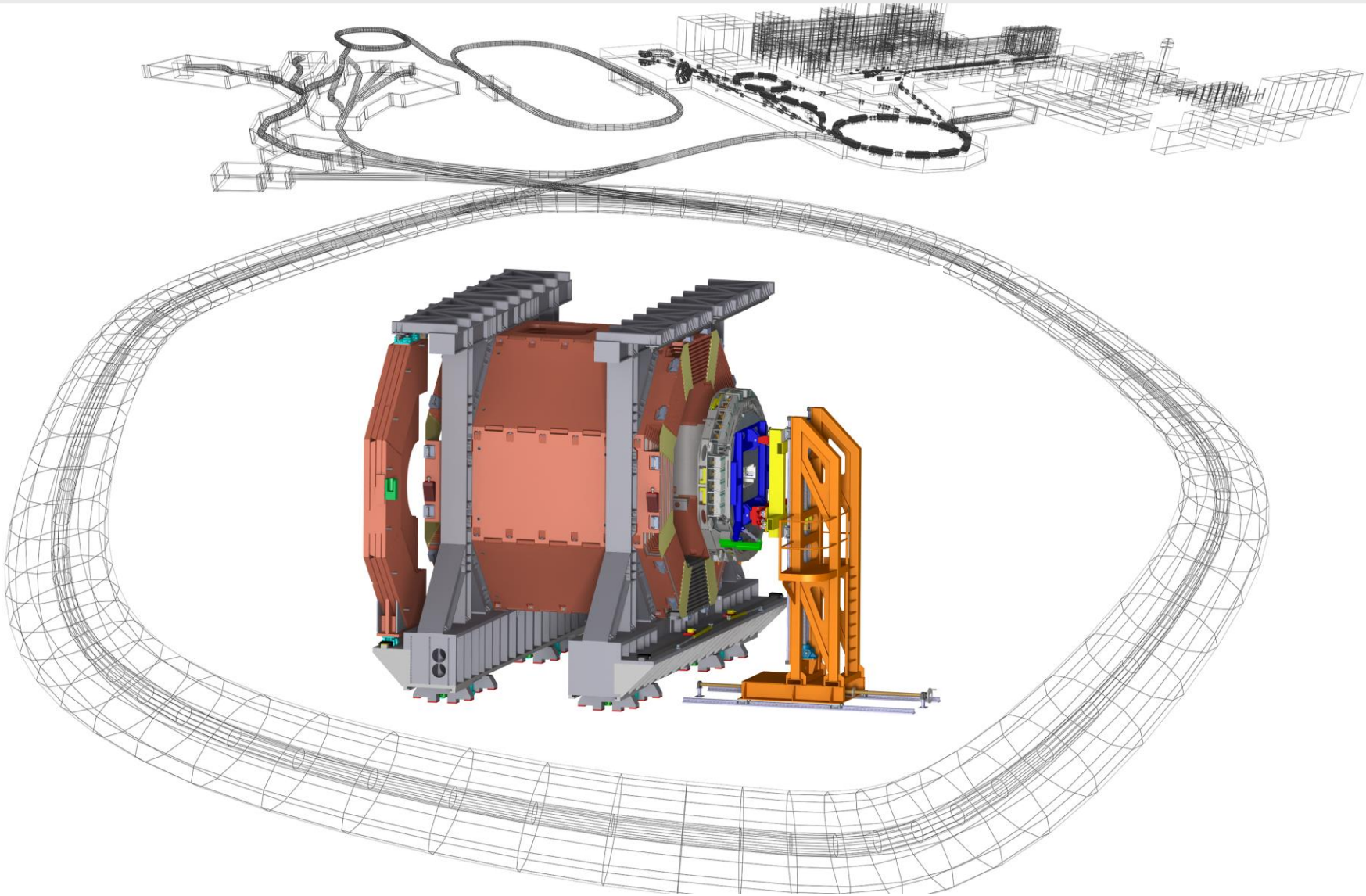
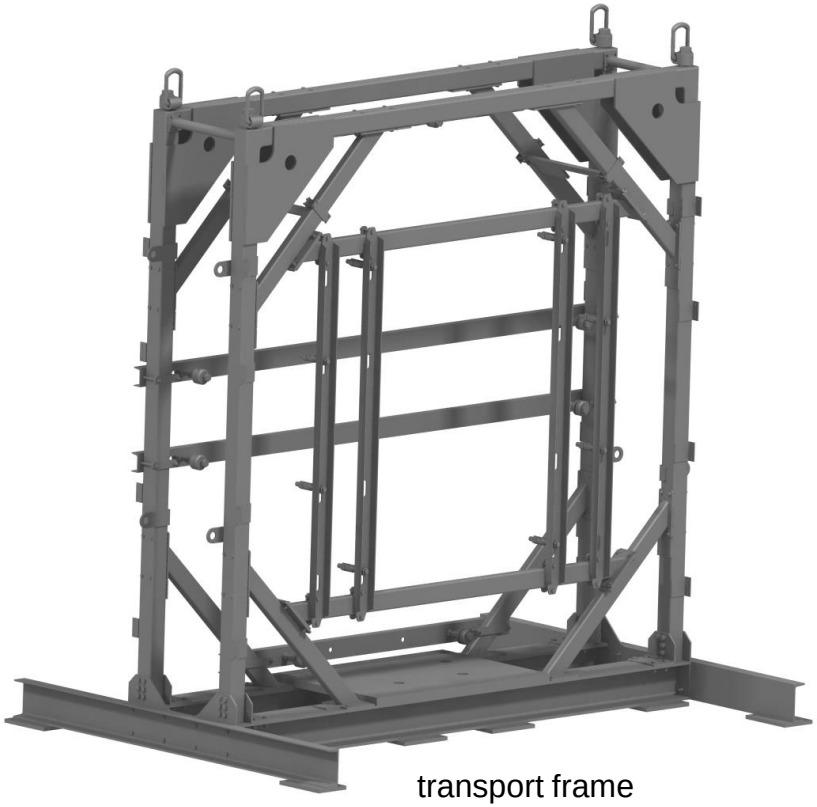
Extended design of the mounting device for the Forward Endcap

