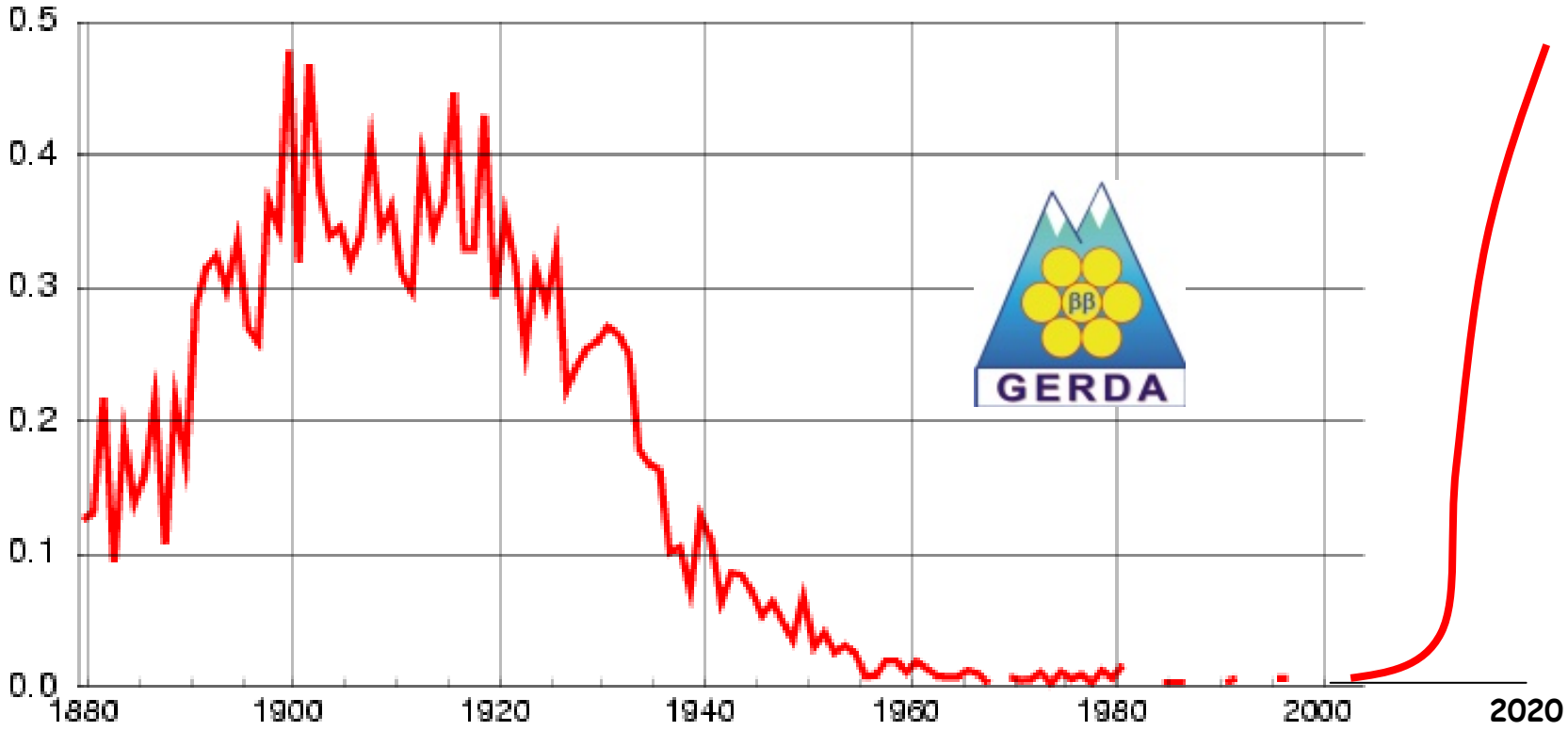
TG5 Review: Infrastructure on top of the tank

OUTLINE:

- Mission Statement
- Transport Infrastructure
- Storage Infrastructure
- Clean Room and Lock System: Reminder
- Lock System Functionality and Dimensions
- Lock System Installation
- String Pulley and Rail system
- Pogo Pin Contacts
- HV Feedthroughs

Mission Statement

Popularity of the name GERDA in norway 1880 - 2000



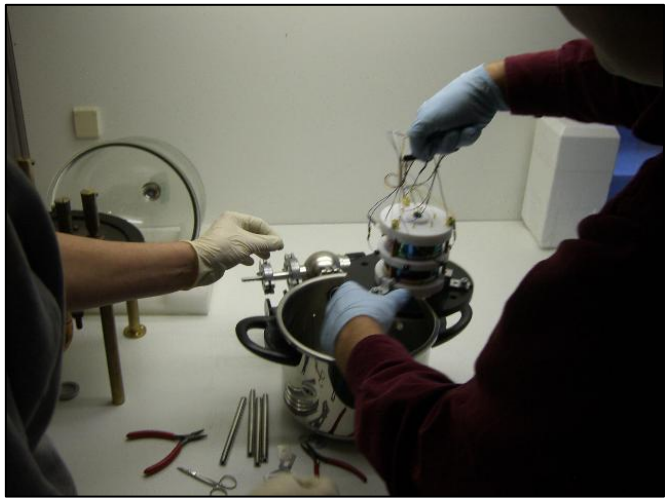
Prosent

Taken from www.norskenavn.no

Phase II prototype detector

18-fold segmented true coax p-type HPGe detector from DSG: 12th of December 2006






Phase II detector transport

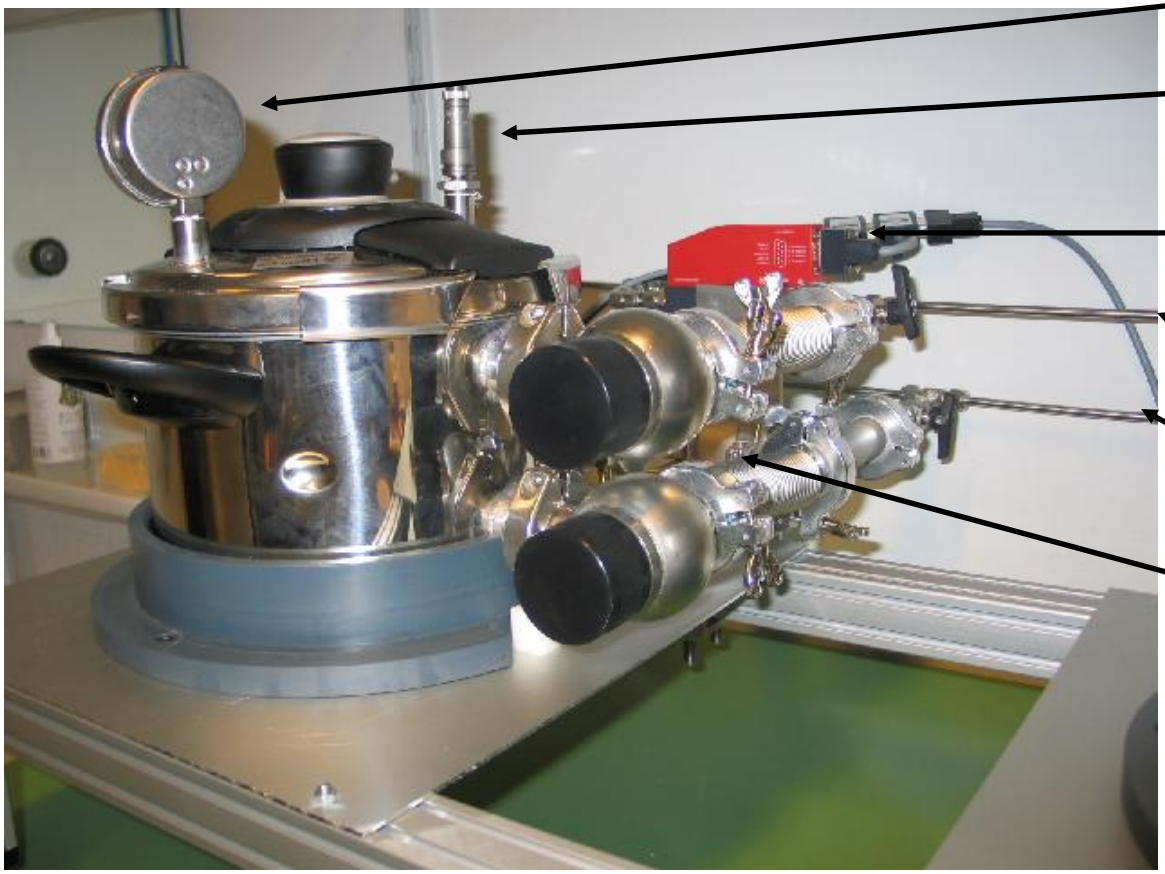
Maximum safety for necessary journeys envisioned

→ Use same system as for most precious thing transported in cars:

