



Contribution ID: 255

Type: Oral presentation (by invitation only)

DC Networks for the Powering of the FCC-ee and FCC-hh

Thursday 8 June 2023 09:24 (18 minutes)

With the advent of power electronics in recent years, DC networks have become an interesting solution for the distribution of electrical energy due to their advantages in terms of efficiency, controllability, volume reduction, and integration of energy storage. Considering the particularities of the FCC, DC networks could be used to supply power to specific machine parts.

At a larger scale, DC networks could transfer power around the machine's circumference, reducing the required cable section and improving active and reactive power control. At the access point level, DC networks could reduce the number of conversion stages, increasing overall efficiency. Additionally, the use of high-frequency transformers and DC cables with lower voltage drops could contribute to reducing the required volume.

This presentation will showcase the available technologies for constructing such a network and the primary challenges that must be addressed to enable the grid's construction.

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Session Classification: Technical Infrastructures

Track Classification: Technical Infrastructures