

1. 10. 2024

CADforum

Hotel Valeč

2024

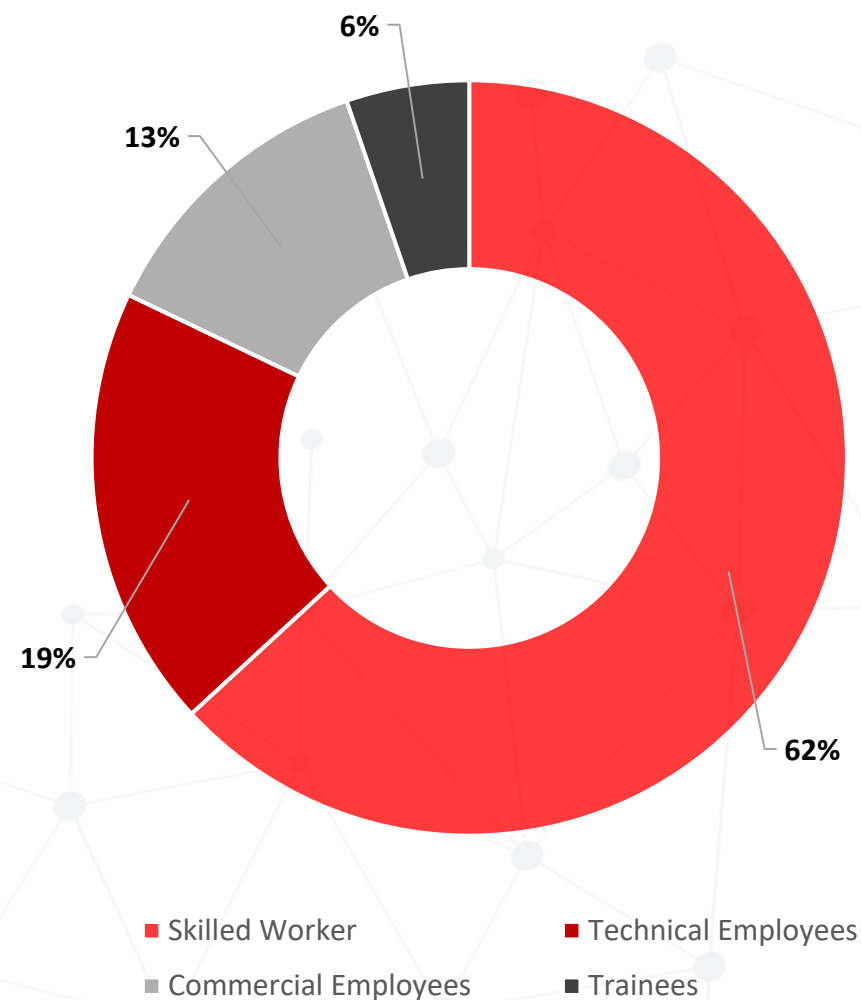
POWERED BY ARKANCE

CAD nástroje při vývoji a výrobě vakuových komor nejen pro kosmický průmysl

Ing. Emil Černý - STREICHER, spol. s r.o. Plzeň

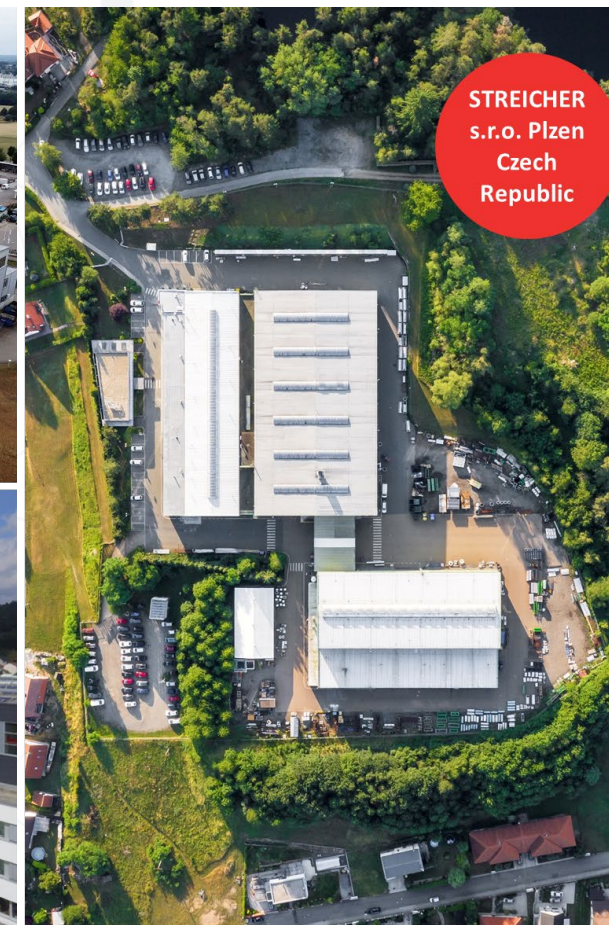
konference.cadforum.cz

- More than **100 years of experience**
- About **4.000 committed employees** at more than **30 locations worldwide**
- Turnover 2021: app. 800 Millions EUR



STREICHER spol. s r. o. Pilsen since 1991.

We can manufacture **large projects** with **STREICHER Maschinenbau GmbH & Co. KG**



NUMBER OF EMPLOYEES

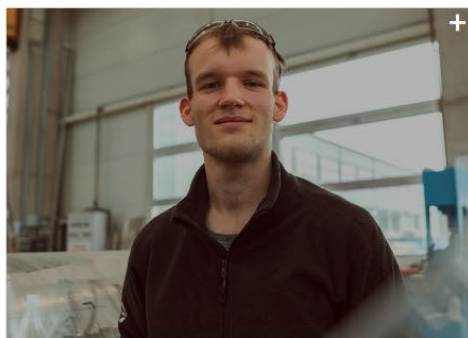
STREICHER Maschinenbau in Deggendorf and Freiberg: 275 employees

STREICHER Pilsen: 170 in machinery department

EDUCATION SYSTEM

- Around 20 young colleagues
- approx. 25 different trainee professions in STREICHER Group
- proportion of pupils and students approx. 8-12 %

Zeptali jsme se tří absolventů našeho učňovského střediska, co jim praxe ve STREICHERu nejvíce dala – Přečtěte si jejich postřehy a názory



