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Engineering Aspects and Physical Research Program of the Modernized T-15 Tokamak

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The project of the T-15 tokamak modernization is now starting to be implemented at the Kurchatov Institute. The main objectives of the research program of the modernized T-15 are: steady-state operation; real time plasma current and pressure control in order to increase ßN (Advanced Tokamak operation); analysis of Te/Ti effect on the confinement properties; studies of the effects of Zonal flows on transport and confinement and the role of the radial electric field Er in confinement; plasma turbulence studies; investigations of MHD effects and disruptions; plasma edge physics; liquid lithium wall experiments; divertor optimization and first wall materials investigations under reactor-like power load on the divertor plates.
To meet this challenges the new device should be equipped with state-of-art diagnostics, real time plasma control, auxiliary heating and current drive systems. Therefore in the vacuum vessel design special attention was placed on the convenience for the diagnostics and heating systems.
The paper will describe the design features and present construction status of the T-15 upgrade. The research program foreseen for the initial operation phase will be discussed.

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