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P4.155 A design study of vacuum vessel and pumping system for COMPASS-U Tokamak

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In Early 2018 a new challenging project of building unique Tokamak device Compass-U has begun. Apart from others, the technical attributes will include elevated operating temperatures of vacuum vessel and plasma facing components, active cooling of temperature sensitive diagnostics, cooling of the magnetic coils to LN temperatures and etc. The listed requirements of operating parameters pose high demands and difficulties on the design and performance of the whole vacuum system of the experimental chamber and its cryostat.

In the presented contribution we discuss the conceptual design of vacuum vessel and related vacuum pumping system. Due to the elevated temperature of the vessel wall and plasma facing components, the integral outgassing rate of in-vessel components and the vessel itself had to be estimated. Preliminary calculations of the pump down curves was numerically calculated in order to achieve optimal operation parameters before discharge in reasonable times. These preliminary results are compared with respect to experiences achieved during operation of the existing device Compass.

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