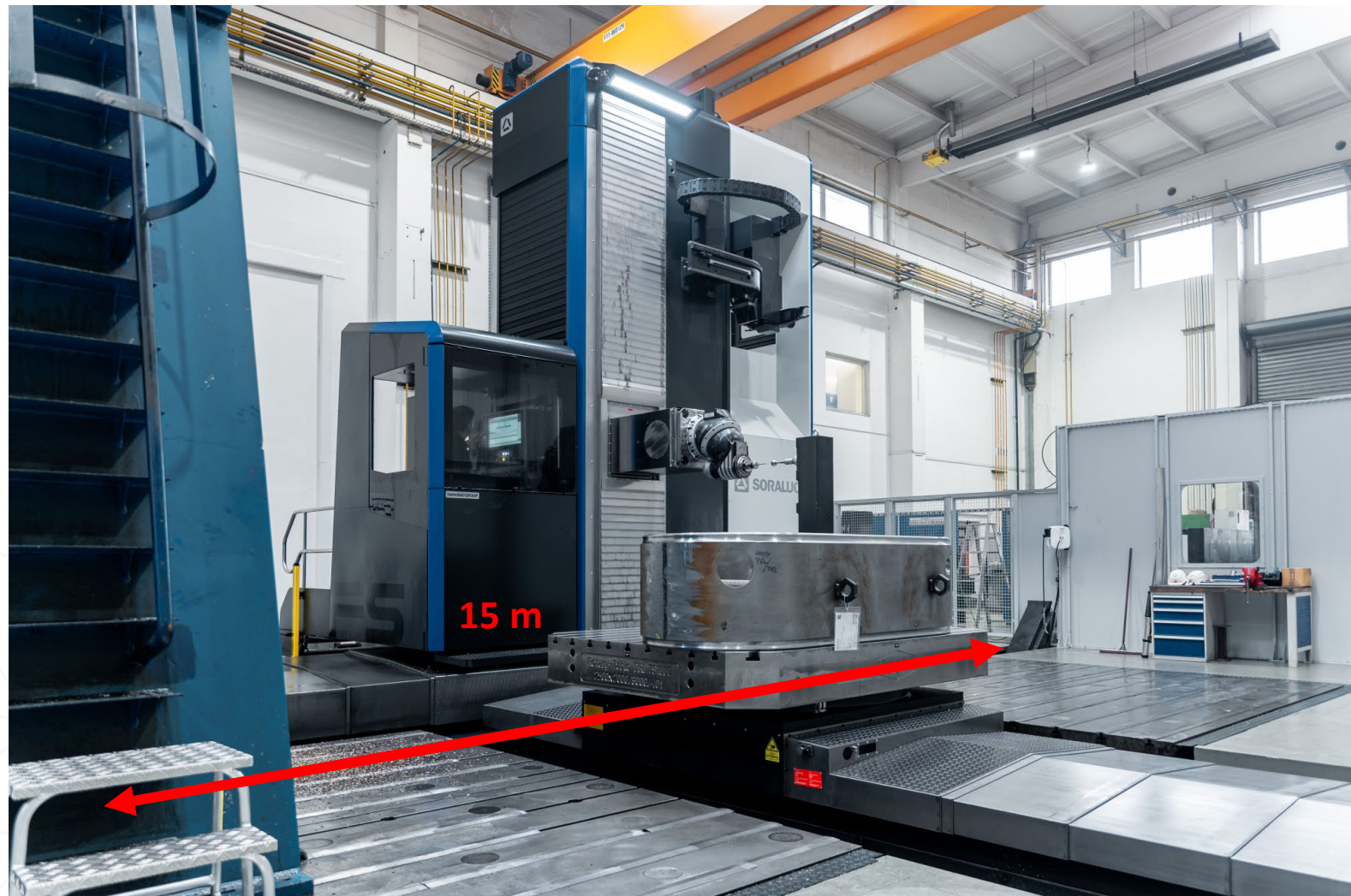
WE HAVE KNOWLEDGE AND EXPERIENCE IN DESIGN AND DEVELOPMENT OF:

- Vacuum chambers
- Pressure vessels
- Special machines and equipment



OUR MACHINE PARK

- 16 CNC-Horizontal spindle machining centers (Deggendorf: 8 pcs, Freiberg: 4 pcs, Pilsen: 4 pcs)
- Využívání CAM od Autodesk Fusion

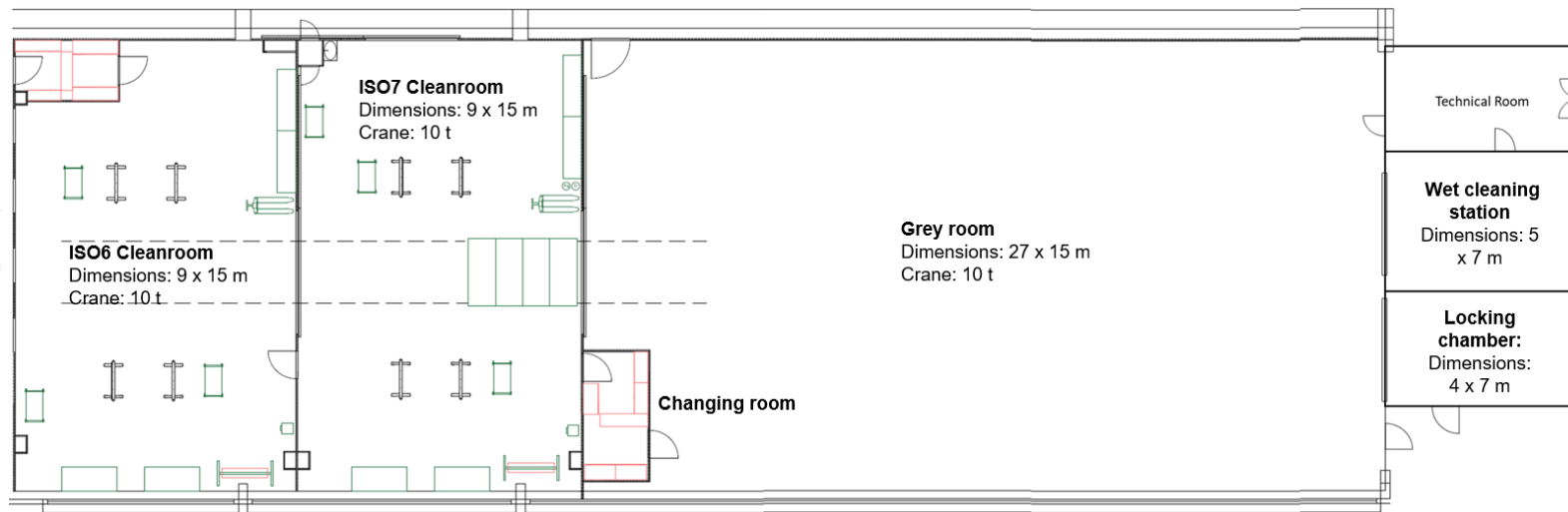


Streicher cleanliness concept:

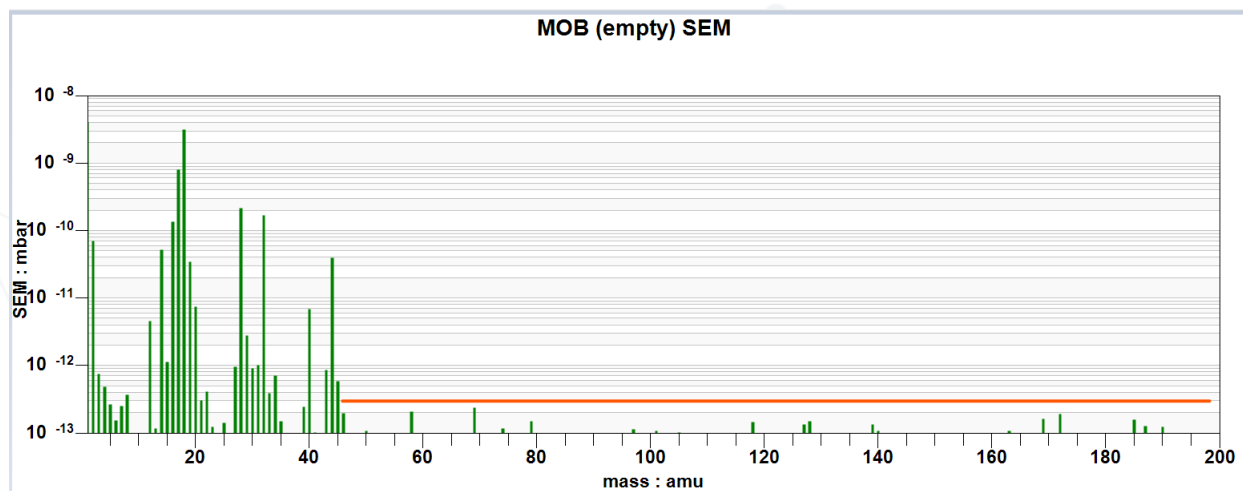
- Segregation of parts requiring enhanced cleanliness from the regular production process
- only water-soluble cutting fluids that are easily washable
- protecting CF flanges with aluminium covers
- Prohibited material: vacuum grease, brass, zinc,

