



Ion beam pipe for BM@N experiment current status and schedule

LLC "Vacuum systems and technologies"
A. Kubankin at all.

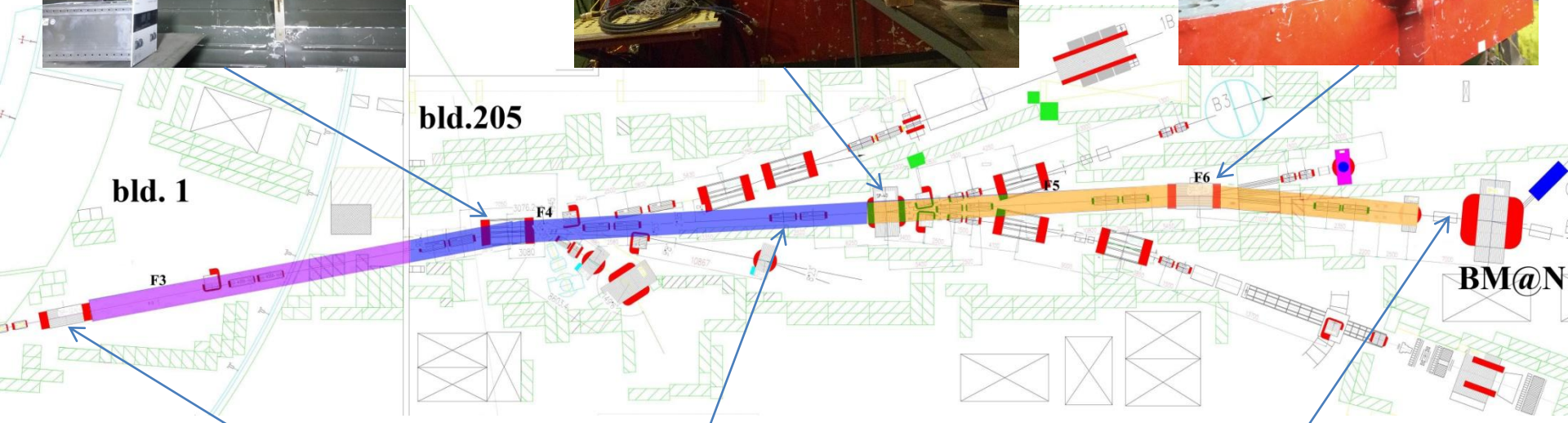
April 2021

The schedule of vacuum ion beam pipe production

- **The contract signed on 25 December 2020**
- **The technical design report has been developed and approved**
- **The parts of the beam pipe are being produced**
- **The installation of the beam pipe will start on July 2021**
- **All parts of the beam pipe will be installed and tested till end of September 2021**

