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Wed-Mo-Po3.01-01 [1]: Conceptual Design and Analysis of the DDT PF Coil System

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The DDT (Divertor Tokamak Test) machine is under construction at the Frascati research center of ENEA and is aimed to investigate the possible divertor solutions for the management of power and particles exhaust for the EU-DEMO tokamak. Its Poloidal Field coil system is constituted by 6 magnets, identical in pairs as the machine is foreseen to be fully symmetric to allow for plasma configuration in the single null (SN) as well as in the double null (DN) scenarios. The PF1 and PF6, will be wound by Cable-in-Conduit conductors (CICC) cabled with Nb3Sn strands, answering to the request of magnetic fields up to about 8 T, as well as to reduce their occupancy in favor of mechanical structures and to leave room for the large ports at the polar regions, while the PF2/5 and PF3/4 are designed with NbTi CICC, being the project request in terms of field less stringent.

In this paper, the last progress in the conceptual design and analyses of the 6 Poloidal Field winding packs are illustrated, and the technical solutions to satisfy the high flexibility of the DDT tokamak with respect to the various operative scenarios foreseen in the present fusion experimental project are discussed.

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