

Minutes

EN/MME Meeting for HL-LHC CRAB CAVITIES

Monday, 26th January 2015

Room 112/2-023

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

Attendees: Kurt Artoos, Teddy Capelli, Luca Dassa, Marco Garlaschè, Norbert Kuder, Raphael Leuxe, Paula Freijedo Menendez, Carlo Zanoni

General

Luca reported the results of the visit at DESY (DE) focused on understanding how to deal with the Pressure Equipment Directive (PED) while designing and manufacturing cavities. The details of the visit and the open points will be summarized in a report that will be circulated among all the members of the group. The presentations shown at DESY can be found in <https://edms.cern.ch/document/1464579/1>.

Tuning

Kurt reported that the calculations for pre-tuning are on-going (Action → Kurt). Also, he has in mind to propose the use of belts for static re-tuning of the cavity (on top of the static contribution of the tuning system). The belts are metal stripes that wrap the cavity up and are adjusted in length for static tuning.

Helium Tank

The preparation of the model for calculation is going on (Action → Norbert). Both Luca and Carlo asked to divide the simulations in sub-problems (e.g. leak welds resistance, bolts, stresses on cavity...) in order to have an easier understanding of the results.

Raphael updated on the status of the design. Among all, the screw lengths have now been uniformed and the interface with both the pick-up and the dummy beam tube are under discussion (Action → Raphael). Unfortunately, the black-out made impossible the presentation of the 3D CAD.

Also, Raphael reported that he's going to design two different He tanks: one for TiG welding and one for EBW. Finally he reported that according to the workshop even the welds made for leak tightness may still introduce deformations in the final shape. Luca underlined at this

point the importance of running tests for a better understanding of the behavior of materials when analysis and FE are not helpful enough.

Carlo summarized the difficulty in being compliant with the thermal budget and with a high 1st mode frequency of the two cavities. The use of G10 as support material has been explored, but doesn't solve the problem. The plan now is to define the support system in stainless steel and then deal with the thermal load with intercept points (Action → Carlo). Luca asked on the use of a tube instead of rods, as a tube would have a larger flexural stiffness that up to know is not exploited. The approach so far has been the use of rods and joints that behave better during cool down (i.e. contraction).

HOM

Teddy is still discussing some details for the final design. He reported that according to the workshop the use of a bellow would be advantageous in order to deal with the deformations due to the welding process.

Next meeting: Monday the 2nd in room 376/1-020.

Minutes taken by Carlo.