EUROPEAN
SPALLATION
SOURCE

The Commissioning Workshop of ESS-J-PARC collaboration

Target systems commissioning - From Mock-Up test Stand to Connection Cell

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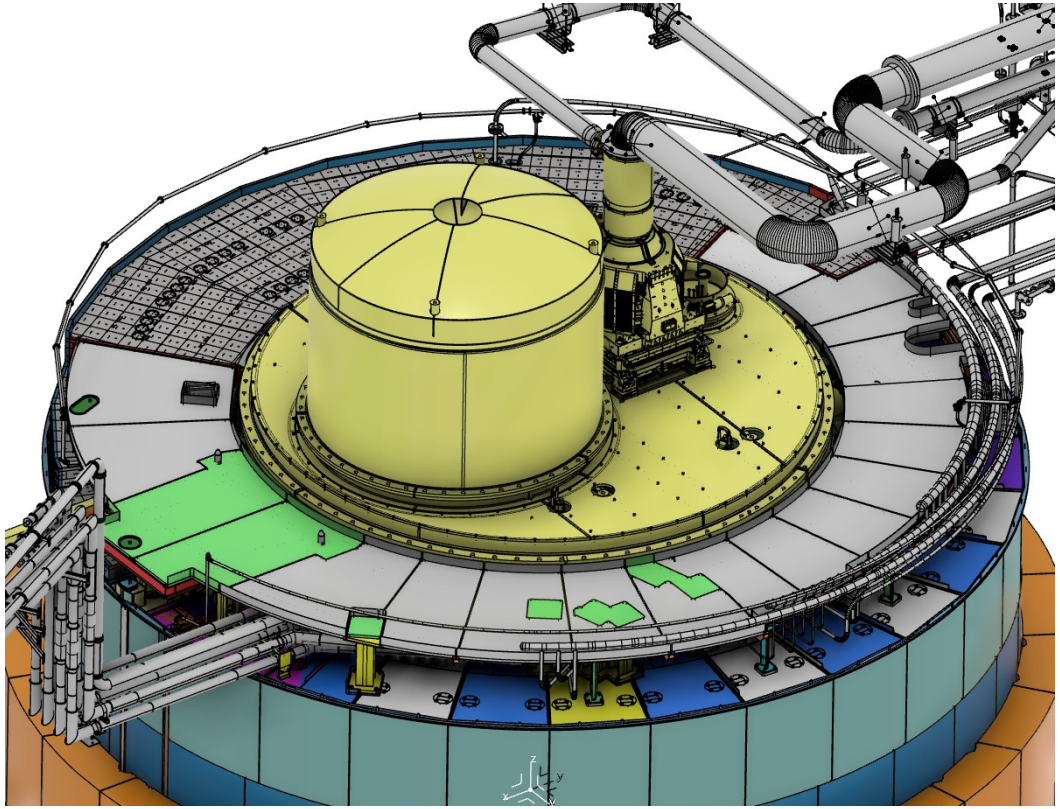
2022-10-17