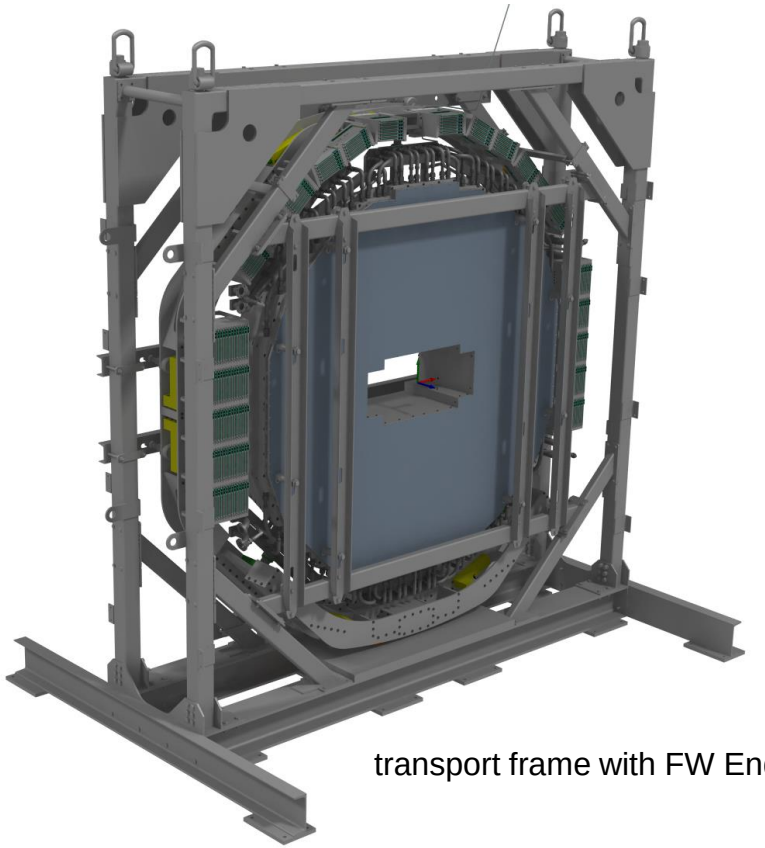


For the installation of the Forward Endcap into the Targetspectrometer, a special device is needed.

The detector will be delivered via an special transport frame.