The modernized area

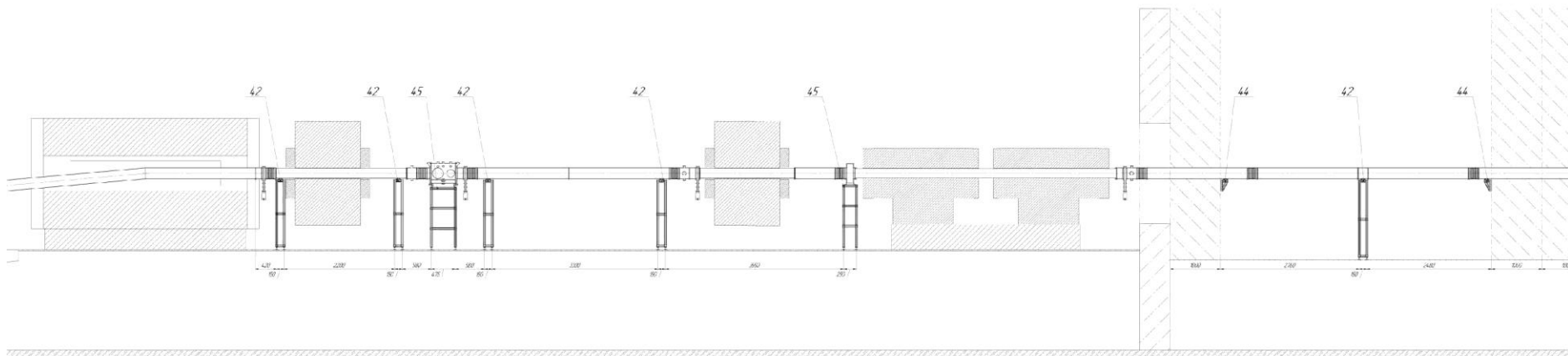
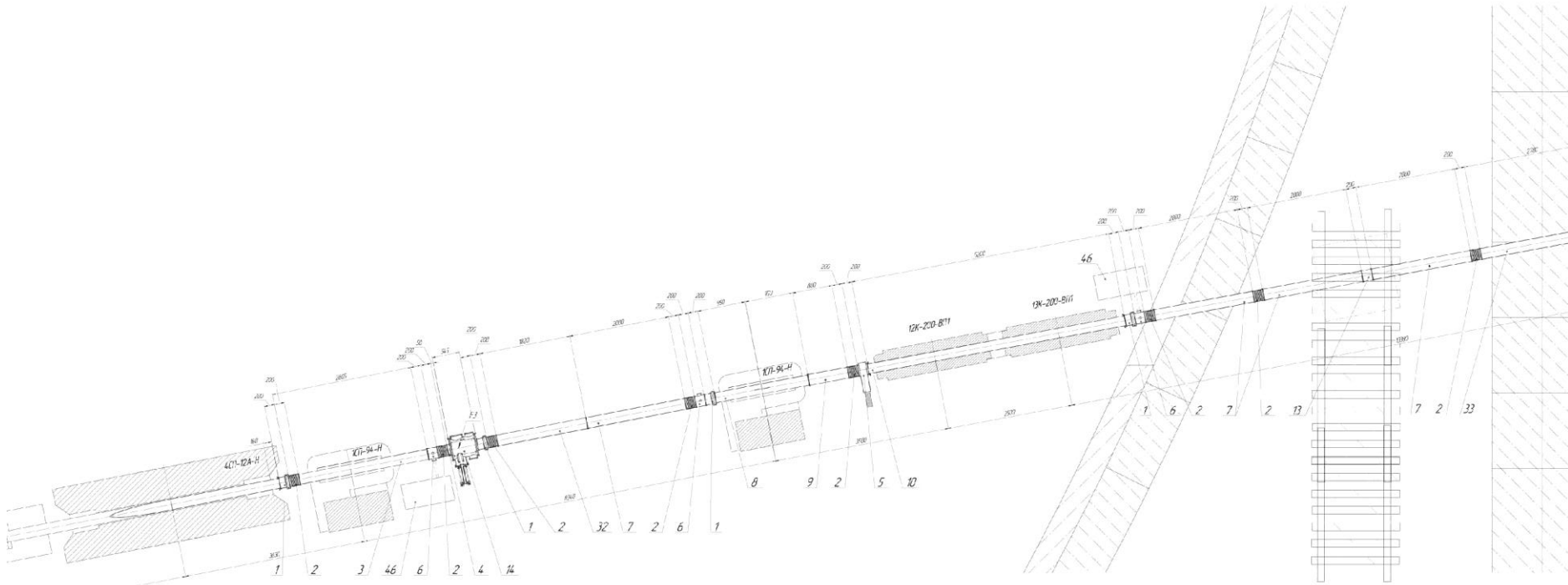
7 quadrupole lenses; 6 magnets; 9 ion beam profilometers