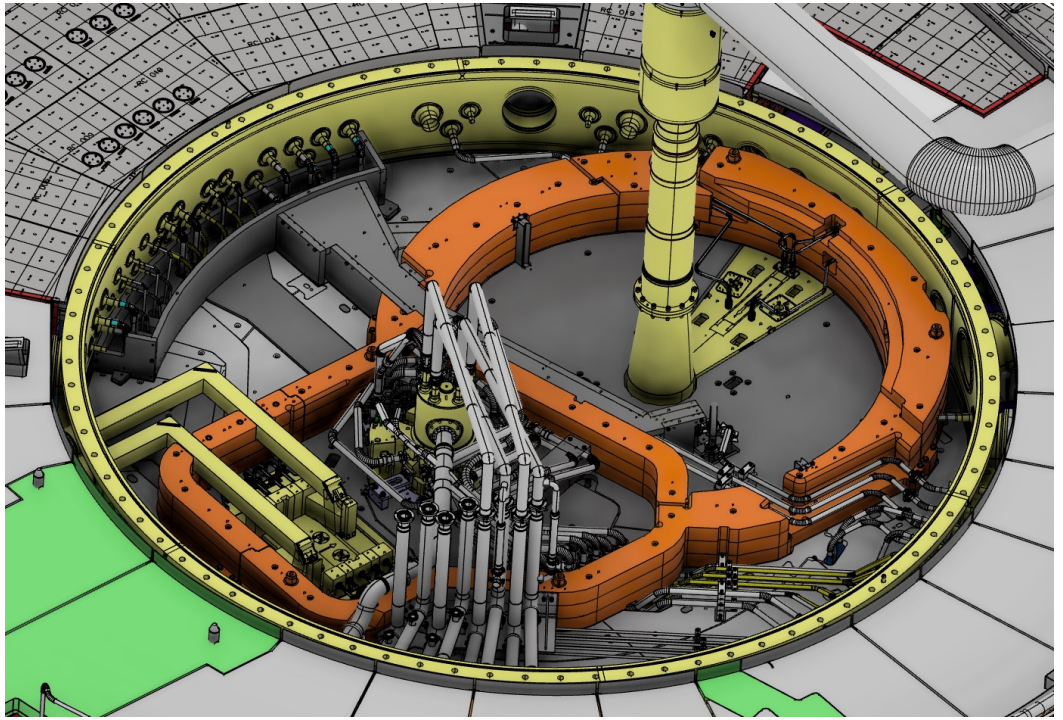
Agenda

1. Access to the target and the moderator
2. Design of the mock-up and test stand
3. Tests to be performed
4. Verify ready for installation in the monolith vessel