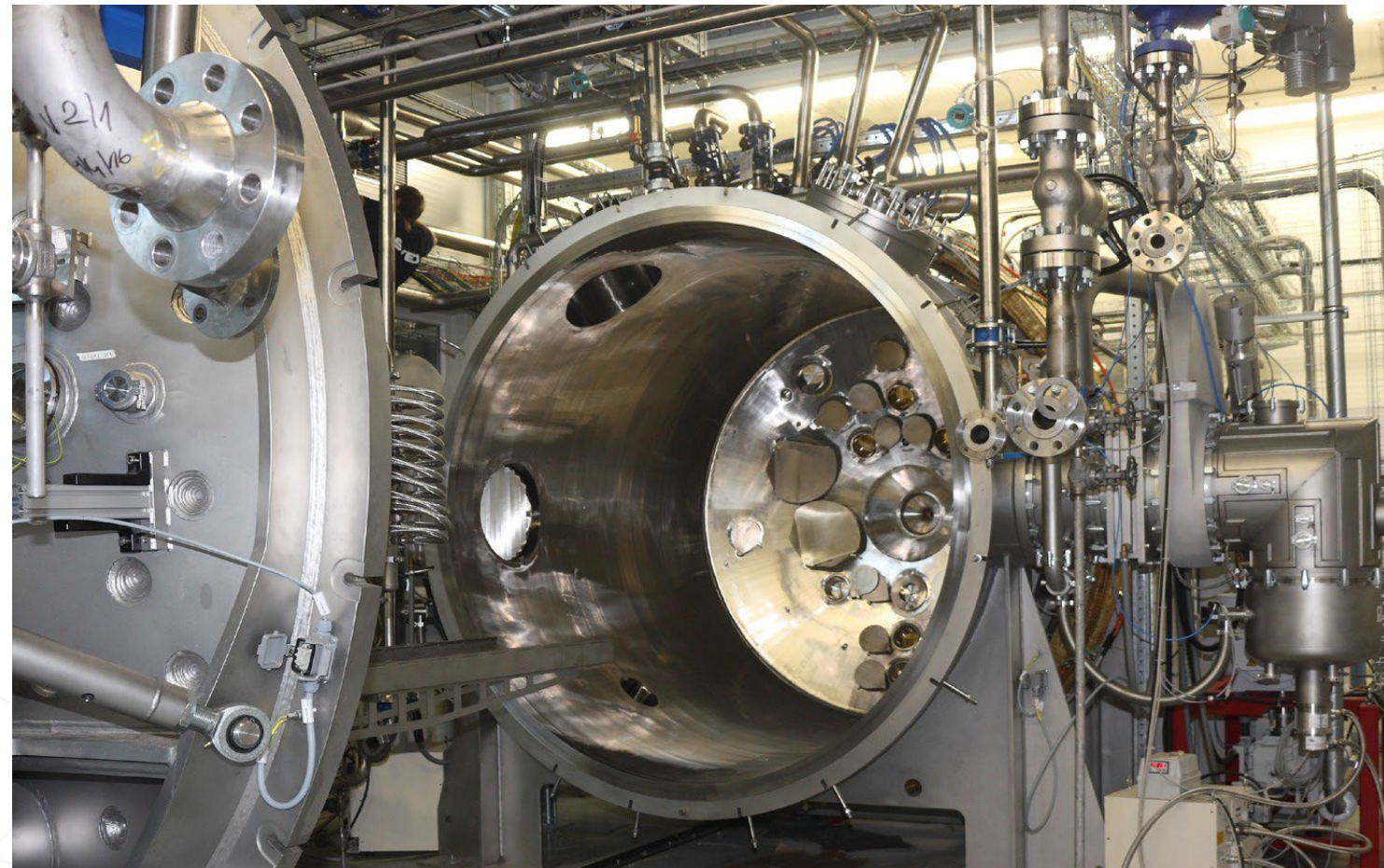


- several years of experience and dozens of clean chambers delivered
- **multi-step cleaning process** - rough cleaning → pre-cleaning (wet cleaning station) → final cleaning (cleanroom ISO6/7)
- O-rings cleaning including vacuum bake-out
- State of the art equipment and cleaning process



- **two time He leak test** → after first assembly → after final (cleanroom) assembly
- **only oil-free vacuum equipment for the final test**
- **RGA test including O-rings (RGA testing chamber)**
- **Certified Personel for He-leak testing**





Testing Vacuum Unit HELCZA F4E / ITER
 High Heat Flux Test Facility for Testing of ITER EU First Wall Components

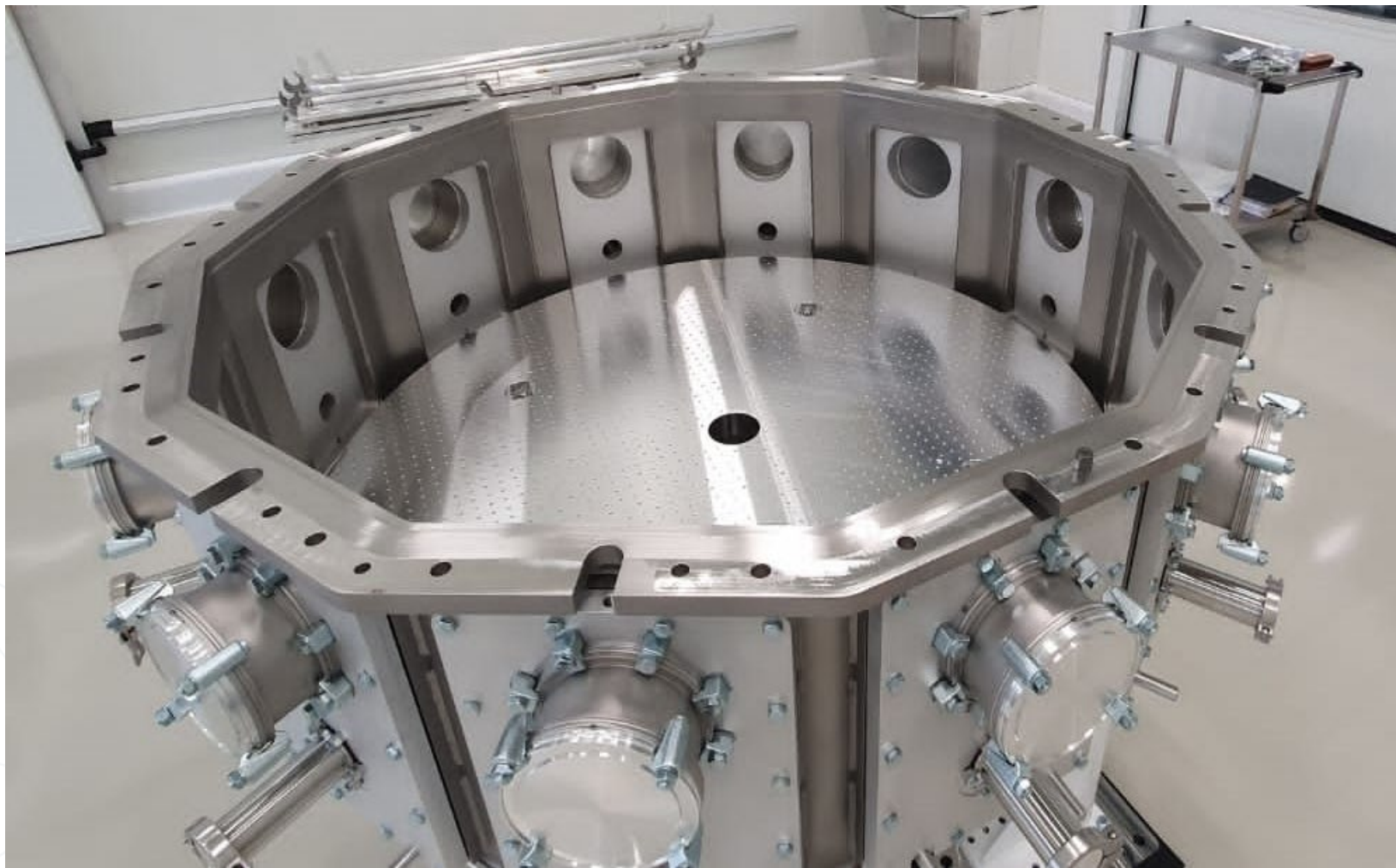
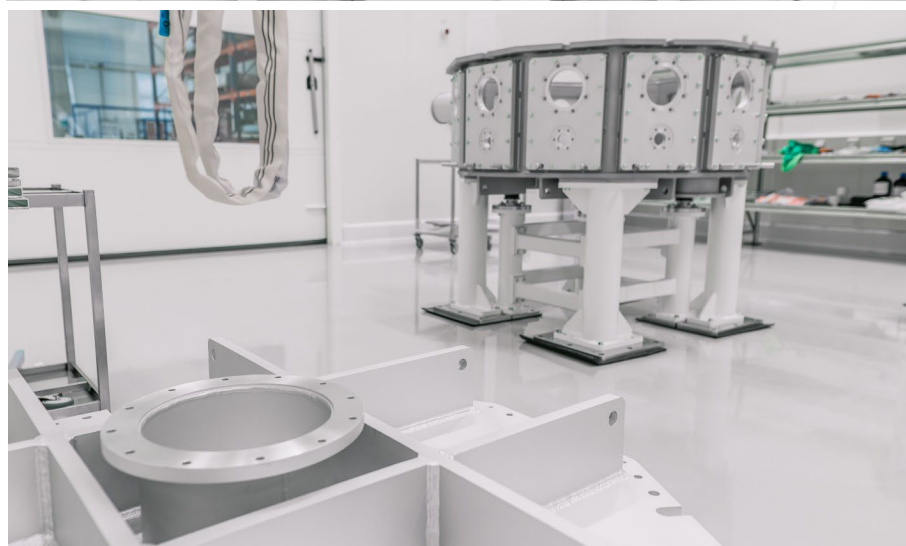
L4 – Compressor Vacuum Chamber for ELI Beamlines