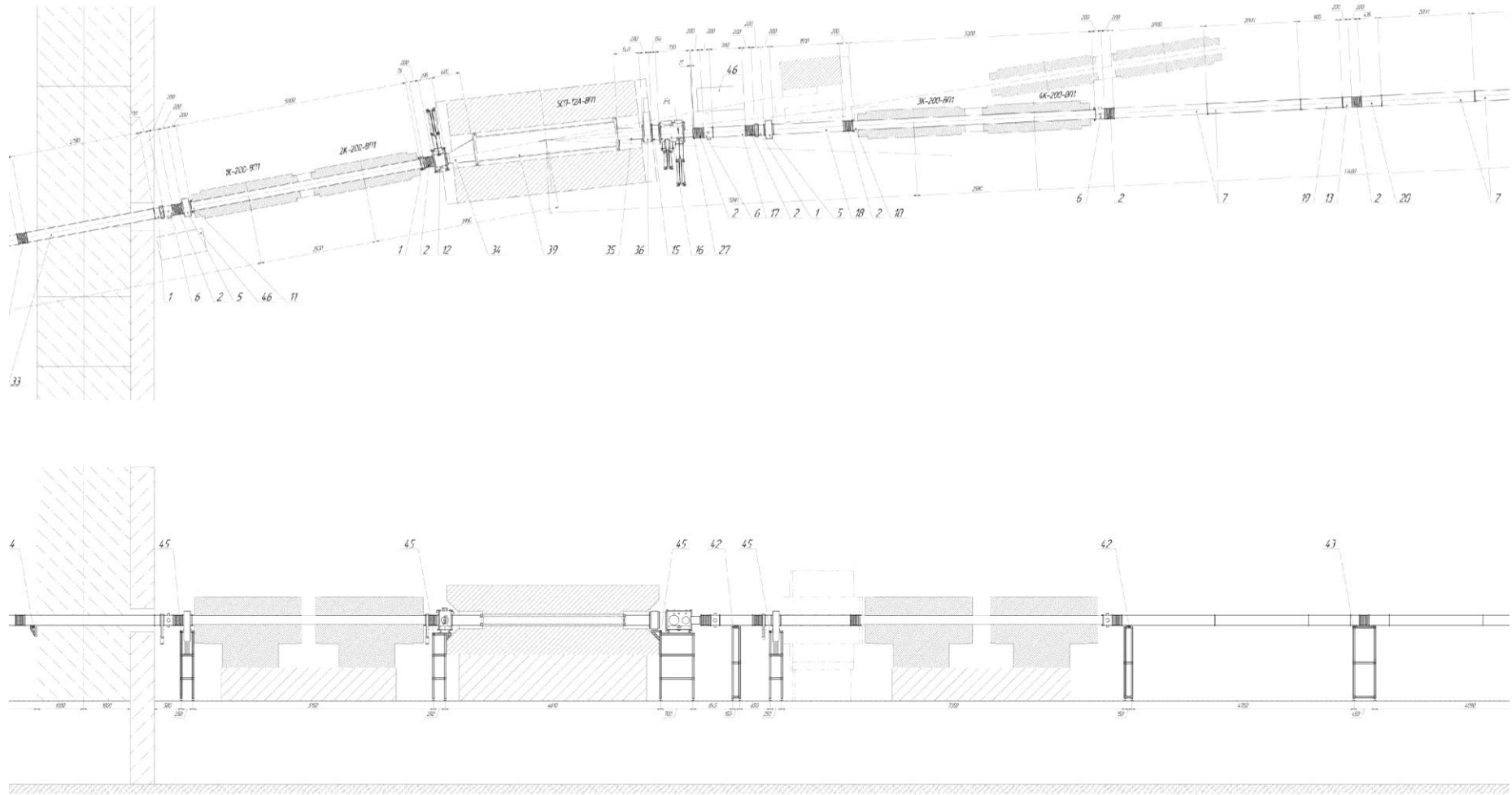
Main elements of the ion beam pipe

- Vacuum compatible tubes with ISO200 flanges (the total length is about of 63 m)
- Ion beam profilometers (9 pce)
- Vacuum boxes for magnets (4 pce)
- Vacuum pump stations based on roots vacuum pumps (6 pce)
- Vacuum gate valves (14 pce)
- Vacuum radiation resistant gauges with controllers (21 pce)
- Support stages for the ion beam pipe elements (29 pce)