ESS Pallation Target

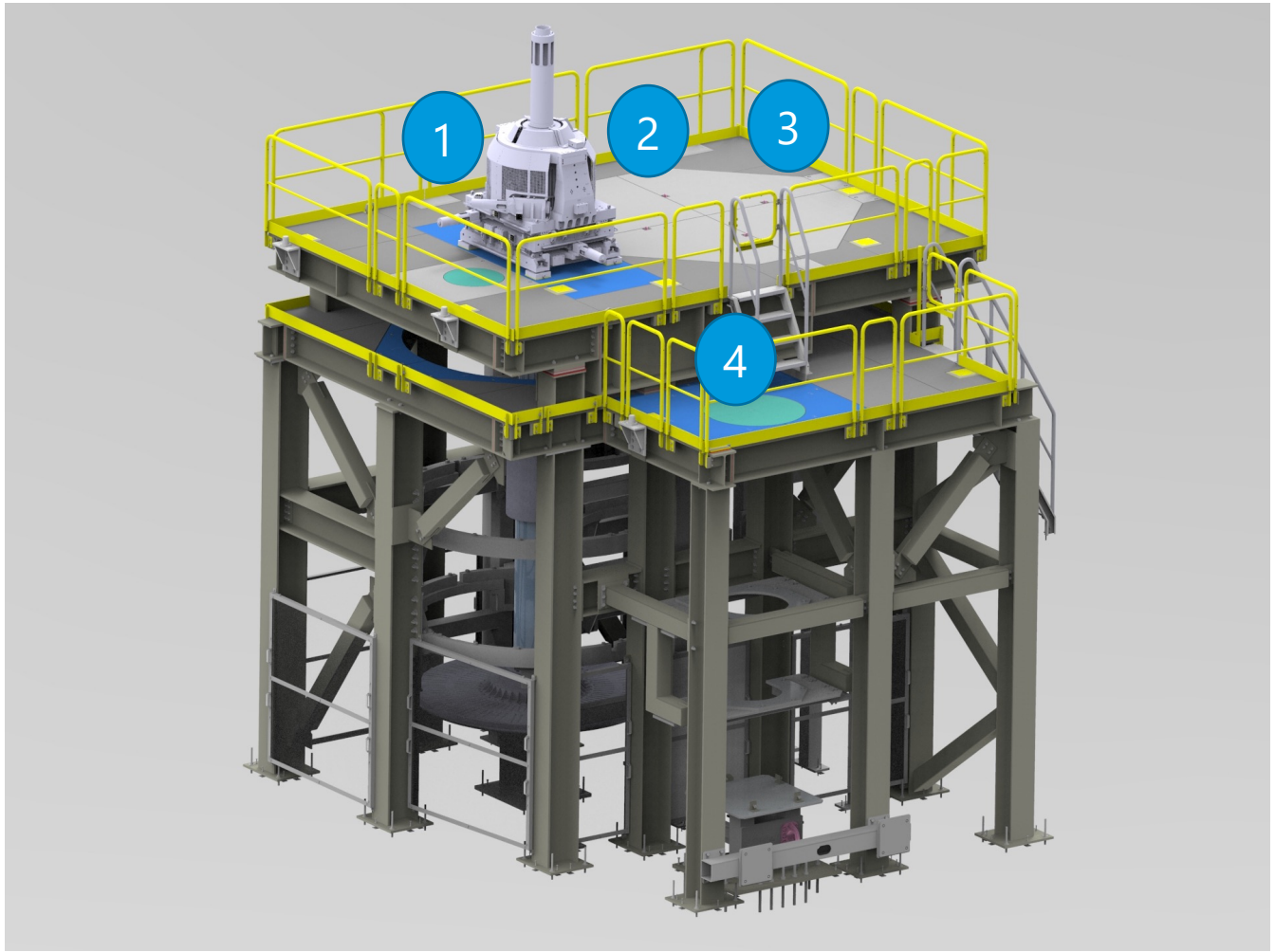
The ESS spallation target is a simple and robust design.
But….. Access, visibility, handling of pipes and shielding



