

Inconel Chambers & Vacuum System: Layout Status

B. Riffaud

On behalf of

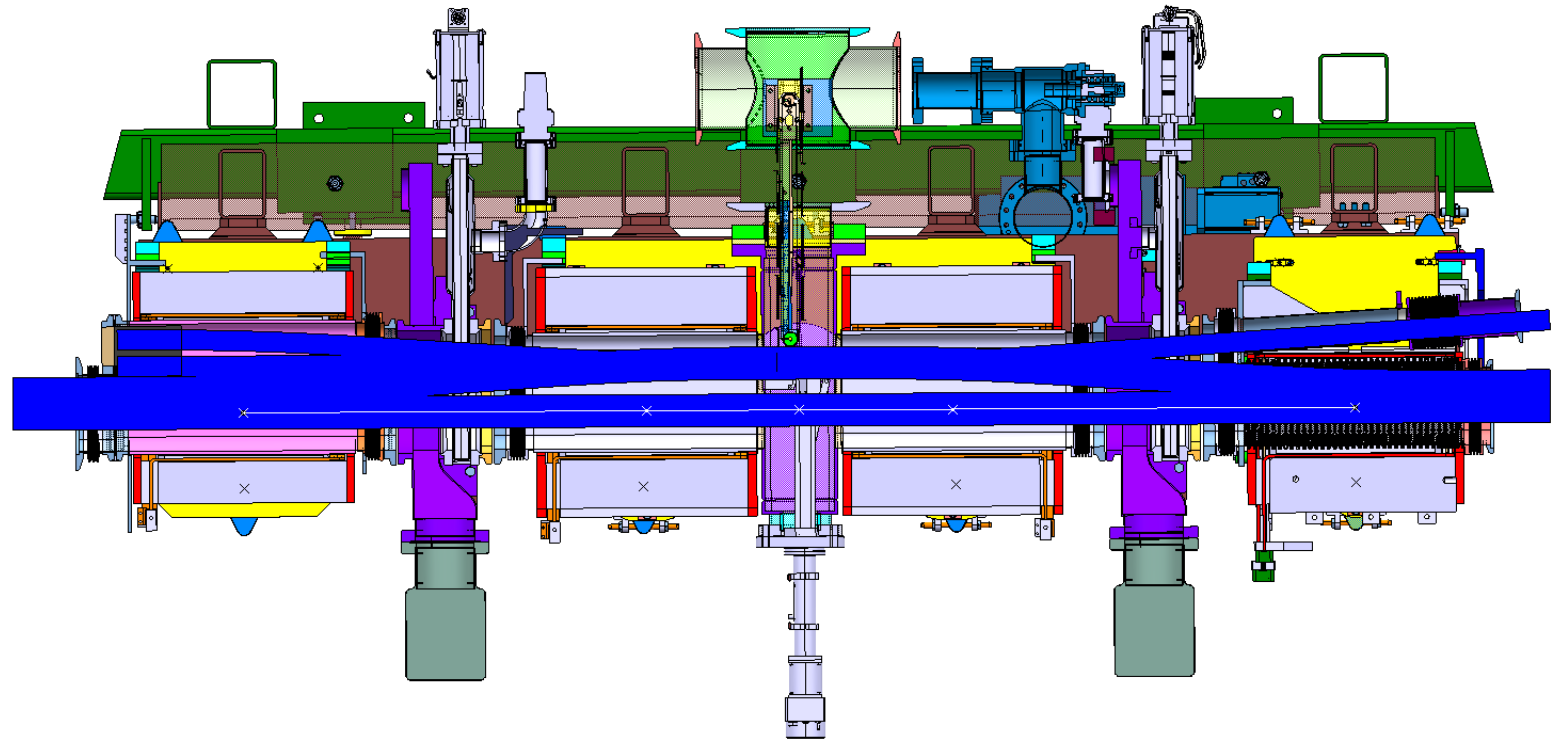
A. Dallochio, M. Garlaschè, L. Zuccalli



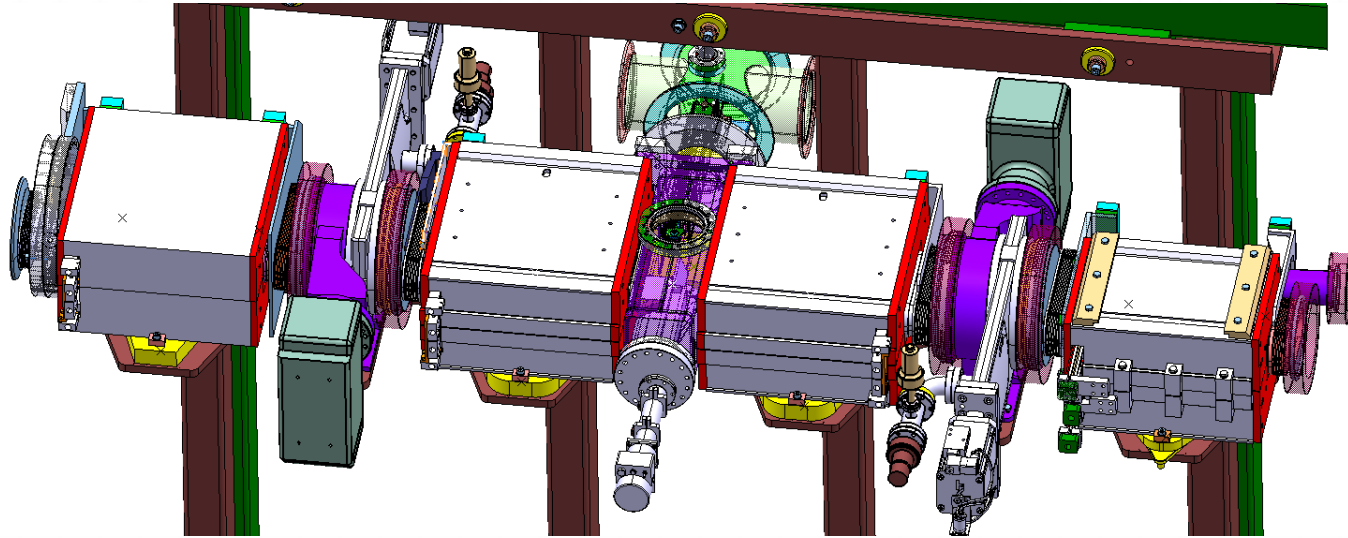
Overview:

Design BASELINE Parameters:

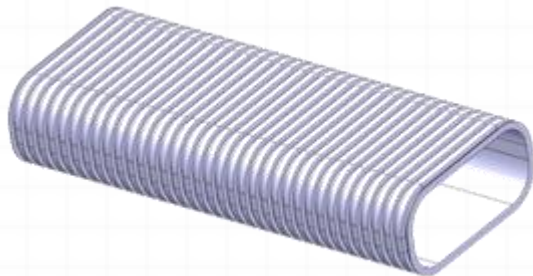
- Undulated Vacuum Chambers (Inconel)
- Independent sector for BSW2/BI.STR/BSW3
- Currently specified beam envelope (TE/ABT)
- Magnet parameters (position, aperture, tolerances)(*EDMS [1244362](#)*)



Current Layout:



Chamber:



- Undulated, Inconel
- 0.45mm max. thickness (mandatory)

