

Overview of all chambers



PSP-Code	Chamber type	Quantity	Subtypes	Status
2.3.7.1.2.1.1	pumping chambers	52	29	BINP (Council)
2.3.7.1.2.1.4	adaptor pumping chamber	45	5	to be assigned
2.3.7.1.2.1.2.1	roughing chambers	41	1	BINP (Council)
2.3.7.1.2.1.3	straight tubes	327	166	BINP (Council)
2.3.7.1.2.1.3	straight tubes with stand	131	107	BINP (Council)
2.3.7.1.2.1.5	bellows	528	10	BINP (Council)
2.3.7.1.2.1.3	x-cross chamber	1	1	BINP (Council)
2.3.7.3.2.1.1	pumping chambers	1		to be assigned (FBL)
2.3.7.3.2.1.2	roughing chambers FBL	3		to be assigned (FBL)
2.3.7.3.2.1.3	straight tubes FBL	14		to be assigned (FBL)
2.3.7.3.2.1.5	bellows FBL	27		to be assigned (FBL)
	Total	1170	319	

Milestones



Milestone	Work Description	Date
M4	<ul style="list-style-type: none">Exchange of signed Contract	03/2019
M6	<ul style="list-style-type: none">Conceptual Design Review (CDR) accepted	05/2019
M7	<ul style="list-style-type: none">Final Design Review (FDR) accepted	07/2019
M8	<ul style="list-style-type: none">Factory Acceptance Test (FAT) of pre-series accepted	08/2019
M9	<ul style="list-style-type: none">Factory Acceptance Test (FAT) accepted	08/2021
M92	<ul style="list-style-type: none">Site Acceptance Test (SATaa) accepted	09/2021
M10	<ul style="list-style-type: none">Site Acceptance Test (SATab) accepted	09/2021
-	<ul style="list-style-type: none">Documentation	11/2021
-	<ul style="list-style-type: none">Final Acceptance	11/2021
-	<ul style="list-style-type: none">Warranty starts	

Vacuum properties



Vacuum properties	Non-bakeable	Bakeable
Integral leak rate	$\leq 1 \times 10^{-10} \frac{\text{mbar l}}{\text{s}}$	$\leq 1 \times 10^{-10} \frac{\text{mbar l}}{\text{s}}$
Outgassing rate (after 10h of pumping)	$\leq 5 \times 10^{-10} \frac{\text{mbar l}}{\text{s cm}^2}$	$1 \times 10^{-12} \frac{\text{mbar l}}{\text{s cm}^2}$
Residual gas analyse (after 24h of pumping)	<ol style="list-style-type: none"> 1. All peaks between mass 18 and 45 must be 100 times lower than mass 18, except mass 28 and 44. 2. All peaks higher mass 45 must be 1000 lower than mass 18. 	<ol style="list-style-type: none"> 1. All peaks between mass 12 – 18 and mass 28 must be $\leq 10\%$ from mass 2. 2. All peaks between mass 22 – 32, except mass 28, must be $\leq 0.5\%$ from mass 2. 3. Peak 44 must be $\leq 20\%$ of mass 2. 4. All peaks between mass 49 – 100 must be $\leq 0.1\%$ from mass 2.

Inspection Reports (FAT):

- pumping time for measurements must be:
 - 10h** for the outgassing rate
 - 24h** for RGA measurement
 - (deviations can't be accepted)

Mechanical properties:

