Inconel Chambers & Vacuum System:
Layout Status

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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:

**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:

**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)

*Design status – ONGOING*
Open Questions:

Dump:

Waiting for outcomes of review

Impact on:
- Design and integration
- Workdose planning
Open Questions:

TE/VSC proposal:
NO single Sector for BI.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 BI.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