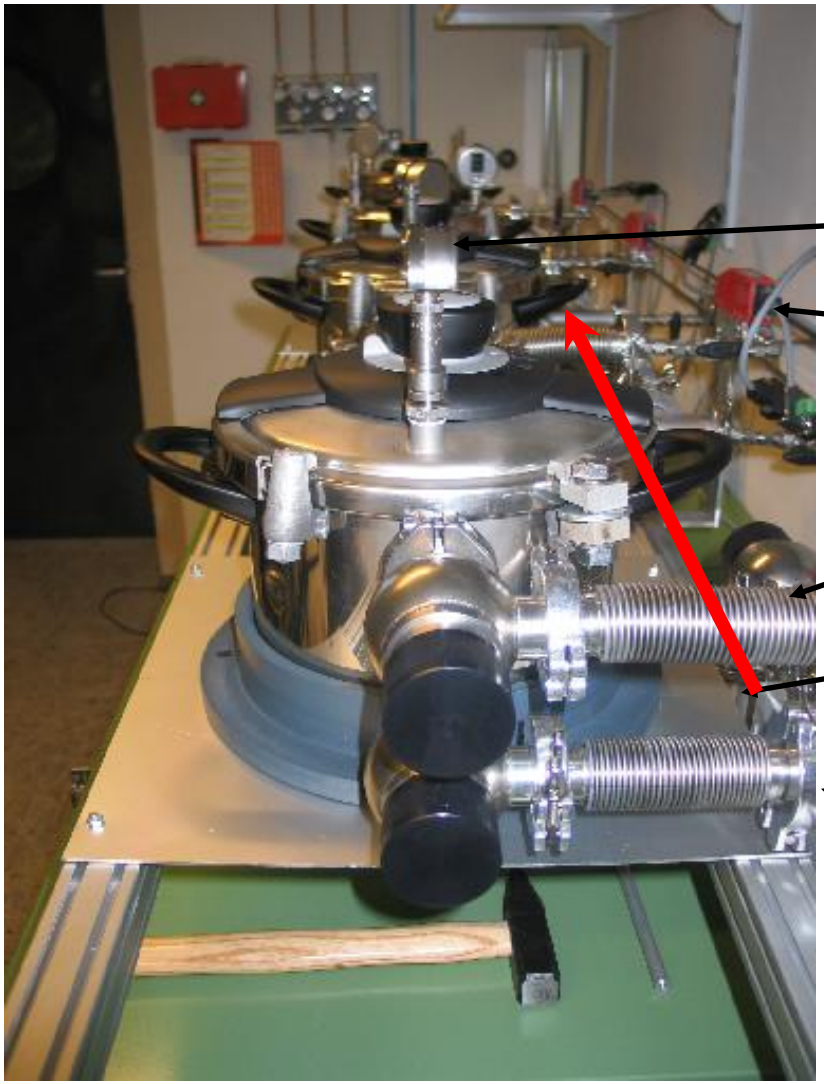
System successfully tested: prototype-detector safely transported from Mainz to Munich

Phase II storage infrastructure

Detector storage system built at MPI Munich for our prototype detectors.



Phase II storage infrastructure



Five storage pots are connected at MPI.