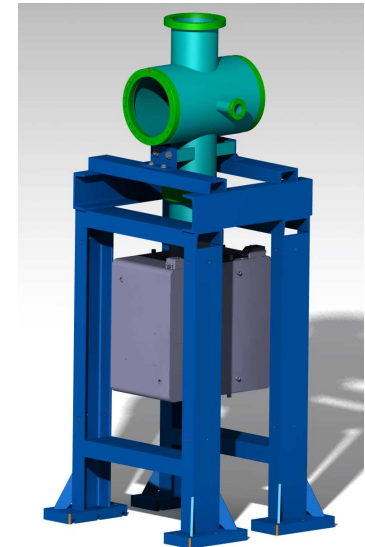
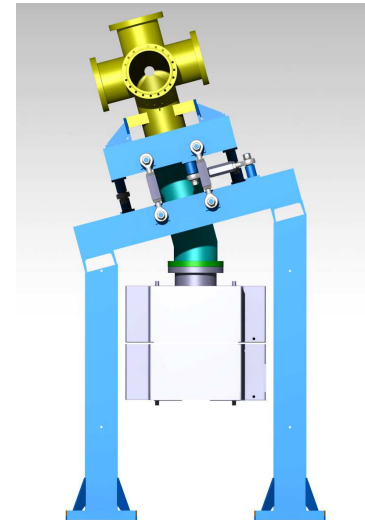
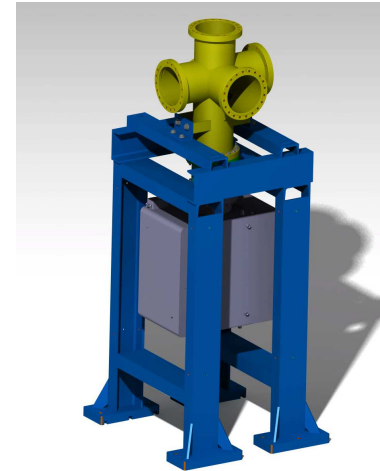
- Check of welding seam according to DIN EN ISO 9712, quality class DIN EN ISO 5817 B
- Surface quality $R_z=25$
- Magnetic permeability:
 - Parts of the body of vacuum chamber $\rightarrow \mu_{rel} \leq 1.05$
 - Components of the vacuum chamber such as flanges, bellows, and other fixed elements such as supports, bolts, nuts, washers, etc. $\rightarrow \mu_{rel} \leq 1.05$
- Chamber material according DIN EN 10088: 1.4306, 1.4307, 1.4404, 1.4429 or 1.4435
- Flange Material according DIN EN10088: 1.4306, 14307 or higher quality
- Material for bakeable flanges: 1.4429 ESR

HEBT: pumping chambers



Chamber type	Quantity	Subtypes
pumping chambers	53	29

- Flanges: DN160CF – DN200CF
- Flange material 1.4429 ESR
- Stands are included in the delivery; pumps are not part of the delivery
- Some chambers with bellows
- Some beamlines are ascending and descending
- Draft version of the 3D model

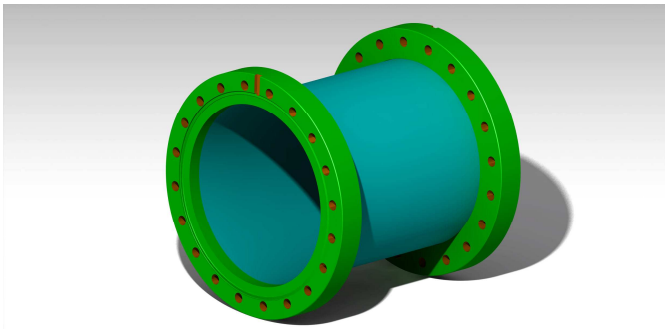


HEBT: roughing chambers

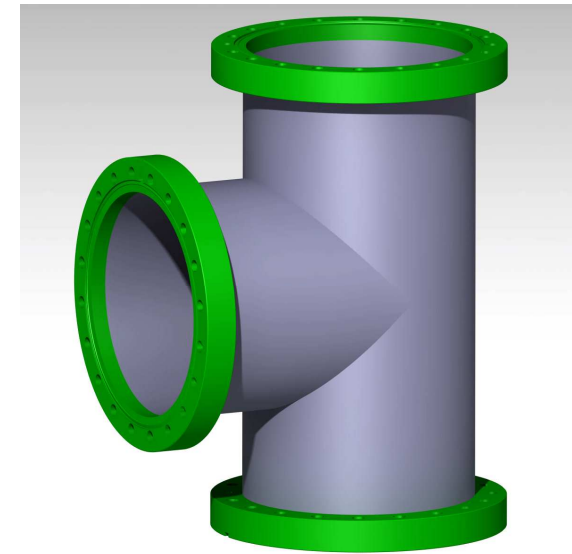


Chamber type	Quantity	Subtypes
adaptor pumping chamber	45	5
roughing chamber	44	1