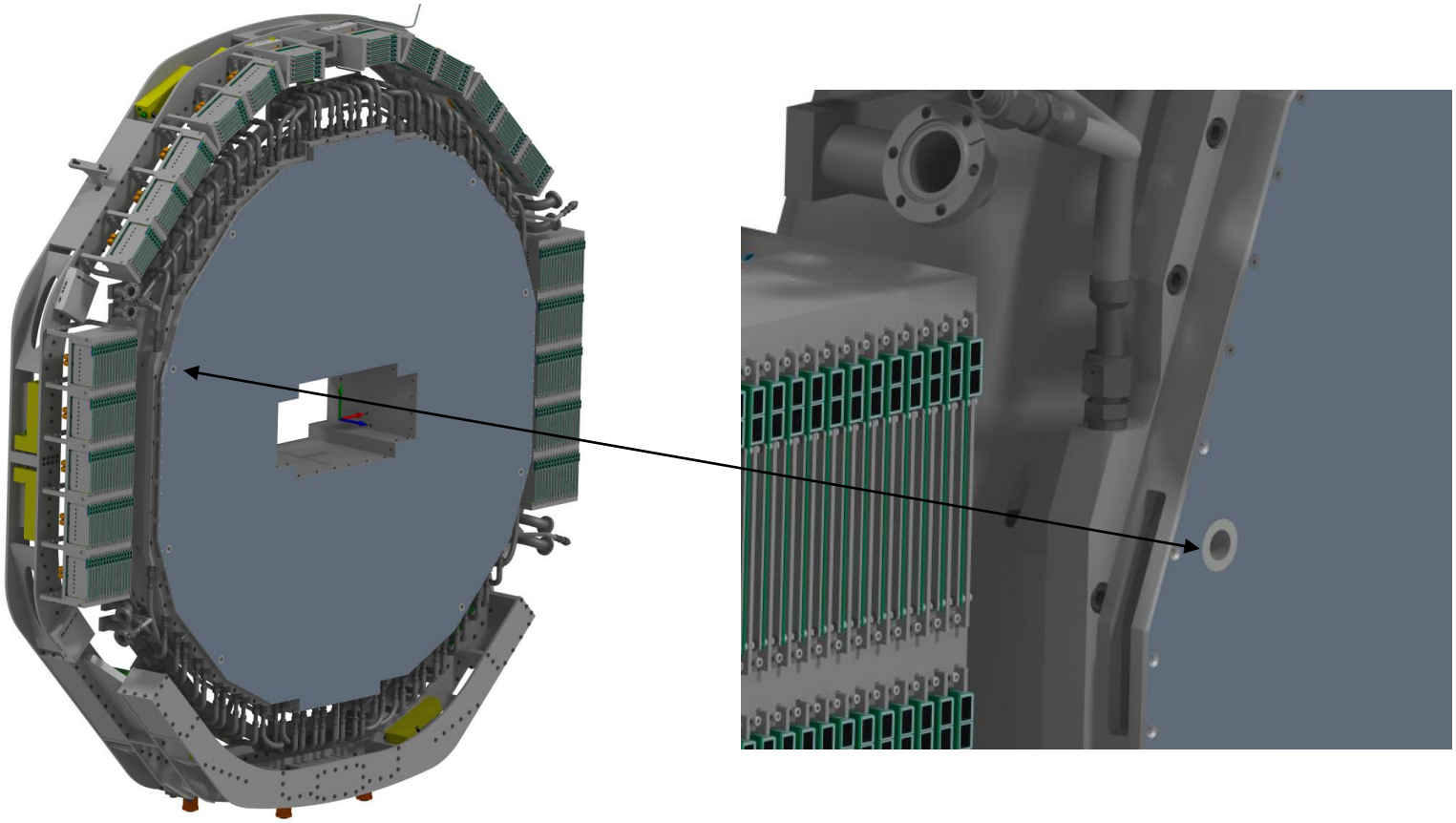


transport frame



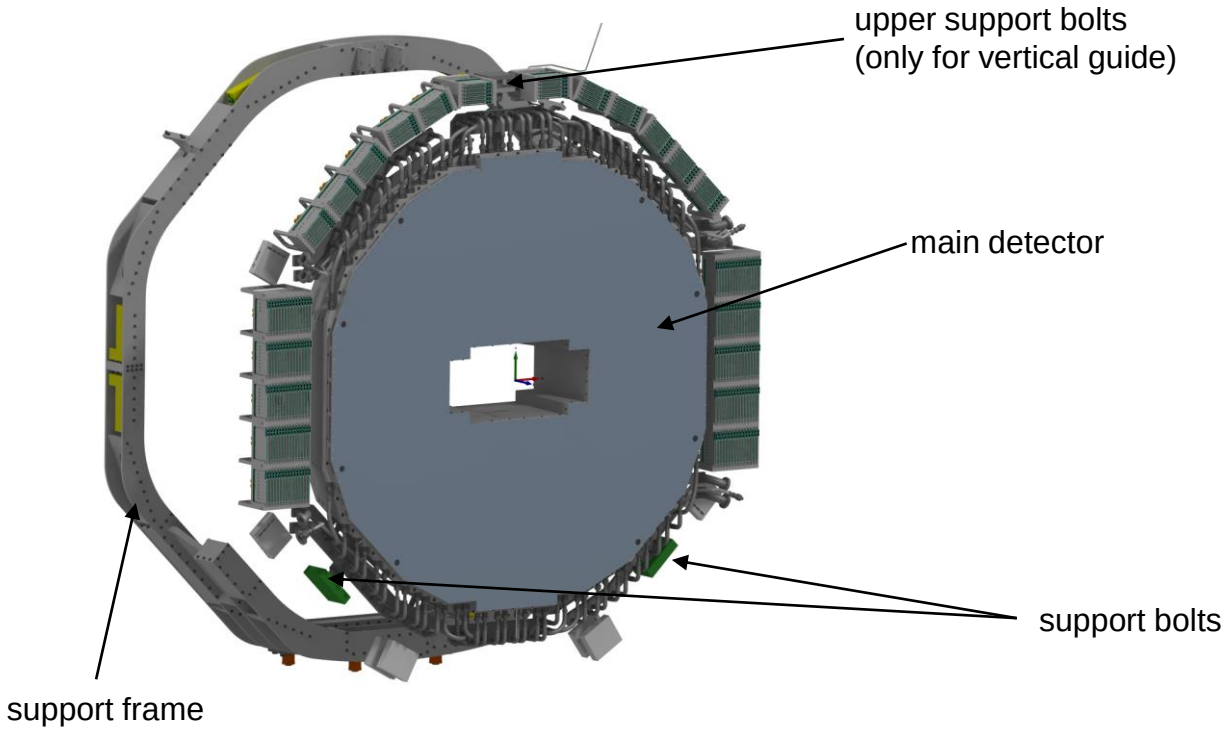
transport frame with FW Endcap

For the mounting device, 8 x M16 thread holes in the backplane can be used. This thread holes are also used as attachment points for the transport frame.



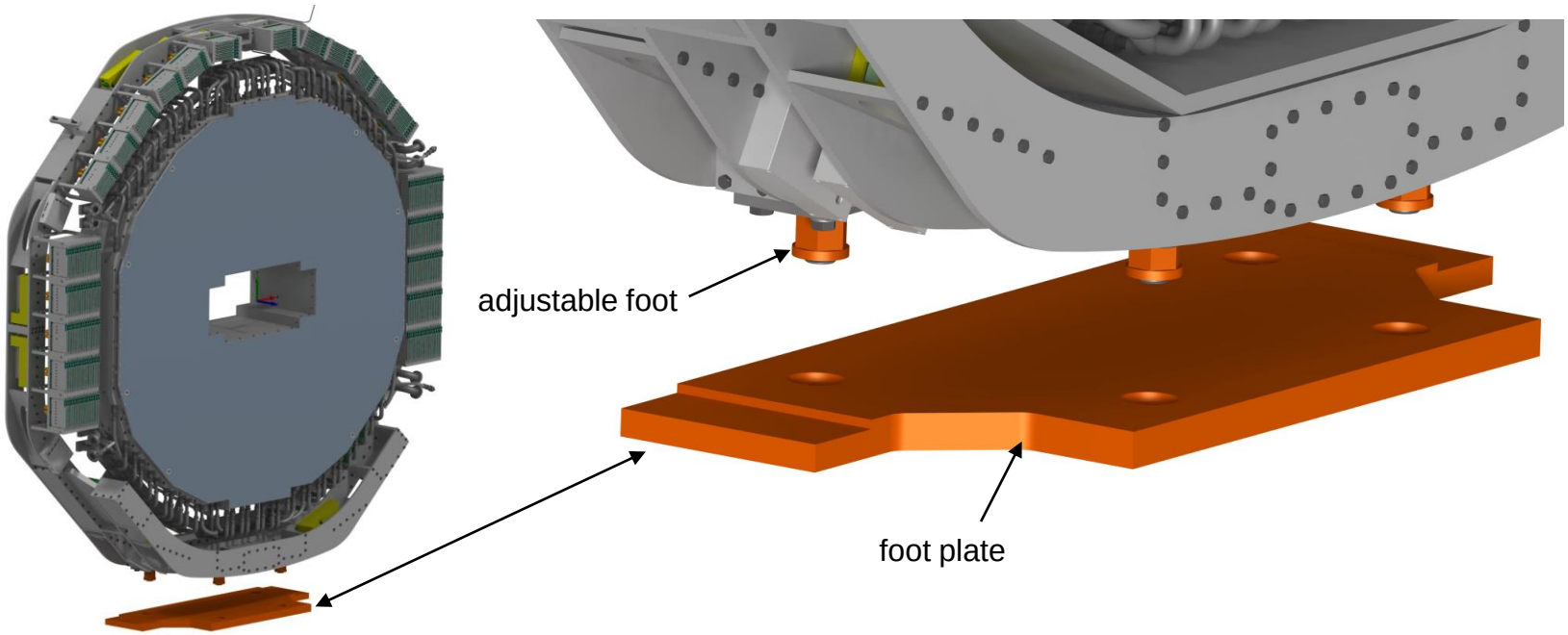
The main detector has no rigid connection to the outer support frame, but is placed on it with two 45-degree supports and secured against falling over.