The complete assembly
evacuated on ultimate
vacuum of $5,1 \times 10^{-8}$ mbar
using turbo pumps.

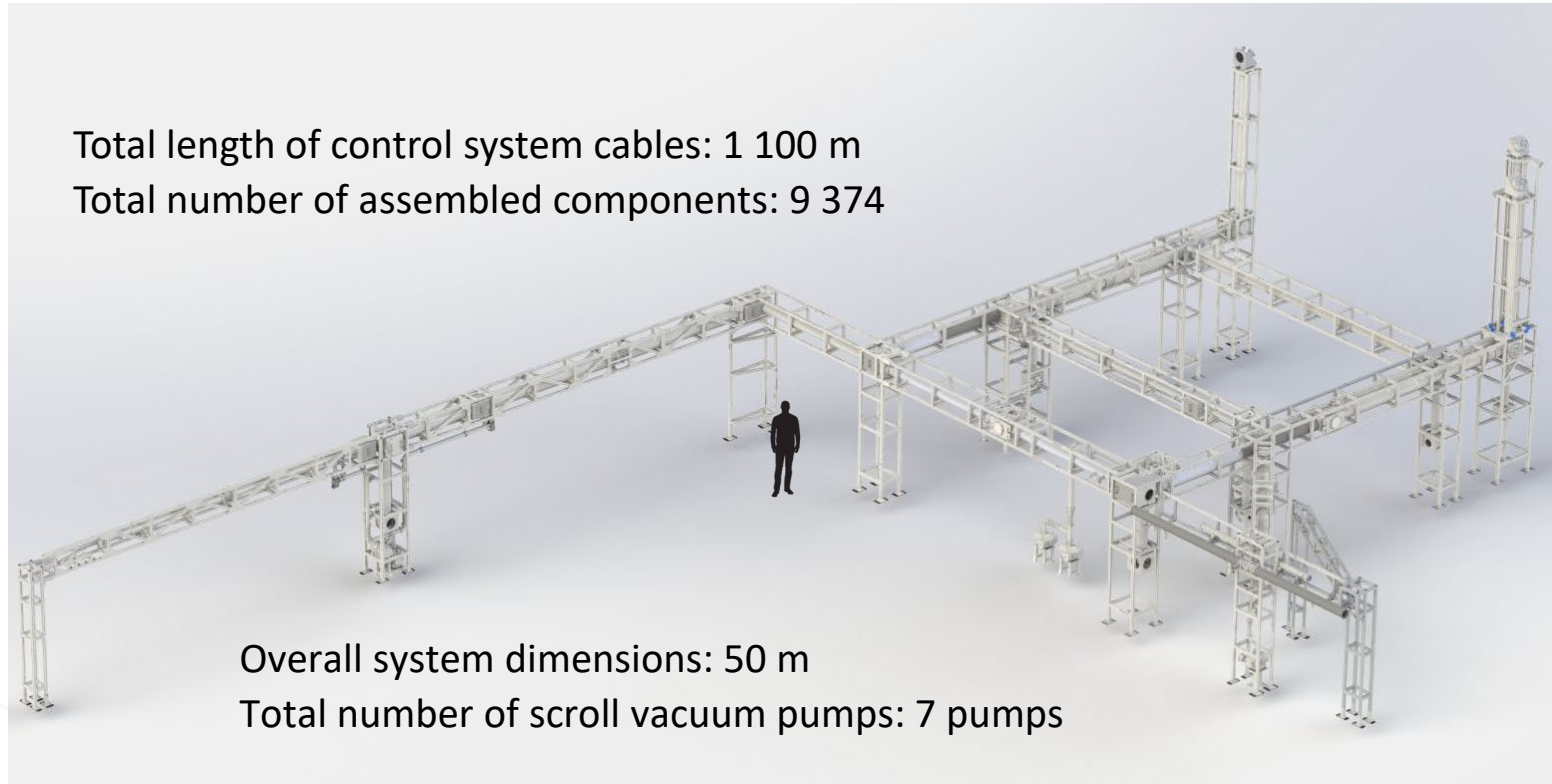
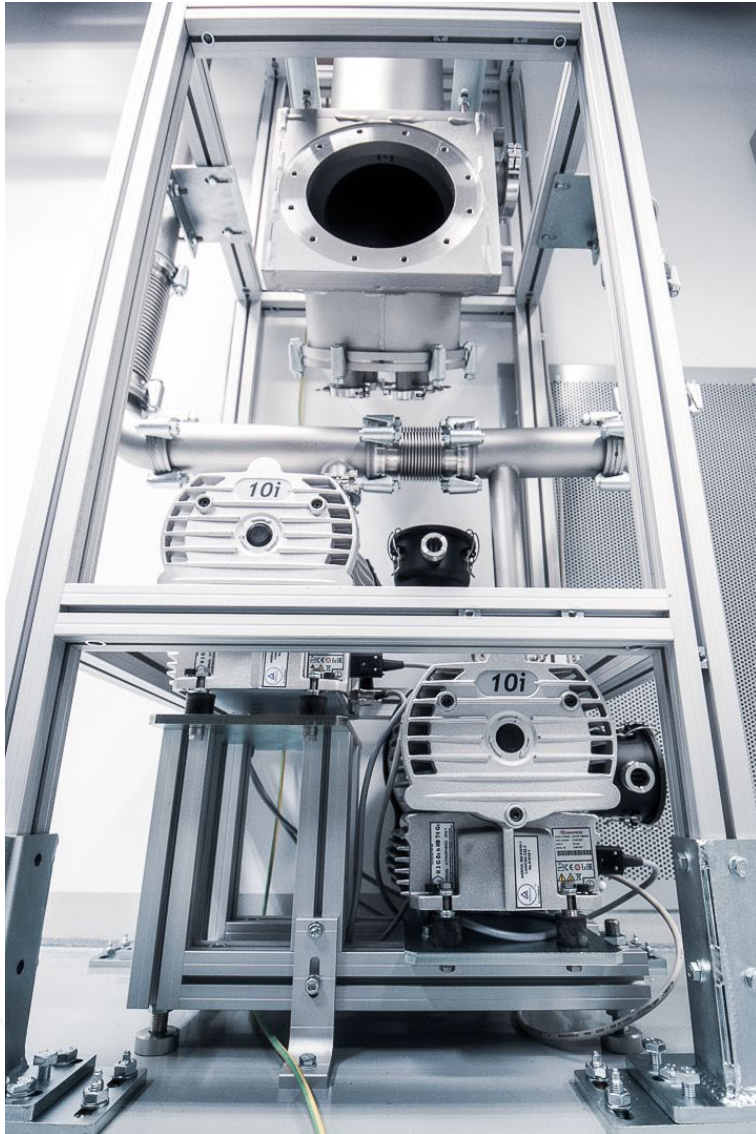
Inner surface hand-polished
and double baked Viton
sealings used.