Pressure gauge

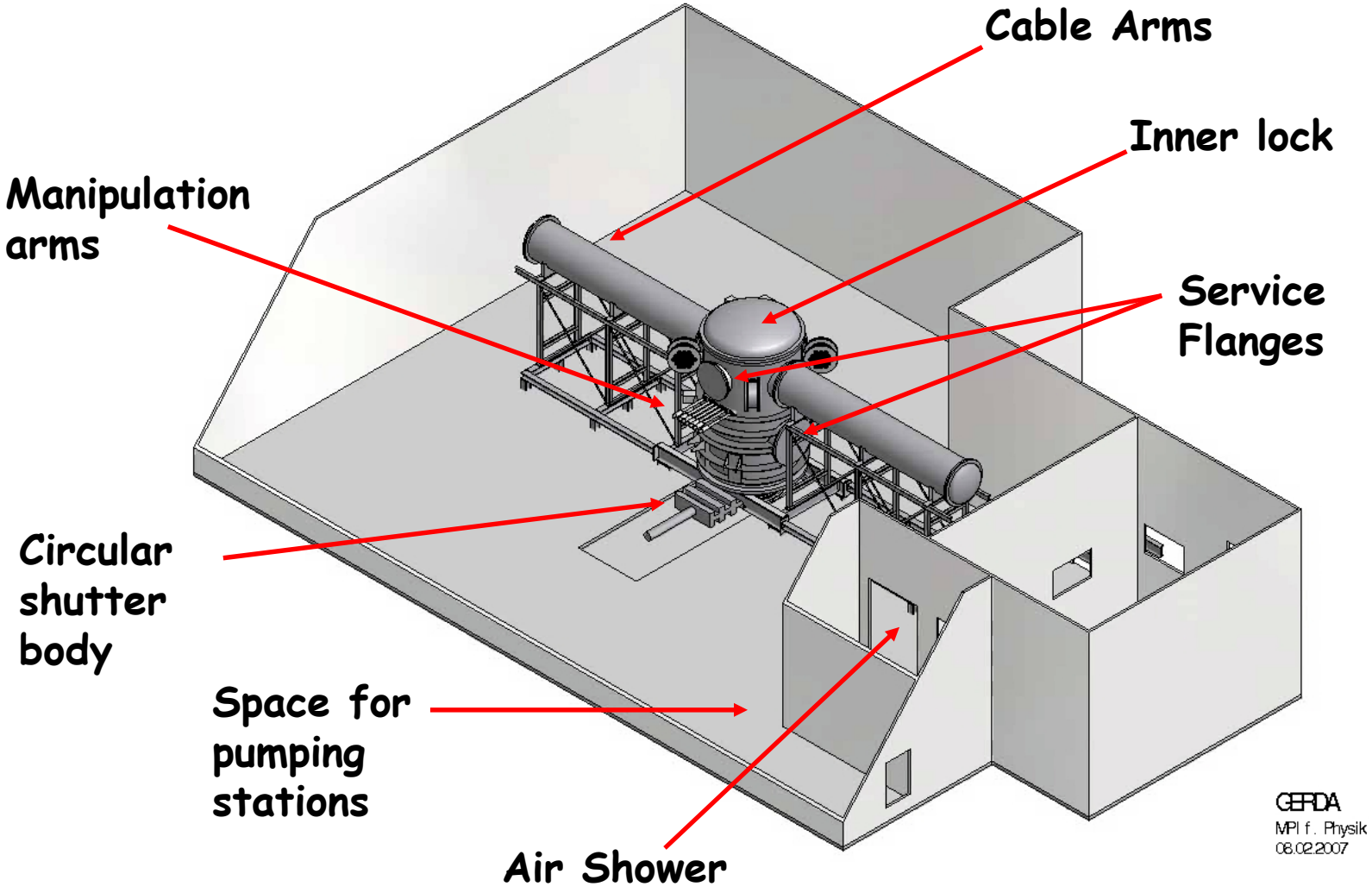
Flow controller to exhaust line

Exhaust line

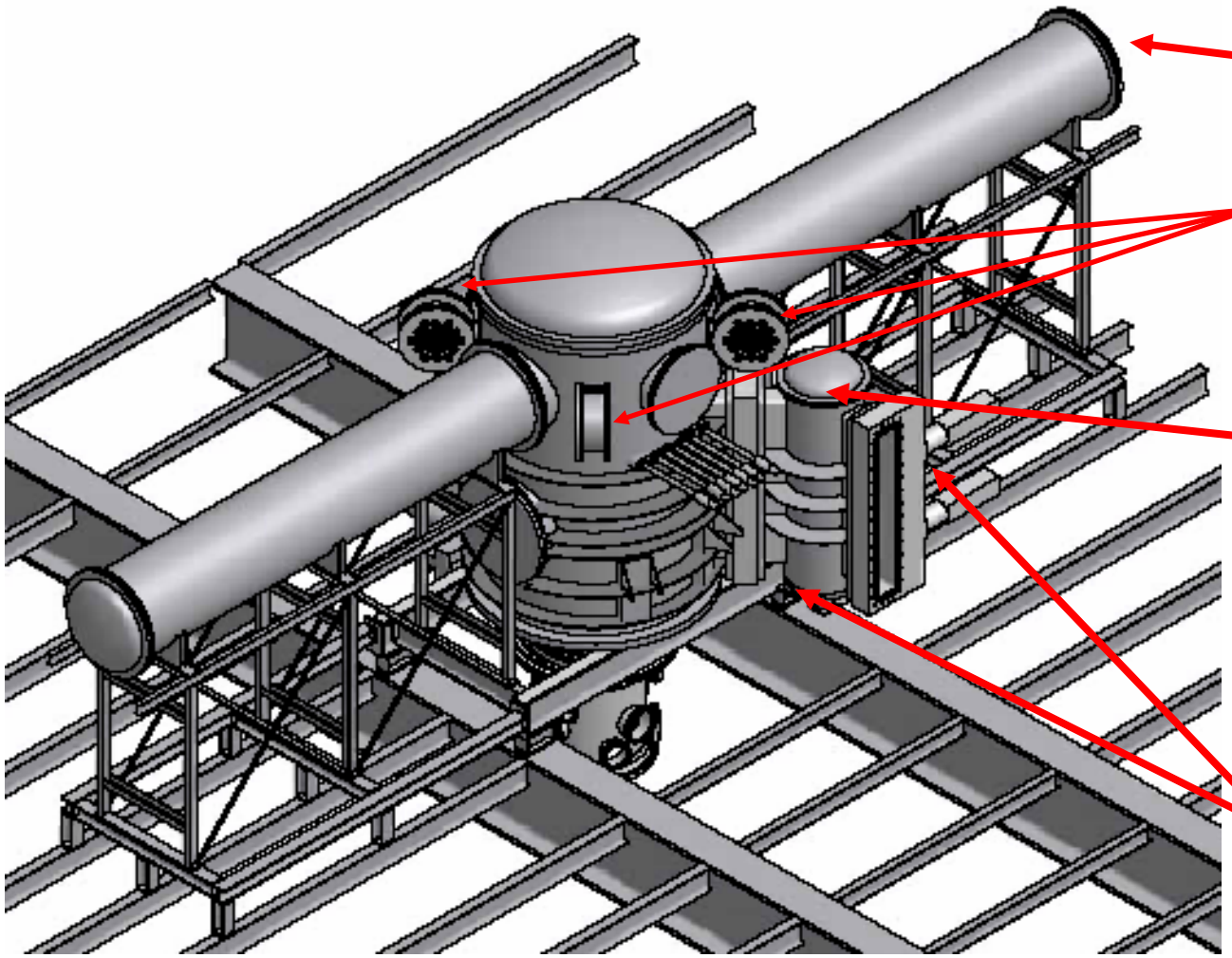
Pumping line

Flushing line

Reminder: the Clean Room and the Lock



Reminder: the Lock

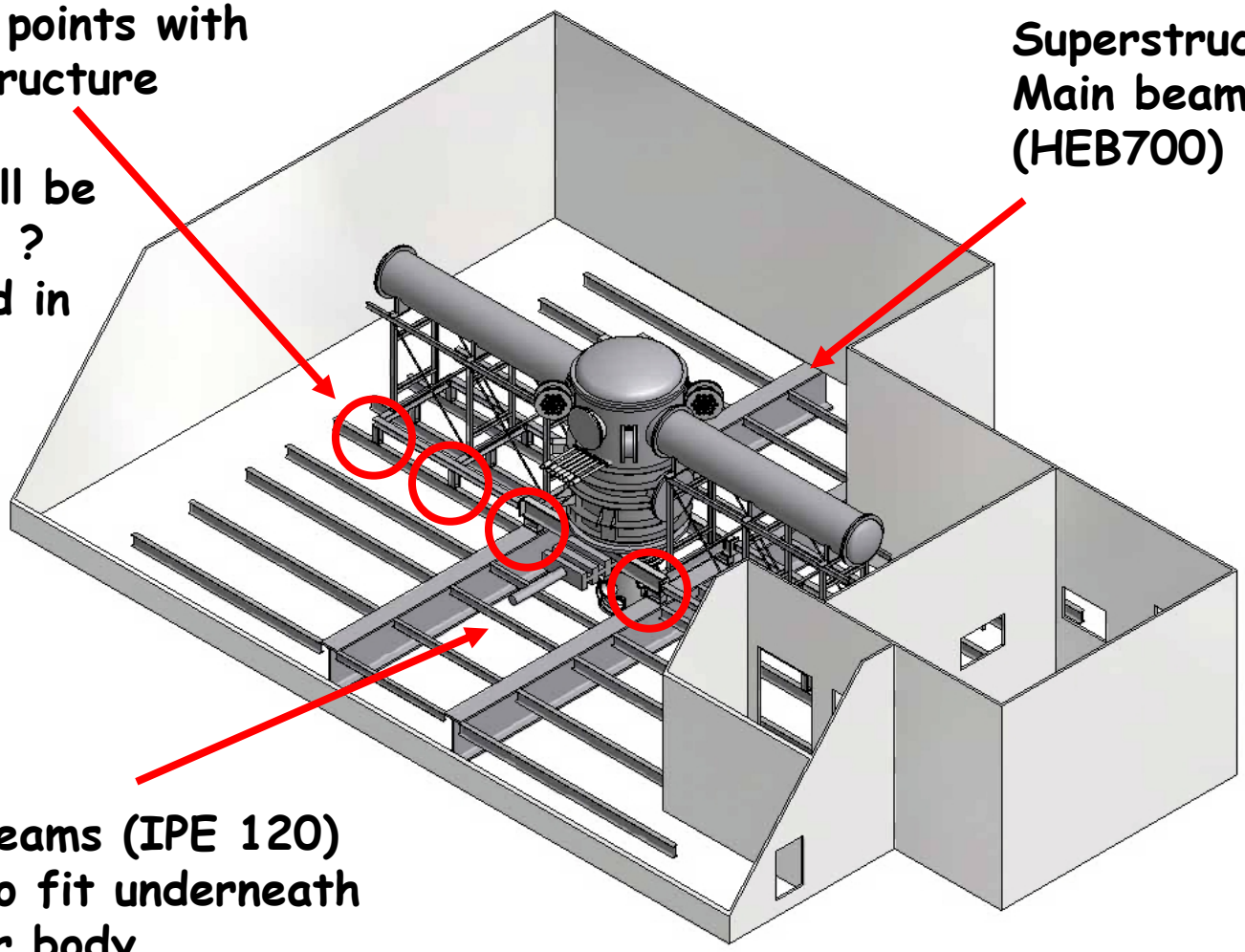


Superstructure - Lock Interface

Anchor points with superstructure

Feet will be damped ? (by lead in rubber wrap)

Superstructure Main beams (HEB700)

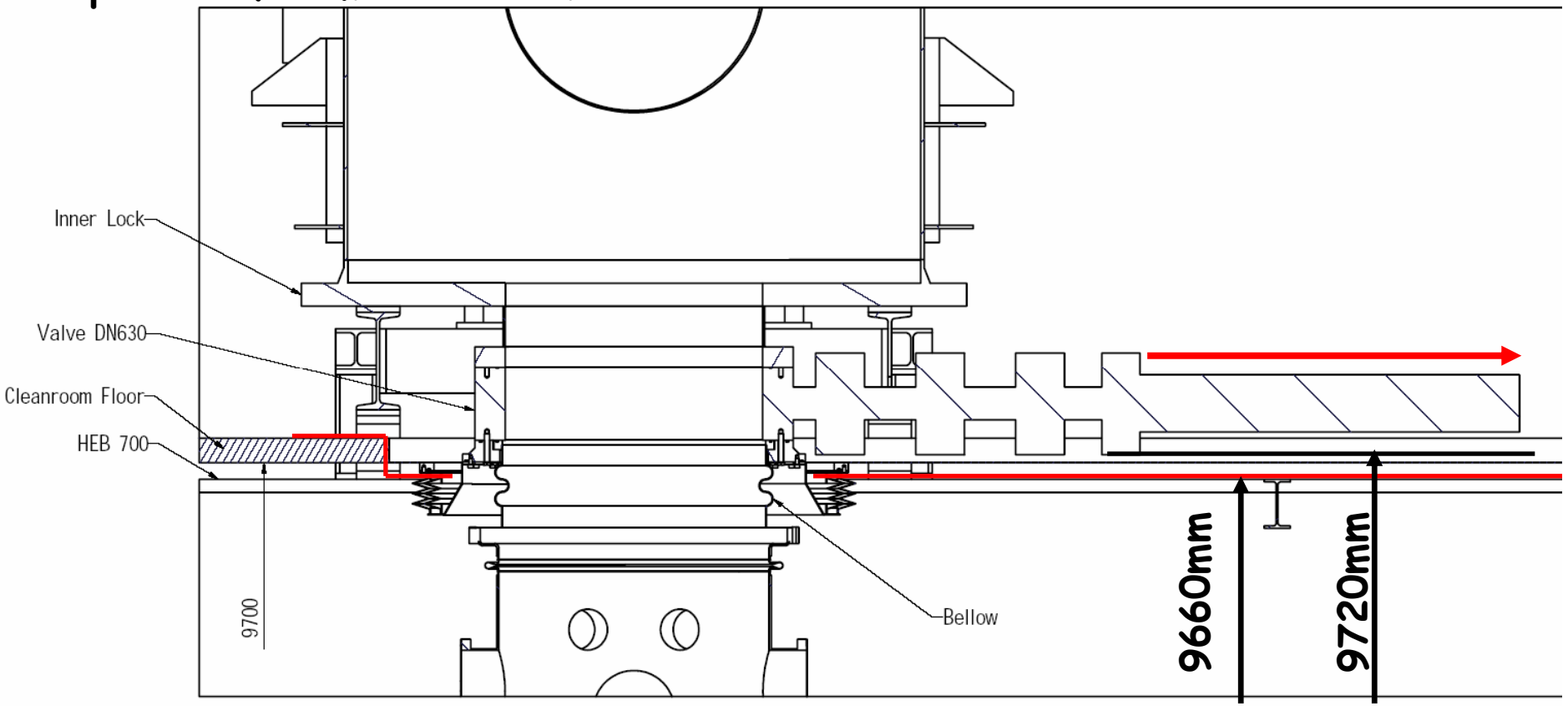


Side beams (IPE 120) need to fit underneath shutter body

Lock System: the Circular Shutter

The circular shutter has a long body.
It has to be mounted above the cleanroom floor and still reachable and openable for maintanance.

