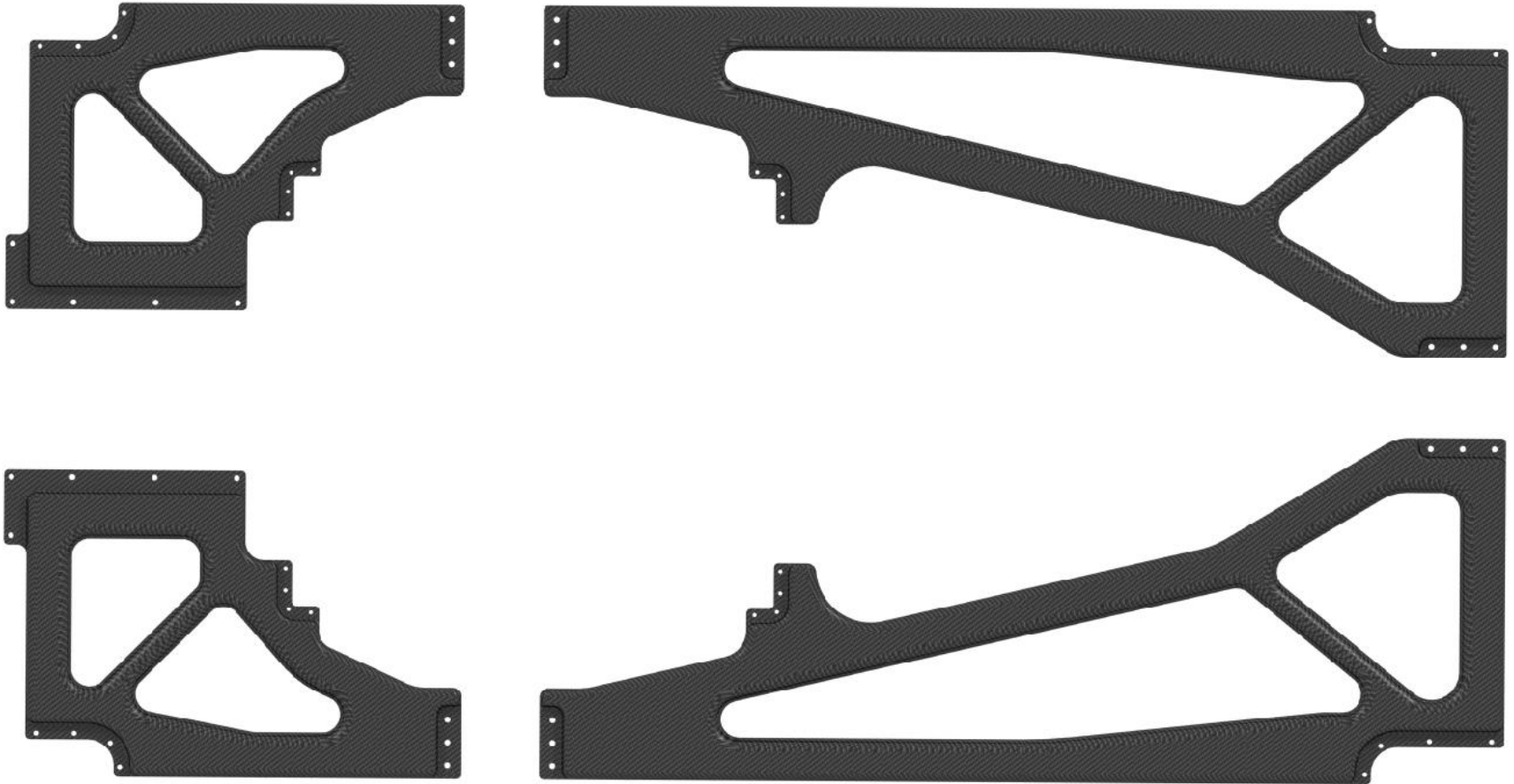
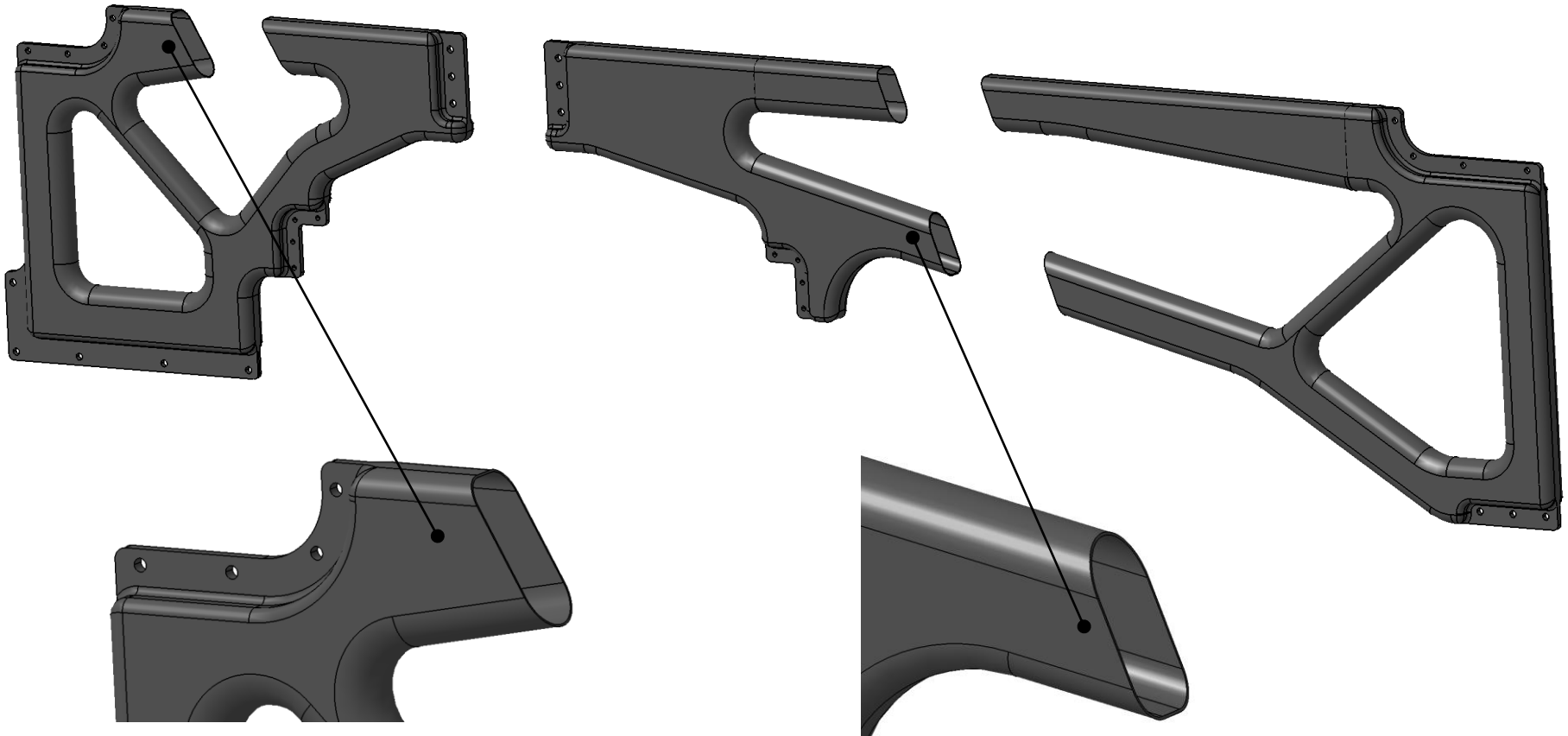


