**MT29 Abstracts and Technical Program** 



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## Wed-Af-Po.09-04: Magnet design activities at CEA for EU-DEMO new baseline

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In 2024, a new EU-DEMO baseline was released which changed substantially the constraints on the magnets systems. In particular, the stored energy of the TF system is about half of the former baseline value, which is bound to impact the magnetic loads as well as the coils protection.

After summarizing the main changes in the design inputs, this paper will present the changes implemented in the MADMACS design toolbox, in particular to include the fatigue analysis in the pulsed CS magnet. Fatigue hypotheses will be briefly discussed, including some sensitivity analysis with respect to the parameters and safety factors used.

We will then present the magnets internal structure (winding pack, cable etc...) obtained using this toolbox, and the preliminary detailed studies made to confirm these designs. In particular, we will focus on the benefit of adding layers of HTS conductor in a hybrid CS design.

We will conclude with some proposals regarding the developments still needed to interface HTS conductors with pulsed fusion magnets.

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