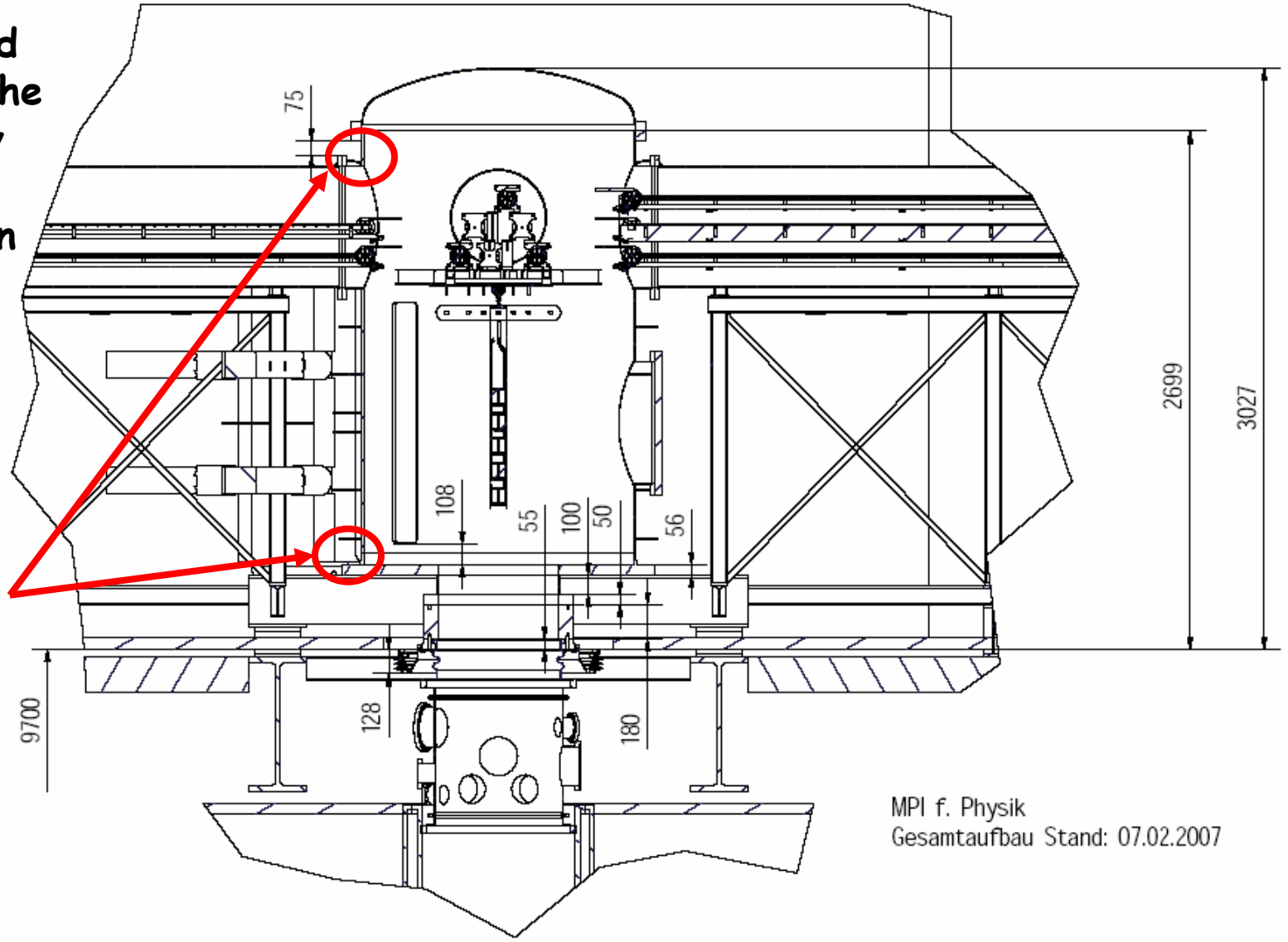
-->there is a cut into the clean room floor.



Lock System Dimensions

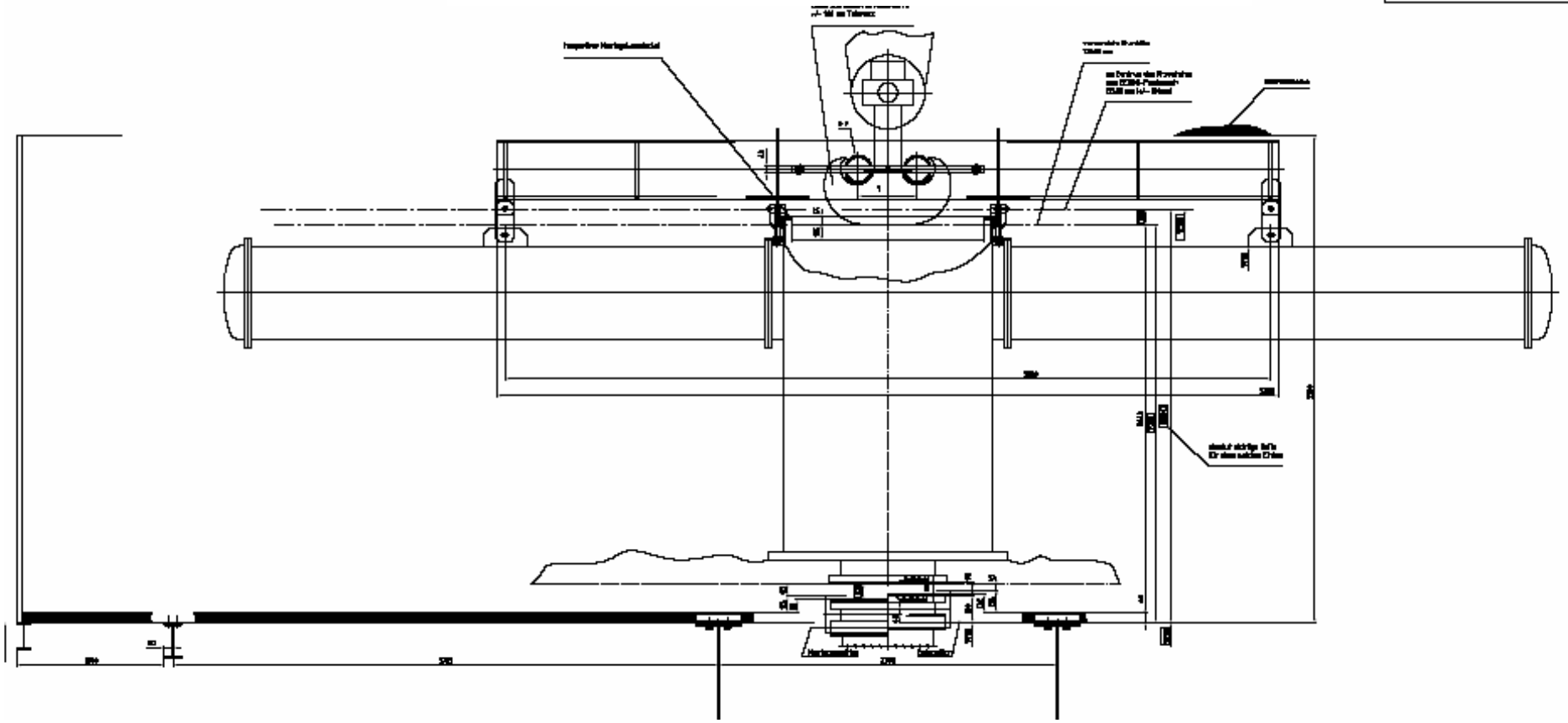
We still need to shorten the lock body by 50 mm for integration in one piece.