Because of that, the mounting device has to ensure that the support frame will keep its origin position to the main detector while moving and adjusting. Not least to prevent damages to cable and pipe components which will be attached to both assemblies.



The final position of the FW Endcap will be on a foot plate which is integrated in the Solenoid yoke. That connection will be realized via four adjustable feet and holes in the footplate.

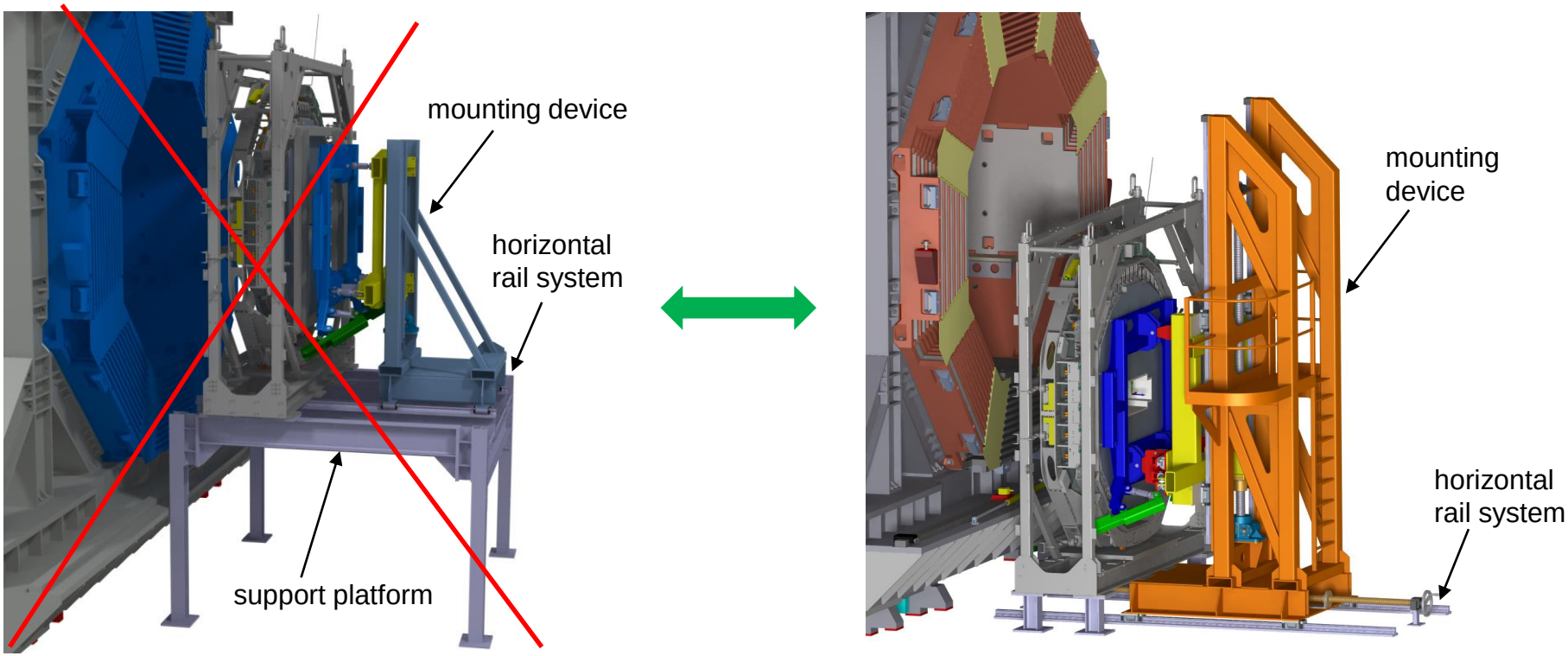
The gap between the feet and the holes is only 1 mm. For that reason, the mounting device should be able to provide to adjust the relative position of the detector to the foot plate.



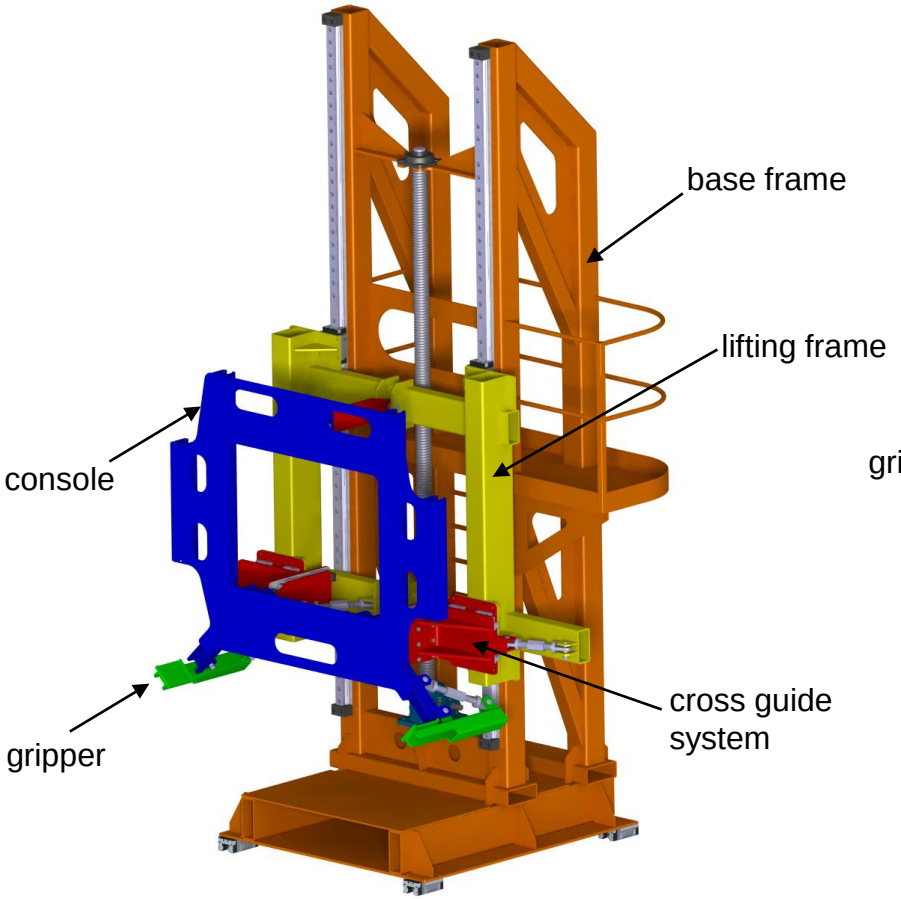
With the new design, the mounting device is no longer on a separate support platform.