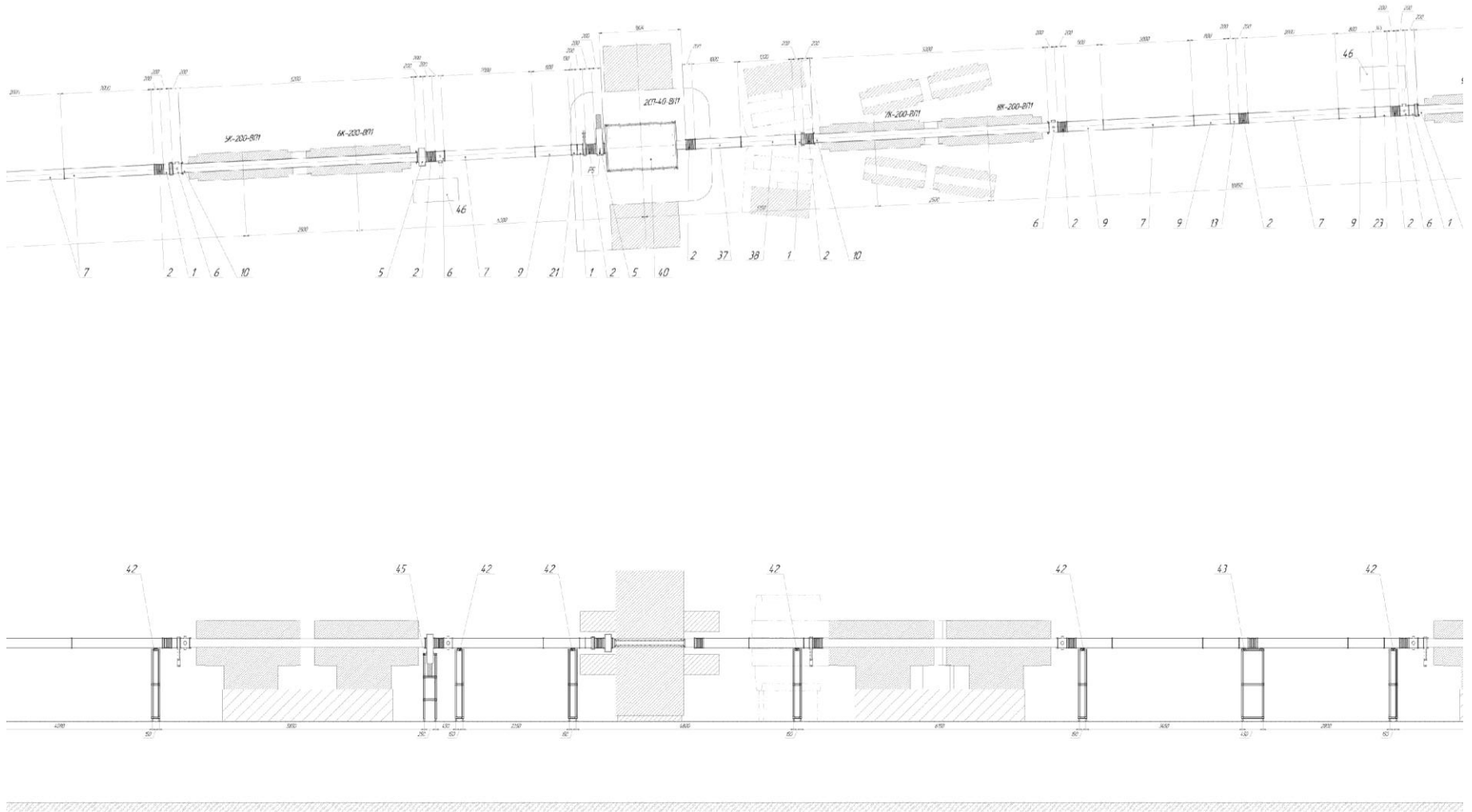
The ion beam pipe crossection (from TDR)



