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## Update on FCC electrical network and grid connection

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The electrical infrastructure for the Future Circular Collider will be composed by a multi-layer transmission and distribution network covering all the power needs of the accelerator.

The study for the network considers as main inputs the known users' requirements and the target load figures of FCC-ee, the power availability of the electrical grid of the surrounding area and its long-term evolution roadmap; furthermore, the study aims to determine the minimum set of features for the operability, reliability and maintainability of the network.

Starting from the baseline presented in the CDR of 2018, the network has now been updated on the new layout of the machine and on the latest users' requirements, and the technical solution under development foresees a high voltage transmission level and a medium and low voltage distribution level.

The high voltage level is conceived to be fed by three connections to the French grid (RTE). The connection points have been selected based on a preliminary check on the availability of RTE to provide the required power, on the total load profile per point, and on achieving a balance and a symmetry in the internal transmission, that will route cables in the accelerator tunnel connecting all the eight points. The analysis will also identify the best possible topology to allow the evolution to FCC-hh.

The distribution level dispatches the power from the transmission grid to the end users at medium and low voltage. The baseline, as already presented in the CDR, uses conventional AC schemes. It will be further developed once the study of the transmission network will be finalized and the users' requirements more detailed. Furthermore, emerging new technologies based on DC schemes are under study and could provide new options to improve the power quality and efficiency of the electrical distribution.

The aim of the presentation for this FCC week is to provide an update on the status of the studies mainly focused on the high voltage transmission network development and on the setup proposed for the connection to RTE grid.

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