The mainframe is made out of four carbon composite parts, two of which are identical.

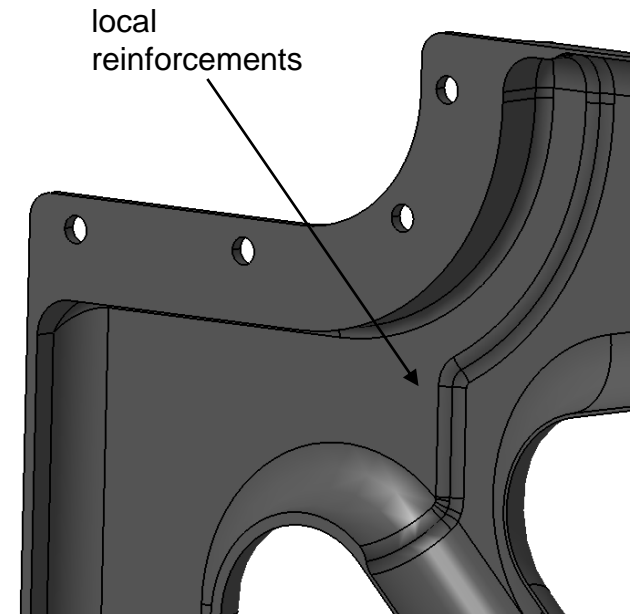
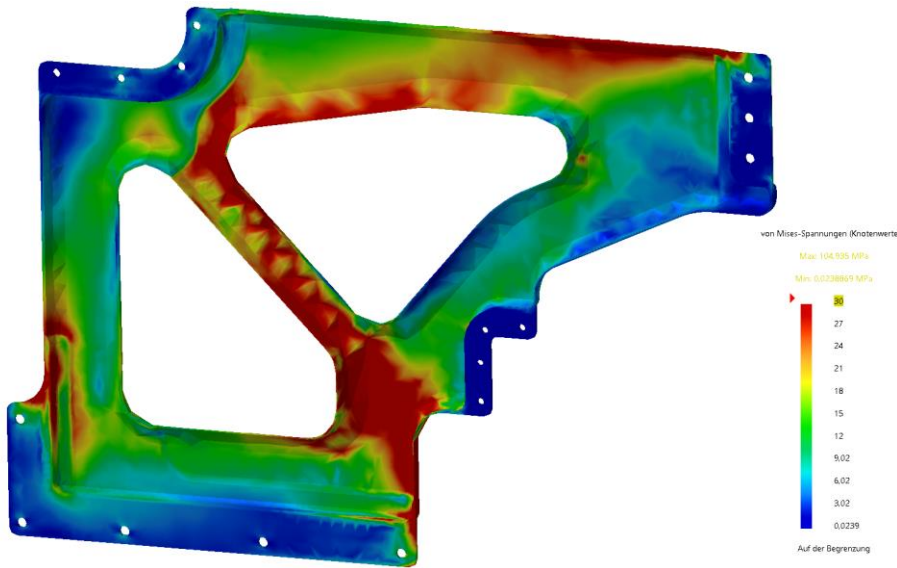


The frames itself are made as tube or hollow profile.

