable cylinder
- Mount linear pulley –string adapter to cylinder
- Place string onto adapter
- Move string from adapter to linear pulley
- Slightly lower linear pulley
- Remove adapter
- Bring linear pulley to upper position
- Close removable cylinder





The Commissioning Lock: Design



Glove box is being assembled around lock system on ITEM profile in Heidelberg.

Items presently in HD:

- VAT 630 shutter
- Cluster Flange
- Bellows
- Vertical tubes
- String mounting plate

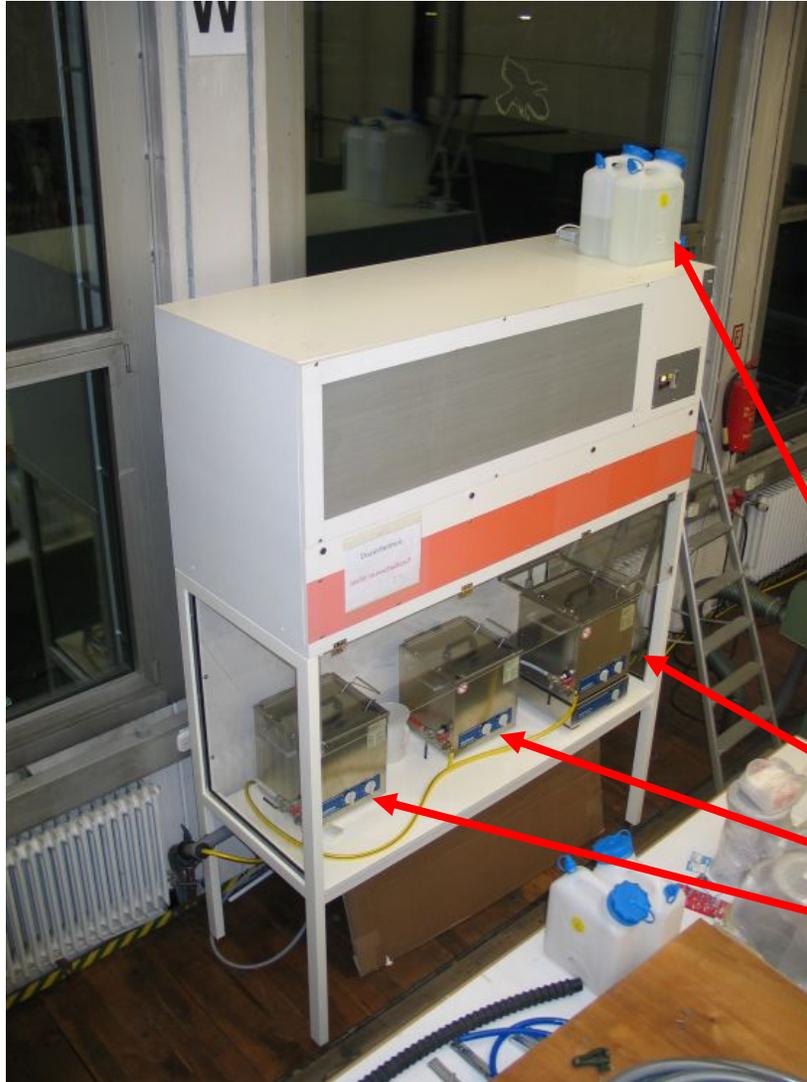


The whole lock system will be sent to HD once installation of all components has been completed

NOTE: OPENING OF THE ARM ONLY UNDER CLENA ROOM CONDITIONS!



Commissioning Lock: Status



All inner welding joints have been pickled and electropolished by Polygrat!

All parts have been cleaned in Ultra sonic bench and rinsed with deionised water underneath a flow box.

Degreasing detergent “Simple Green”