Maximum space gain also determined by spce between welding joints



Lock System Integration

Bring in the complete lock system using a special harness



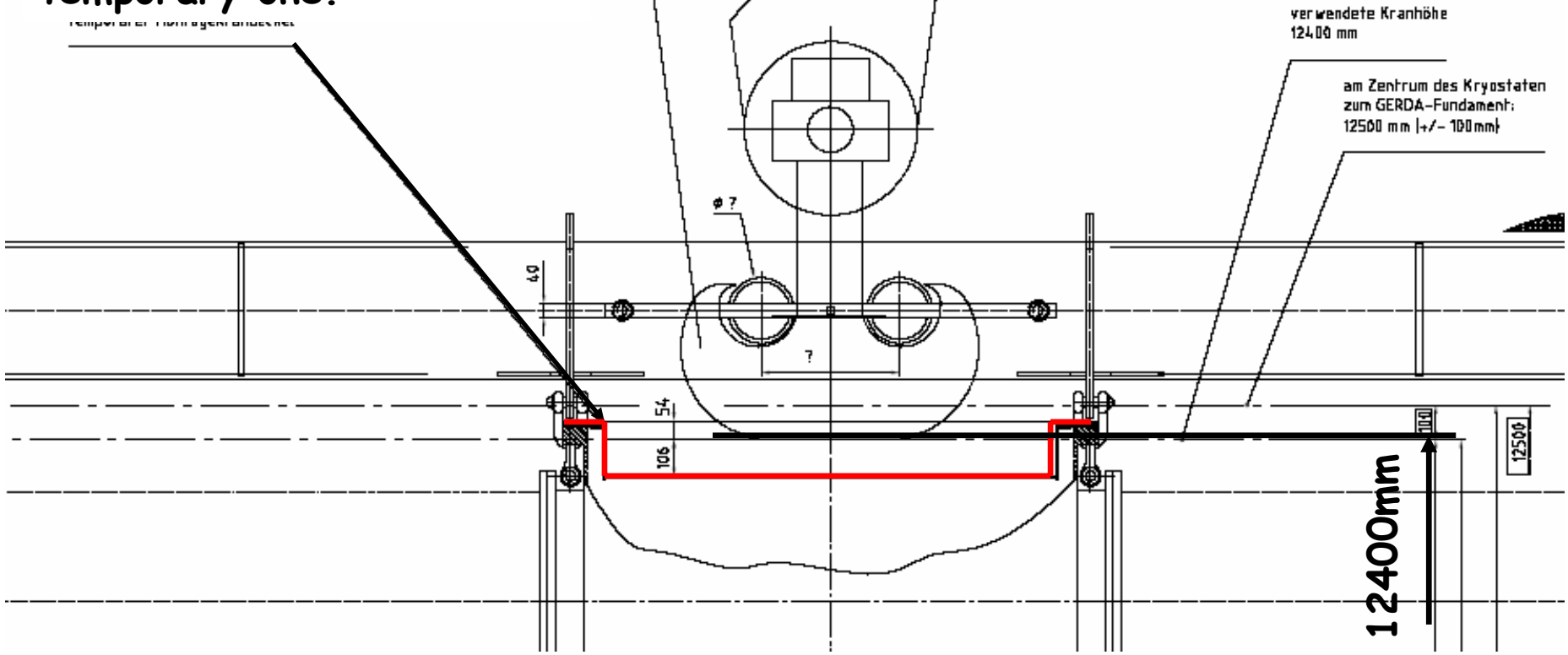
Lock System Integration

LVD use such a harness for their modules

Lock System Dimensions

We barely have enough space to bring in the lock with its lid replaced by a temporary one.

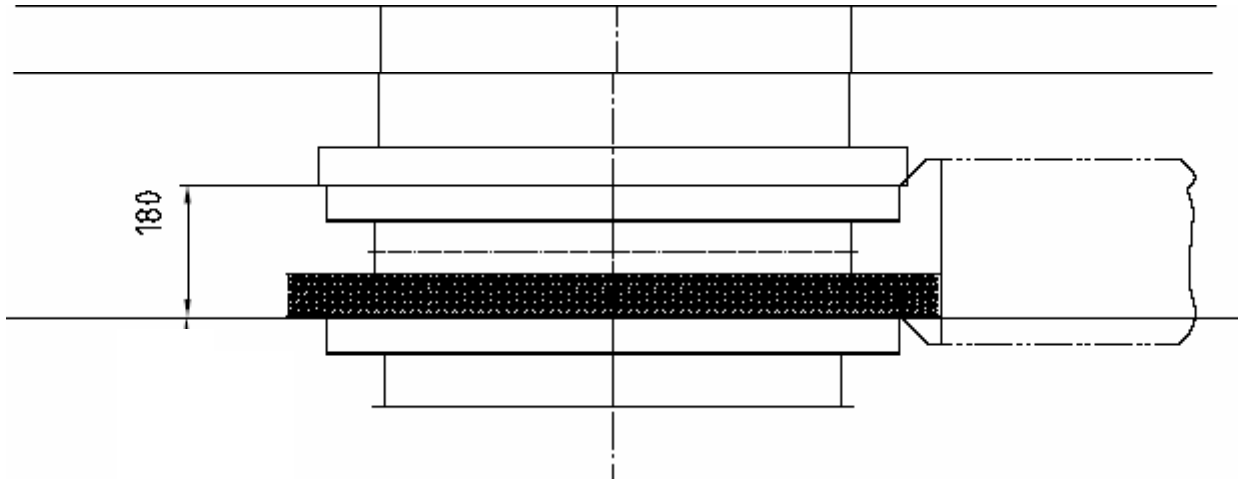
Crane is in its highest position (tolerances are taken into account)



Lock System Integration

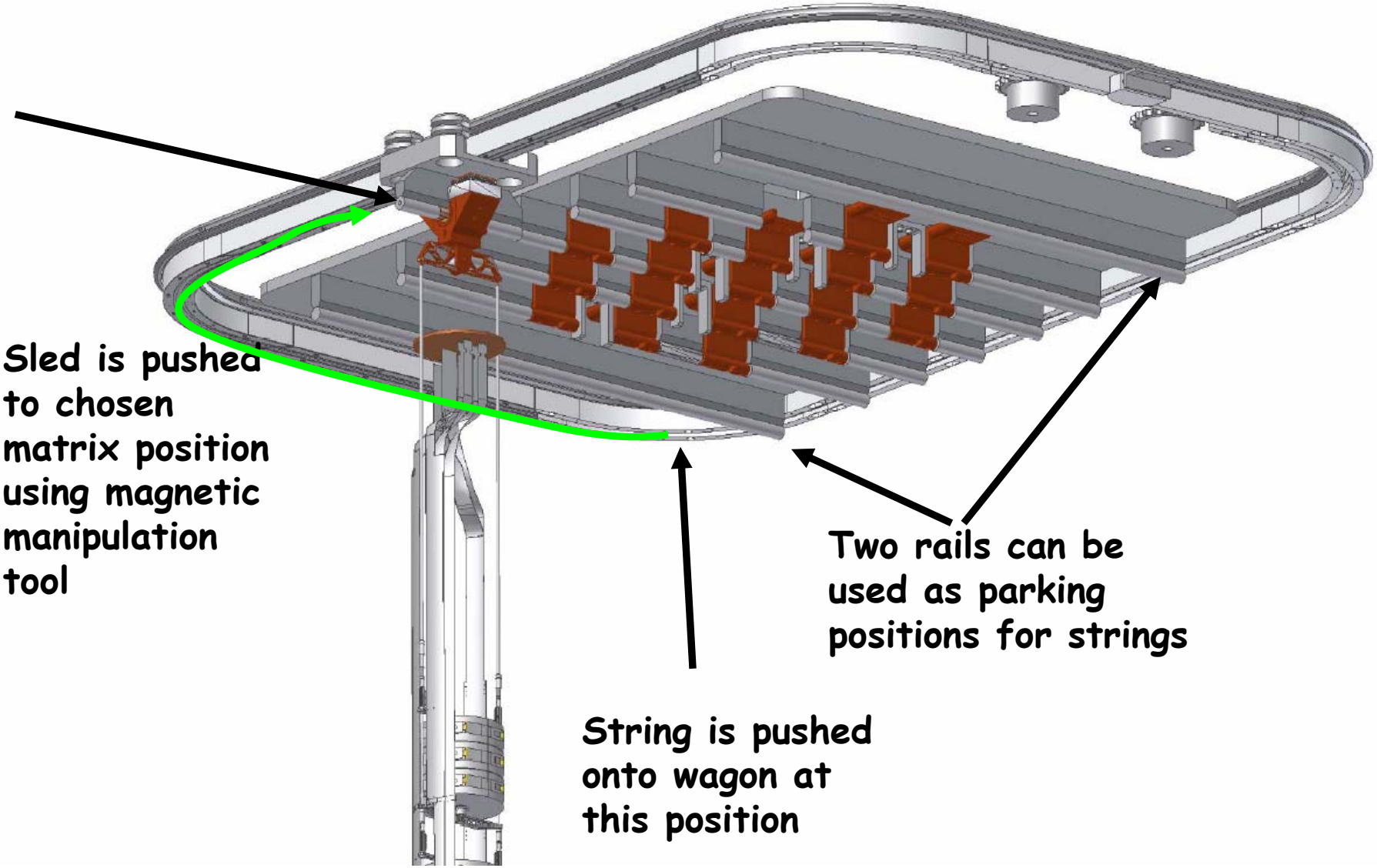
With crane in its uppermost position we have 106 mm between lock and shutter.

Bellow is lowered by 40mm while mounting in order to adjust lighter bellow to heavier lock.

