

VAX's aperture calculations

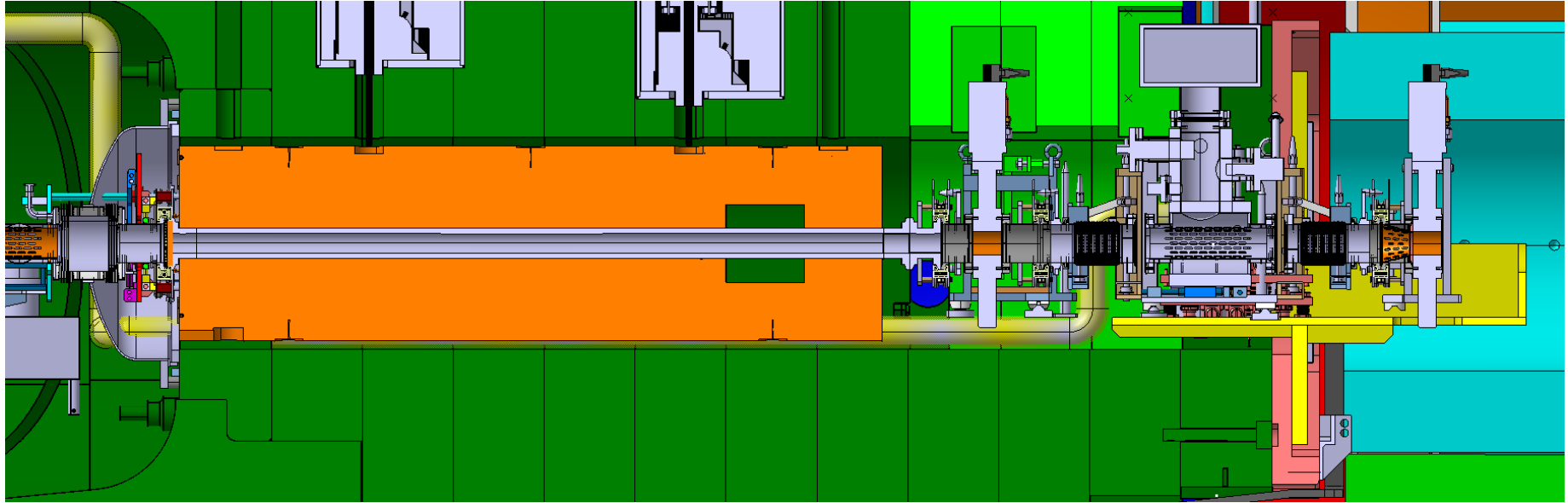
VAX's chassis numerical analysis

42nd WP8 Bi-weekly meeting
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VAX's aperture calculations



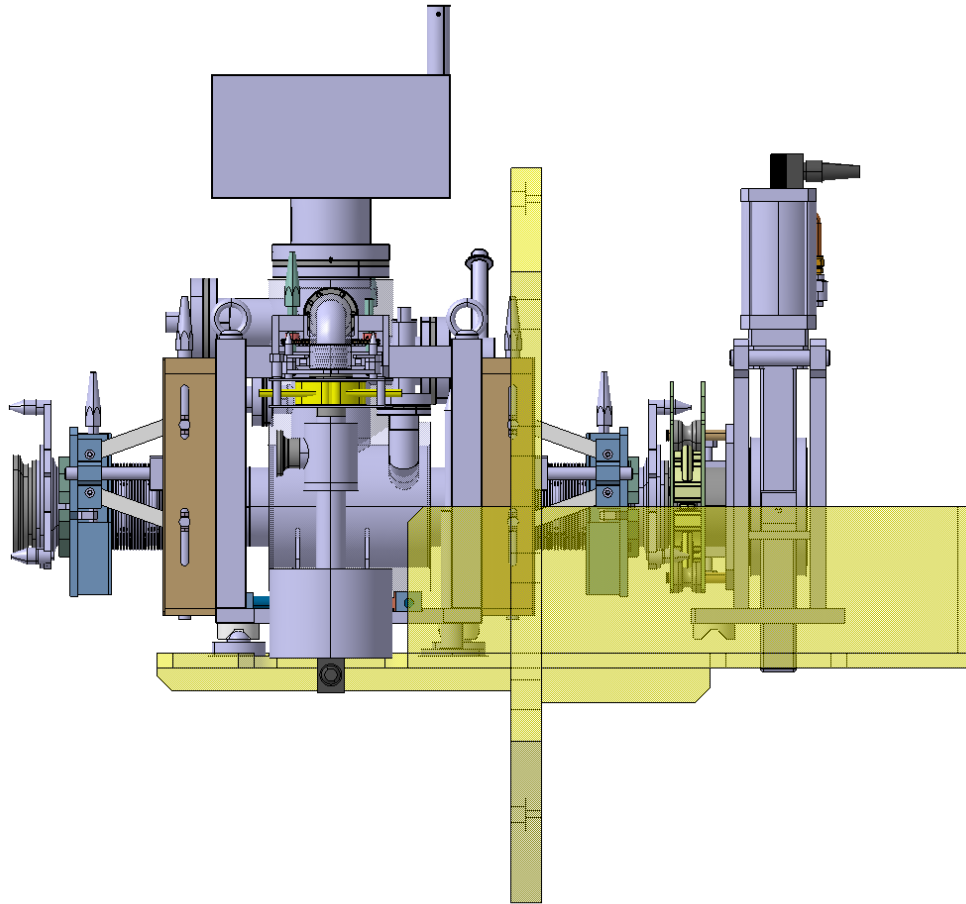
CF flange internal aperture [mm]	63
Beam pipe diameter [mm]	60

