STATUS OF TOKAMAK T-15MD [[1]](#footnote-1)\*)

DOI: 10.34854/ICPAF.2023.50.2023.1.1.015

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The T-15MD tokamak, the main feature of which is the combination of a low aspect ratio (A= 2.2) and a high toroidal magnetic field, B= 2.0 T, is designed to operate with cross-sectional plasma with ellipticity 1.8 and triangularity up to 0.4 at R=1.48 m, a=0.67 m and plasma current up to 2.0 MA [1]. By 2026, the installation will be equipped with an additional heating complex unique for domestic tokamaks: electron-cyclotron heating and current drive with a power of 5 MW, injection of neutral atoms with a power of 6 MW, heating and current drive with 4 MW low-hybrid waves, heating and current drive at 6 MW ion cyclotron resonance frequencies. After the physical start-up of the T-15MD tokamak in May 2021, work on the power supply of the installation from the CHP-16 of Mosenergo JSC has been begun. By December 2022, the connecting of all electrical equipment from sub/station No. 745, 110/10 kV, 300 MVA to the T-15MD tokamak electromagnetic system was completed. Protective graphite tiles installed in the chamber. The vacuum waveguide path for the input of the pre-ionization gyrotron power has been fully installed and adjusted, a microwave power of 1 MW has been introduced into the tokamak chamber for 50 ms. A system for monitoring the radiation situation has been created, with the registration of the intensity of hard gamma and neutron radiation, both in the installation zone and beyond. Conditioning of the discharge chamber have been conducted, including ohmic heating and glow discharge.

The diagnostic complex of the installation provides a wide range of various diagnostics that allow for a wide range of fundamental and applied research in the field of tokamak physics. Currently, diagnostics of the starting minimum, including electromagnetic, spectroscopy in the visible area of the spectrum, diagnostics of radiation losses and soft X-rays have been prepared and installed on the tokamak. To measure the plasma density at the initial stage of experiments, a vertical probing channel of a microwave interferometer with a wavelength of 0.9 mm has been prepared. To monitor the breakdown and development of the plasma column, 3 video cameras were mounted. Diagnostics were connected to the digital registration system for the implementation of the initial phase of plasma experiments. The preparation and testing of the discharge scenario for the implementation of the initial phase of experiments in the T-15MD plasma control system were conducted.

The power start-up and first plasma experiments are planned to be carried out in December 2022 -1 sq. 2023.

Reference

1. P.P. Khvostenko, I.O. Anashkin, E.N. Bondarchuk, N.V. Injutin, V.A. Krylov, I.V. Levin, A.B. Mineev , M.M. Sokolov, EXPERIMENTAL THERMONUCLEAR INSTALLATION TOKAMAK T-15MD // Physics of Atomic Nuclei, 2020, Vol. 83, No. 7, pp. 1037–1057 (2020)
1. \*) [abstracts of this report in Russian](http://www.fpl.gpi.ru/Zvenigorod/L/R/ru/KL-Anashkin.docx) [↑](#footnote-ref-1)