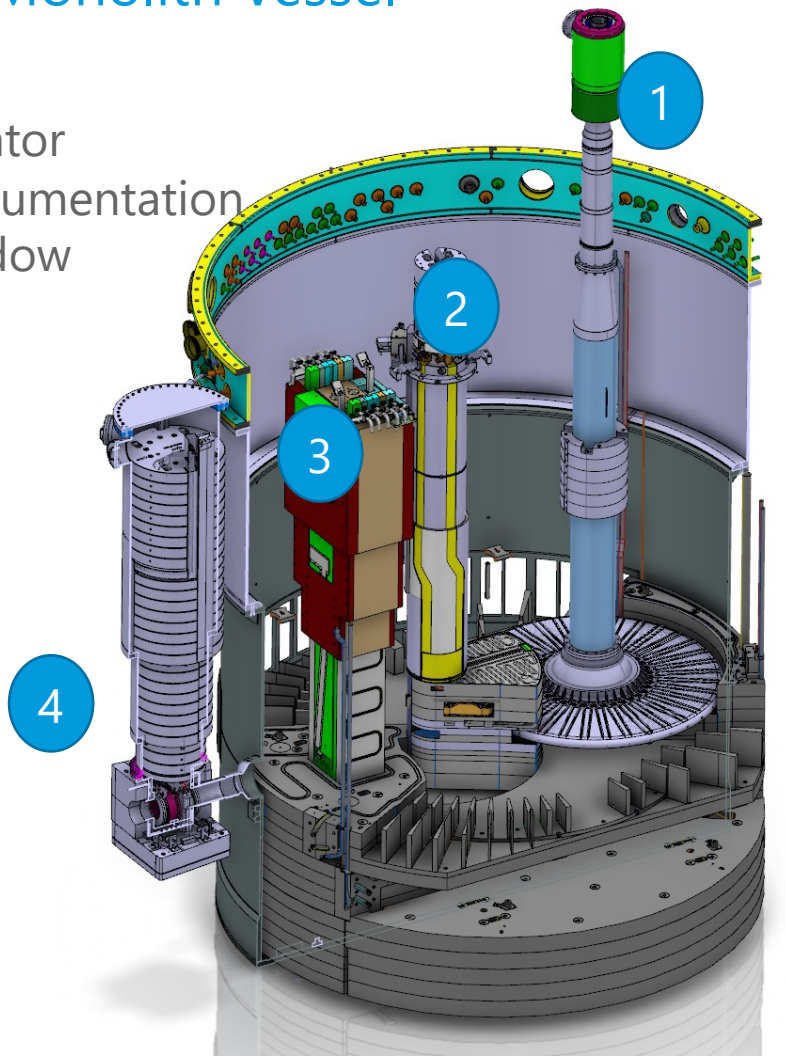


MUTS vs Monolith Vessel

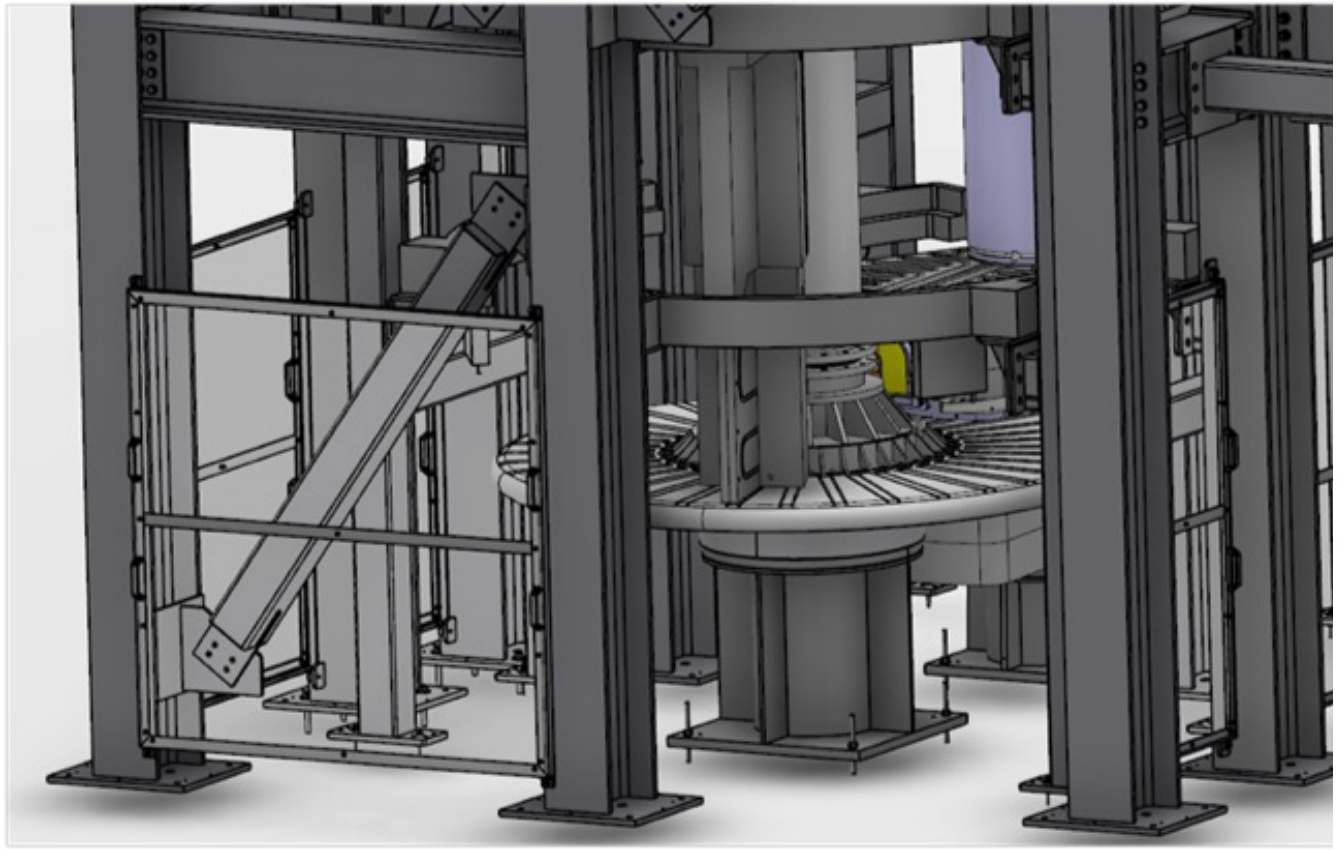
MUTS (Mock Up and Test Stand) to be a replica of the Monolith Vessel

