Recent Progress in the ITER EC H&CD System

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The Electron Cyclotron (EC) system for ITER is an in-kind procurement shared between five parties (EU, IN, JA, RF, US) with the aim of injecting ≥20MW into the plasma for heating and current drive applications. The EC system consists of up to 26 1MW gyrotrons, the associated power supplies, transmission lines and five launchers (one equatorial or EL and four upper launchers or UL). Several modifications from the baseline design have been proposed during the recent ITER design review, which aim at taking into account technology upgrades, increased functionality and possible cost reductions. In addition, modifications in the internal interfaces between the subsystems have been proposed that simplifies the procurements and subsystem requirements. These include changes in the procurement boundaries between the power supplies-gyrotrons, gyrotrons-transmission line and transmission line-launchers. Additional changes in the launcher steering range is under modification to improve the EC accessibility across the plasma cross section for increased applicability of the EC power for heating and current drive applications. A general overview of the ITER EC system is to be presented along with a brief description and status of the above proposed modifications.

Collaborations: The EC section of the IO has been taking steps to increase its collaboration with the domestic agencies involved in the subsystem procurements. In addition, members of the EC community have been periodically called in to support design reviews to ensure an optimized EC system design. The IO is also seeking support for design work using synergies with training programs, an example is the EU EFDA Marie Currie Training program for young engineers, equipping them for future work on ITER. An overview of these collaborations will be reviewed.