Ultrasonic bath with detergent

Normal water

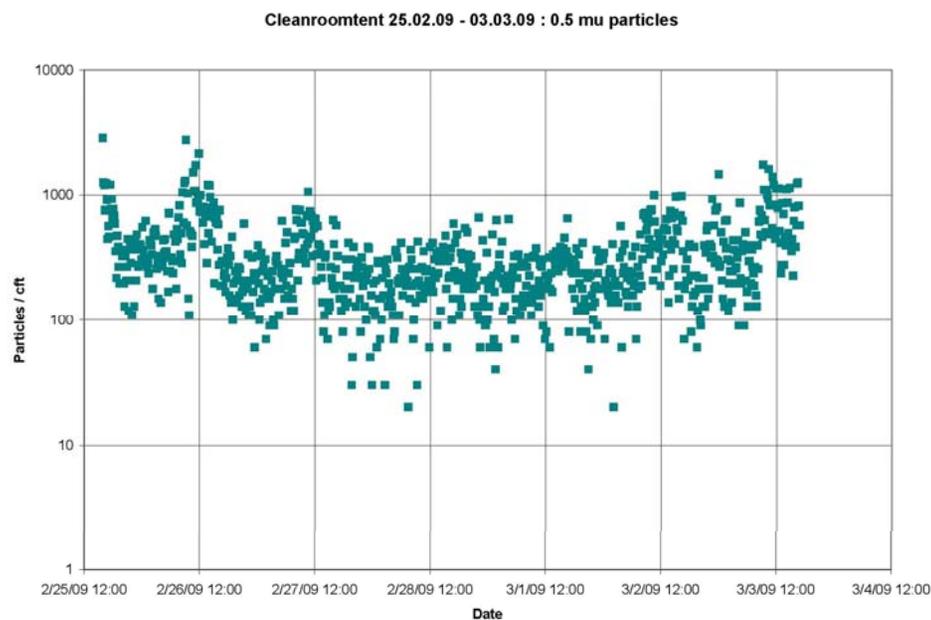
Deionised water



Commissioning Lock: Status

All assembly works have been carried out in a specially built clean room cabin.

Even during assembly class 10.000 could be maintained!





Commissioning Lock: Status

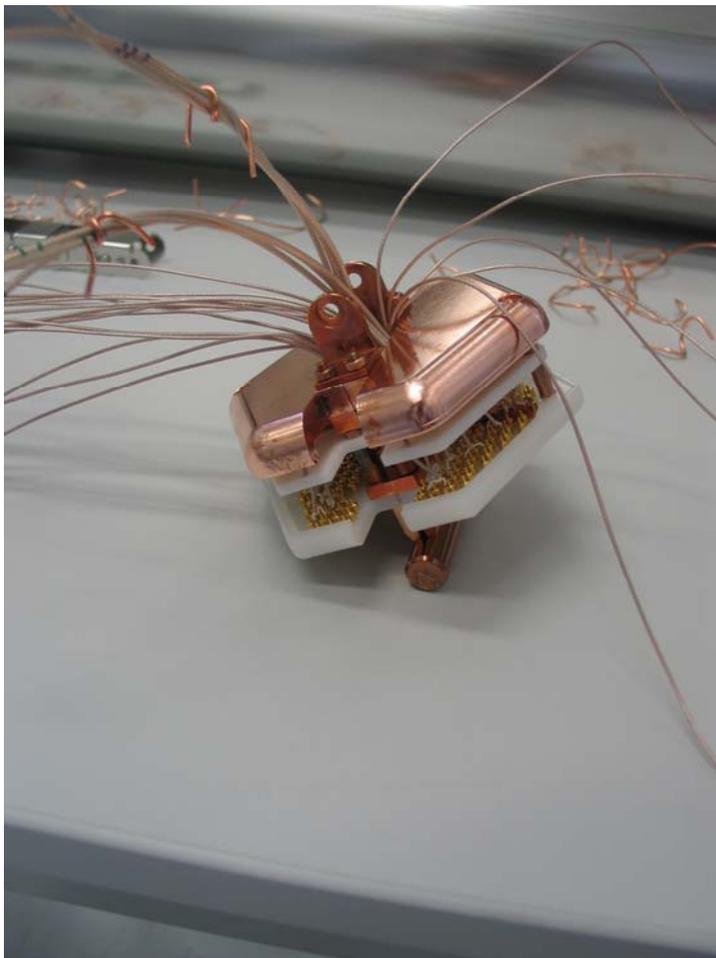
One complete cable arm has been assembled without cables. PLC test are done with this one presently





Cables and Connecting Matrix:

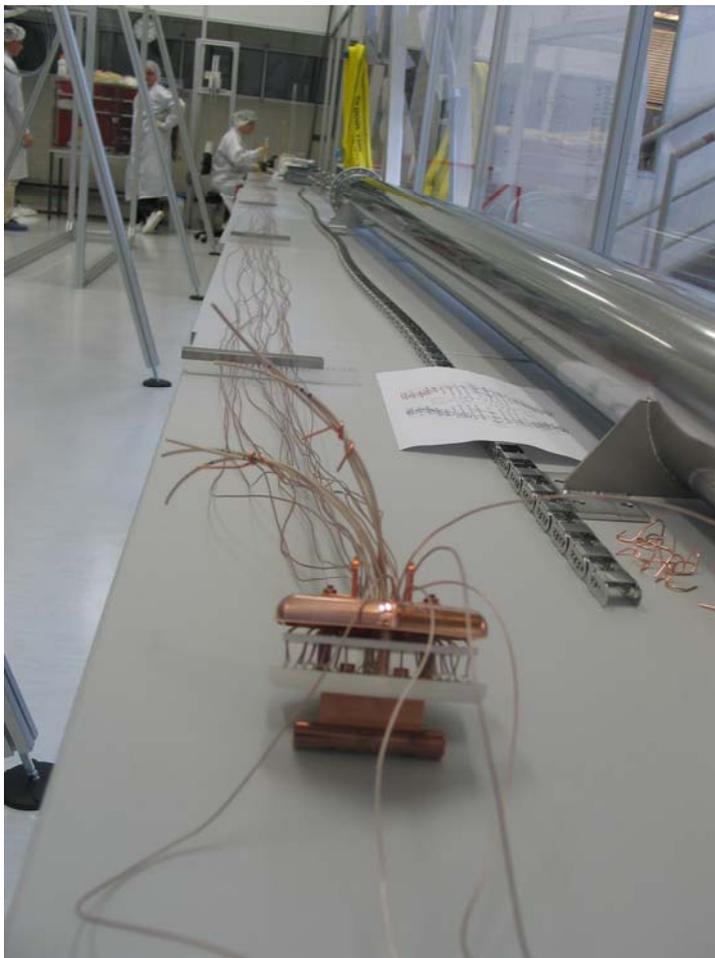
Both cable trees have been prepared. Cables have been soldered to the matrix.





Cables and Connecting Matrix:

Second cable arm has been preassembled and is presently being assembled with the completed cable chain





Cables and Connecting Matrix:

First cable chain is finished. It is currently being installed. HV cables still need to be implemented!





Commissioning Lock: The PLC



Extensive tests with PLC to be done:

- **How accurately can we position the strings?**
- **How does calibration (“homing”) work?**
- **How often do we need to recalibrated?**

Tests need to be done with system including the cabling!

We still need to agree:

Where to place the PLC?

→ Need to agree with MPI HD

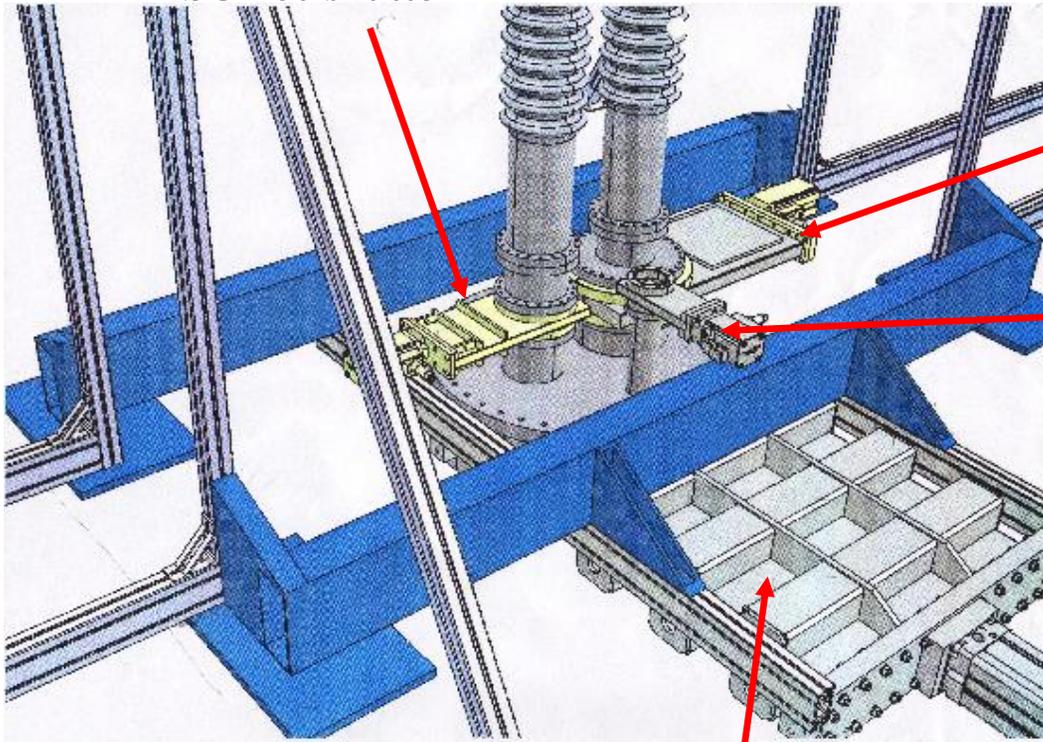


The Circular Shutter:

Emanation results: Shutter total emanation rate: approximately 900 μBq ✓

Once clean room is available, circular shutter needs to be installed

ISO 160 shutter



ISO 250 shutter

ISO 63 shutter: Port for calibration source (LNGS design)

Shutter support with adjustable feet. Design by LNGS (Donato Orlandi). Adjustable feet important for installation sequence! ✓

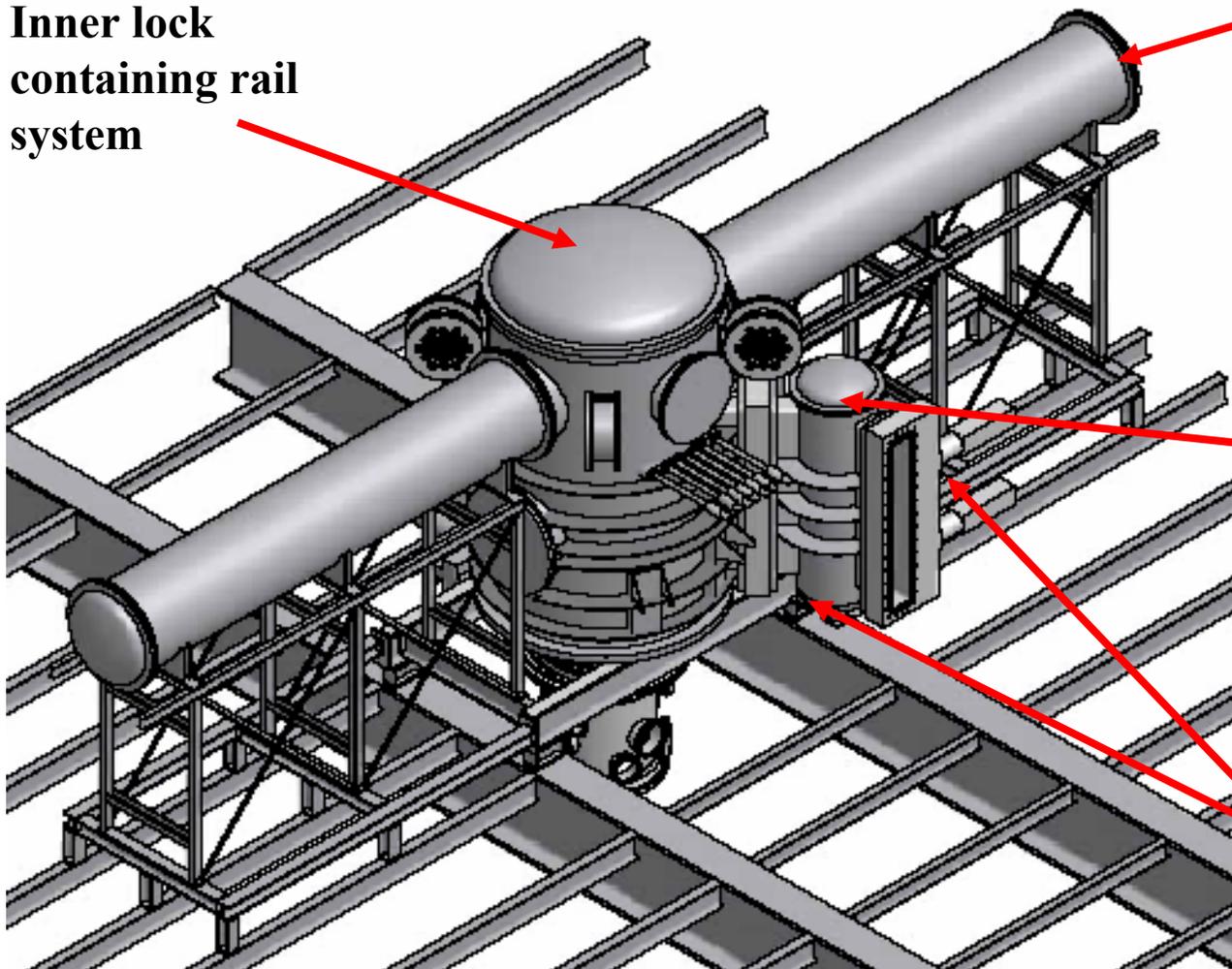
→ Ready to order!

