CERN HL - LHC CRAB CAVITIES EN

Minutes

EN Meeting for HL-LHC CRAB CAVITIES

Monday, 23th November 2015

Room 376/1-020

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

Attendees: Alexandre Amorim Carvalho, Kurt Artoos, Rama Calaga, Ofelia Capatina, Teddy Capelli, Luca Dassa, Konrad Eiler, Paula Freijedo Menendez, Marco Garlasche, Laurene Giordanino, Michael Guinchard, Norbert Kuder, Raphael Leuxe, Mateusz Sosin, Giovanna Vandoni, Carlo Zanoni

Cavities:

- Raphael updated on the recent meeting on trimming and welds positions, that is part of the definition of the manufacturing drawings of the cavity
- One plan B, but really unwelcome, is the production of the inductive rings from bulk
- Orders to be launched soon with Ningxia and Tokyo Denkai

Tank Prototype:

- 2nd weld step is on-going
- The temperature has been measured at both the interface with the magnetic screen and screw locations (reatek and thermos-couples used):
    - Shield interface: 190 – 250 C
    - Exterior: 330
    - Screws : 180

      Michael underlined that the values at the screws position may be underestimated. The effect on the sensors will be verified soon.
- The continuation of the plan provides finishing the welds, except for the caps, evaluate the effect on the sensors and then weld the caps, which have been proved not being a threat to the proper functioning of the sensors.

HOM:

- Launch feedthrough production

Ti – SS join:

- Standard practice is the use of a nickel layer. However, nickel is ferromagnetic and its effects should be carefully considered
- Other options are the use of copper or tantalum
- The best choice for titanium is the grade 1, which, however, is easily weldable on Ti gr.2.

Review:

Most of the meeting has been dedicated to discussing the outcome of the review.

- Ofelia and Rama have integrated the presentations with a dedicated discussion during Wednesday morning (11/11) on the schedule and the SPS tests
- The reviewers were impressed by the amount of work and the results obtained. The technical direction also sounds right.
- On the other hand, the schedule appears to be very tight.
- There's a risk on the general coherence of the project and on losing the design optimization due to the large number of people involved and the fact that many of us are part-time or short-term.
- The reviewers didn't find and show-stopper in the design
- However they highlighted the absence of a set of minimum acceptance criteria, which is of key importance

As far as this introduction is concerned:

- Giovanna highlighted the importance of creating culture and of having a general overview of the design, to guarantee the global optimization
- She also underlined the importance of having all WP4 working as the engineering side is doing
- The previous experience, such as the one from ISOLDE, should also be used
- Ofelia reported that F. Bertinelli strongly suggests avoiding considering too many options and follow a certain design path without hesitation, in order to be able to meet the tight deadline
- Kurt finally remarked the importance of documenting the work. He also suggested to follow Carlo's guideline of using presentations as draft documents when a report is not ready or not needed. EDMS folders must provide info on every piece of equipment. The point is sharing information, not paperwork.

The discussion continued then with comments on the indications on the individual systems:

- Regarding the alignment monitoring system, the reviewers said the system may be risky and expensive towards LHC. Our feeling is that such a system does not add

particular risks (if the thermal loads are confirmed). In terms of price, this is something expected to decrease thanks to time and scale economies.

- The FPC will be reviewed during a future workshop on similar devices
- The tuner system will be reviewed in a dedicated event comprising trimming and cavity pretuning
- The low-stiffness of the supports is not considered low by us (and the value doesn't seem to be an issue). However, the possibility of having a thicker FPC will be explored along with an assessment of the effect of the tuner on the cavity alignment. Similar assessment should be done on the forces due to vacuum.

Actions

- Estimate the effect of nickel near the magnetic shield (explosive bonding) → Carlo
- Share CM deliverable and specs with reviewers → Carlo
- Trigger discussion on minimum acceptance criteria → Carlo, Giovanna
- Define minimum acceptance criteria→ Rama, Kurt, Carlo, Giovanna
- Verify the effect of the tuner on the cavity alignment→ Kurt, Norbert
- Verify vacuum and reaction forces on the dressed cavity→ Norbert, Carlo

In order to put together a list of open actions obtained through the review, everybody should send Carlo the relevant info that has noted during the review.

Next meeting: Monday the 30th of November in room 376/1-020.

Minutes taken by Carlo