In order to avoid collision between the beam and the VAX, during design process all of the points listed below, which have influence on the final

TAS upstream	Position [mm]			IP
	VAX upstream	VAX downstream		
	20850	18816.8	17689.3	0
Beam diameter [mm]				
	60.00	54.15	50.90	0.00
Diameter aperture [mm]				
	3.00	8.85	12.10	63.00
Radius aperture [mm]				
	1.50	4.43	6.05	31.50

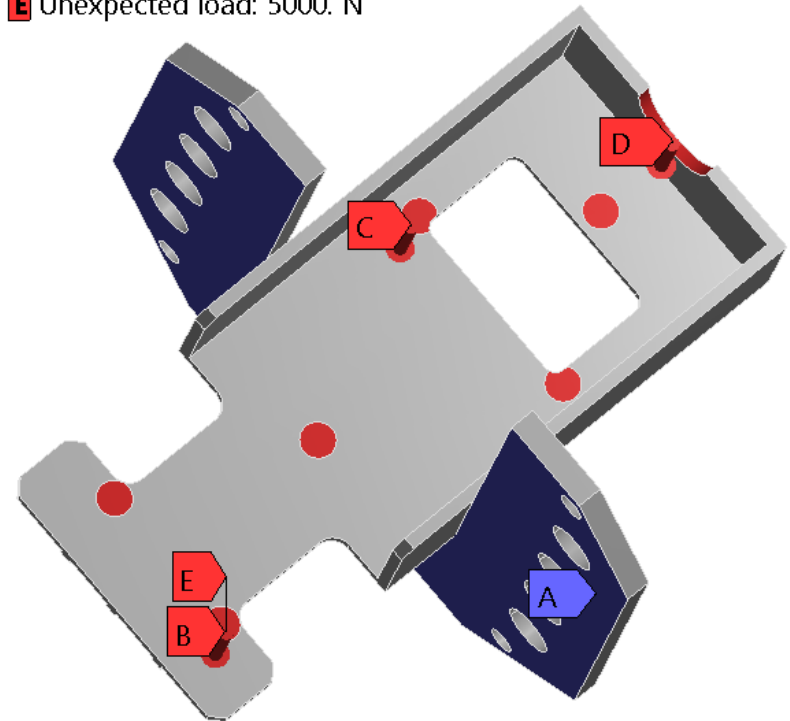
	CMS VAX upstream	CMS VAX downstream
Calculations accuracy [mm]	1	1
Manufacturing accuracy [mm]	1	1
Alignment accuracy [mm]	1	1
Measurement accuracy [mm]	1	1
Heat expansion [mm]	1	1
Installation/ deinstallation	1	1
Total [mm]	6	6
Safety [mm]	-1.57	0.05