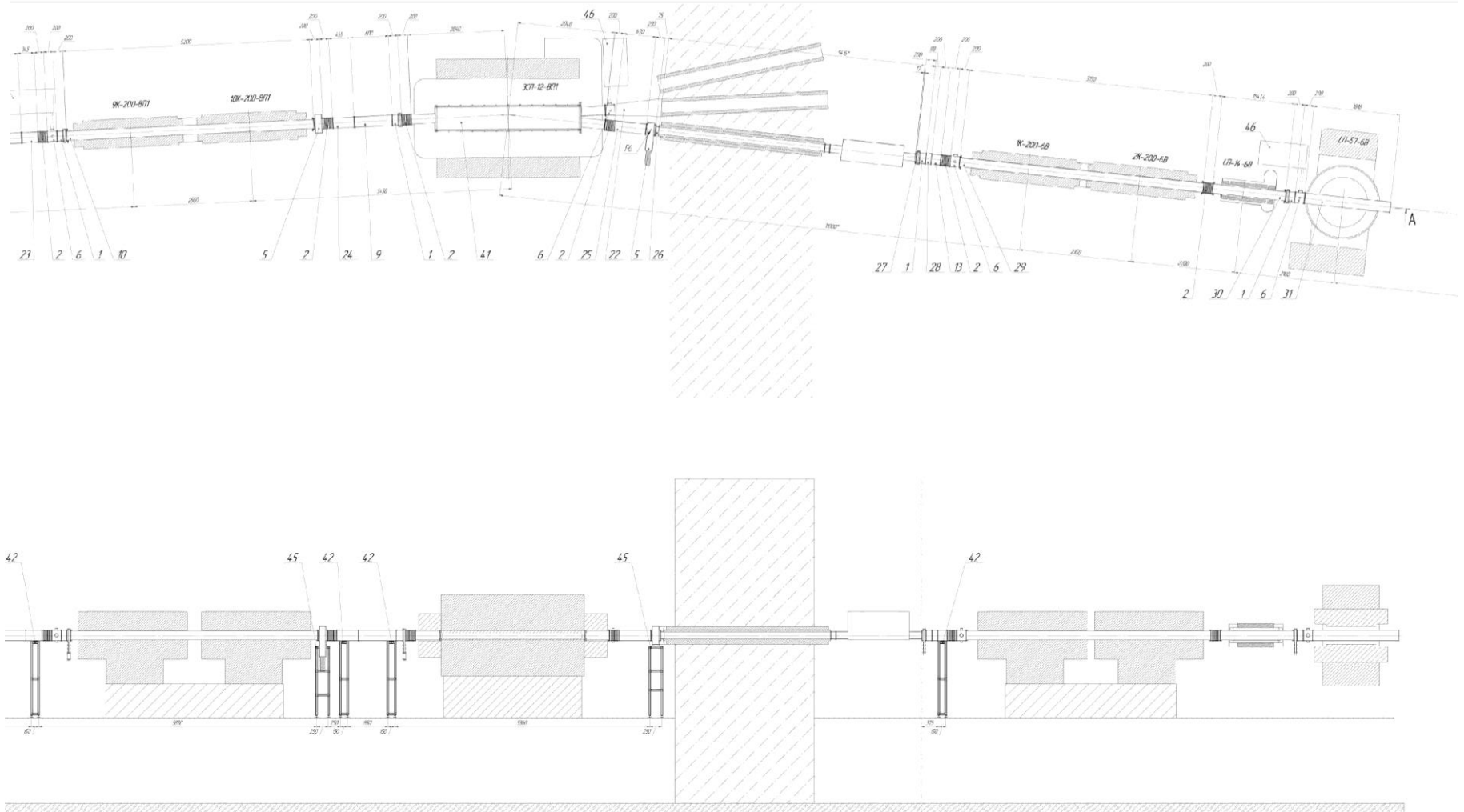
The ion beam pipe crossection (from TDR)