ISO 630 shutter



Reminder: the Lock

Inner lock
containing rail
system



Cable Arm
containing Linear
pulley system

Outer lock

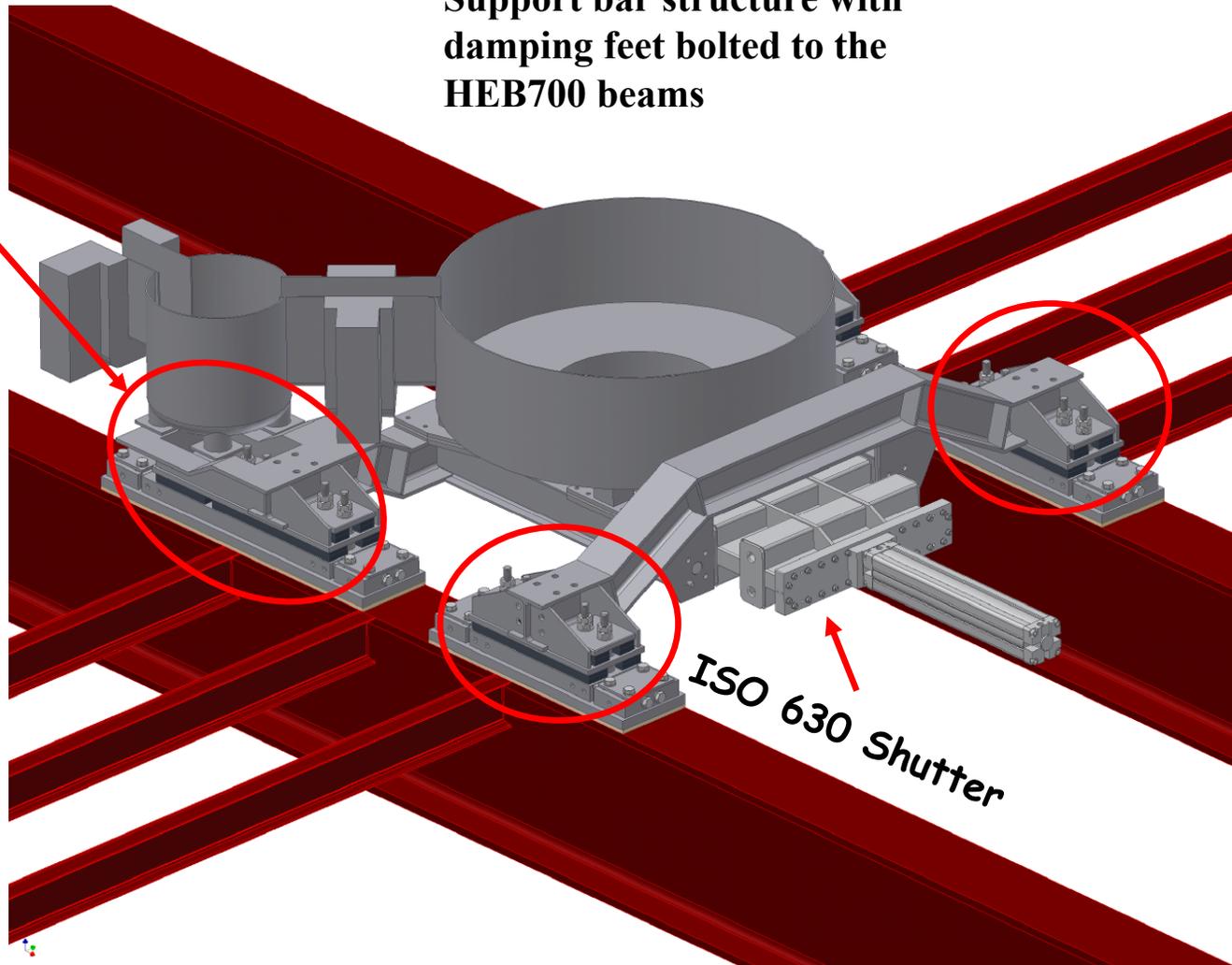
Rectengular
shutters



Superstructure-Lock Interface

Damping material
Sylomer

Support bar structure with
damping feet bolted to the
HEB700 beams



ISO 630 Shutter



The Final Lock: Linear Pulley Status

Feedthroughs for pulley motors: technical Production drawings available.

