

## 2x2 pressure test Bern, June 2021

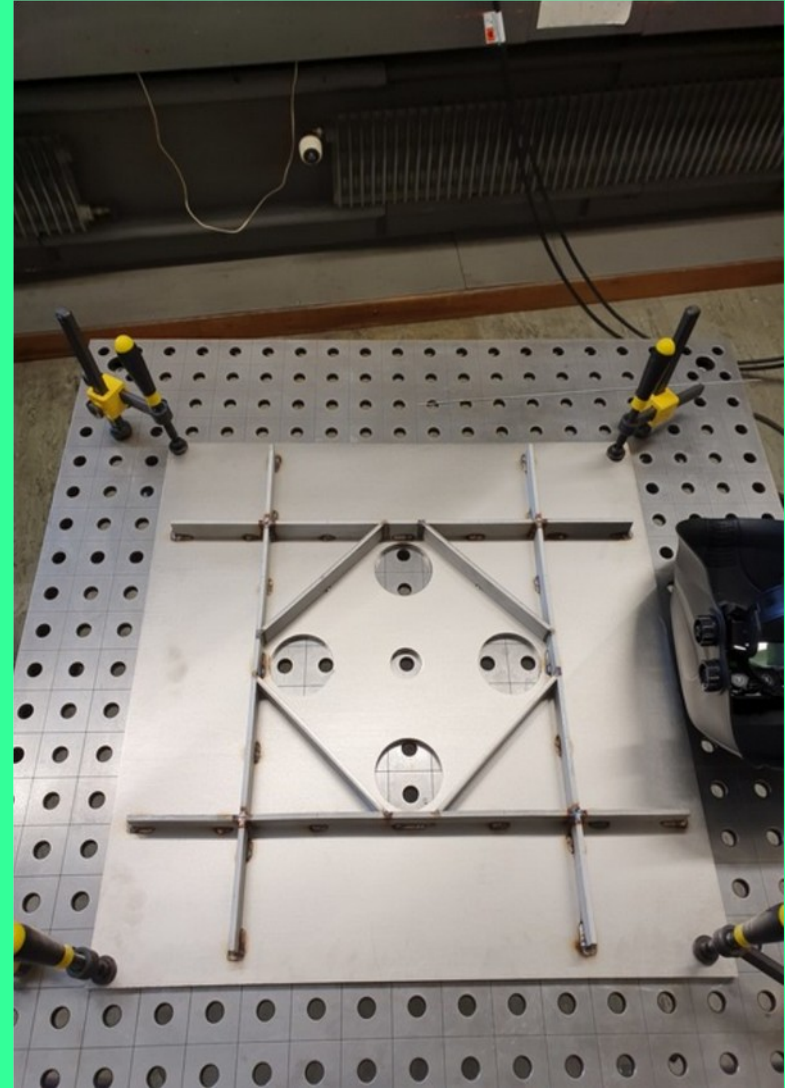
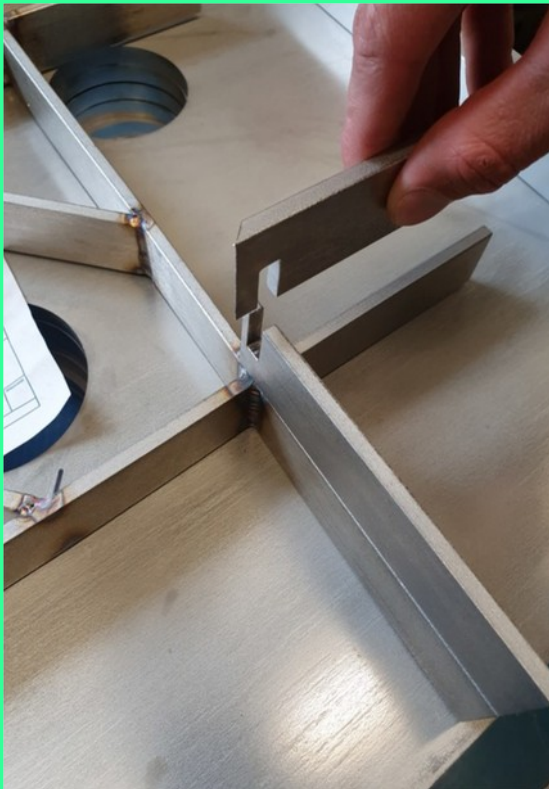


## Overpressure test

Planned WAWP - 350 mbar

Test requirement: 4 x MAWP -> 1.4 bar

FEA by A.Lambert: vacuum pillows need reinforcement.