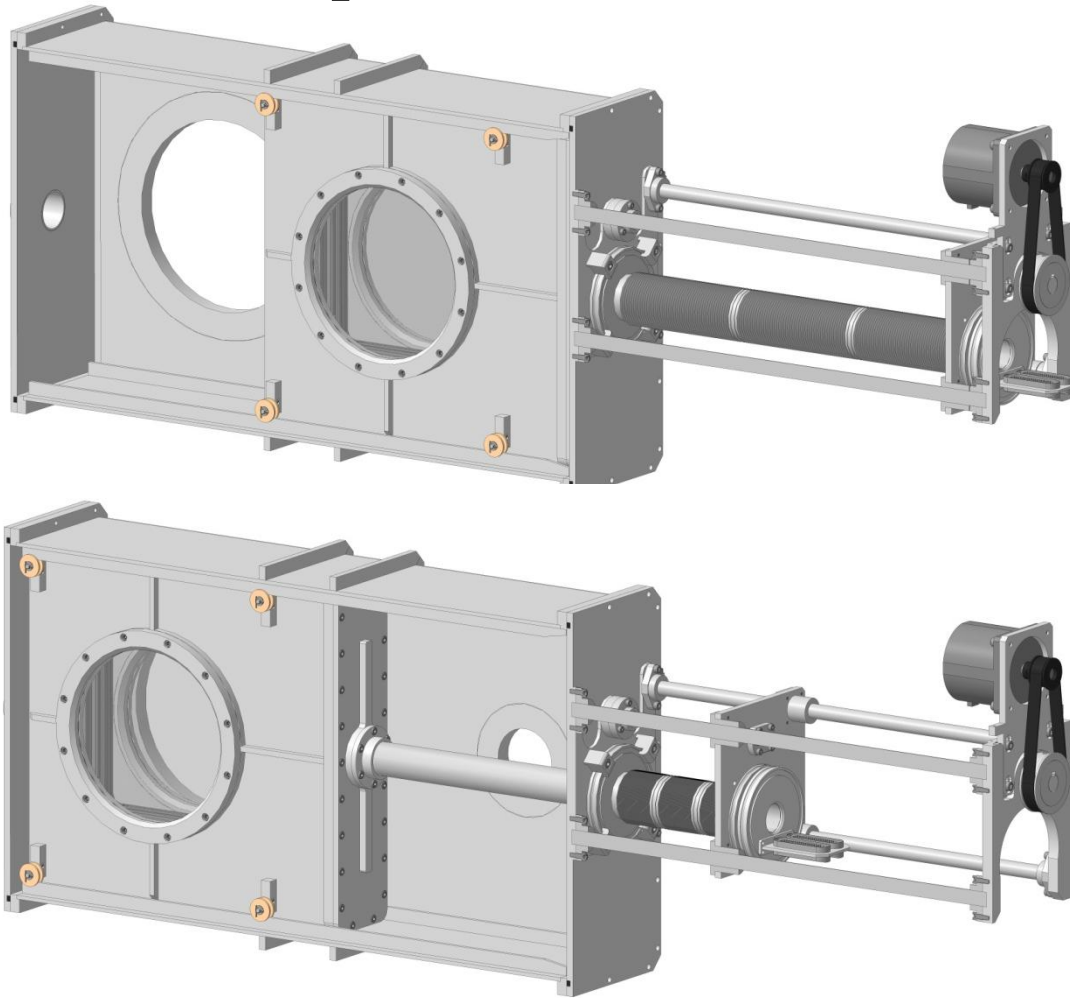
The ion beam pipe crossection (from TDR)



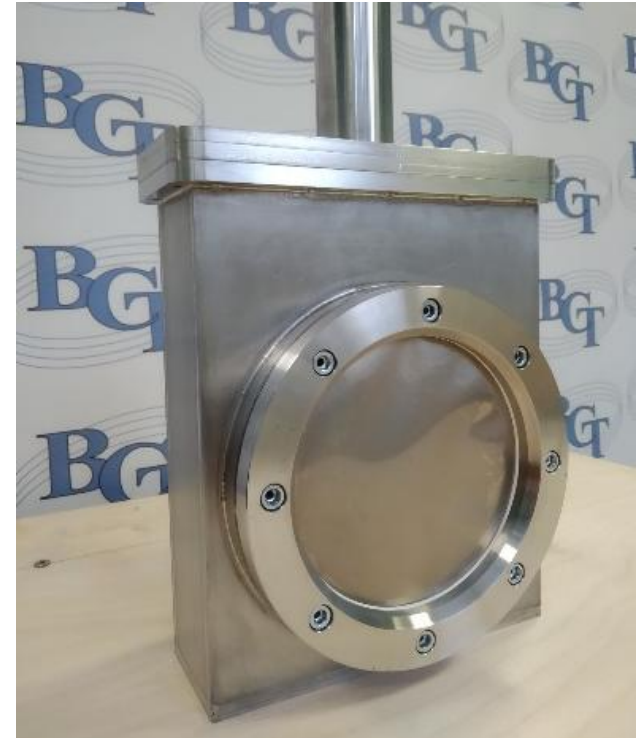
The ion beam pipe cross-section (from TDR)



The vacuum compatible ion beam profilometers have been developed with sensitive area 80x80 mm and 200x200 mm

