HL-LHC Collimators:
Design, Engineering and Prototyping #18
Minutes

Friday, 2nd March 2018

112-2-023

Attendees: A. Bertarelli (AB), F. Carra (FC), L. Gentini (LG), A. Lechner (AL), M. Calviani (MC), A. Mereghetti (AM), J-P. Corso (JPC), S. Pelletier (SP), M. Pasquali (MP).

AGENDA:

- Approval of minutes from previous meeting and review of action list;
- Update on thermal calculations of passive absorbers for IR7 magnets
- Update on design of passive absorbers for IR7 magnets
- Open discussion on passive absorbers for IR7 magnets
- AOB.

1) *Approval of minutes from previous meeting and review of action list*

Minutes checked and approved.

2) *Update on thermal calculations of passive absorbers for IR7 magnets*

MP presents the results of the new thermal simulations performed on the passive absorbers, taking into account a 0.2h BLT scenario with a peak value of the losses of 8.8E11 p/s applied for 10 s, instead of the previously analysed 1h BLT case with a steady load of 7.9E11 p/s. The maximum bulk and surface temperatures obtained are T_{bulk} = 58°C and T_{surf} = 50°C, respectively, against the previous values of T_{bulk} = 155°C and T_{surf} = 128°C. No need for additional active cooling is therefore ascertained.

3) *Update on design of passive absorbers for IR7 magnets*

LG shows the new design for the passive absorbers: it features five blocks of 0.5 m of length each for a total of 2.5 m, against a previous length of 2 m. Each block is divided horizontally in two parts, the lower one being able to be adjusted in height and tilt thanks to some adjusting rods and featuring some guiding shafts enabling the upper part to correctly slide towards it without bumping into the beam pipe. MC suggests to remove 5 additional millimetres from the block side, increasing the distance from the beam pipe to 8 mm (**action L. Gentini**). Moreover he proposes to insert a groove in the blocks in the region above and below the beam pipe passing through them to be able to host some

endoscopes to check the beam pipe – absorber interface (**action L. Gentini**). AL states this should not affect the shielding capabilities of the absorber. The constitutive material should be structural steel with a zinc coating.

4) Open discussion on passive absorbers for IR7 magnets

To ease its installation, AB suggests to realize the whole absorber in two parts, merging together, respectively, all the upper and lower parts of each block. This would cause the weight of the two resulting parts to exceed the 1000 kg limit prescribed by SP for transport and manoeuvre. As a result, AB suggests to design one whole lower part lighter than 1000 kg and to split the previously proposed single upper part into two blocks weighting less than 1000 kg (**action L. Gentini**). The installation of the absorber is foreseen to take place during the first or second quarter of LS2.

AOB:

- Nothing to report.

ACTIONS

Update the design of the absorbers taking into account the suggestions emerged during the meeting (**action L. Gentini**);