Cleanliness conditions ISO 5,
dimensions: WxHxL= 3.500 x
4.500 x 18.000 mm





Polygon vacuum chamber DN 1500 mm including decoupled optical table with high-vacuum performance for Research Centre ELI Alps in Hungary



Total length of control system cables: 1 100 m
Total number of assembled components: 9 374

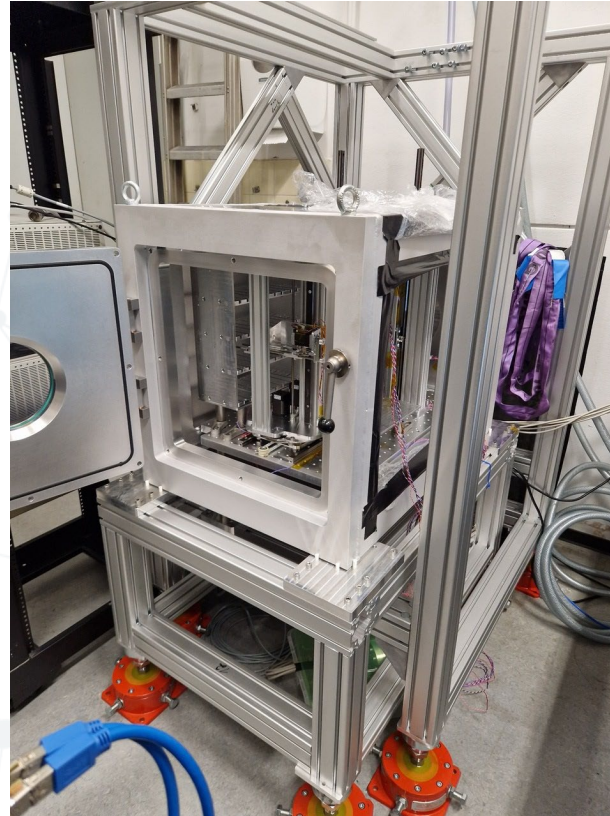
Overall system dimensions: 50 m
Total number of scroll vacuum pumps: 7 pumps

Vacuum laser beam distribution for Research Centre HILASE
(mirror chambers, pipeline) incl. support construction
Delivery including vacuum control and telescope chambers

GSI Helmholtz Centre, TU Darmstadt

S-CUBE allows great accessibility for installation – you can access any side anytime for easier installation.

- It is easy to modify, upgrade or extend the system in the future
- Decoupled optical table or similar accessory is simpler for integration



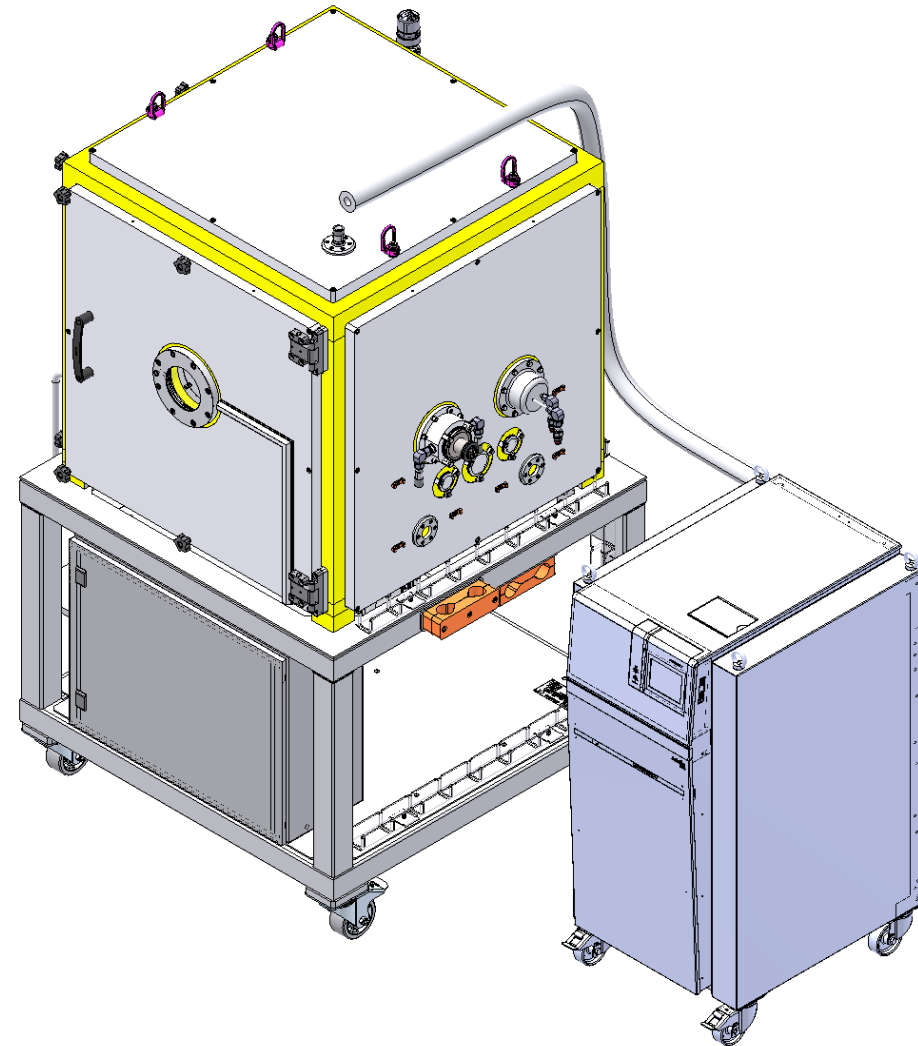
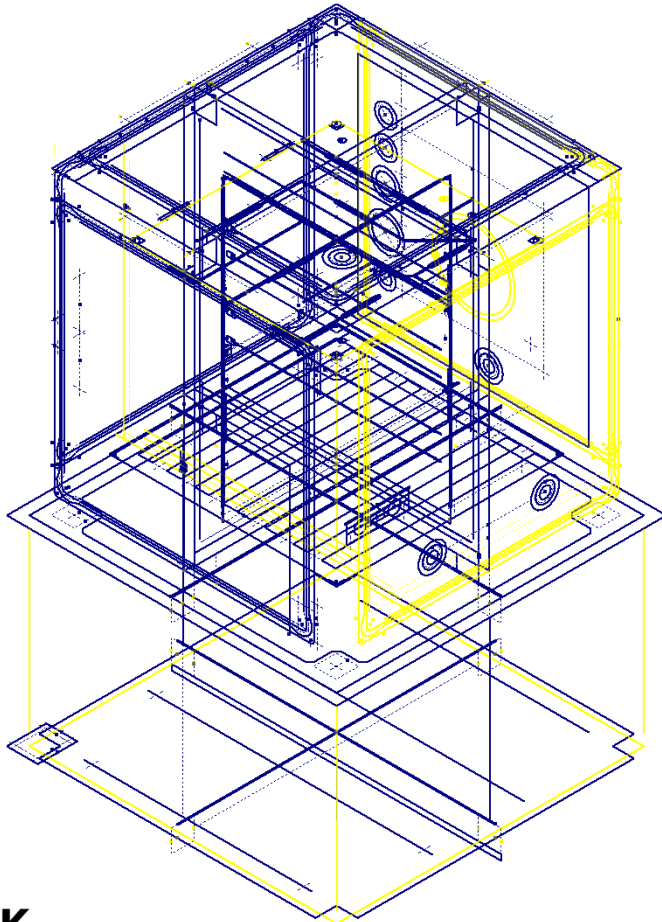
TVAC chambers

S-CUBE allows compact but flexible testing platform

One assembly on average includes 1-10 thousands of components



- Creating objects according to Master-Slave hierarchy in Autodesk Inventor . Using derive feature allows us to control all objects via „Master“ sketch. This process speed up any changes and tweaks of the design.