VAX's chassis numerical analysis



C: V0.02
Static Structural
Time: 1. s
18/08/2016 11:20

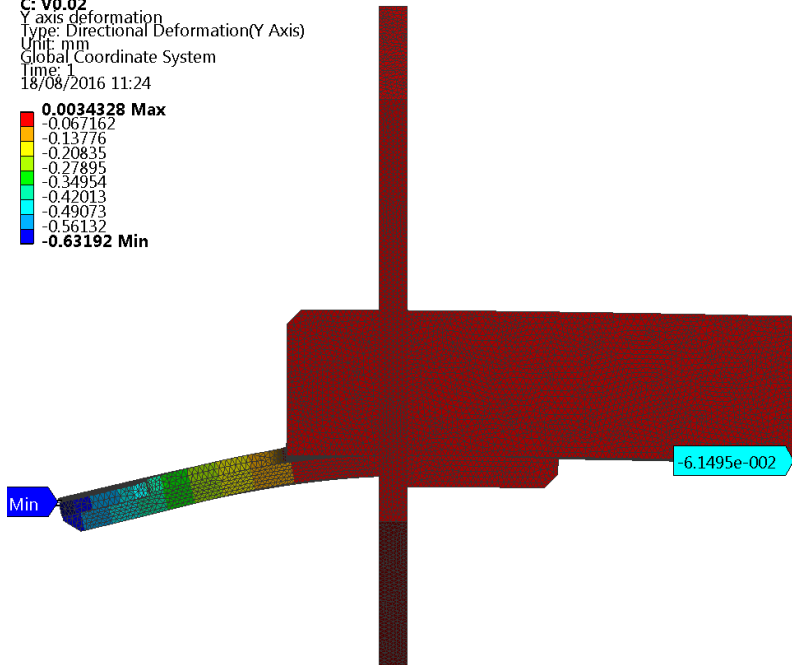
- A** Fixed Support
- B** Upstream load: 1020. N
- C** Downstream load: 600. N
- D** Pipe 2: 1800. N
- E** Unexpected load: 5000. N



VAX's chassis numerical analysis

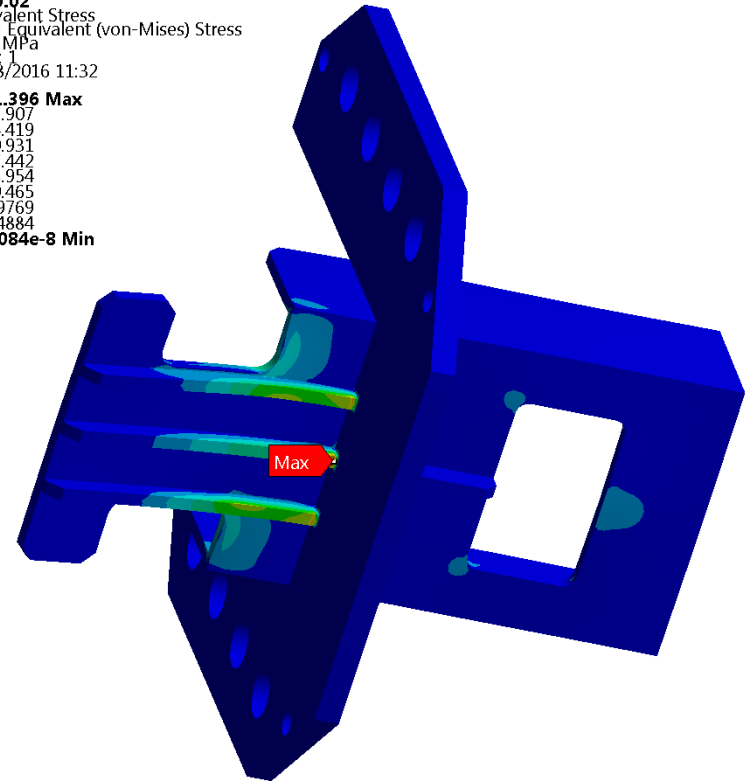
C: V0.02
Y axis deformation
Type: Directional Deformation(Y Axis)
Unit: mm
Global Coordinate System
Time: 1
18/08/2016 11:24

0.0034328 Max
-0.067162
-0.13776
-0.20835
-0.27895
-0.34954
-0.42013
-0.49073
-0.56132
-0.63192 Min



C: V0.02
Equivalent Stress
Type: Equivalent (von-Mises) Stress
Unit: MPa
Time: 1
18/08/2016 11:32

31.396 Max
27.907
24.419
20.931
17.442
13.954
10.465
6.9769
3.4884
3.084e-8 Min



Conclusions:

- Maximum deformation: 0.63 mm
- Maximum stress: 31.4 MPa
- Min. safety factor: 10



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