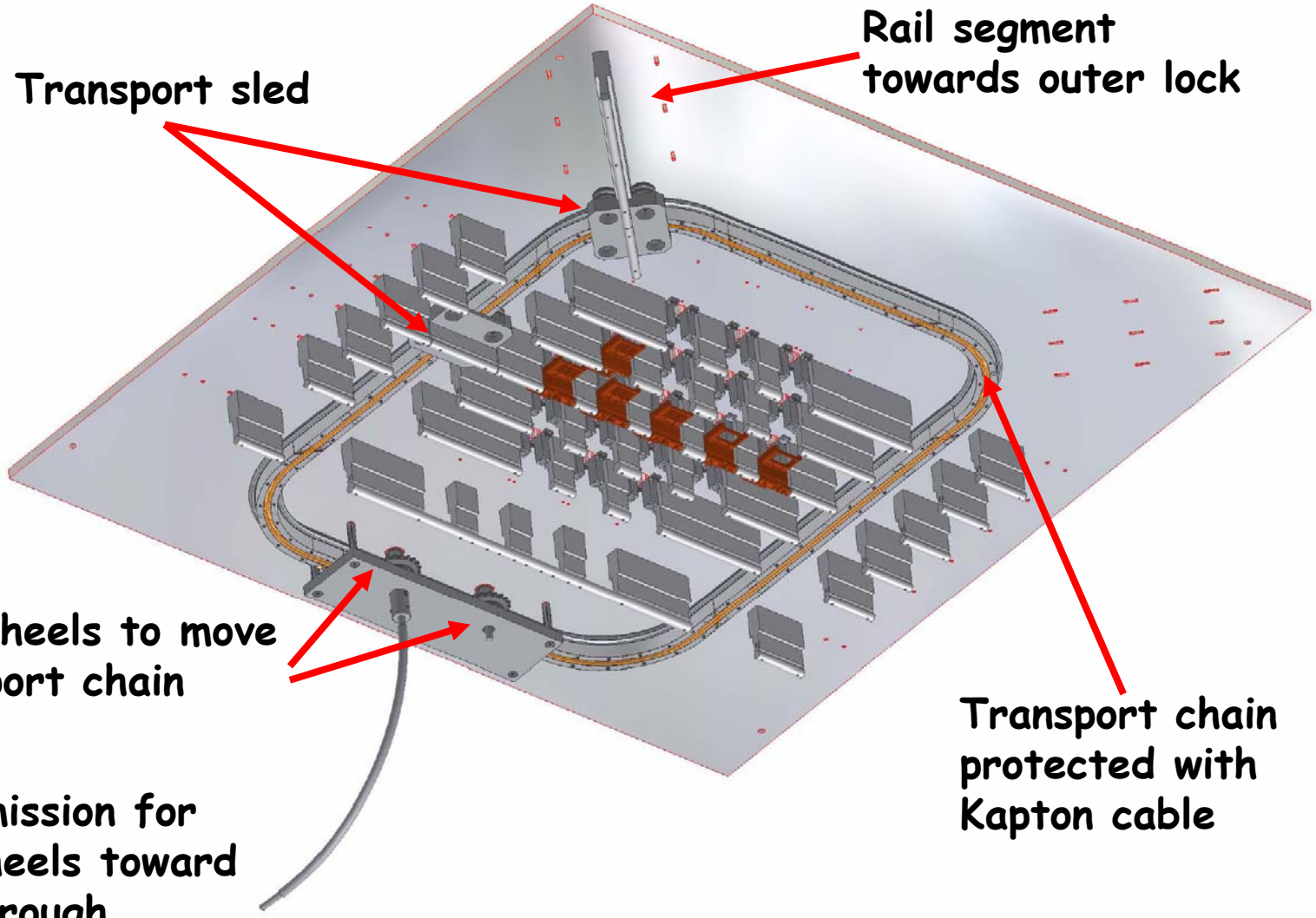


- Lock is positioned above shutter: 106 mm space between flanges
- Lock is lowered by 90 mm to its final position and attached to the superstructure: 16mm space between flanges
- Take off blind flanges, release bellow and attach it to the lock

Inside the Lock



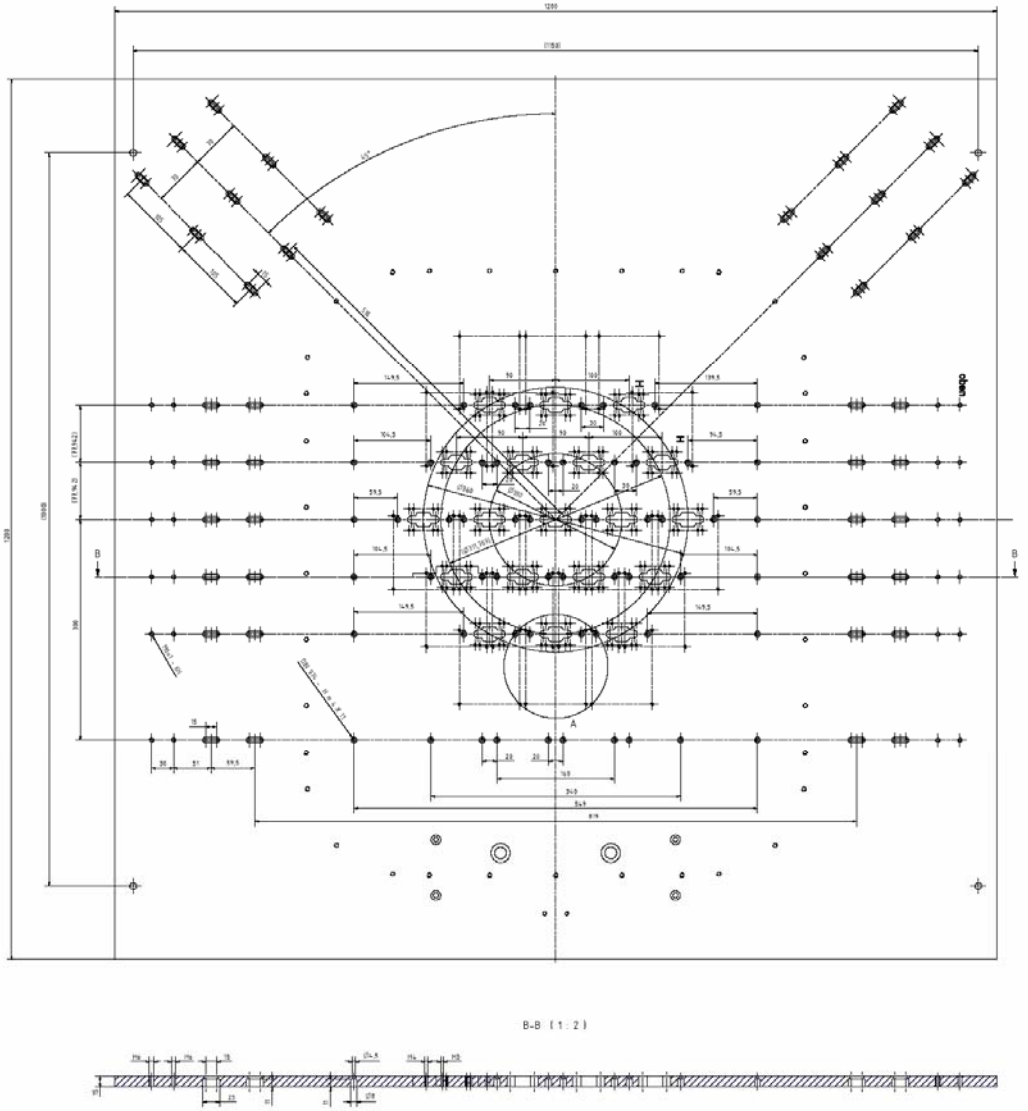
Internal Rail System:Status



Internal Rail System:Status

Sled positioning system with wagon was built up in Munich

Internal Rail System:Status



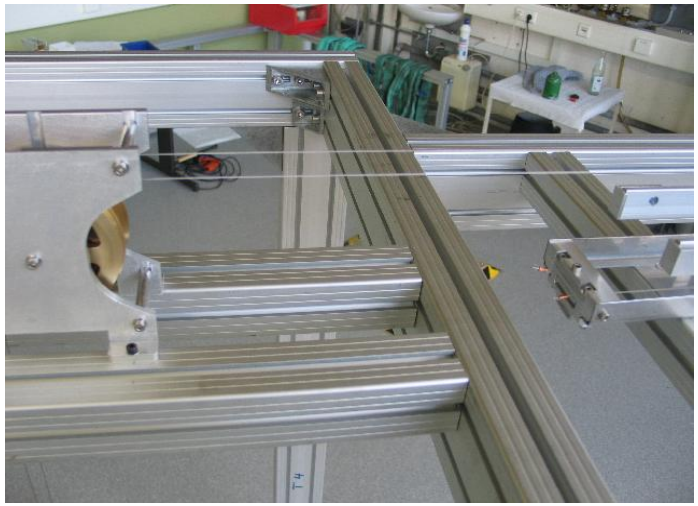
Production drawing for parts are finished: plate, rails, etc.