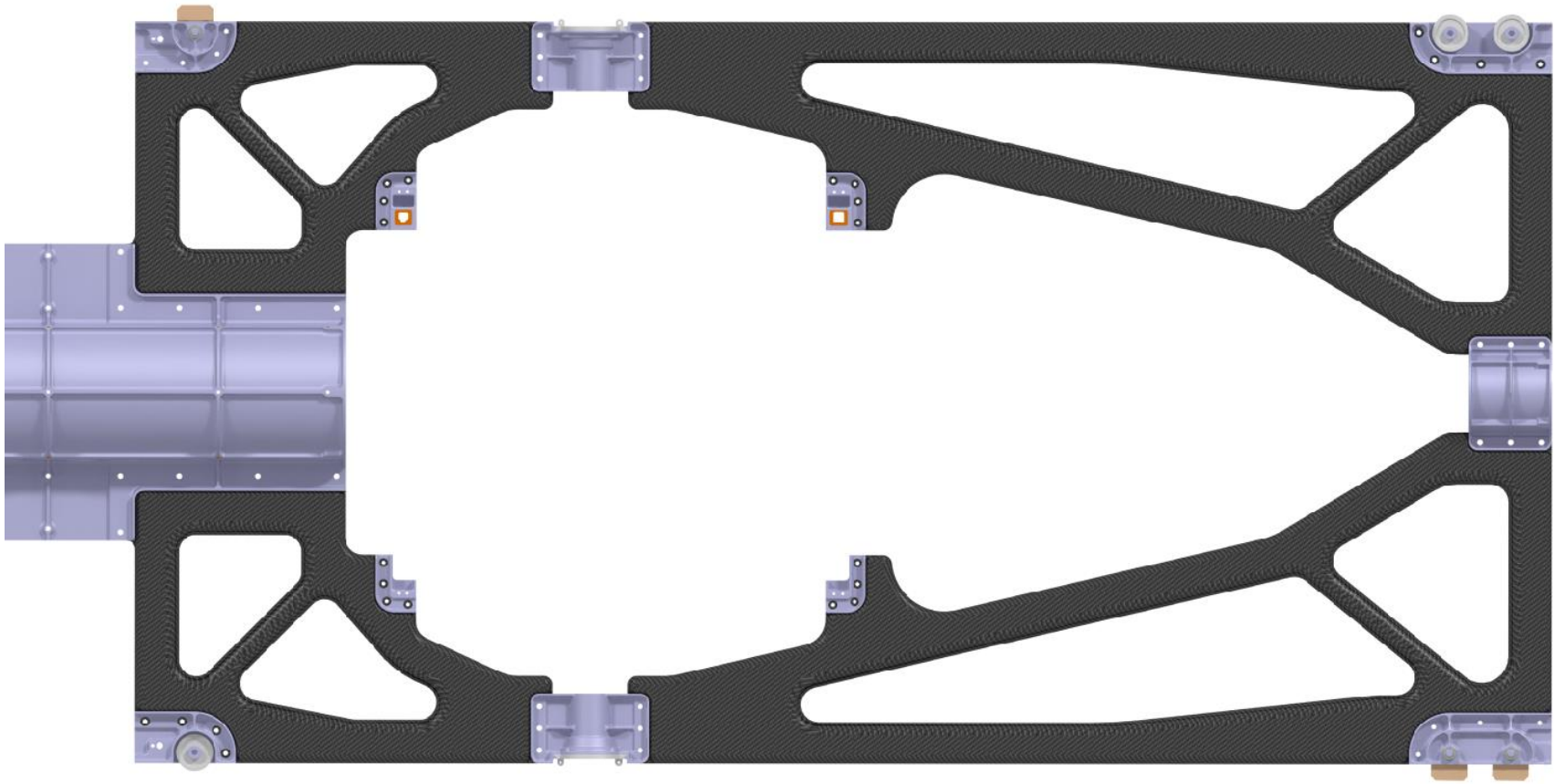
Each of the parts consists of two half-shells, which after lamination are joined together via epoxy-based adhesive .



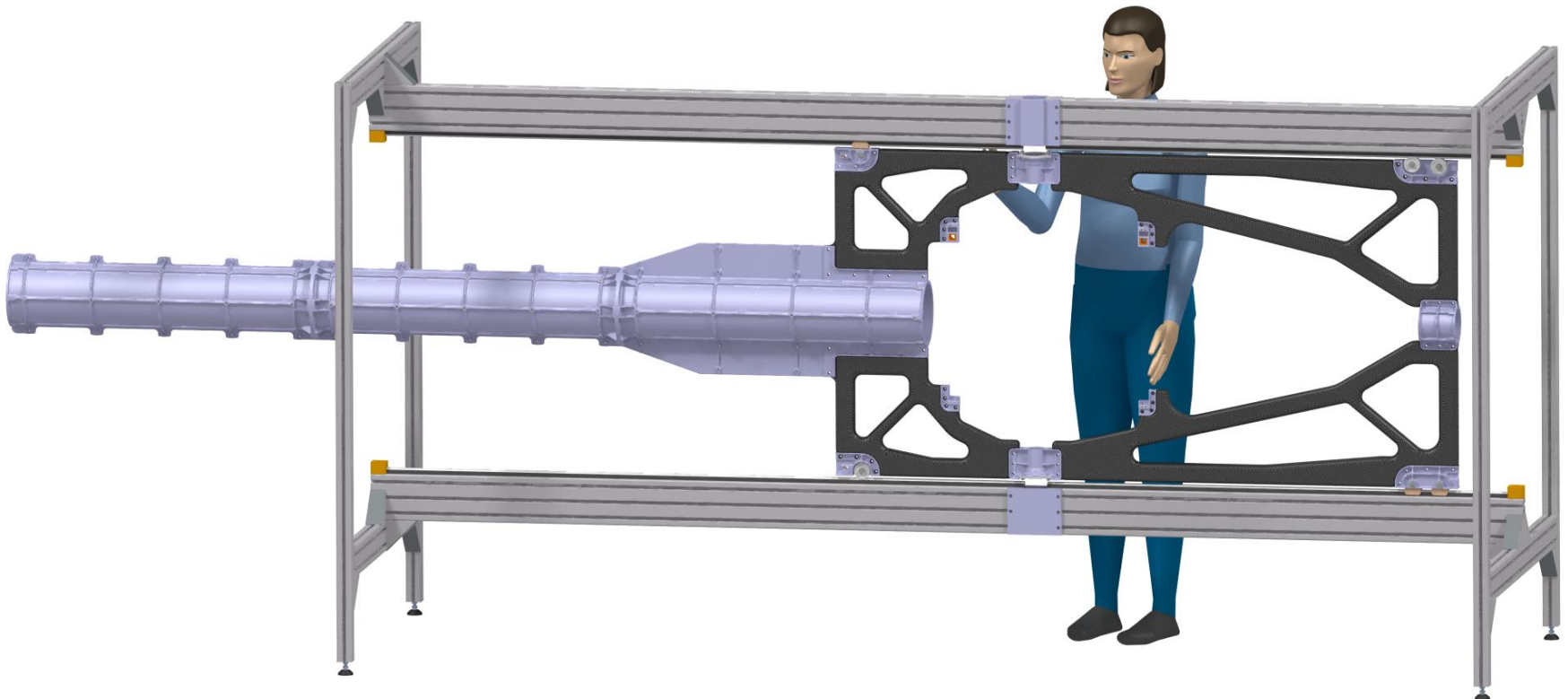
Regarding our FEM calculation, we had foreseen local reinforcements in places of high stress. As a result, the general wall thicknesses and the weight could be kept low. The weight of all 4 carbon parts is about 2 kg.