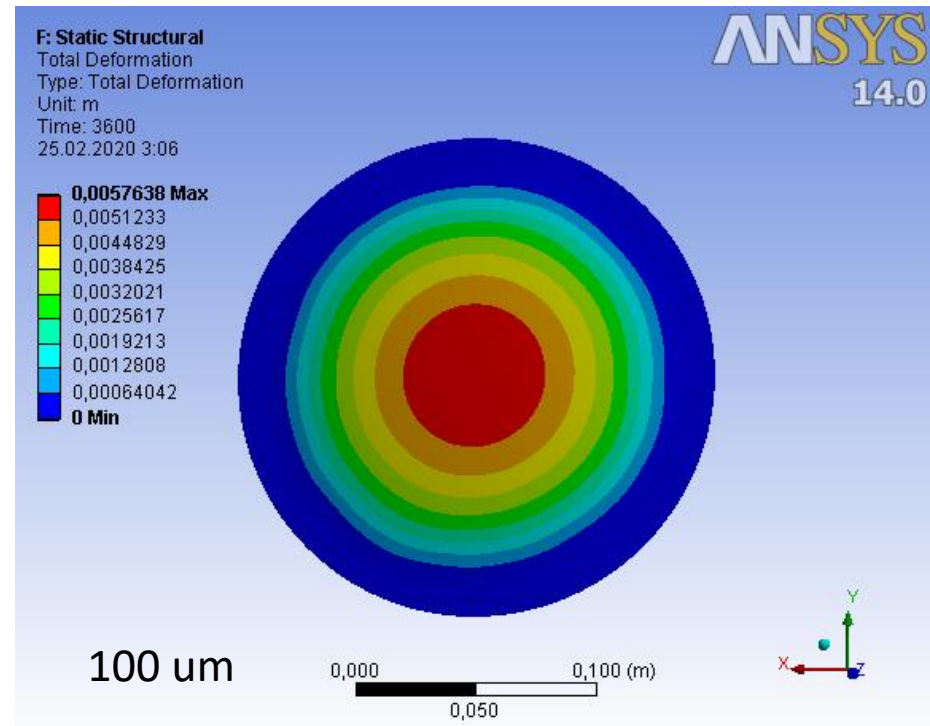
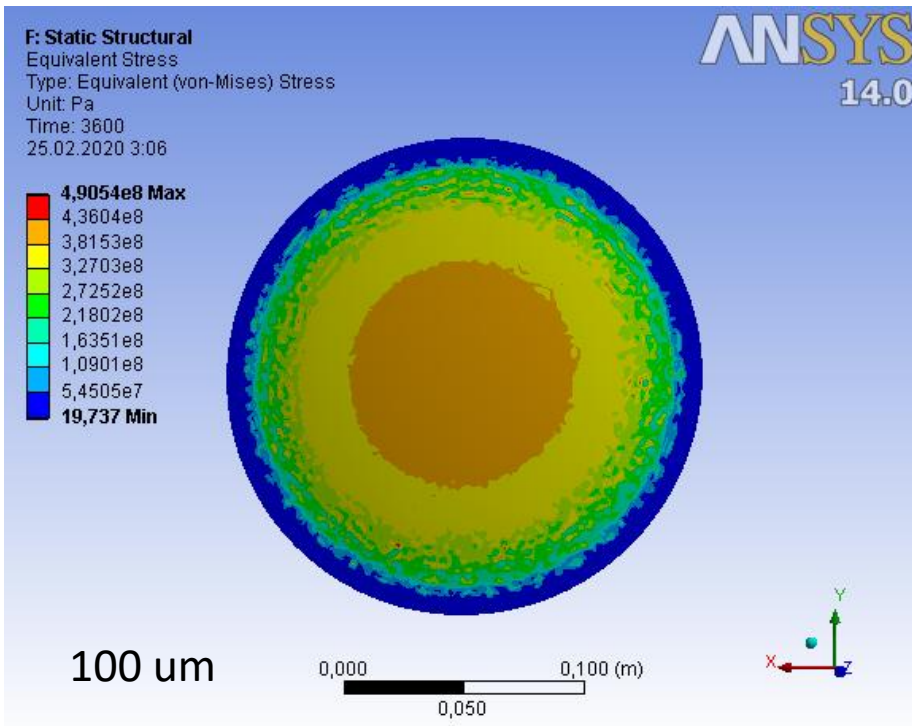


Vacuum box with the beam profilometer.
Two positions of the profilometer: in and out of the ion beam.



Vacuum body of the profilometer
has a thin titanium window

Modeling of properties of the thin titanium windows



The real tests show the possibility of thin titanium windows application under pressure difference 2.5 bar.

Thank you for the attention!