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Prebaking of T-15MD vacuum vessel

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Presently, the Tokamak T-15MD is being built in the NRC “Kurchatov Institute”. Vacuum vessel was manufactured and passed the preliminary vacuum tests at the plant in St. Petersburg (Efremov Institute) in 2016. Vacuum vessel consists of toroidal shell made of a 321 stainless steel of 5 mm and 8 mm thick, horizontal and vertical ports (152 in total), in-vessel elements. The chamber volume is 47 m³ and a surface square faced to plasma is ~ 200 m². The purpose of vacuum vessel prebaking is the checking of quality of the numerous welds and a workability of the control system. To bake the vacuum vessel up to 220°C at the plant in Bryansk, the ohmic heaters (a single 1.2-mm diam. Ni-Cr alloy wire, housed inside a stainless-steel 6-mm diam. shell, with a magnesium oxide ceramic insulator) have been laid on vessel shell surface both outside and inside. The thermal insulation (cases with mineral wool) closed the vessel surface outside. The surface temperature is controlled by thermocouples. The currents through the heaters are regulated by means of control system. The temperature data processed and stored by means of the data acquisition system. The results of vacuum vessel baking are presented.

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