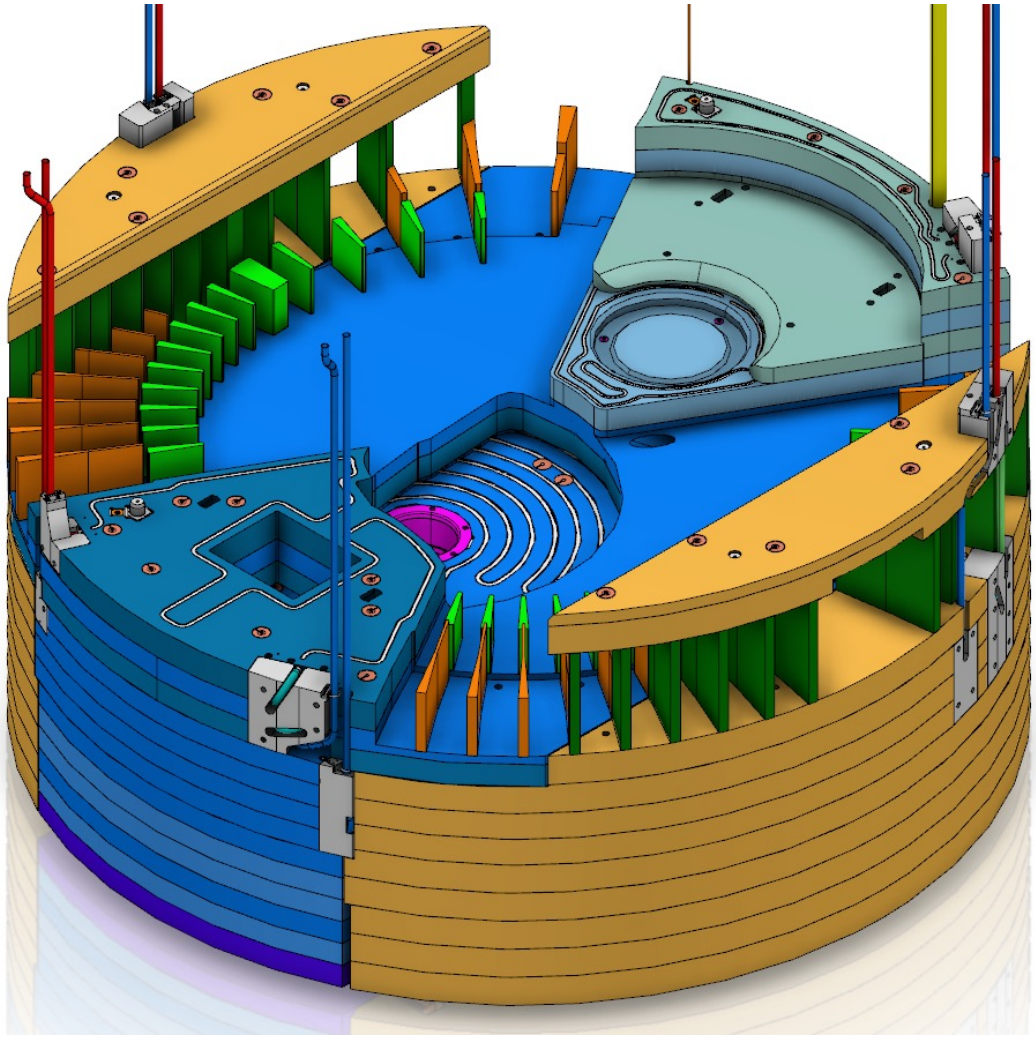


1-Target
2- Moderator
3- PB Instrumentation
4- PB window

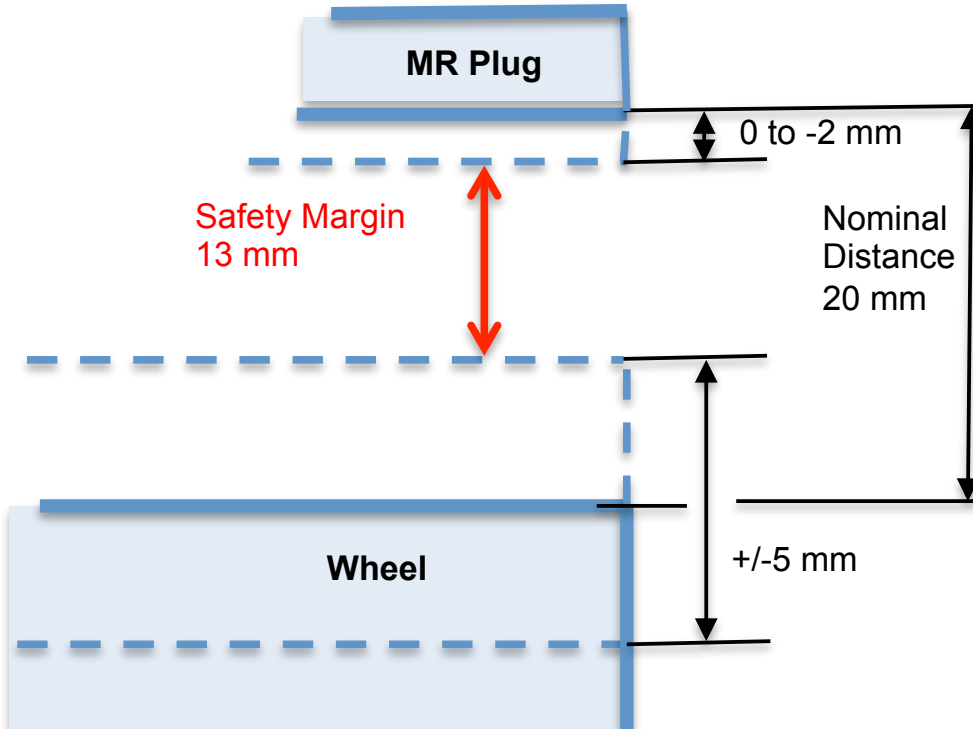


Target Pedestal and Moderator Bucket





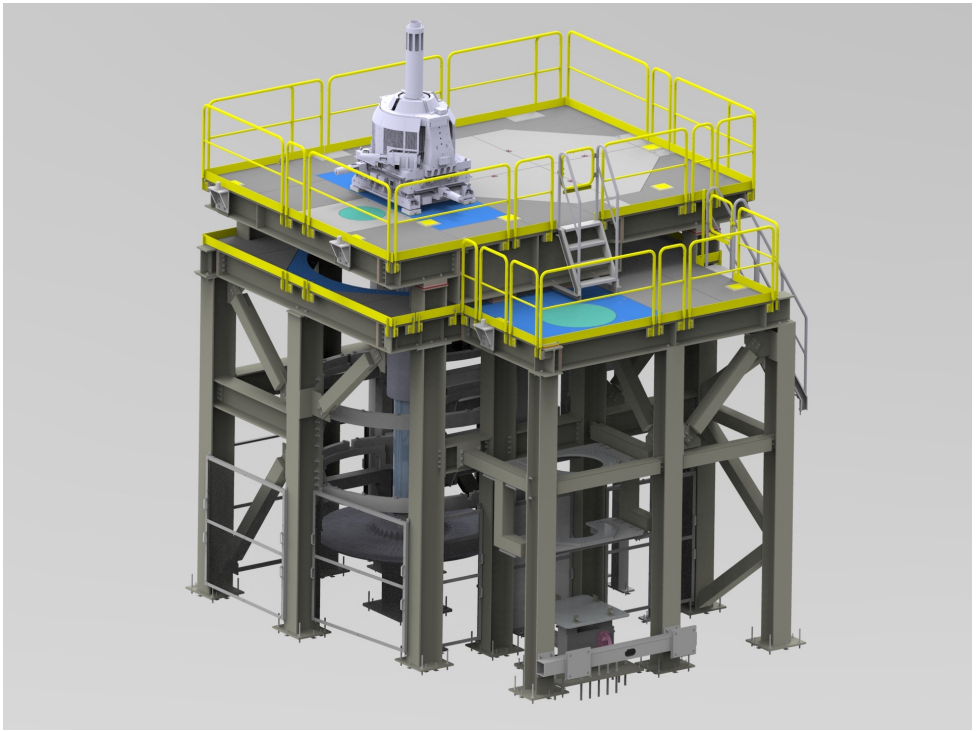
Target Wheel interface to Moderator



Tests to be completed in the MUTS

Tests without heat load and helium cooling system

- Installation (tools, crane operator position, tolerances, etc)
- Target Wheel deflection during start up, normal operation and emergency stop
- Target Wheel synchonisation
- Target Wheel positioning of sector
- Target Monitoring x y z measurements
- MPS and TSS instruments