Instead, the device and rail system are attached directly to the floor of the PANDA hall.

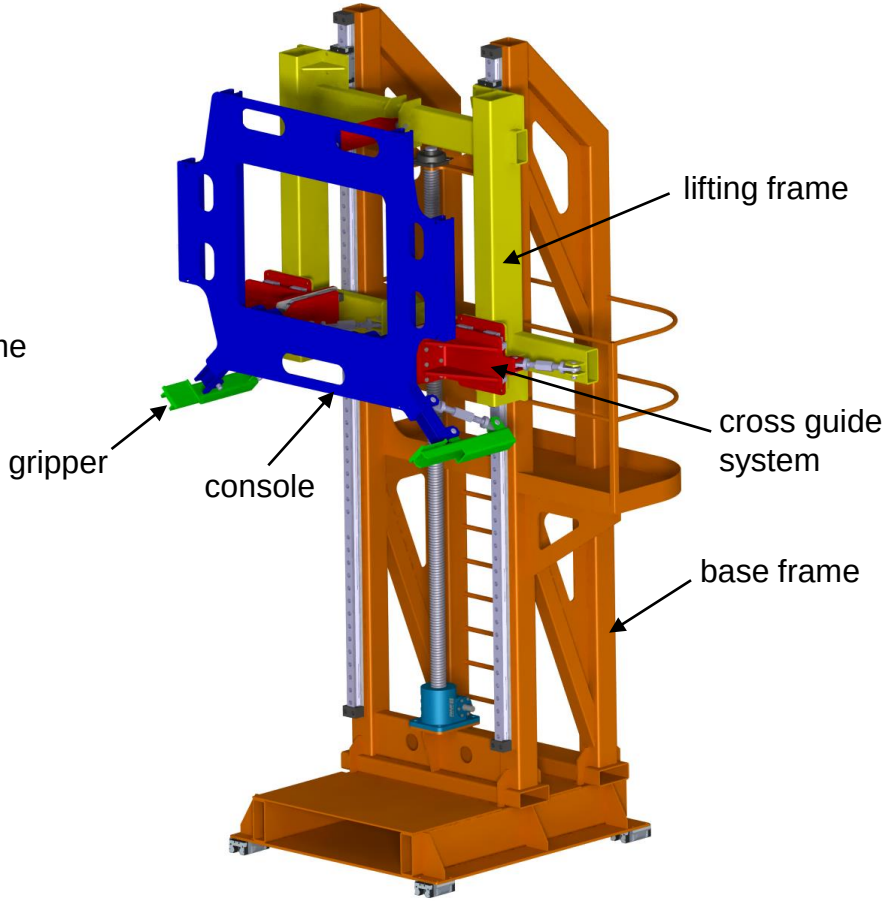
The difference in height is compensated by an greater vertical stroke of the device.



The device essentially consists of several welded assemblies.

