

## DEVELOPMENT OF KSTAR IN-VESSEL COMPONENTS AND HEATING SYSTEMS

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The in-vessel components of the Korea Superconducting Tokamak Advanced Research (KSTAR) mainly consists of Plasma Facing Components (PFCs), divertor, In-Vessel Control Coil (IVCC), and In-Vessel Cryo-pump (IVCP) as shown in Fig. 1. Because most in-vessel components mentioned above have not been installed in the construction phase, inside of the vacuum vessel is now under dramatic change for preparation of the KSTAR 2010 campaign. After finalization of engineering design for the in-vessel systems in 2009, rigorous fabrications and installations of the in-vessel components are in progress. The in-vessel system is to be installed by end of May 2010 before start of operation that is planned to start from June 2010.

The KSTAR heating system includes all of the most important ancillary systems such as Neutral Beam Injection (NBI), Ion Cyclotron Range of Frequency (ICRF), Electron Cyclotron resonance Heating and Current Drive (ECH & ECCD), Lower Hybrid Current Drive (LHCD) systems. Although it will take quite long time to prepare the final KSTAR heating system up to 27 MW (NBI: 14 MW, ICRF: 8 MW, ECH/ECCD: 3 MW, LHCD: 2 MW), several key systems including first NBI (called NBI-1), ICRF, and ECH start up system come in the KSTAR 2010 campaign.

In this paper, key design features, status, and future plan of both the in-vessel system and the heating system of the KSTAR will be reported in summary.

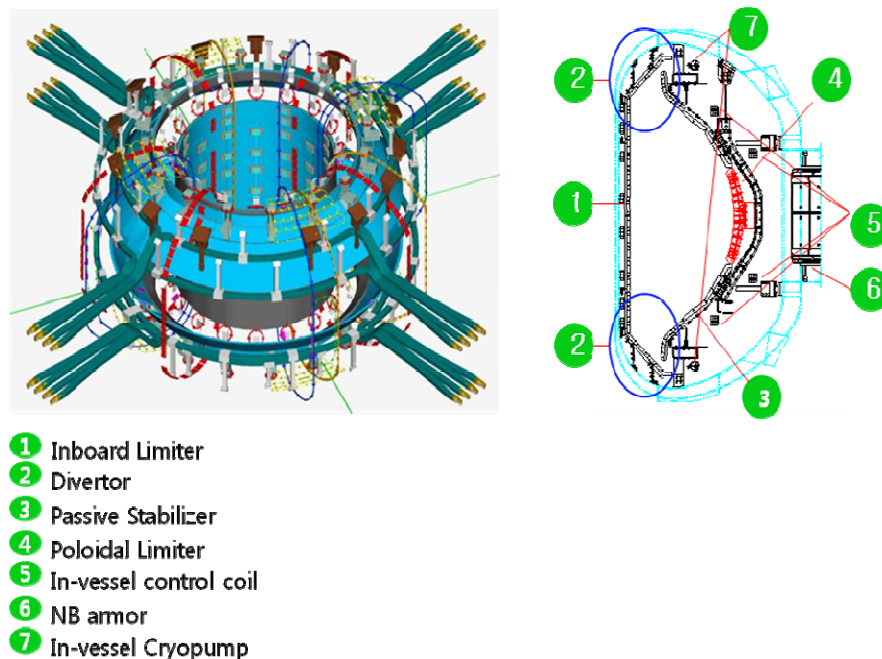


Figure 1: The KSTAR In-vessel System