- Flanges: DN160CF – DN200CF
- Draft version of the 3D models



adaptor pumping chamber



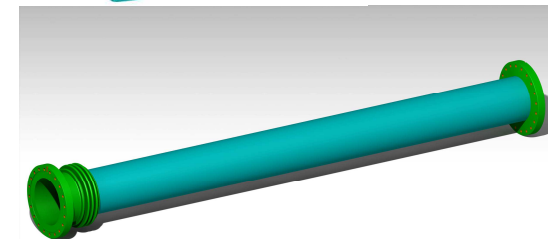
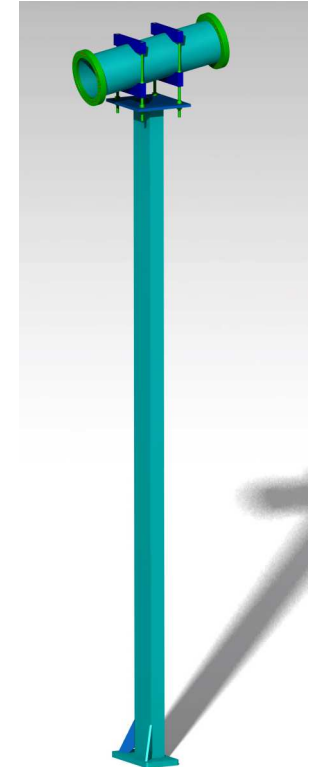
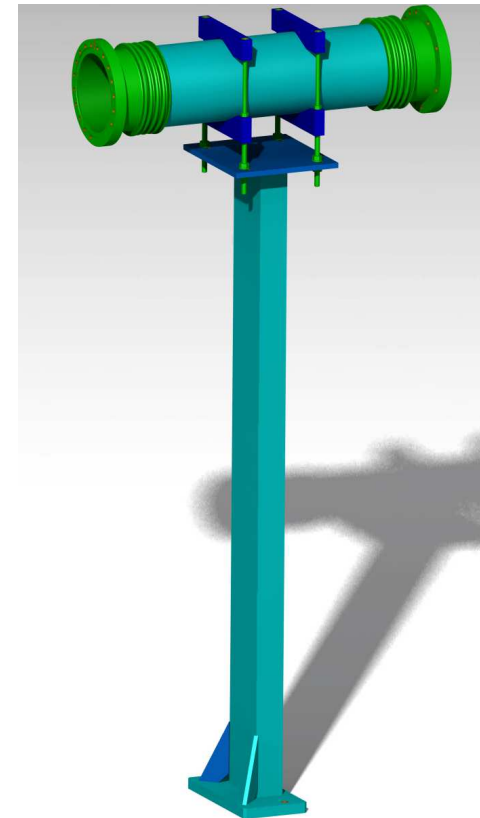
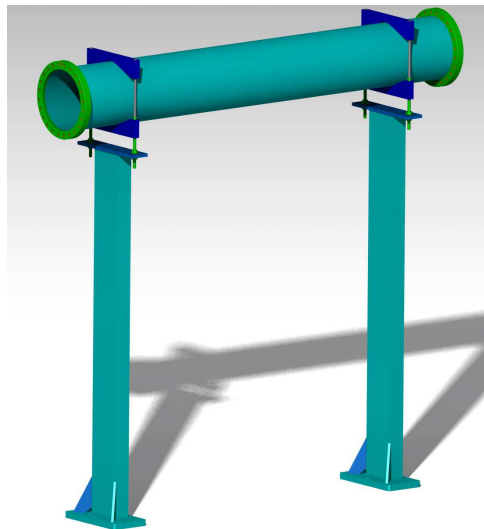
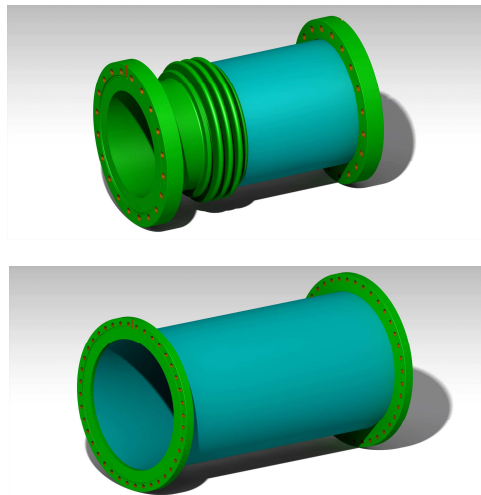
roughing chamber