Weld:  
continuous, full penetration  
(welding in progress shown in figure)

## Overpressure test

Top frame is reinforced too.



## Overpressure test

Top flange is assembled  
and placed to the cryostat.

Sealed with indium wire.



## Overpressure test

Cryostat is filled with water,  
pumping in water by hand pump.

Center deflection is measured by  
10-micron precision gauge.



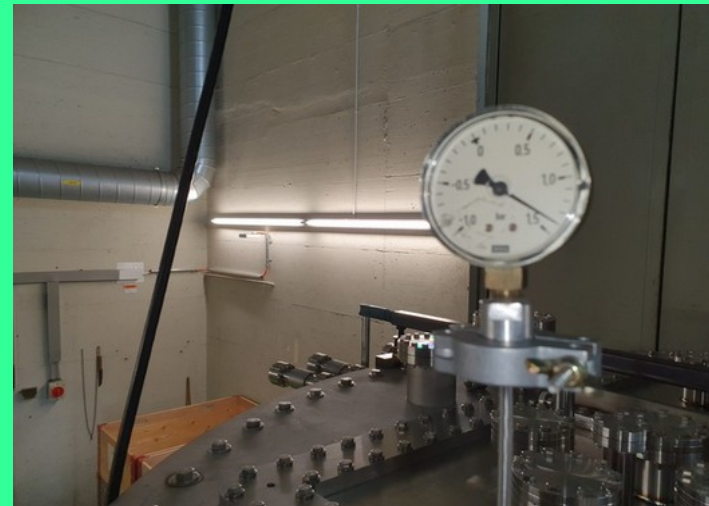
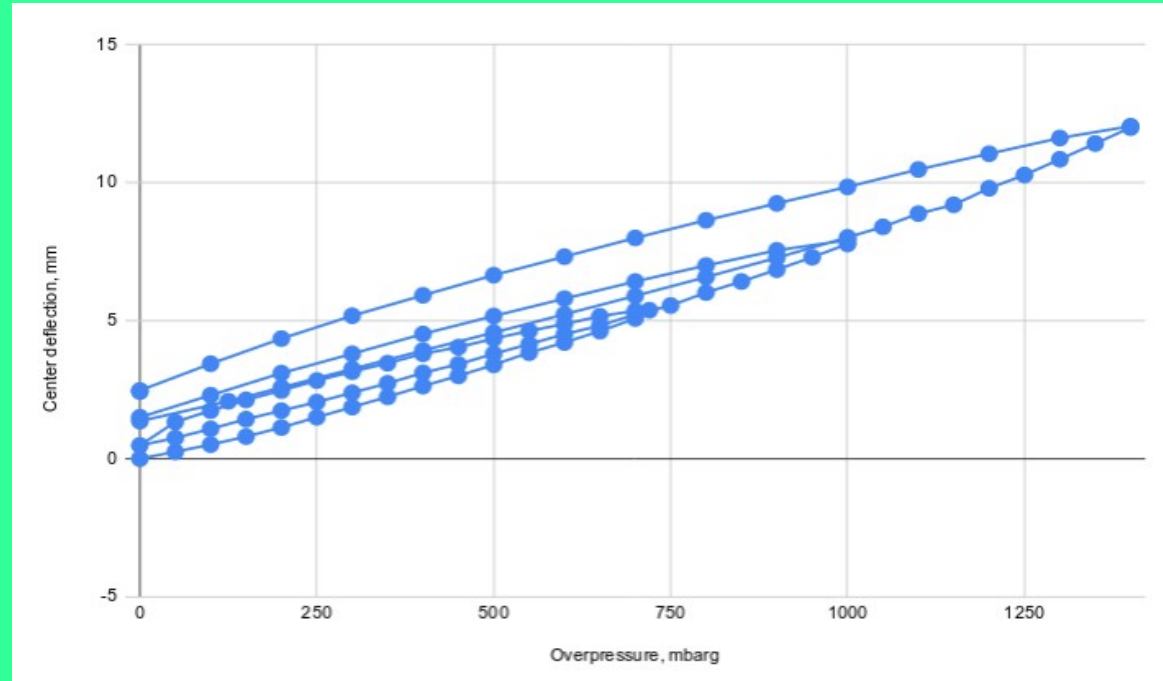
## Overpressure test

1 st round - reached 0.7barg  
2nd round - 1.0 barg  
3rd round - **1.4 barg (~10 mins)**

Going down to 0 after each round,  
logging deflection

Residual deflection -  
due to indium flow.