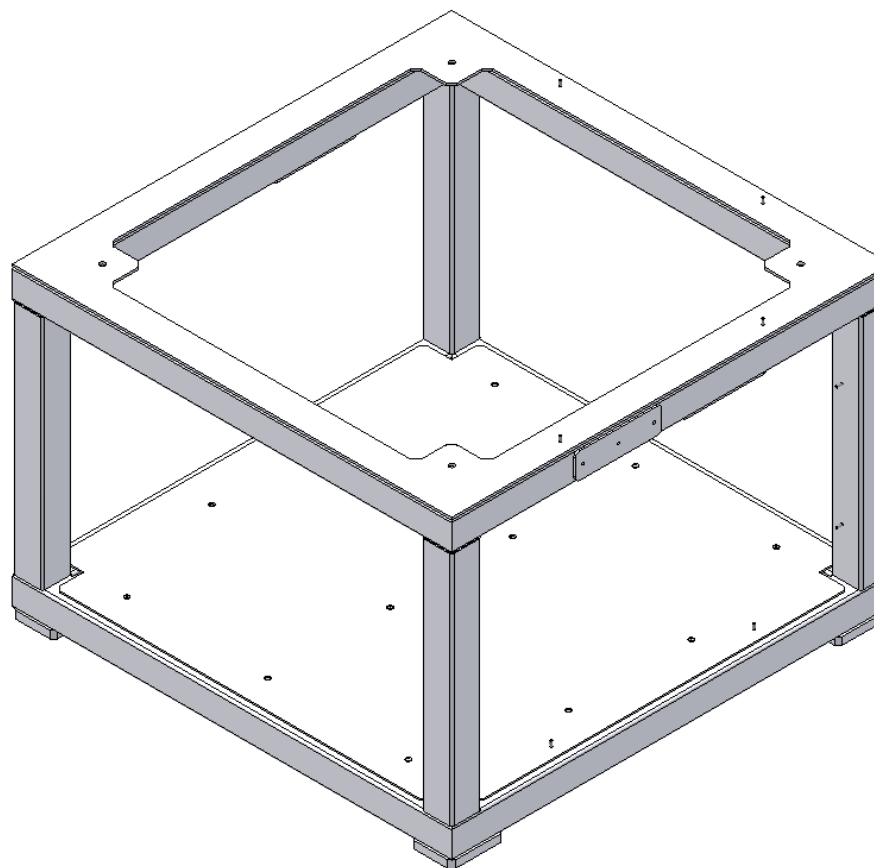
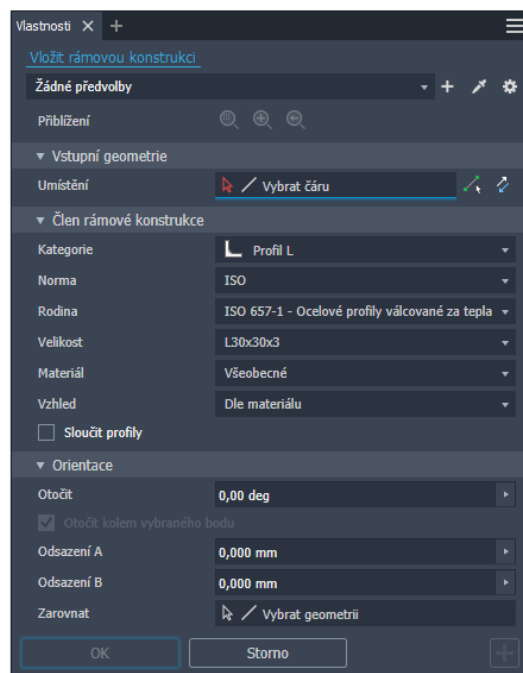


„MASTER“ SKETCH

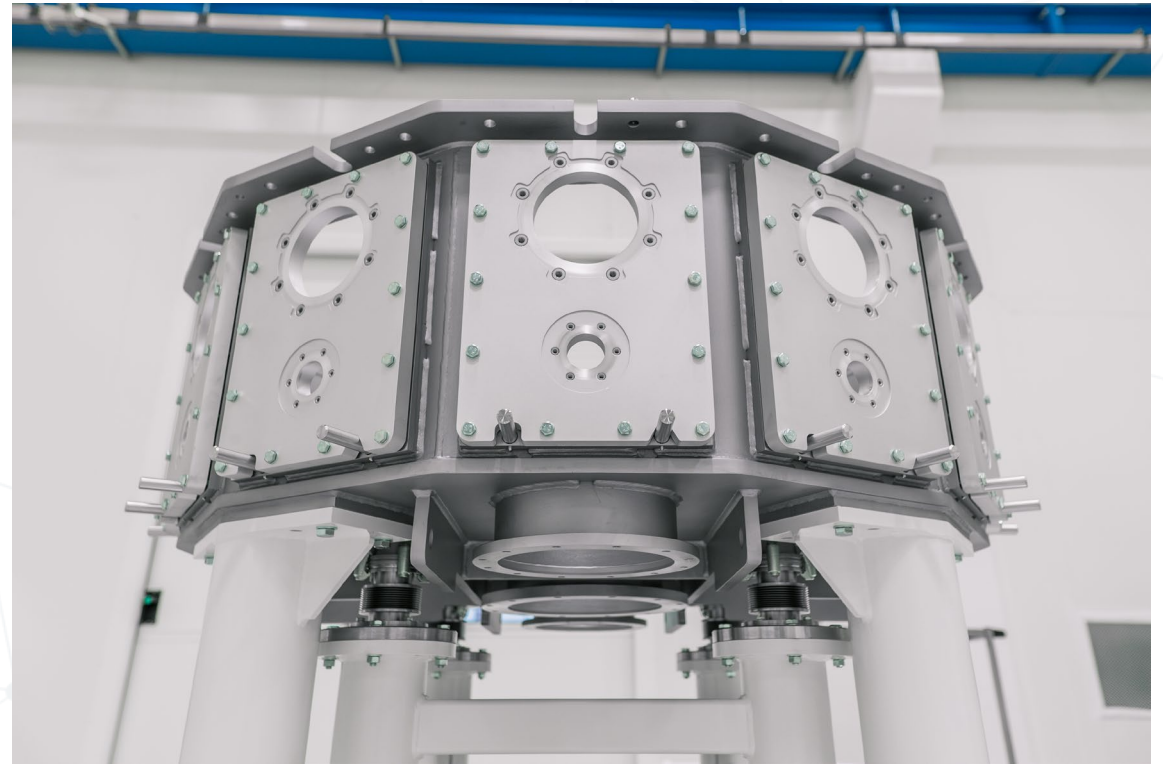
- Especially important for complex shapes