Various brackets and fixings made of aluminum are connected to the mainframe. These parts are all made via 3D printing.



The lower picture shows the 3D model of the Prototype. The following slides will show some photos of this test stand.

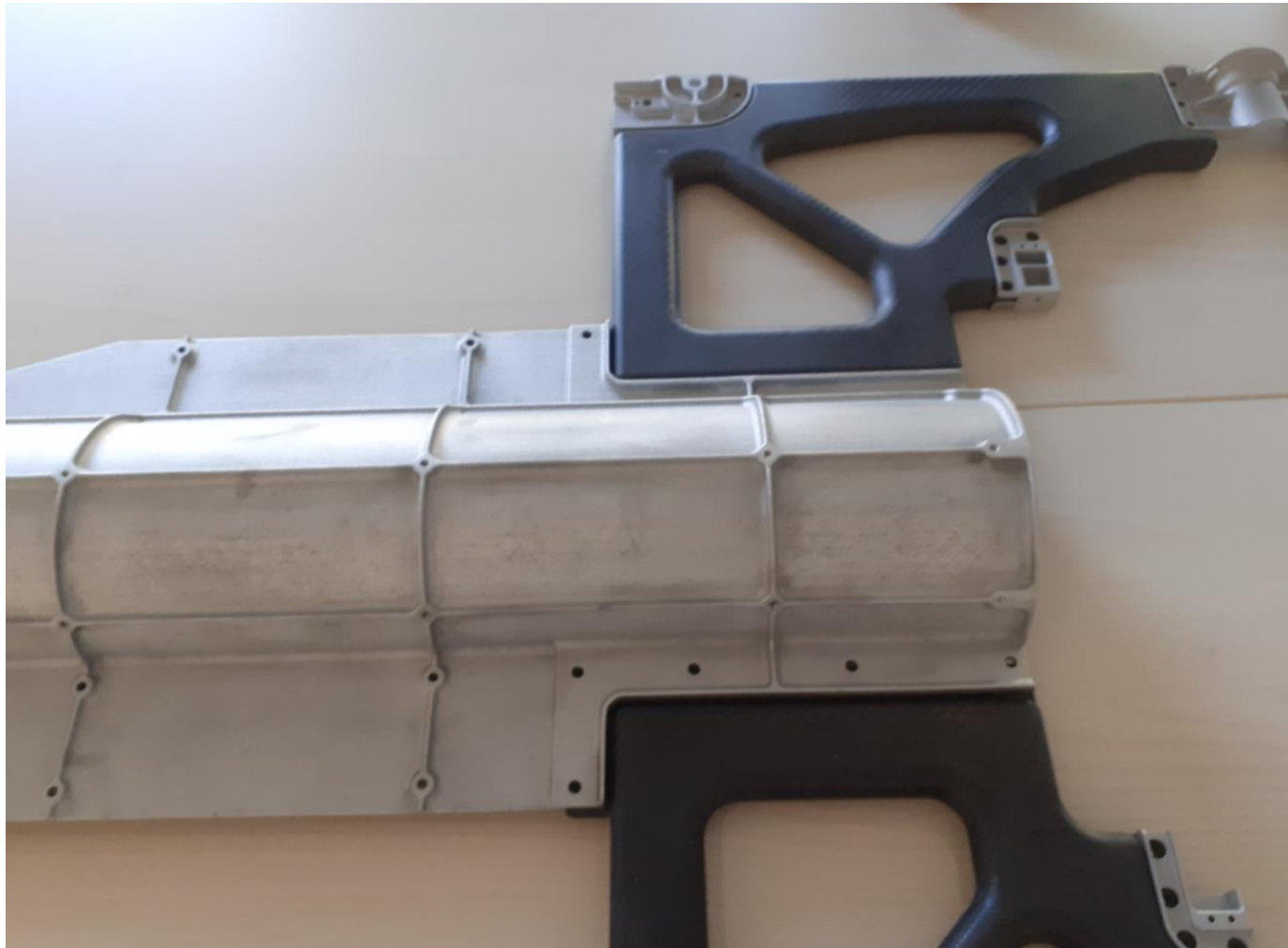




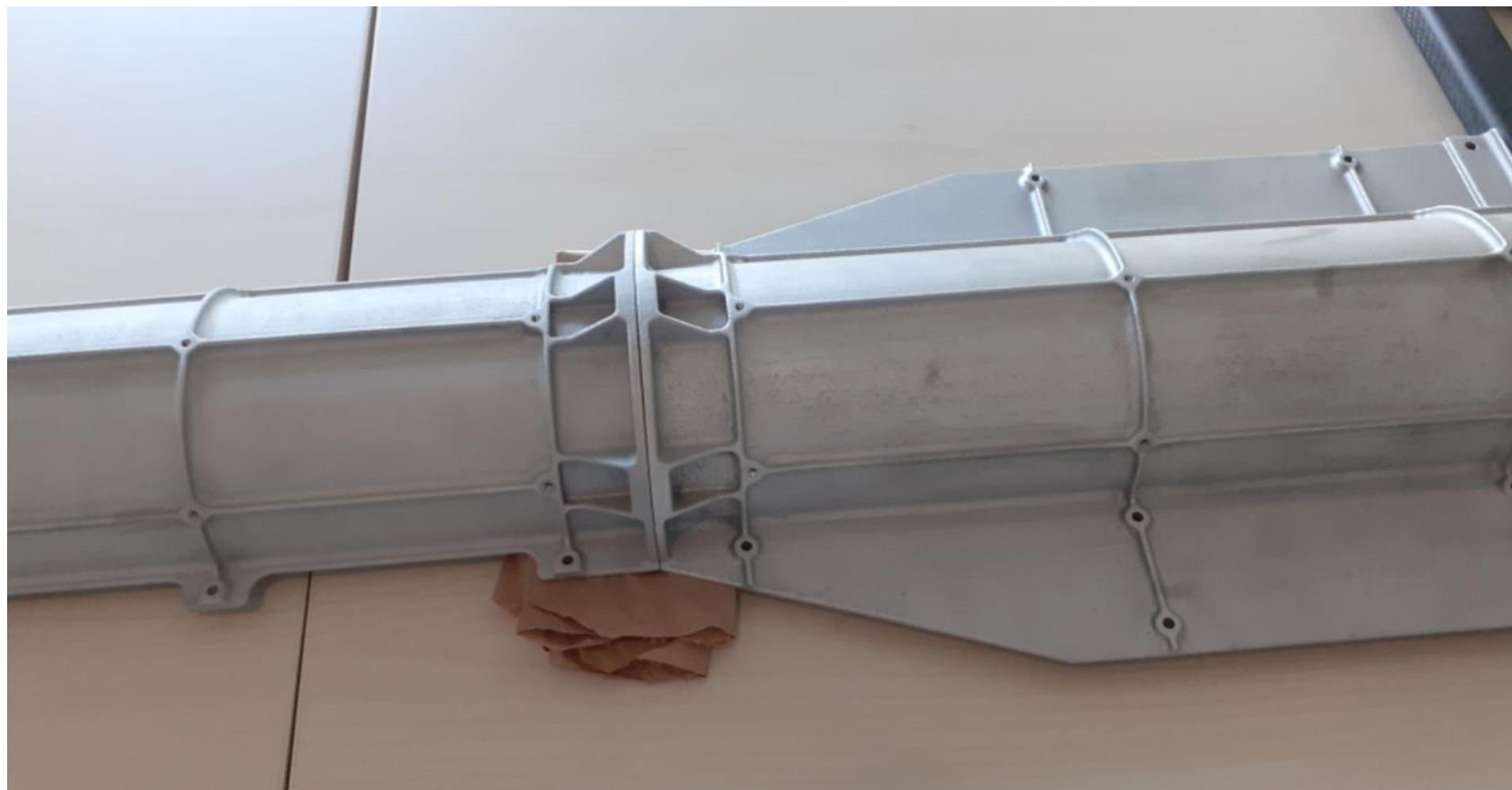
Carbon parts with inner aluminum connectors



Carbon parts with aluminum connectors and support structure



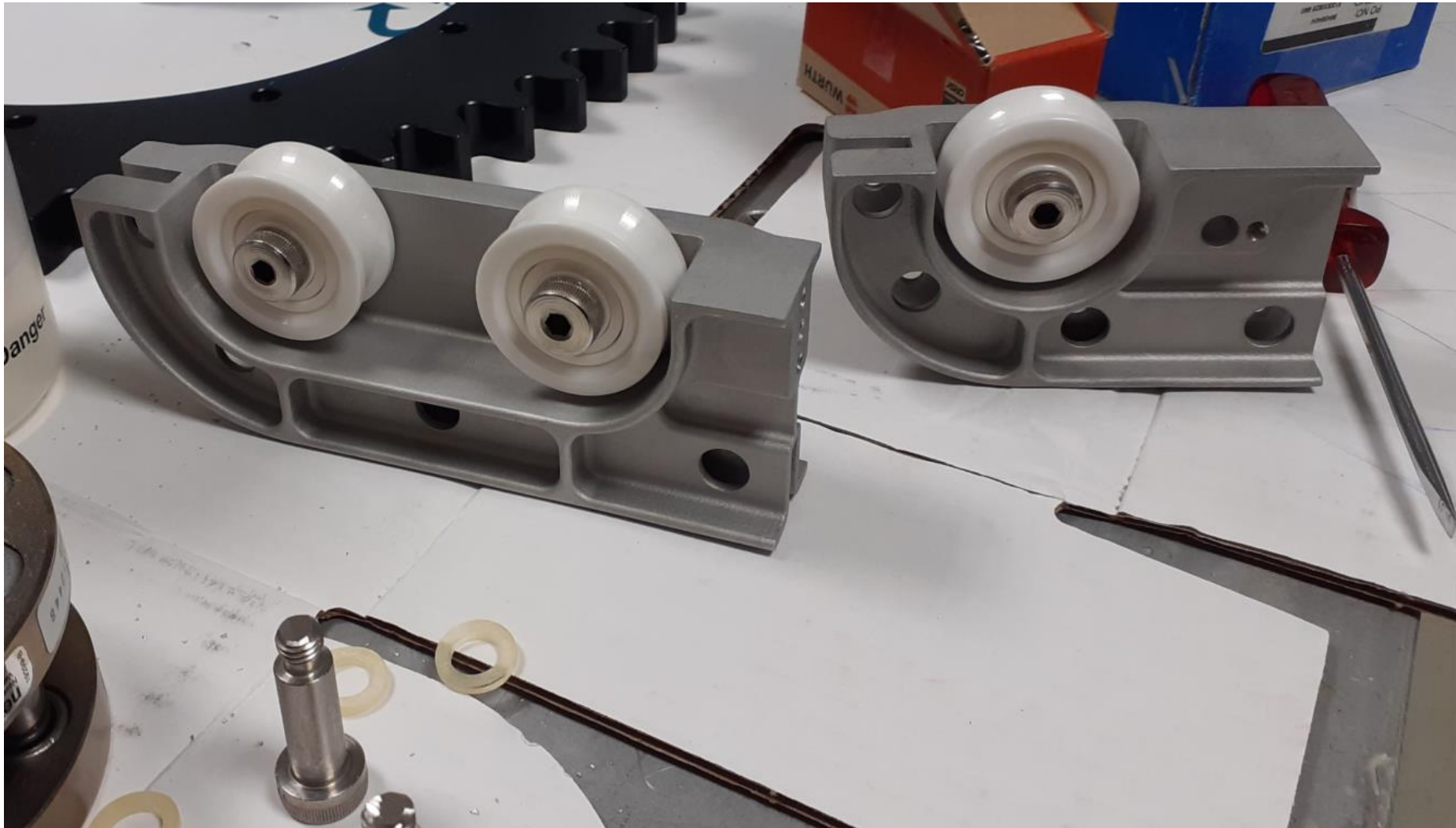
First section of aluminum support structure