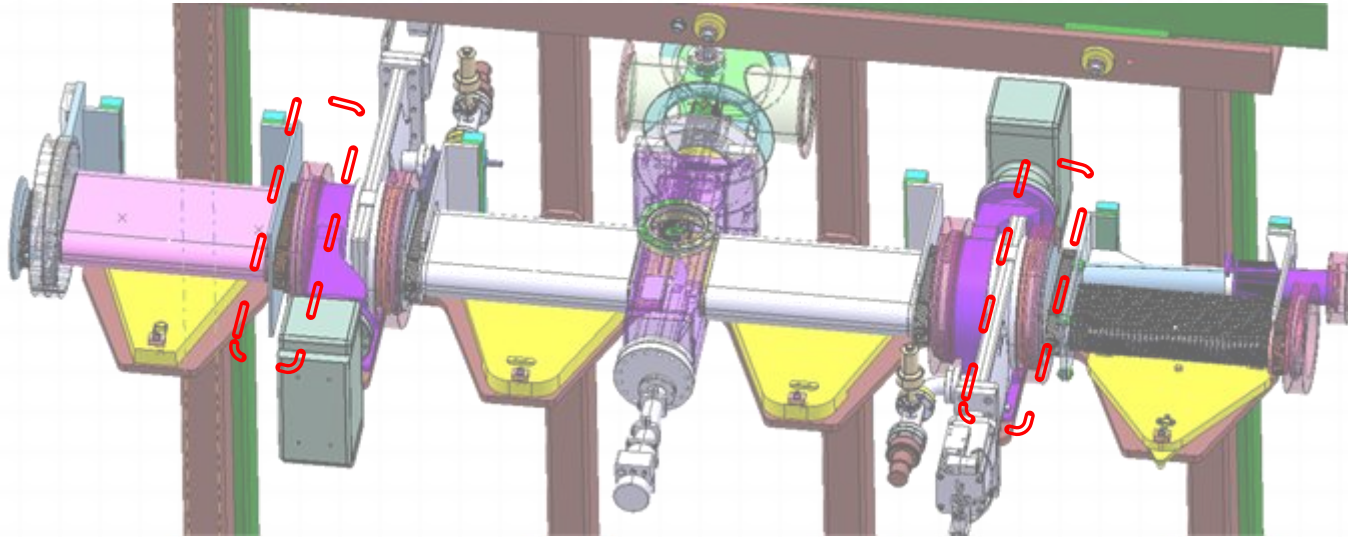
Design status – ONGOING

- Draft specification performed (*EDMS 1277821*)
- Market survey launched (TE/ABT)
- Interface w. Stripping foil box to be defined (with TE/ABT)

Current Layout:

EN

Engineering Department



Flanges:



- Conical by MKT
- Insulation: special ceramic coating on surface (spec by TE/VSC)

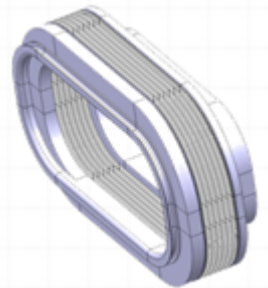
Design status – CLOSED

Bellows:

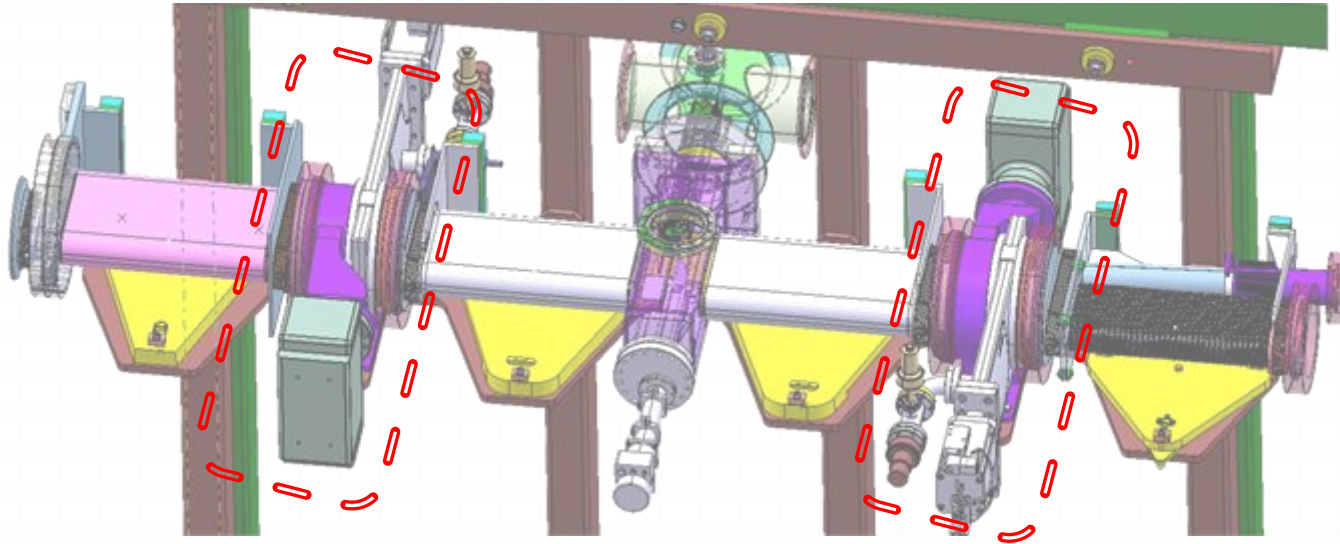
- Edge welded

Design status – ONGOING

- First proposal from Mewasa
- Compatibility check with PSB beam aperture
- Final dimensions to be confirmed
- Bellow compression tool
- Position tolerance of injection-region adjacent flanges (BHZ 11 & 162) needed