Retightened bolts  
after each round.



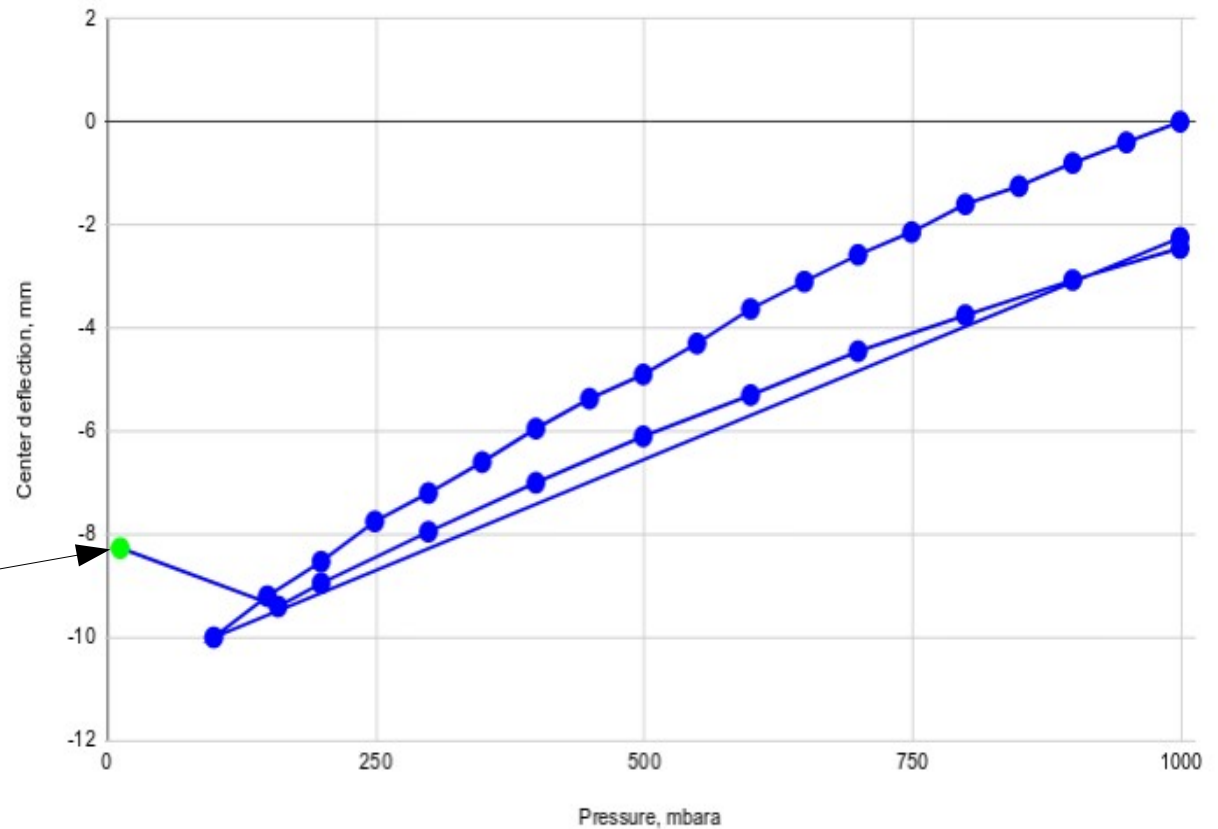
## Vacuum test

Cryostat is still full with water  
to limit stored energy. Minimum reached residual pressure - ~ 10 mbar

Pumping out by forvacuum pump.



Bolts re-tightened



## Conclusions

Both overpressure test to 1.4 barg and vacuum are successfully passed

Elastic deformation at the center approximately +9mm, -7.5mm

Plastic deformation due to indium seals: ~ 2-3 mm

Involved personnel:

R. Haenny - certified engineer

M. Weber - safety officer

L. Meier - technician

I. Kreslo - logger