- Vibration conditioning monitoring system
- Long run test 24/7
- Moderator and Target Wheel interface
  - Proton Beam Instrumentation Plug
  - Proton Beam Window



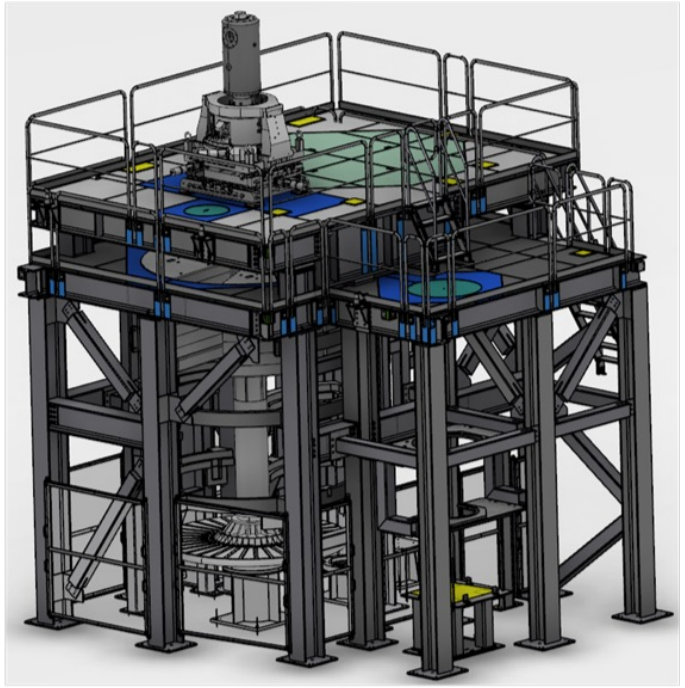
Findings and corrections so far

- Elaborated target monitoring plug guiding pins.
- Elaborated target monitoring plug lifting equipment.
- Fine tuning of the target drive unit bearings.
- Correction of the target. shaft and target wheel interface.
- Correction of the target drive unit and monolith vessel head interface.
- The target shaft vacuum seal rejected at the SAT.
- …

TRIM (Target division Ready for Installation in the Monolith vessel)

TRIM goal is to minimize risk during or after installation in the monolith vessel and to secure RBOT- and BOT-milestones according to schedule

- Verify systems to be ready for installation in the monolith vessel
- The TRIM report will include:
  - all lessons learned and corrective actions for the installation
  - non-conformities
  - all tests and test results
  - remaining tests to be done once installed in the monolith vessel
- Approval of the TRIM report by the Target CCB before installation in the monolith vessel



- **Helium cooling system not connected**
- **No heat load**

Finish presentation