Current Layout:

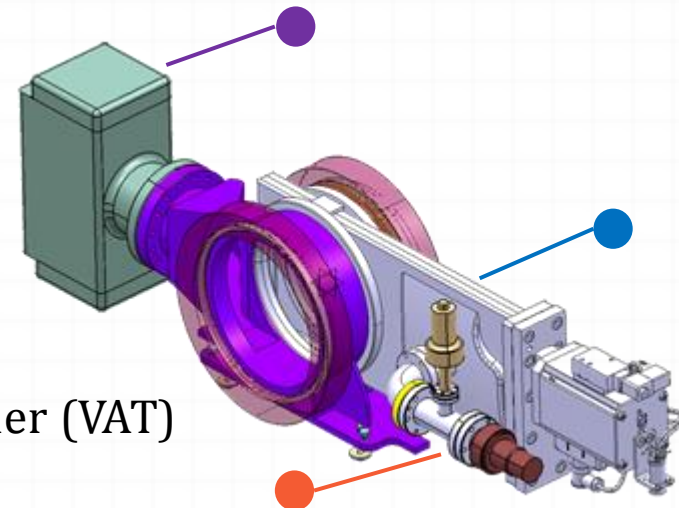


Sectorizing System:

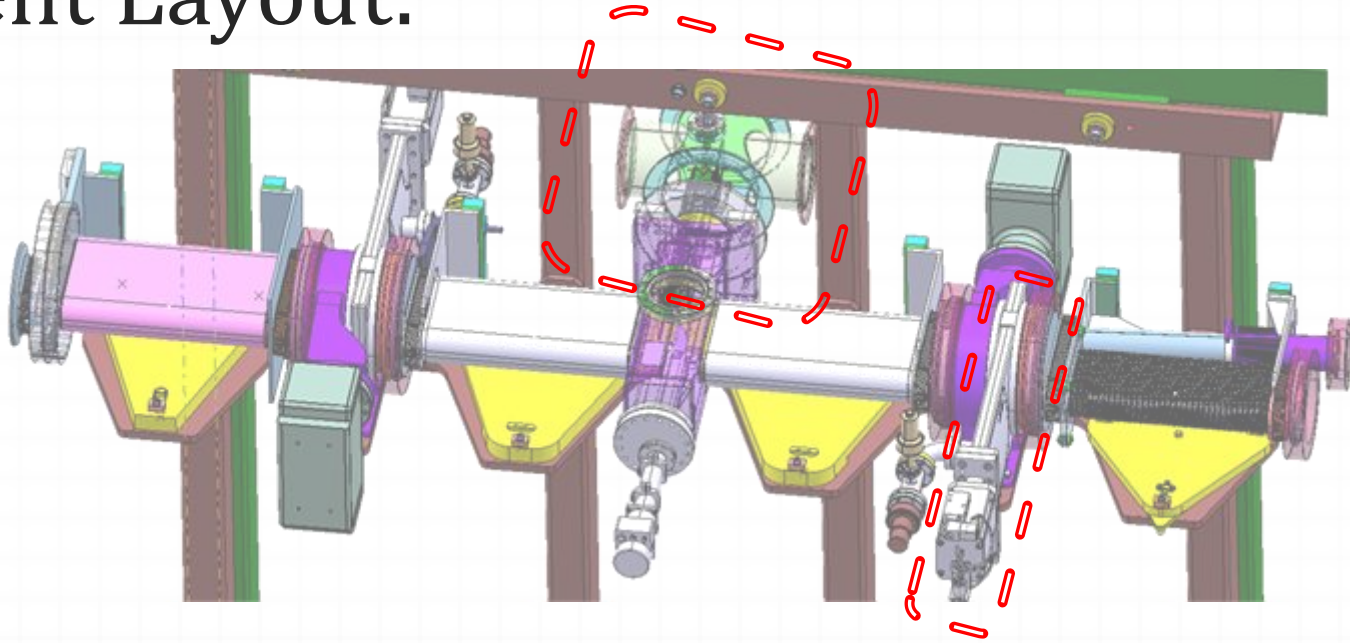
- NOVEL DESIGN: single compact system for **sectorization**, **pumping** and **instrumentation**
- Quick independent extraction from the line

