

## **The EU DEMO Plant Electrical System: Issues and perspective**

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### **Abstract**

In the EU DEMOnstration power plant, the Plant Electrical System (PES) is one of the largest systems; its scope covers the electrical power generation and the Power Supply (PS) systems necessary for supplying all the plant loads. The studies conducted so far have been addressed to understand, on the one hand the specific design challenges with respect to an equivalent system for a fission power plant of similar size and on the other hand the additional issues with respect to the ITER electrical system. In order to satisfy the power needs for the DEMO operation, minimizing the requests from the power transmission grid (PTG), and in particular high peaks of active power and huge amount of reactive power, a R&D program has been launched to explore suitable electrical energy storage systems and advanced power converter topologies to maximize the energy exchange within the plant. This paper gives an overview of the DEMO PES main requirements and system architecture and of the progress of the studies conducted. Particular focus is given on the main issues to be faced, the paths taken to address them, the preliminary results achieved and on a plan of design activities and R&D tasks to explore promising technologies and design solutions to achieve a comprehensive conceptual design in the next Framework Program.