

Remarks on the FDR design of the FOS vacuum diagnostic chamber FPF2DK1:

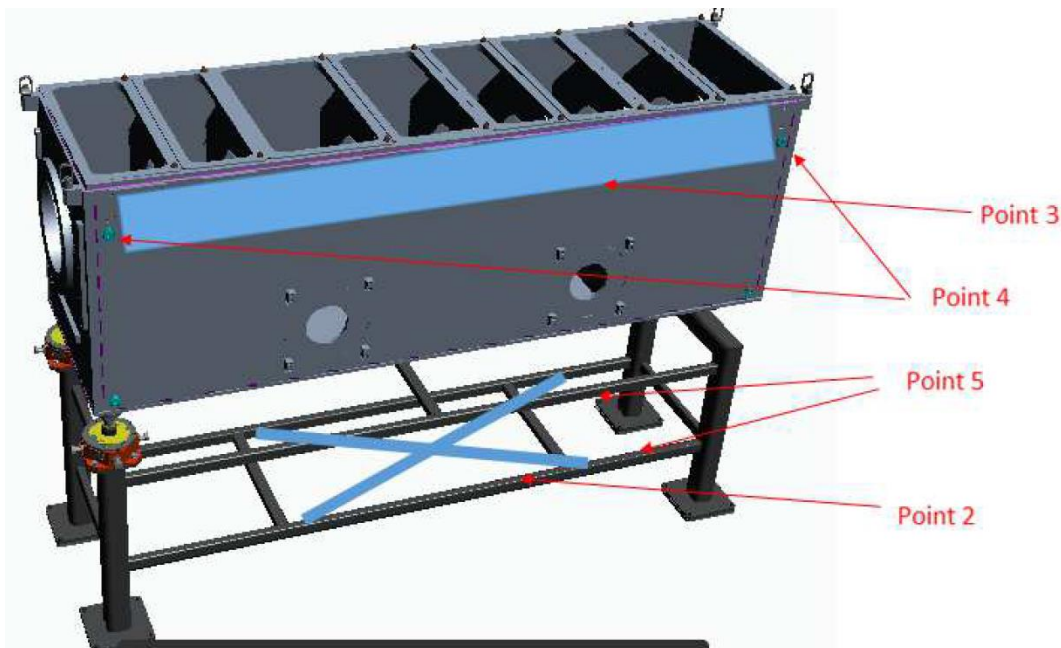
From Engineering Office, Martin Gleim:

the report on drawing inspection and comments on the scanned drawings indicate that there is still a room for improvement. But the drawings are fine in general.

- 1) When assembling the vacuum chamber, information for the leak rate and cleaning is missing.
- 2) For the individual parts of the vacuum chamber, the material specification is only "Stainless Steel". This should be specified in more detail.
- 3) In some cases, machined surfaces which are not sealing surfaces were indicated with a surface roughness of Rz 6.3 microns. Please specify Rz 25 microns for such areas.
- 4) In the case of a flange, the position tolerance of the threaded holes is missing.
- 5) The base frame looks somewhat fragile compared to the vacuum chamber.
- 6) The horizontal struts of the frame have only a general tolerance. With the longest strut of 3080mm, a difference in length of 4mm is expected in the worst case.

Some drawings have recurring spelling errors.

From Super-FRS technical group, Christos Karagiannis:



1). The alignment feet of the chamber are placed at the corners or at the edge of the chamber. This could allow a larger bending of the chamber. Are there any calculations of the chamber bending /strength by fully equipped chamber (8 drives x750kg each) under vacuum? What is the max bending of it?

2). The struts of the chamber stand are not cross reinforced. Are there any strength calculations?

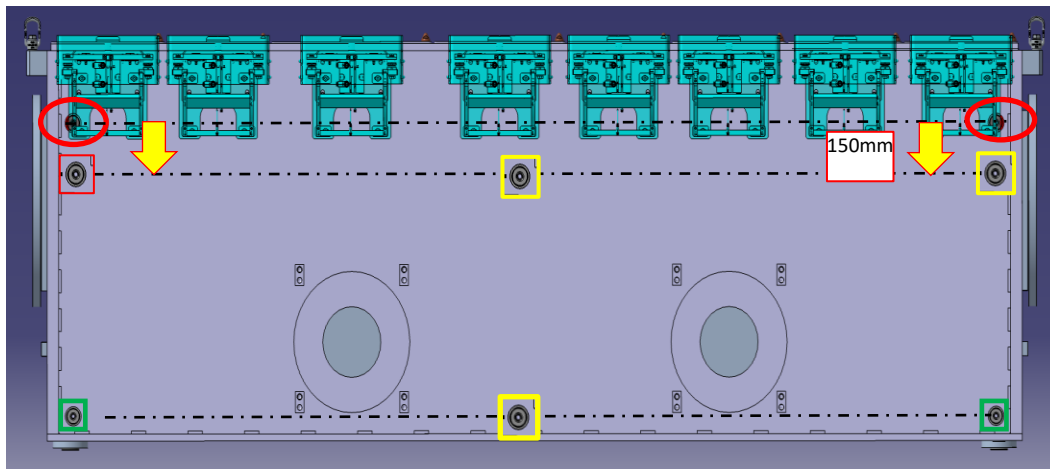
3). *Suggestion*: the holder plates which are carrying the threads for the media boards and are welded at the side of the chamber could be exchanged with one long one along the chamber. Single plates were suggested by us, but the long plate has some advantages for the welding and positioning against several single plates.

4). The position of top fiducial holders placed at the media board side are not useful. There are the media boards with cables and tubes and I think these fiducial holders should be moved. We should ask the alignment group for that.

5). At the media board side, we should foresee some threads along the support for cable management. All cables come from the back side of the chamber from the floor till up to the media boards.

From the alignment group, Alexander Bergmann

during the DMU examination of the current chamber FPF2DK1, I have noticed that the upper fiducials on the chamber are positioned too close to the media boards and are expected to collide. Furthermore, two more fiducials are wished in the middle of the chamber.



Therefore, DMU propose to move the upper fiducials 150mm down and to add 2 fiducials (top & bottom) in the middle.

From the alignment group, Velonas Vasileios

1). We want at least two more fiducials at the middle of the chamber in order to control, if necessary, the deflection of such a large chamber.

2). We have to be careful on which side the fiducials are attached, namely looking toward the tunnel side (not to the aisle side).

Remark on a sequence of a serial production of the diagnostic chambers.

The proposed sequence of production is:

FoS – the vacuum chamber FPF2DK1 and its support, then

Serial Production – **1st- FLF6DK1, 2nd- FMF1DK1**, then a copy of FPF2DK1, then FPF3DK1, FPF4DK1, FMF2DK1, FMF2DK2, FMF2DK3, FMF3DK1, FHF1DK1, FHF1DK2, FLF1DK1, FLF2DK1, FLF3DK1, FLF4DK1, FLF5DK1, FRF1DK1, FRF2DK1, FRF3DK1.

The last chamber FTF1DK1 to be cylindrical.

The FoS chamber together with 1st-of-series FLF6DK1 and 2nd-of-series FMF1DK1 cover all types of flanges. The latter two may hosts all types except the F550 which is for Disk Degradator only.

Table. All types of custom flanges on top of diagnostic chambers of Super-FRS (first column). Chambers proposed to be produced first: FPF2DK1, FLF6DK1, FMF1DK1 with number of flanges.

Flange type	Chamber FPF2DK1	Chamber FLF6DK1	Chamber FMF1DK1
F350	2	-	1
F390	4	-	1
F450	1	1	2
F550	1	-	-
F630	-	-	1
F750	-	1	-