

Status of KSTAR 170 GHz, 1 MW Electron Cyclotron Heating and Current Drive System

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A 170 GHz Electron Cyclotron Heating and Current Drive (ECH/CD) system on KSTAR is designed to launch total 2.4 MW of power for up to 300 sec into the plasma. At present the first 1 MW ECH/CD system is under installation and commissioning for 2011 KSTAR campaign. The 170 GHz, 1 MW, 300 sec gyrotron and the matching optics unit (MOU) will be provided from JAEA under collaboration between NFRI and JAEA. The transmission line consists of MOU and 70 m long 63.5 mm ID corrugated waveguides with the eight miter bends. The 1 MW, 10 sec launcher is developed based on the existing two-mirror front-end launcher in collaboration with Princeton Plasma Physics Laboratory and Pohang University of Science and Technology, and is installed on the low field side in the KSTAR equatorial plane. The mirror pivot is located at 30 cm below from the equatorial plane. 3.6 MVA power supply system is manufactured and now is under commissioning to meet the triode gun operation of JAEA gyrotron. The power supply consists of 66 kV/55 A cathode power supply, mode-anode system, and 50 kV/160 mA body power supply. In this paper, the current status of KSTAR 170 GHz, 1 MW ECH/CD system will be presented as well as the experimental plan utilizing 170 GHz new ECH/CD system.