HEBT: Straight Chambers with stands



Chamber type	Quantity	Subtypes
straight tubes	341	166
straight tubes with stand	131	107

- Overall length: 250mm – 6700mm
- Flanges: DN160CF – DN400CF
- Stands are included in the delivery
- Some chambers with bellows
- Some beamlines are ascending and descending
- Draft version of the 3D models

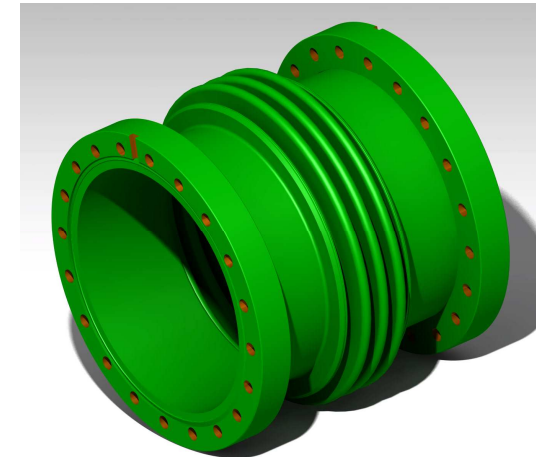


Bellows

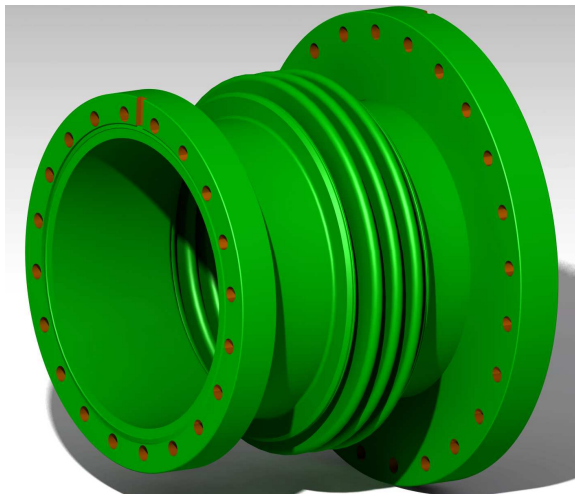


Chamber type	Quantity	Subtypes
bellows	555	10

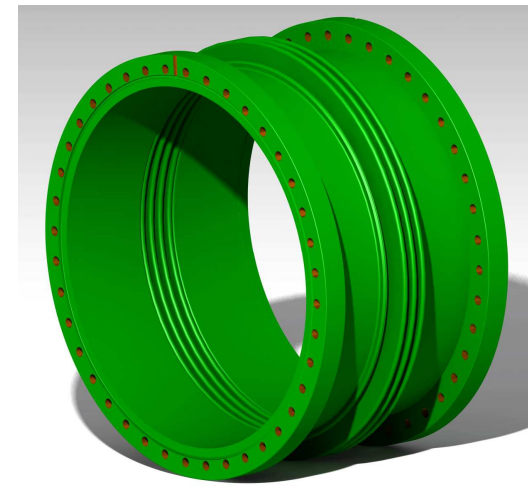
- Flanges: DN160CF – DN400CF
- Some bellows are bakeable
- Draft version of the 3D models



DN160CF



DN160CF - DN200CF



DN400CF

HEBT: X-cross chamber



- Flanges: 6 x DN160CF
- Maximal construction room reserved
- Draft version of the 3D models