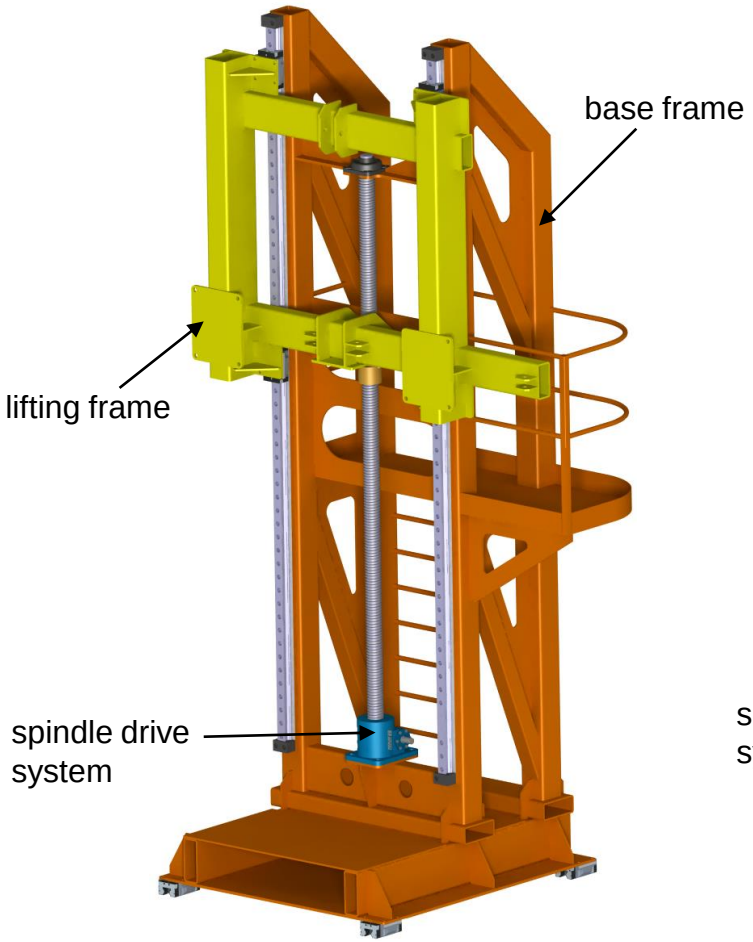


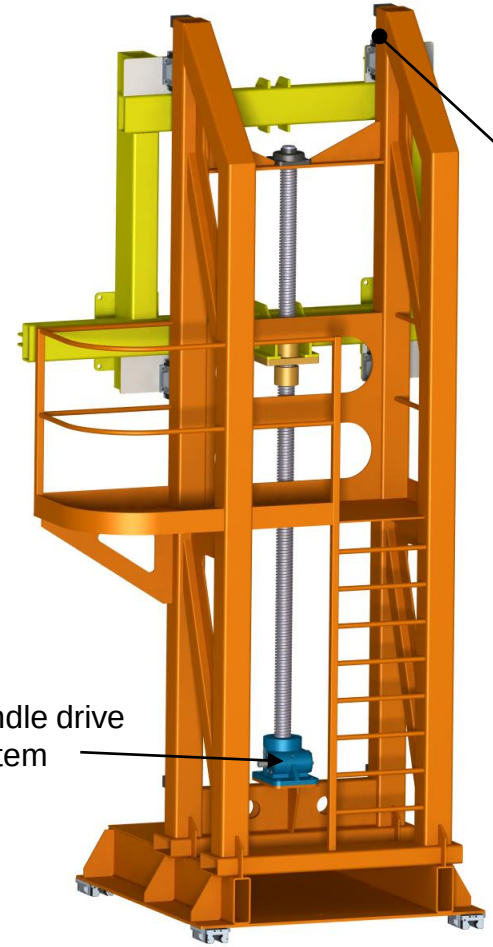
device in lower position

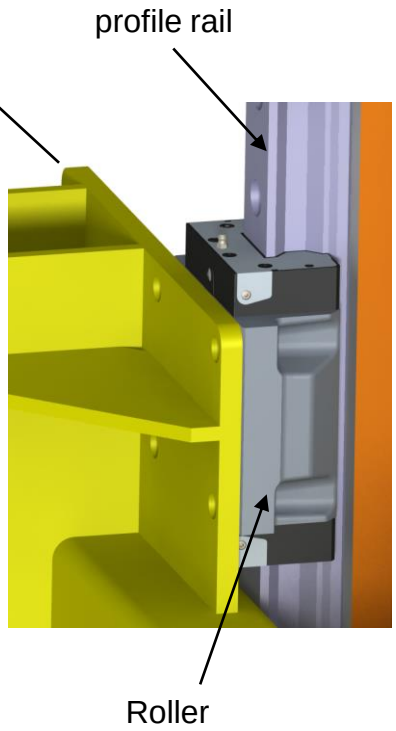


device in upper position

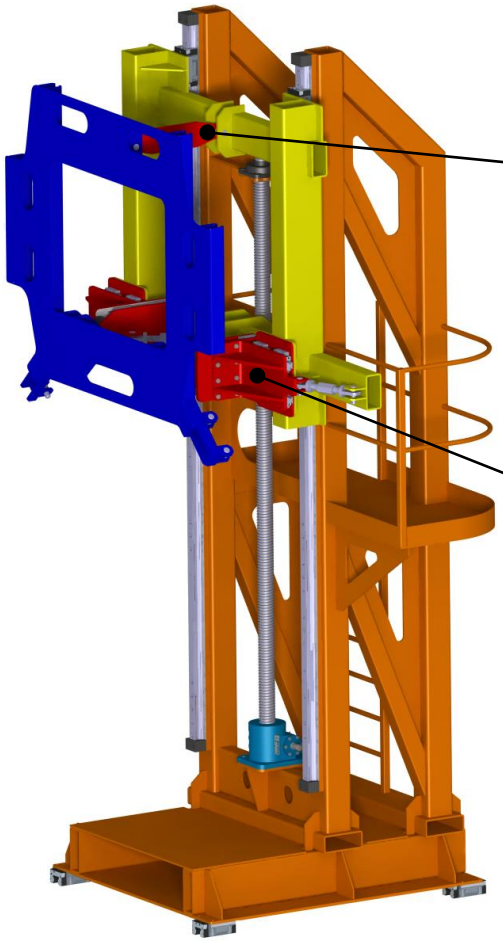
For lift the detector, the spindle drive system was lengthened. The guiding now works via profile rail guides. The movement of the spindle can be driven by hand, for example with a ratchet, or with a cordless screwdriver.

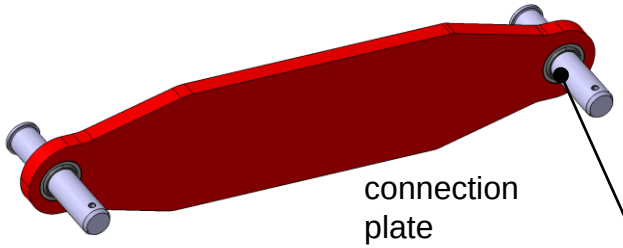




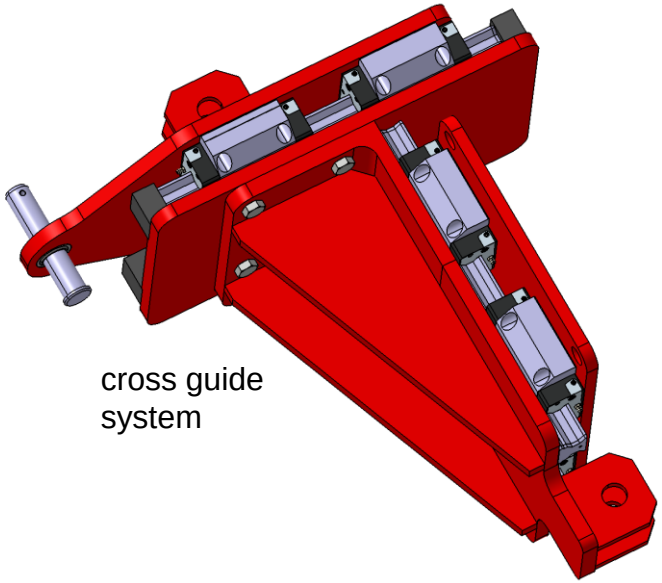


The console is attached to the lifting frame via two cross guide systems and a plate. The connection works via bolts and spherical bearings.