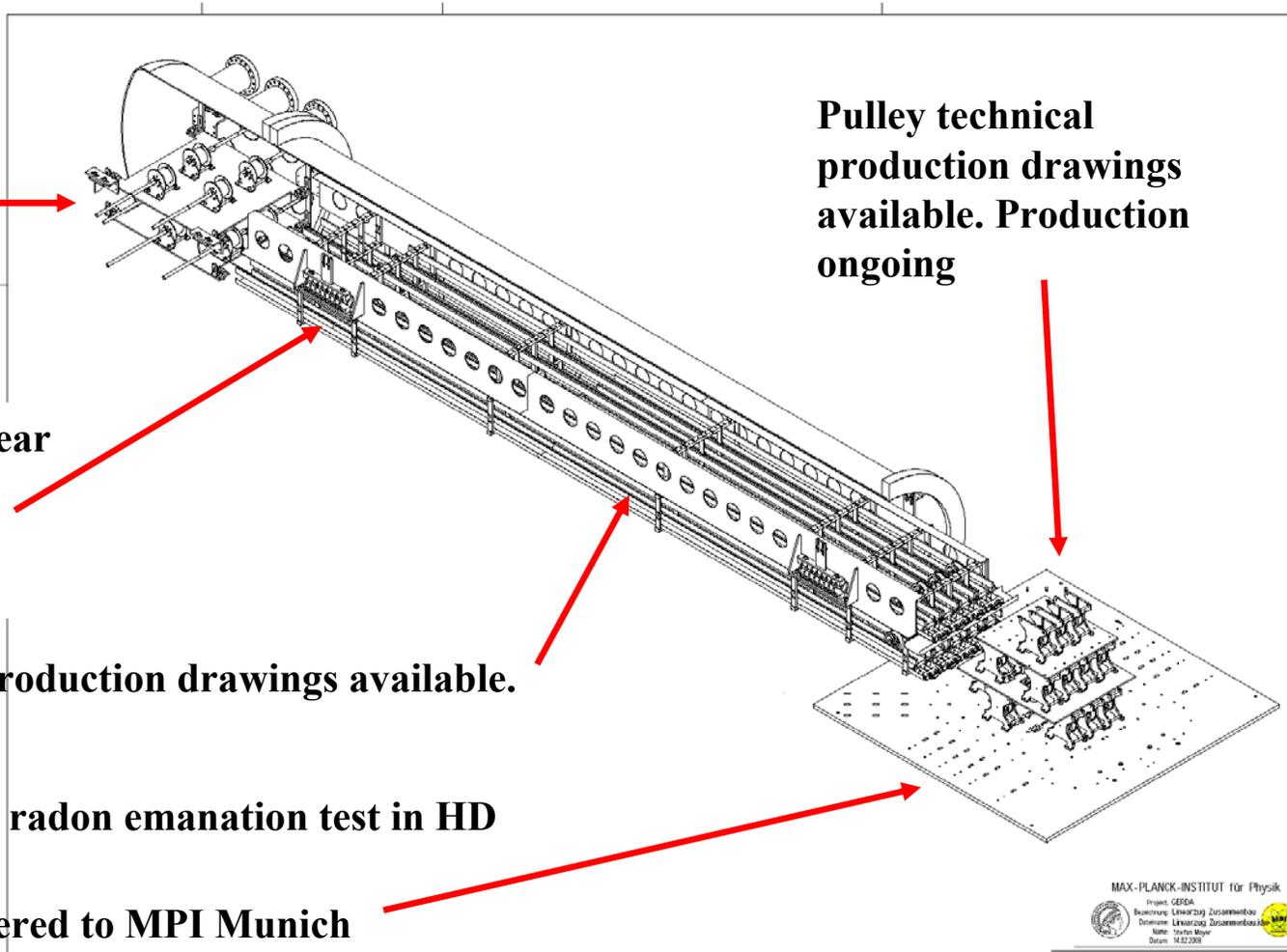
O-rings have been measured for emanation

