

The first results on the injection of the HF-radiation from the gyrotron into the vacuum chamber of the T-15MD tokamak

I. S. Pimenov, A. A. Borschevskiy, E. R. Akhmedov, S. V. Neudatchin, V. N. Novikov, V. N. Pavlov, I. N. Roy, N. V. Shapotkovsky and I. N. Khromkov

NRC “Kurchatov Institute”
1 Akademika Kurchatova pl., Moscow, 123182, Russia
E-mail: Pimenov_IS@nrcki.ru

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This paper presents the results of two phases of the final tests (end of 2021 – beginning of 2023) in preparation for the first experiments with circular plasma on T-15MD tokamak. At this stage the HF-heating system (gyrotron set-up) of the tokamak is equipped with one gyrotron with an operating frequency of 82.6 GHz and an output power of about 1 MW. A focusing HF-launcher has been installed, which can be used both for breakdown the working gas and for heating the plasma. The implementation of the breakdown is planned on the second harmonic in extraordinary mode (X-mode). The tests carried out on the gyrotron set-up included the adjustment of the evacuated mirror-waveguide transmission line, the total length of which is 37 m and measurements of HF-power losses before entering to the tokamak vacuum chamber. Measurements of the gyrotron power was done by calorimetric method while the value of the waveguide transmission coefficient was not less than 0.9.

Keywords: gyrotron, ECR heating, waveguide path, calorimetric measurements, tokamak.

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