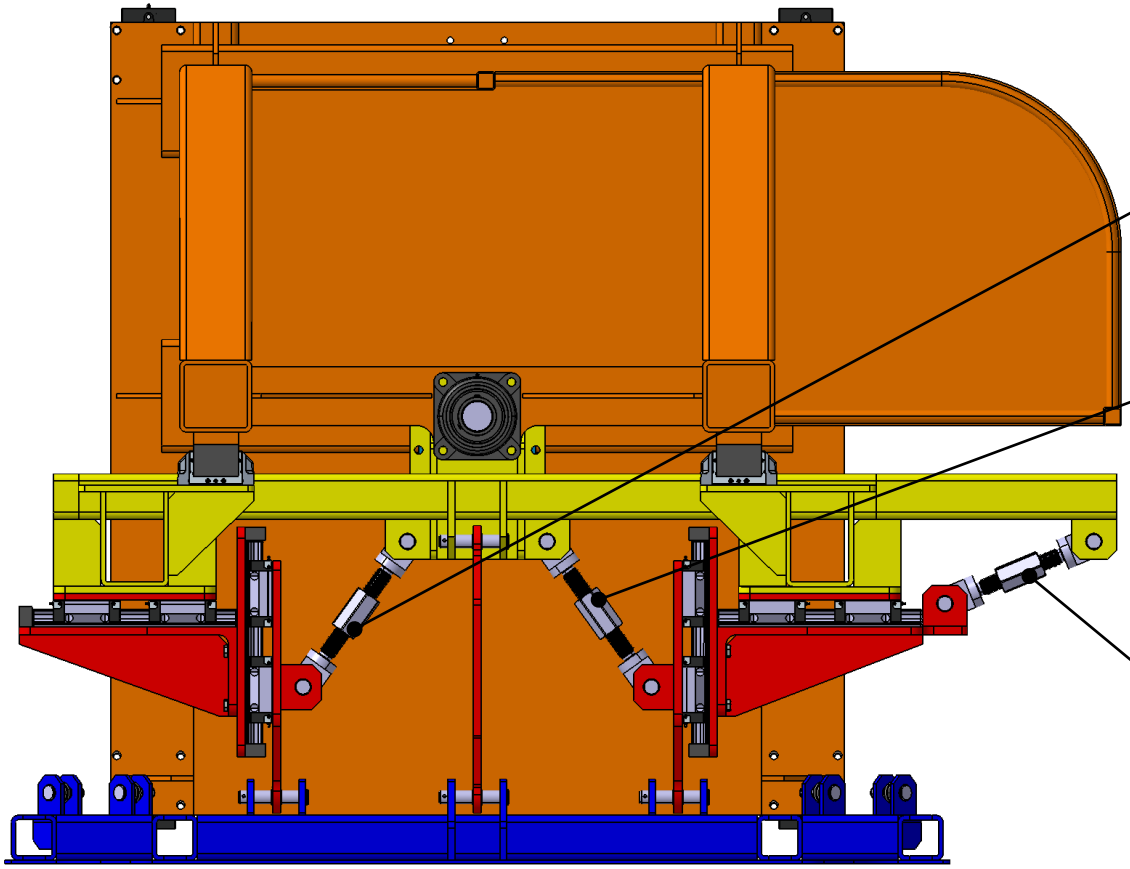
connection plate

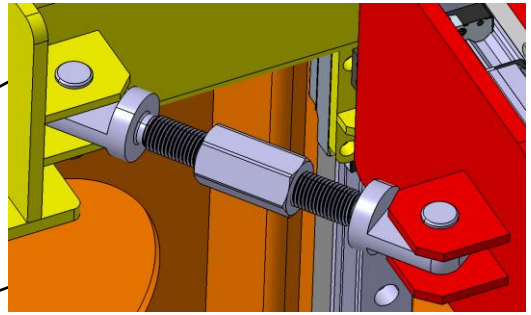


cross guide system

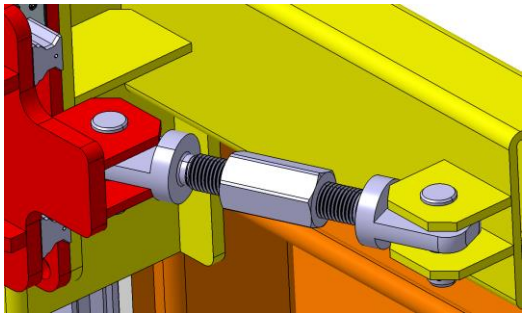
spherical bearing

For manipulate the position of the console, three adjustable spindle sets will be attached between lifting frame and cross guiding systems via bolt connections.