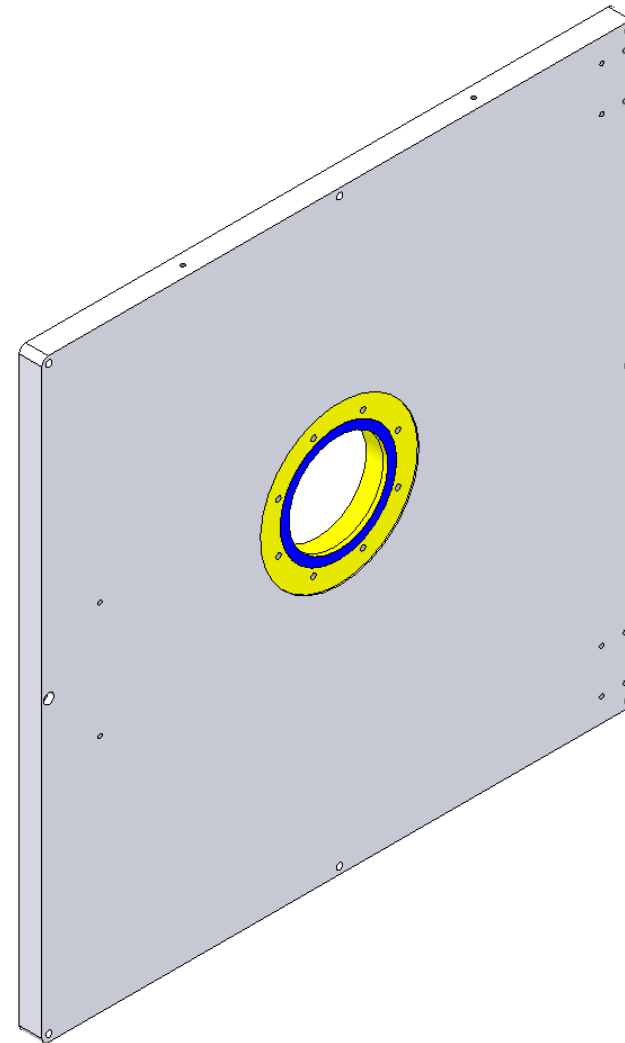
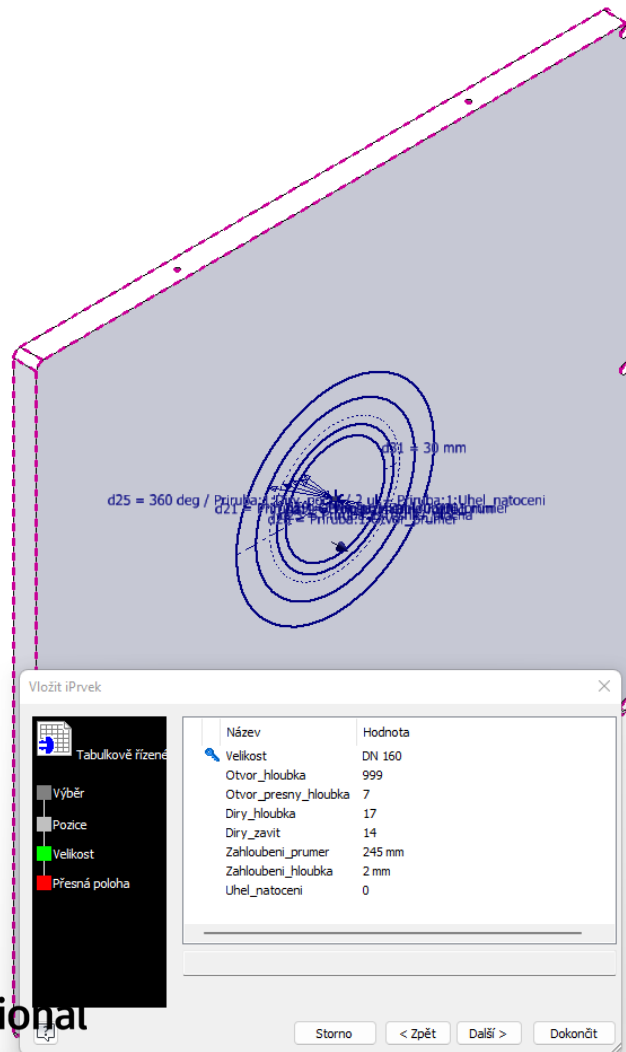
- From our „Master“ sketch in Inventor we can easily generate frames.



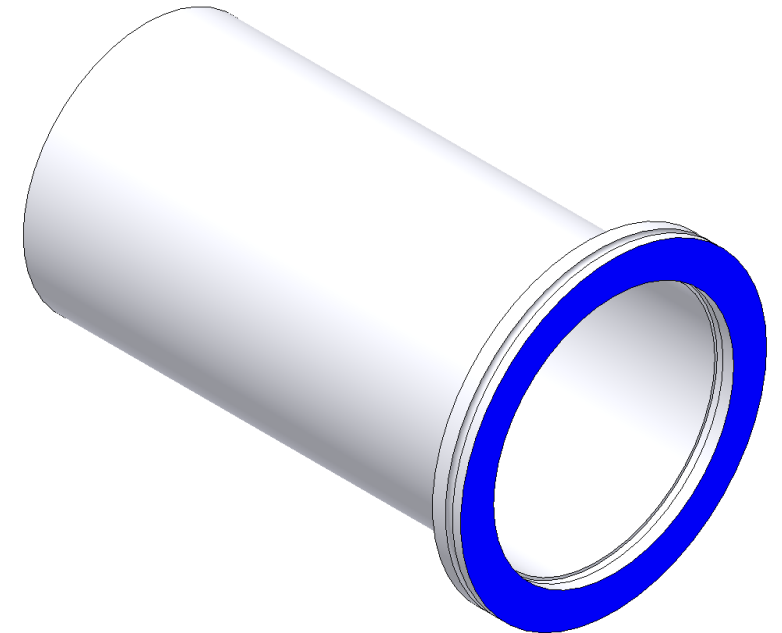
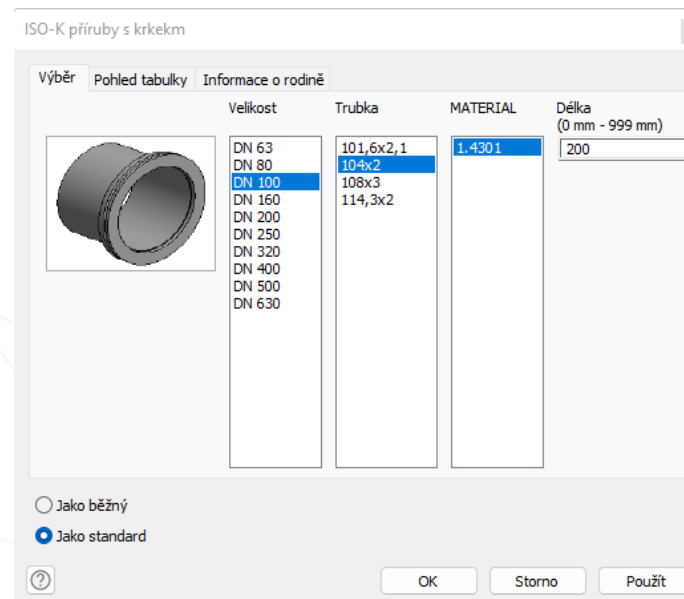
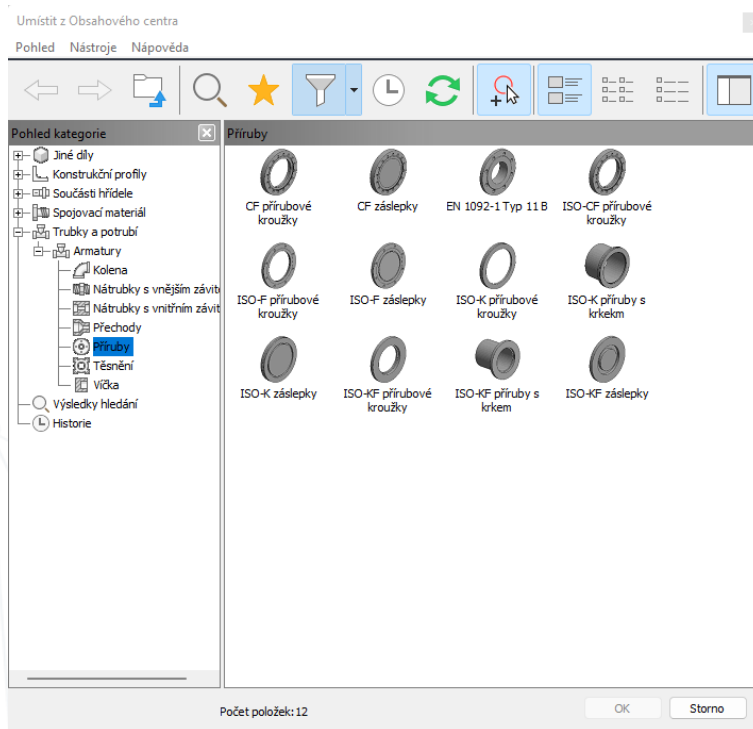
- Support structures often have functional requirements and are interlinked