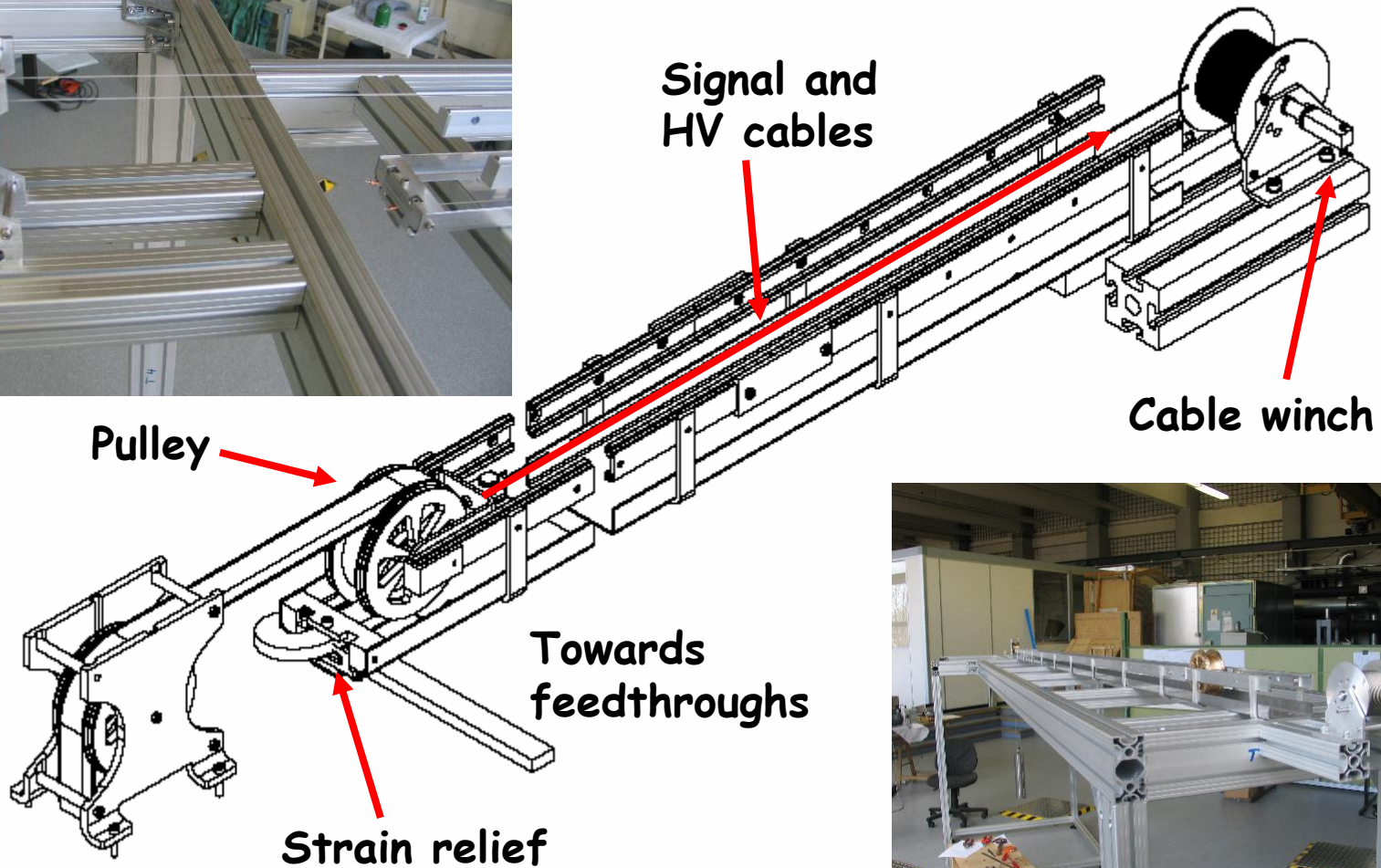
Production and mounting ongoing

Lock System Status

The first string pulley has been installed at MPI Munich

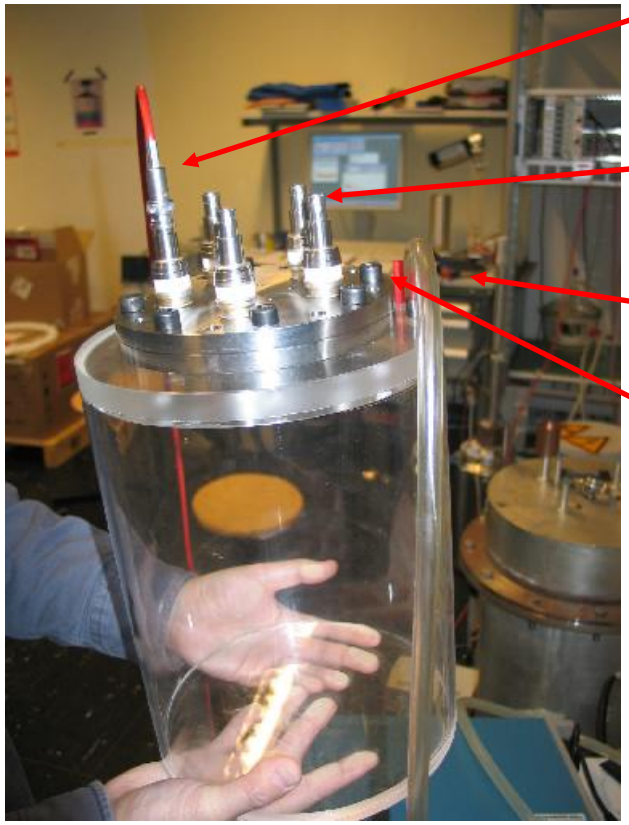
Lock System Status





HV Feedthroughs

Tests of HV feedthroughs in Ar-atmosphere were performed in a Ar-gas-chamber



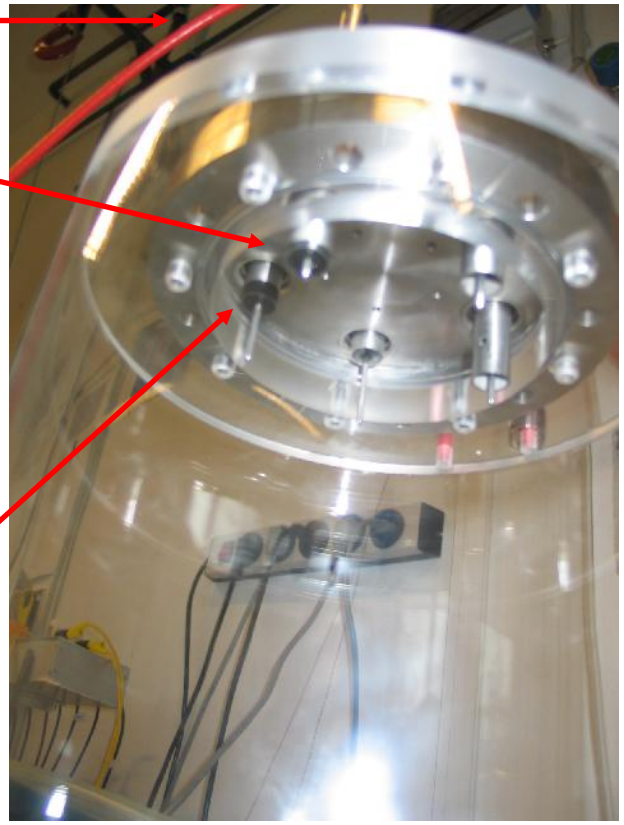
HV cable

Five 5kV feedthroughs on CF-flange.

Flushing line

Exhaust line

Vacuum HV shield filled up with Stycast.