Interfaces between aluminum support structure



Interfaces between aluminum support structure



aluminum connectors for roller



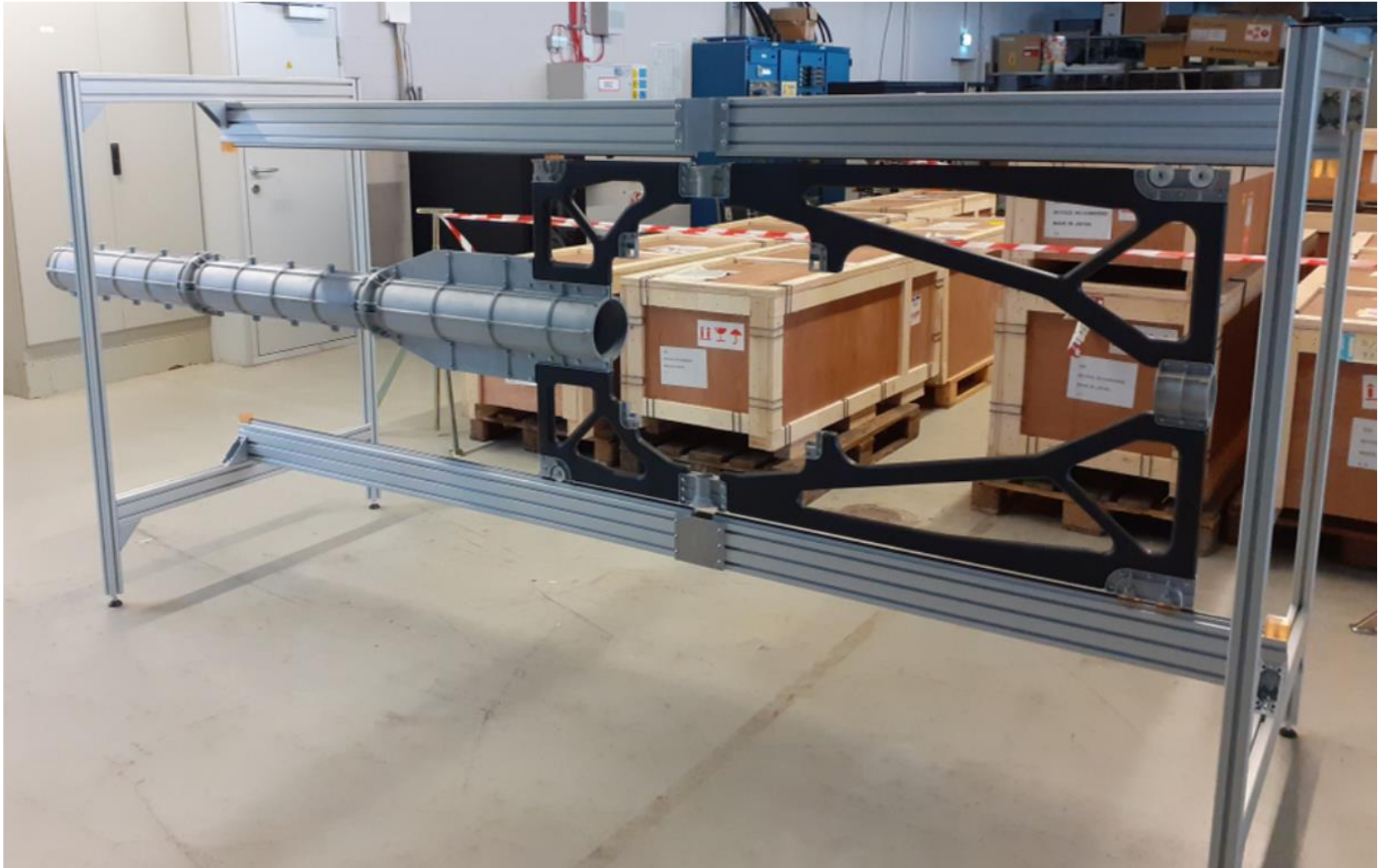
Support frame for prototype



Hard anodized aluminum shaft for movement



CSF in support frame

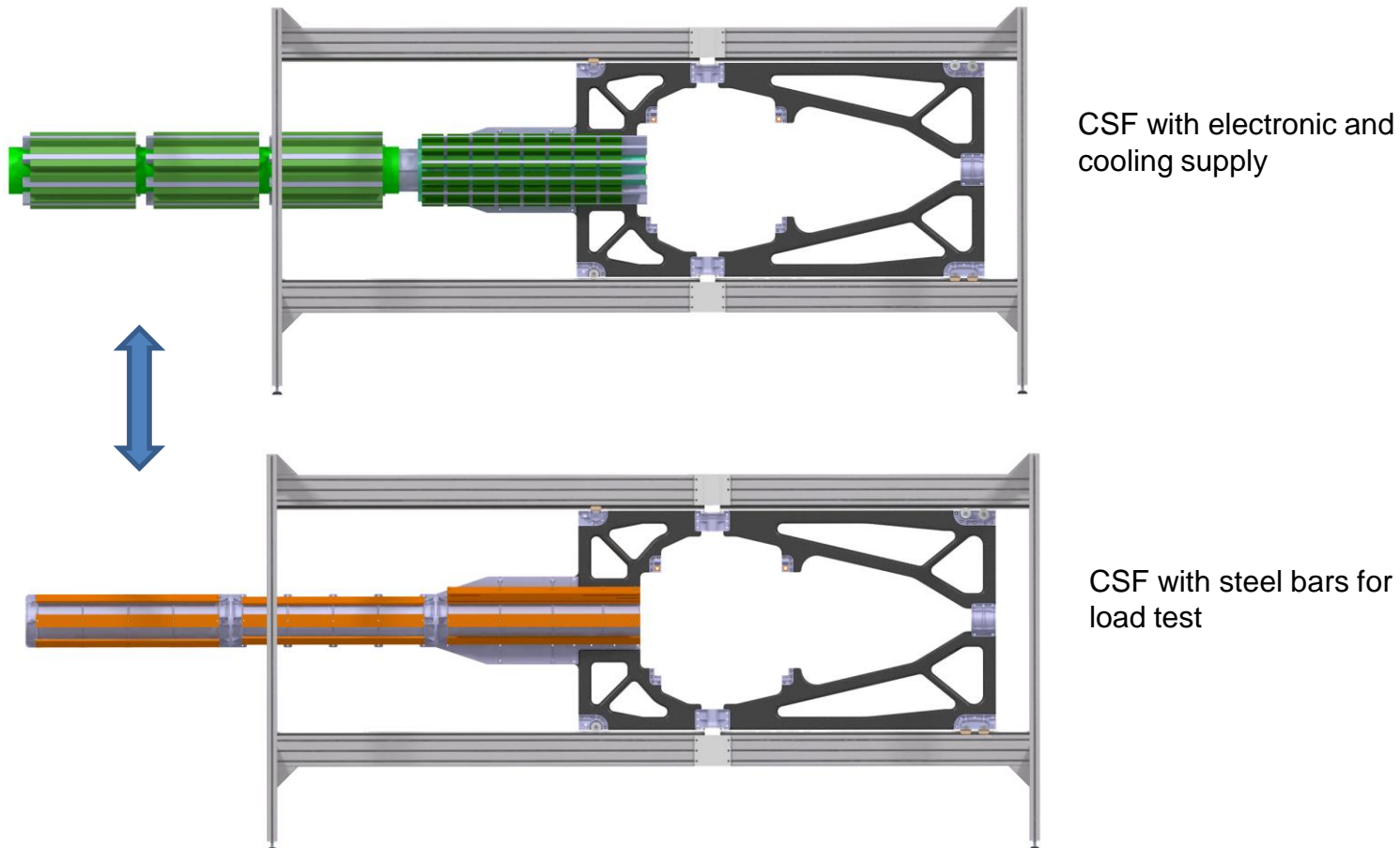


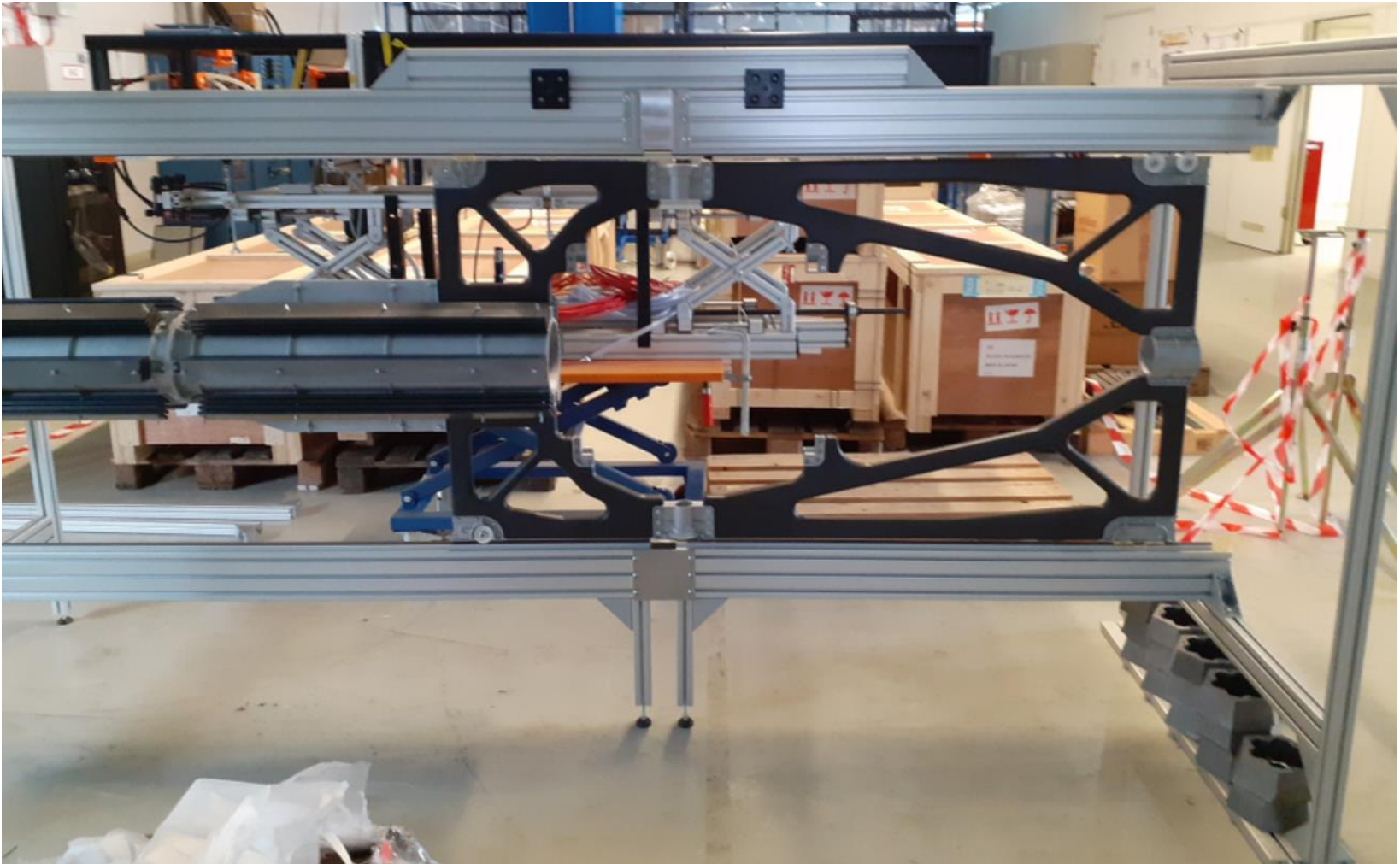
CSF in support frame



CSF in move

In addition, we made a first load test, to verify that the CSF is can carry the weight of 160 kg MVD electronic and cooling supply. For that, we distributed 72 flat bars(162 kg) in a way, that the mass distribution will be very close to the later electronic and cooling components.