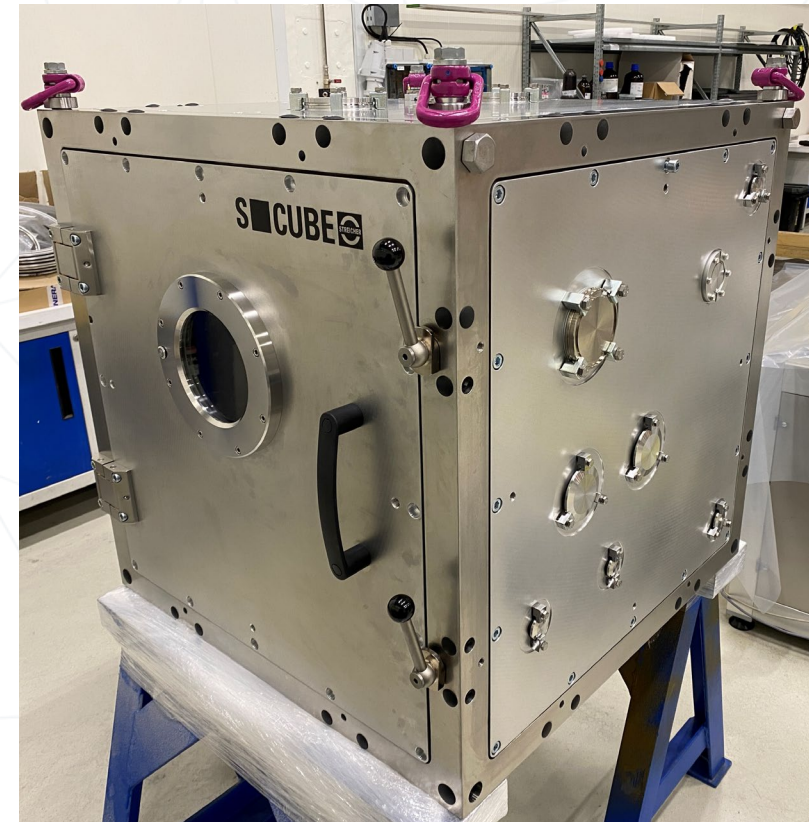
- i-Feature in Autodesk Inventor allows us to create standardized interface into walls and doors.



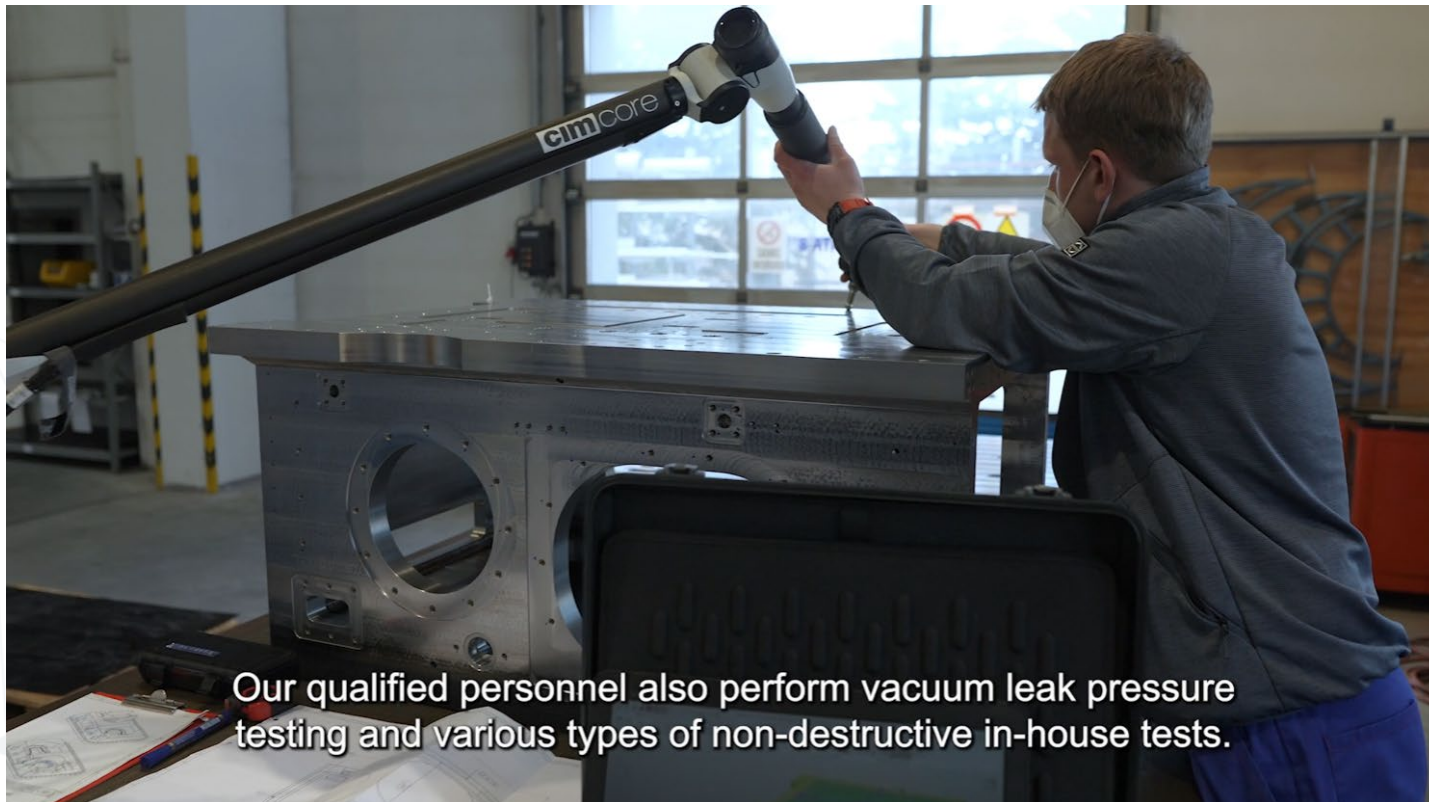
- Custom parts in Inventor added to library allows us to create frequently used parts for vacuum applications.



- Simple integration of standard features saves a lot of time and reduces a risk of error



- High requirements on accuracy often requires special approaches
- 3D measuring arm - tolerance of 0.07 mm with PowerInspect visualization



Our qualified personnel also perform vacuum leak pressure testing and various types of non-destructive in-house tests.



AUTODESK
PowerInspect

- Arkance provides a regular insight in digital world
- Currently we are considering Autodesk VRED as a next tool to improve our design and marketing capabilities



- Open availability of Autodesk products to students
- User friendly environment of Inventor allows simple training
- Great customization options thanks to scripts for Inventor
- Important increase of competences with PowerInspect
- Wide range of products and possibilities for synergy effects for Autodesk
- Arkance provides a regular insight in Autodesk portfolio
 - Virtual Reality
 - CAM



AUTODESK
Inventor Professional



AUTODESK
PowerInspect

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Děkuji za pozornost

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