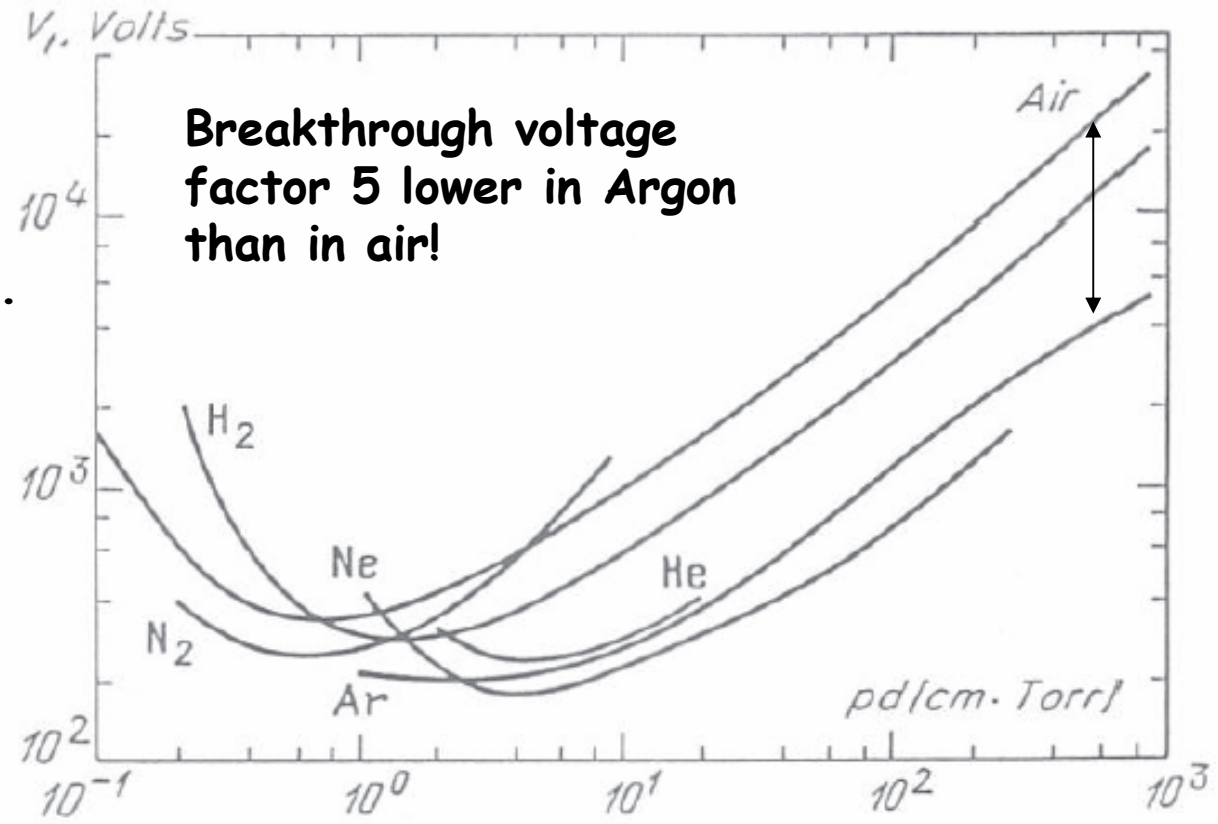


HV Feedthroughs:

5kV feedthrough for air
Argon breaks down at 5 times lower voltage

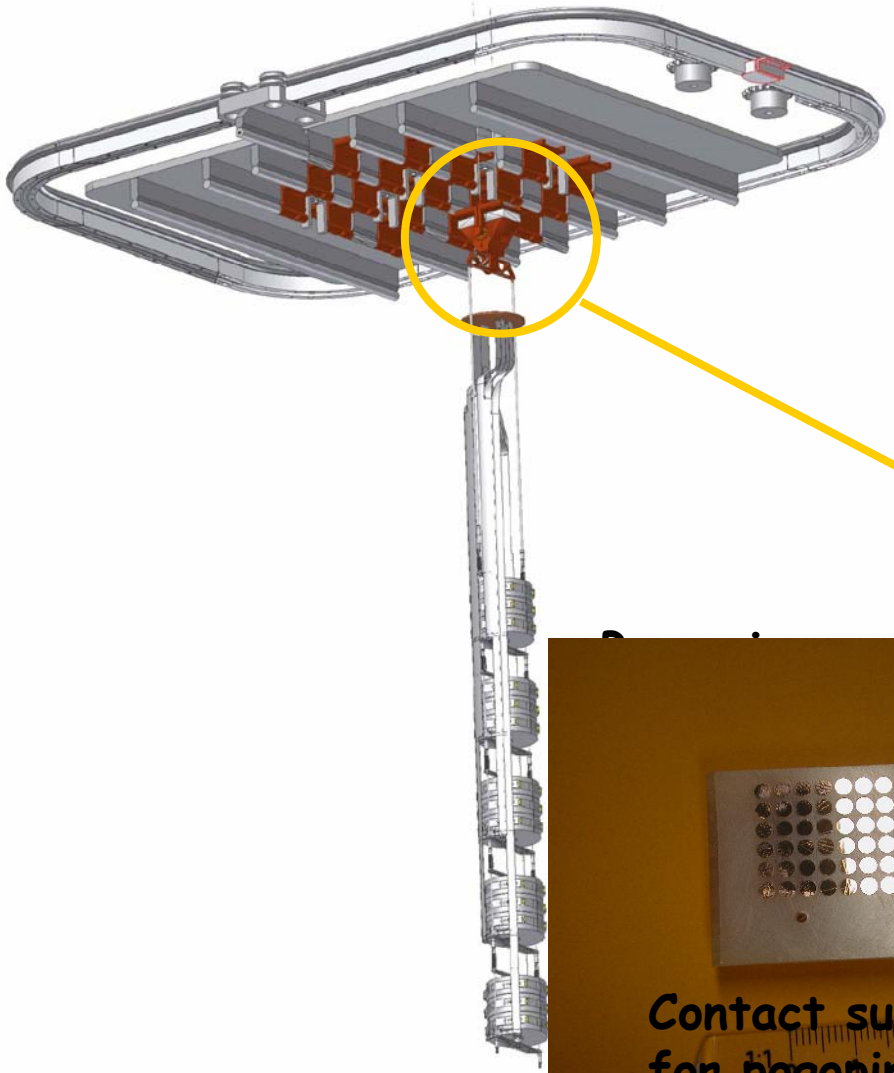
--> We observe breakthrough at 1.6 kV without special treatment.

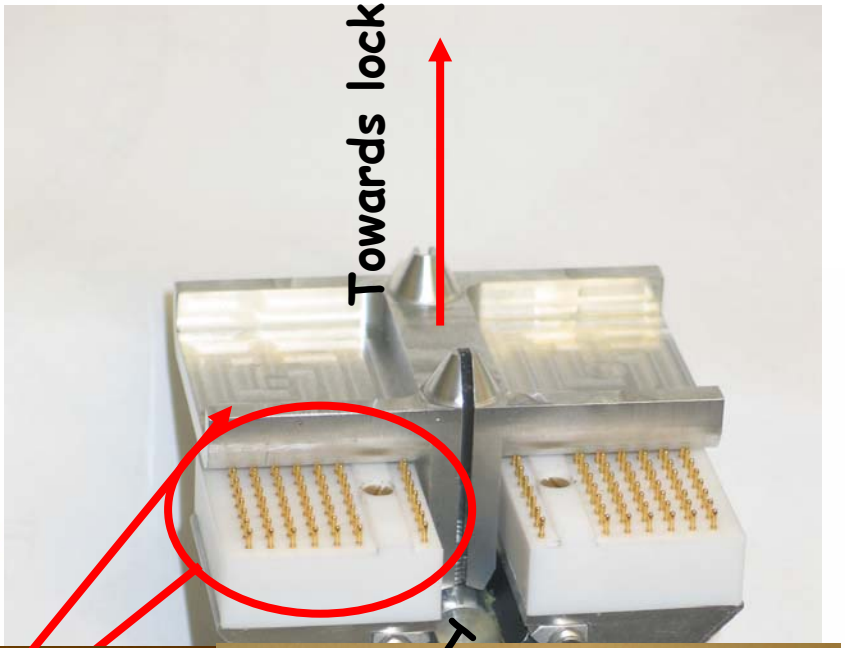
With stycast between shield and HV contact breakthrough at 3.5 kV

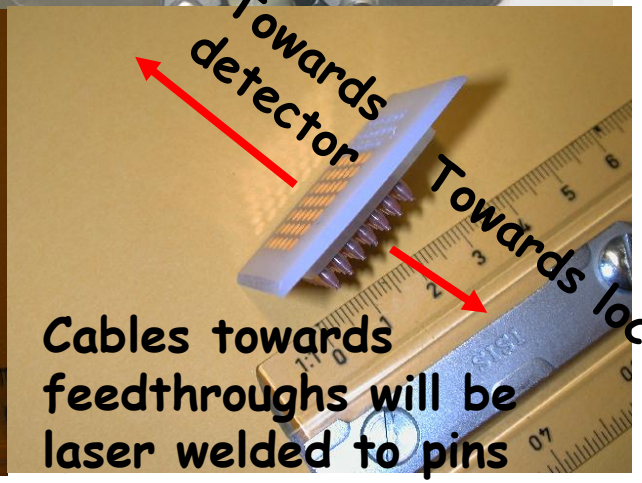


--> We will need to use 25 kV Feedthroughs for 5kV

Signal and HV contacts







Pogo Pin Tests

Test performed:

- Sled with 107 pogo pins tested in liquid nitrogen for their resistences to ground. All pins had R<1 Ohm

- Currently ongoing: 104 Pogo pins in long term test since january. So far all ok!

Next steps:

- Send signals through pogo pins in sled

- Test with individual contacts on both sides

Conclusion

- Transport and storage infrastructure finished
- Clean room and lock system are well advanced
- Lock system installation under control
- String pulley and rail system mockup are underway
- Pogo Pin contact test successful, more tests to be done
- We have to be very carefull about HV in Ar - gas