Spring suspension for linear pulley presently being manufactured at MPI Munich workshop

Linear Pulley technical production drawings available. Production ongoing

Sliding parts presently at radon emanation test in HD

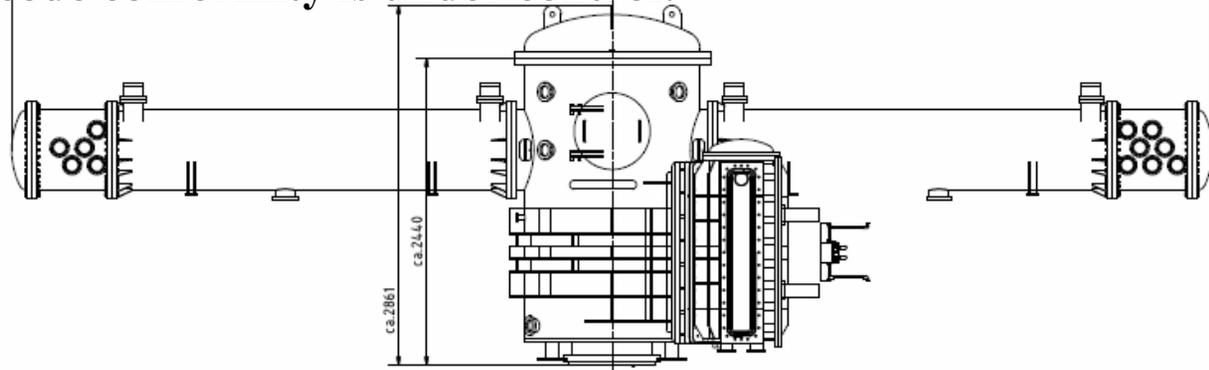
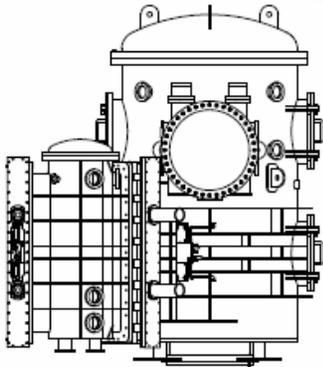
Base plate has been delivered to MPI Munich





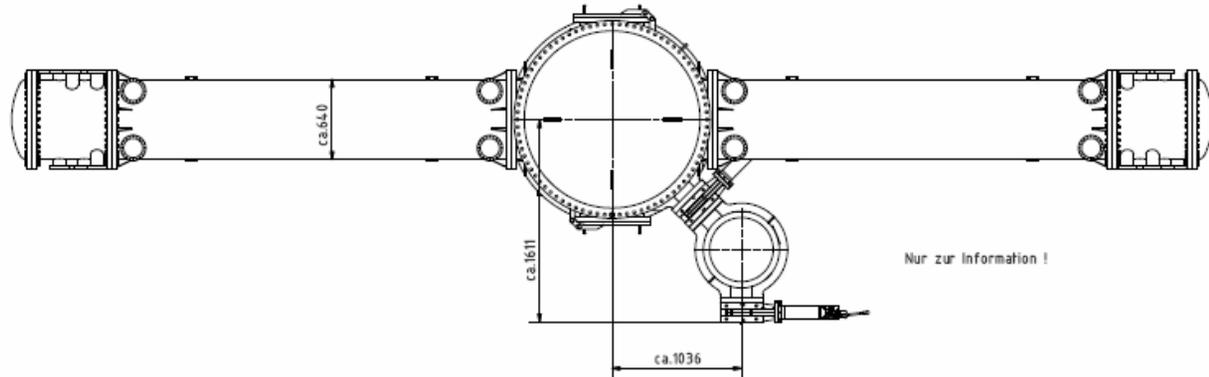
The Final Lock: Status

**Design has been finished since quite a while.
Pressure code conformity is under control!**



External company is doing it:

- ✓ → Extraction of technical production drawings from model
- ✓ → Calculation of deformation at vacuum and at 1.5bar (2.2bar) overpressure
- ✓ → Adjustment to pressure code conformity
- ✓ → Welding instructions
- Approval of design by TueV
- Tender documentation
- Accompanying production
- Final TueV approval





Conclusion

- **Clean Room well under way**
- **Clean room approval in April**
- **Construction of Temporary Lock system close to being finished**
- **Integration to glove box in HD can start soon**
- **Final lock system production drawings are with TueV**