

## Minutes

### EN/MME Meeting for HL-LHC CRAB CAVITIES

Monday, 19th October 2015

Room 376/1-020

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Scope: regular meeting for the HL-LHC CRAB CAVITIES (WP4) Project at EN/MME

Attendees: Kurt Artoos, Elisa Cantergiani, Teddy Capelli, Luca Dassa, Konrad Eiler, Eugenie Gallay, Marco Garlasche, Laurene Giordanino, Raphael Leuxe, Carlo Zaroni

#### **Helium tank proto:**

Luca reported that the use of the T tube during the test makes the equipment fall in the Category 2 classification. He will discuss the consequence with HSE and report any further calculation/modification/test needed. Indeed, the T tube will require to be calculated, the weld location has to be indicated on the drawings and the material certificates must be retrieved.

The assembly is supposed to start Thursday the 22<sup>nd</sup>. Eugenie said that if they manage to finish before the 28<sup>th</sup> the equipment for dimensional control will be free avoiding further delays. She would also need a confirmation of the E modulus of the material of the screws.

#### **Cavities:**

Marco confirmed the DQW will be the cavity concept to be produced at CERN.

#### **Magnetic and Thermal Shields:**

Carlo showed the analysis performed to validate the previous calculations done in UK. The results are similar. The warm magnetic shield alone is able to decrease the value of the field from 60  $\mu\text{T}$  to 2  $\mu\text{T}$ , whereas the requirement is 1  $\mu\text{T}$ . The design of the shield compliant with the new vacuum vessel shape is performed by Nik at STFC. One of the open points is the possibility of leaving gaps between the top plate and the rest of the shield. Carlo underlined that the analysis performed so far are not very detailed in terms of shape. He will support Nik with some analysis – CERN has Maxwell licenses, which are not available to Nik- and double check the excitations.

The thermal shield is also under design. A 2D model used as first iteration and for identifying the major issues and all the loads was used. The loads will be discussed together with Fede. Carlo will work on advancing on this design and will interface with Nik and Tom in UK.

### **Alignment and support system:**

A quick summary of the discussion that took place with Tom on Friday the 23<sup>rd</sup> was reported. One of the main concerns is the deformation of the support system (blades + FPC) when a translation and/or a rotation are applied. Carlo and Teddy will narrow the uncertainty on the stiffness of the bellows, update the rough estimation (which shows a deformation of 10-15% of the applied displacement/rotation) available and pass the info to Tom.

### **Actions**

- Discuss with HSE issues concerning the safety of the He tank prototype → Luca
- Assess the stress in the T shaped tube for the tests → Norbert
- Updates on the drawings of the prototype → Raphael
- Retrieve material certificates for the aforementioned tube → Paula
- Provide screw E value to Eugenie → Luca, Raphael
- Interface with Nik in order to support the calculations for the Thermal and Magnetic shielding → Carlo
- Investigate the effect of gaps in the magnetic shield → Carlo
- Provide the 3D model of the vacuum vessel to everybody for the needed calculations (stress assessment and design of the shields) → Teddy
- Analyze the thermal shield in order to get a more mature design → Carlo (calculations), Thomas (design)
- Provide updated heat loads for the thermal shield design → Fede

Next meeting: Monday the 26<sup>th</sup> of October in room 376/1-020.

*Minutes taken by Carlo.*