CSF with flat steel bars for load test



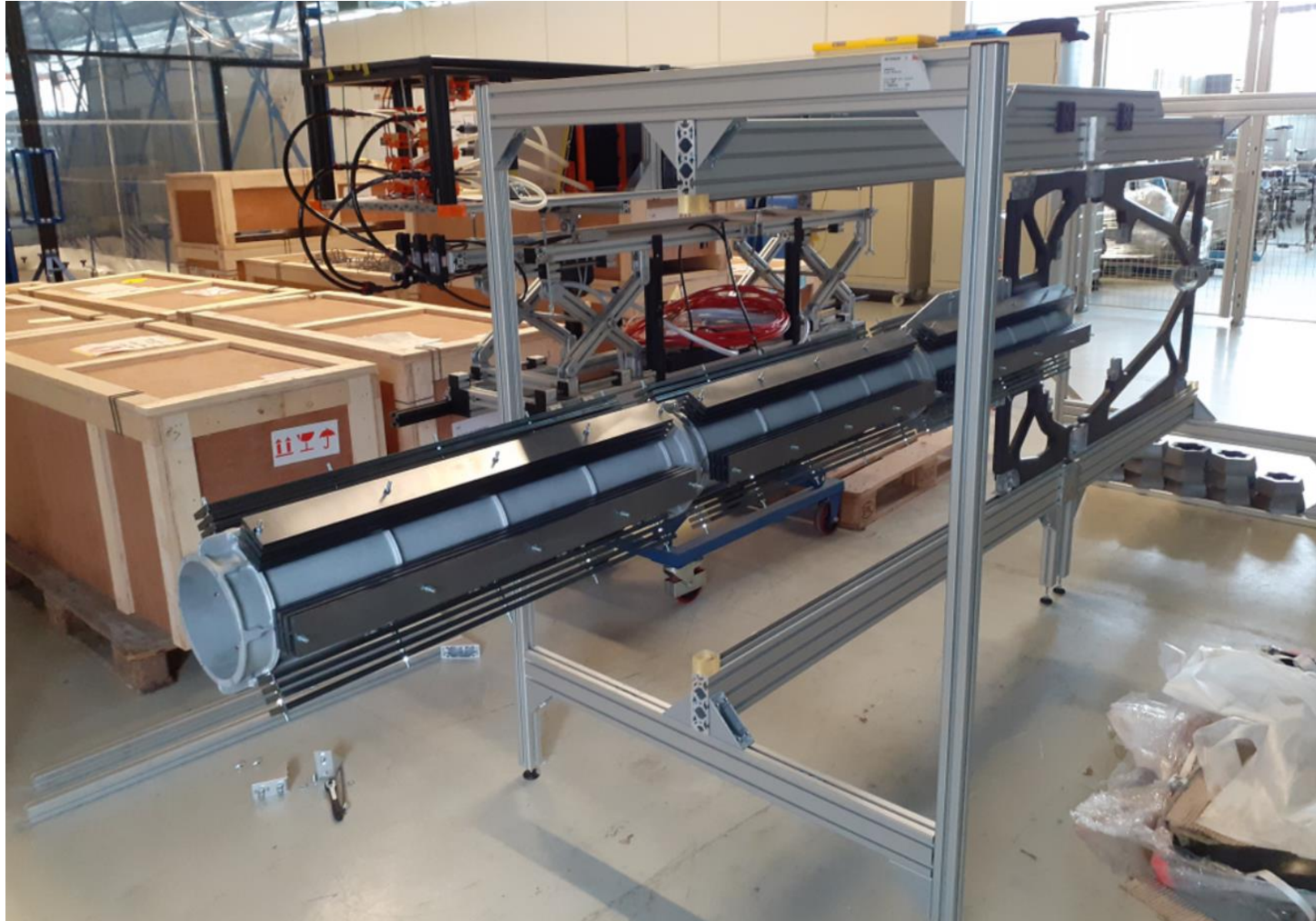
CSF with flat steel bars for load test



CSF with flat steel bars for load test



CSF with flat steel bars for load test



CSF with flat steel bars for load test

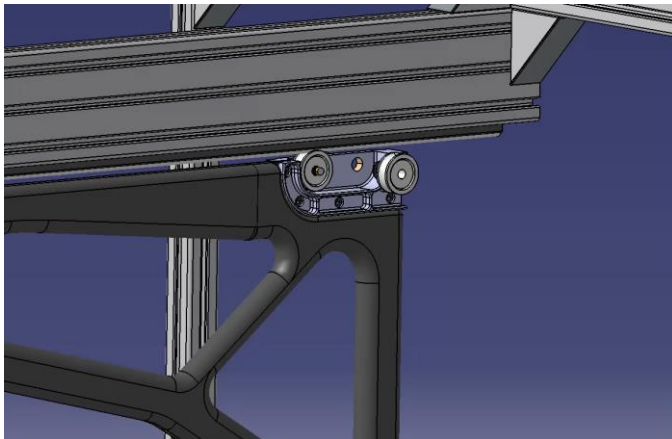
Conclusion:

The load test was successful and showed in principle, that we can built a light weight structure (weight of the carbon structure is just 2 kg) which is able to carry the load of the MVD electronics.

Outlook:

We will continue with various tests and improvements. For example:

- Integration of the target pipe
- Testing of the bayonet sealing system
- integration of the detector frames
- Checking of deformation and repeatability regarding to the positioning
- using eccentric bolts for the downstream roller to compensate for misalignment and to ensure a smoother moving over the gap reserved for the target cross



Thank you for your attention!