Design status – ONGOING

- Technical feasibility to be confirmed by supplier (VAT)



Current Layout:

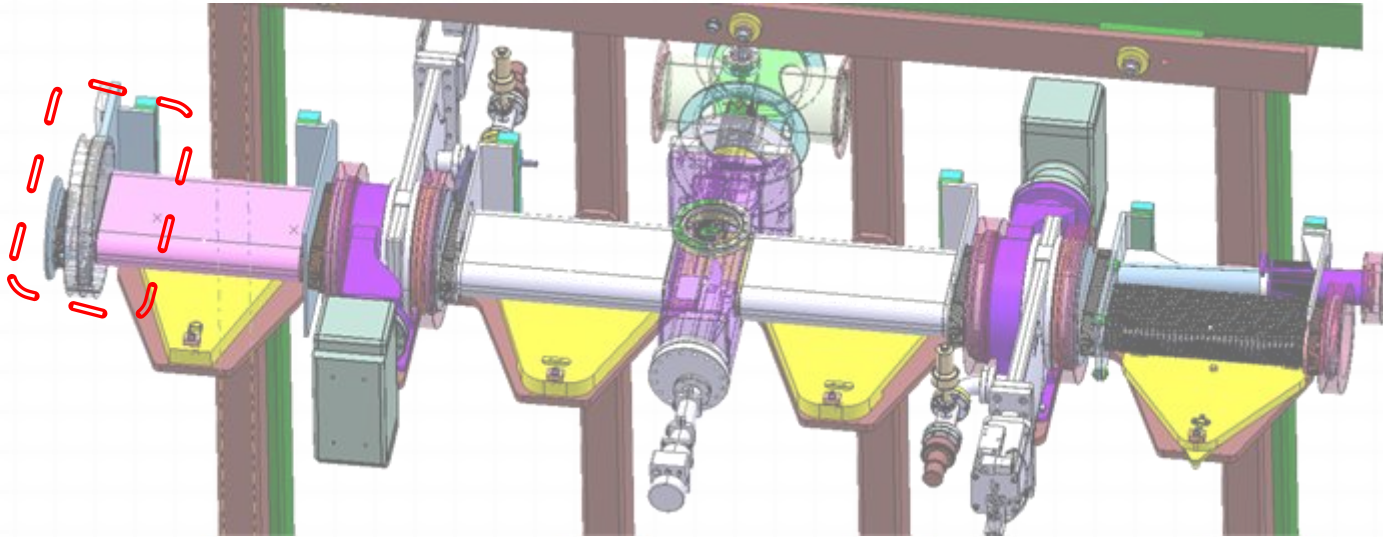


Design status – ONGOING

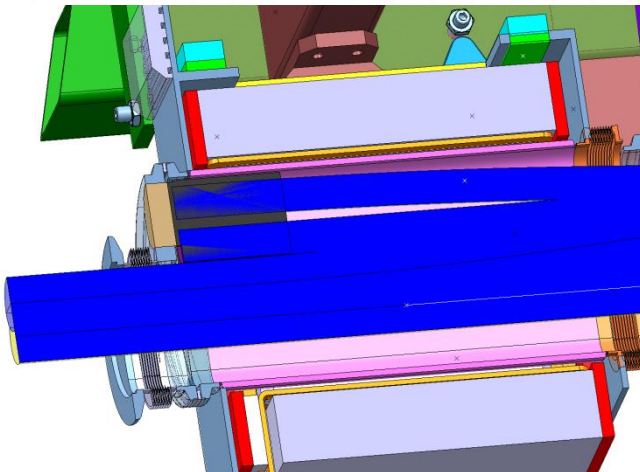
BSW2/BI.STR/BSW3 Section :

- Primary Pumping and venting: fixed pumping system required (TE/VSC)
- Study ongoing for quick disconnection of complete section (vacuum + magnets)

Open Questions:



Dump:

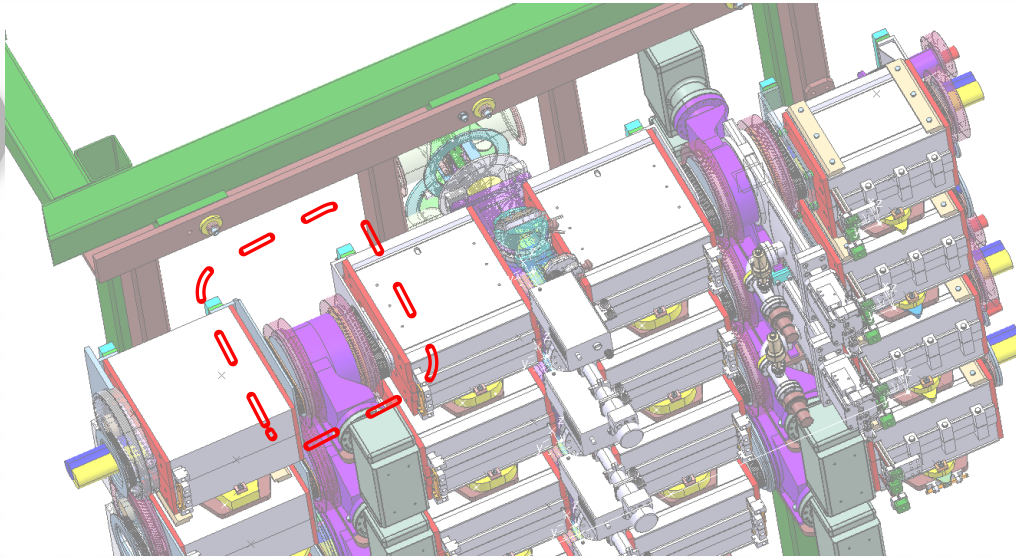


Waiting for outcomes of review

Impact on:

- Design and integration
- Workdose planning

Open Questions:



TE/VSC proposal : NO single Sector for BL.STR

- Valve after BSW1
- Ionic pumping after BSW3
- Primary pumping & sectorizing @ existing PSB sector after bending magnets

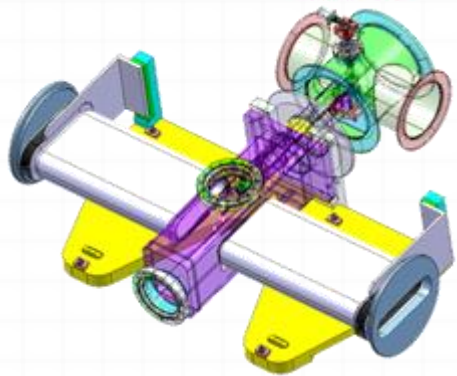
- **TE/VSC proposal based on current workdose planning (draft)**
- **TE/ABT recommends separate sector for BL.STR (BASELINE) following review ([link1](#), [link2](#))**

EN/MME advises:

- Final & validated workdose planning (dump choice related)
- Evaluation of venting issues and pumping duration

Ceramic Chamber: what if?

- Production feasibility of ceramic chambers validated : preliminary market survey done (TE/ABT) , functional spec (*EDMS 1277821*)
- Enough space inside yokes to house ceramic chamber

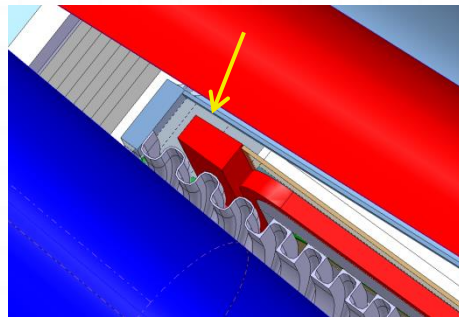
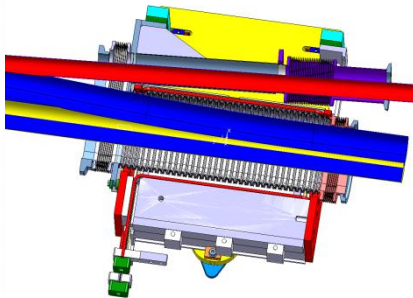


Support for chambers:

- Independent w.r.t. magnet support (BASELINE)
- Hyperstatic



Support & alignment strategy
(quick plug in) to be
reconsidered



Ceramic chambers imply smaller
gap available w.r.t to beam
envelope and magnet aperture

Conclusion:

Critical Information needed for design progress:

- Dump review outcome
- Workdose planning
- Venting and pumping strategy
- Sector for stripping area
- Position tolerance of BHZ 11 & 162 flanges
- Chamber : Inconel vs. Ceramic