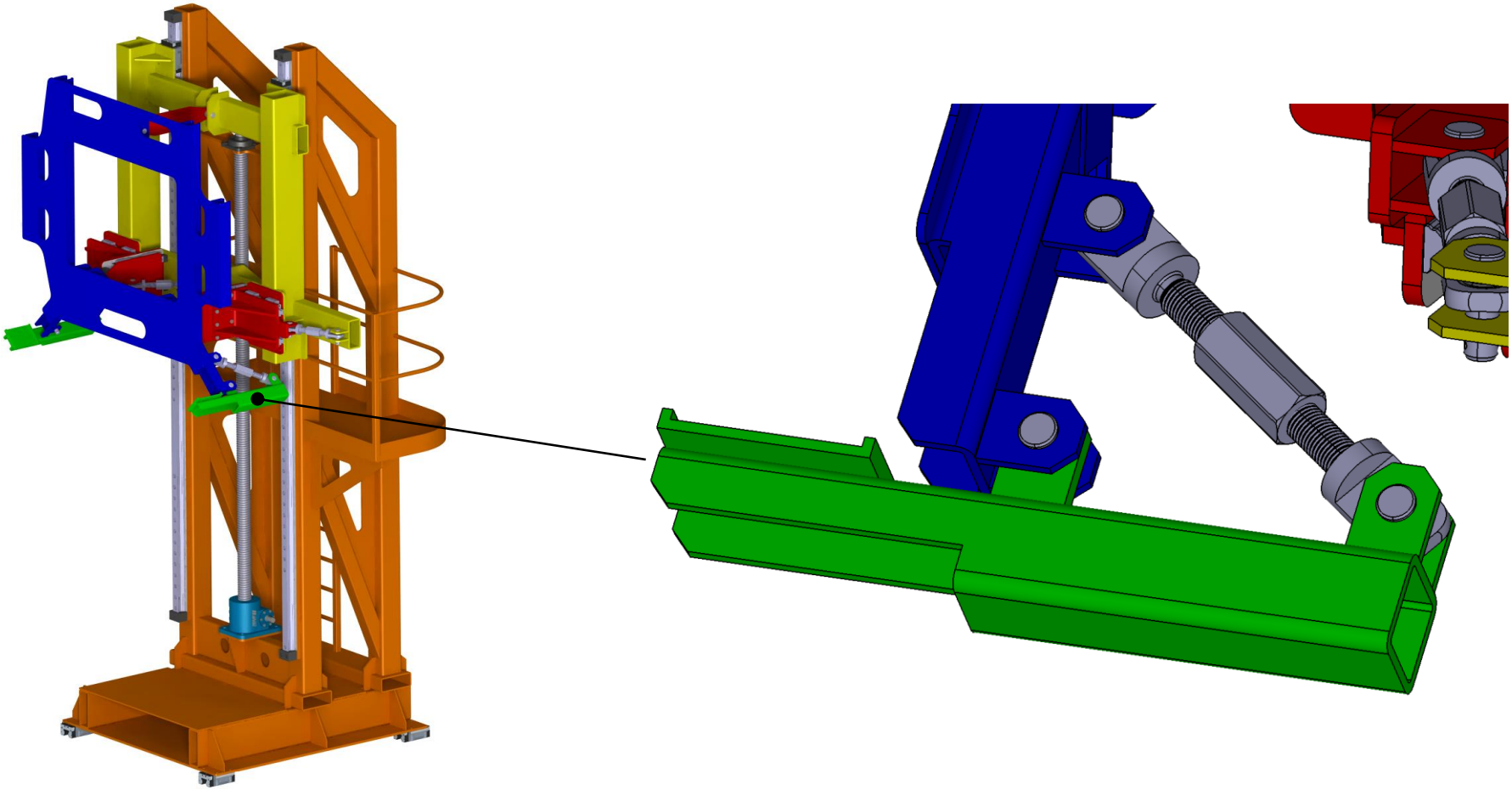




connection with
adjustable spindle set

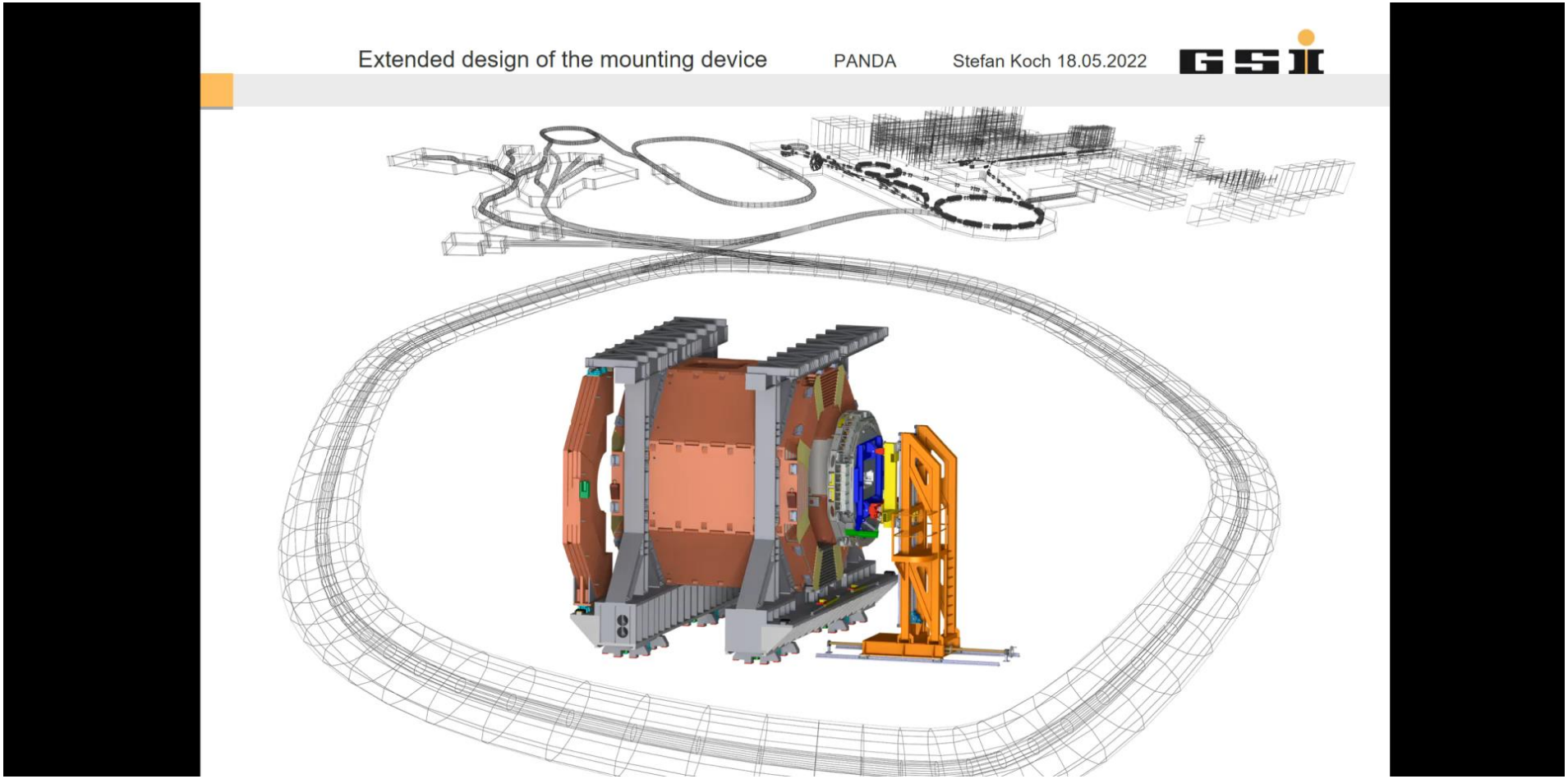


For the fixation of the support frame, two grippers will be attached to the console via bolt connections. An additional spindle for each gripper allows to close and open it.



New design of the mounting device

The following video shows in a simplified form how the mounting procedure could look like.



Conclusions:

With the mounting device directly on the floor, we save assembly time and space in the hall.

More details and specifications has to clarified.

An Advantage of the modular design is, that we could use the same device for installation of the GEM by exchanging the console with an other adapter.

Open points:

If we decide to proceed with this concept, for the final design we have to make calculation regarding to stress and deformation.

If we decide to use the same mounting device for the GEM, we have to clarify the boundary conditions for that installation procedure as well.

Thank you for your attention!