

Status of the CBM STS CAD design

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A virtual model of the planned CBM STS detector system gets designed in the CATIA CAD software in full detail [1]. It is used to visualize the space dependencies of all sub-systems like mechanics, electronics and cooling. In this report the status of the work on this model is shown.

Repository

Several people of the CBM STS collaboration work with the CAD model. Since they work in different institutes all over the world a platform was needed to enable collaborative work. As control system Subversion was chosen because of the instant availability and the ease of use. GSI hosts a Subversion server on which all CAD files are now located. This Repository not only gives access for everybody involved but also brings file versioning and backup.

Sensor layout

The sensor layout has been improved in the area around the beampipe and in the outer edges at the large stations. To optimise the amount of different parts and lengths of cables the readout electronics have been re-arranged to appropriate positions (see Fig. 1 and Fig. 2). Now only 16 different lengths of carbon ladders are needed.

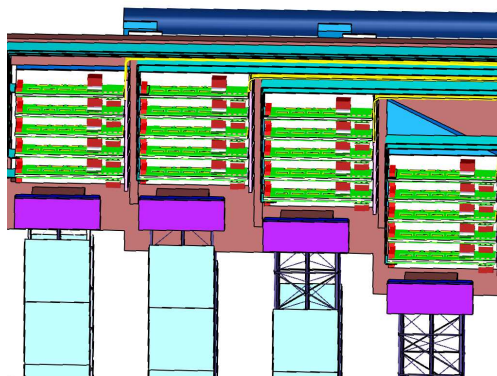


Figure 1: Detailed view of the upper end of ladders. Space between uppermost sensor and electronic not optimised for cables lengths (not shown).

Cooling plates

The detailed construction of the cooling plates has started (see Fig. 3). Different manufacturing methods and their influence to the shape of the plates were considered.

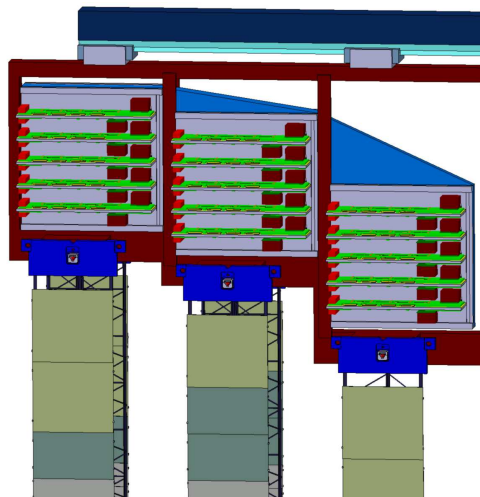


Figure 2: Detailed view with re-arranged electronics. Distances between sensors and electronics shorter and more regular.

Two special joining processes (with and without additional material) for aluminium are tested. At first two different sizes of plates are designed to prove the desired cooling power, pressure stability and the reliability of the production process.

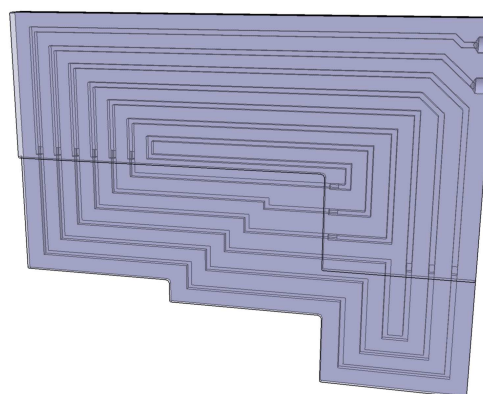


Figure 3: Semi-transparent view of a cooling plate. Length of inside channel is more than 5 m, cross section 4 × 4 mm. Connectors will be at the upper right corner.

References

- [1] S. Belogurov, A. Kolosova and J. Kunkel, CBM Progress Report 2013 (2014), p. 46