BARC develops Control Systems of Ship Borne Terminal for The Indian Space programme

RCnD, BARC has recently completed the design and fabrication of the Servo controller and 3 axis drivesfor the 4.6 mShip-borne terminal to be deployed in support of ISRO's launch and recovery missions. This would now be subjected to further integration, trials and qualification tests at ECIL.

ISRO Telemetry Tracking and Command Network provides TTC (Telemetry, Tracking and Control) support for Launch Vehicles and Spacecrafts for all ISRO missions. BARC and ECIL are developing this

Fig. 1: Antenna Control and Drive Unit Cabinet

indigenous ship borne antenna terminal (SBT) to support ISRO missions which include tracking of re-entry vehicles for future Indian manned missions to space. This 4.6m ship-borne terminal is capable of continuously pointing at the commanded angles and mono-pulse tracking even in the presence of ship's rocking movements.The antenna is actively stabilized against ship movements by the use of an Inertial Measurement Unit. The SBT is mounted on a rugged chassis which is designed to be easily transported in standard ISO shipping containers. The reflector of the SBT can be quickly disassembled and the SBT can be folded down automatically for swift relocation and redeployment. TheSBTtechnology is crucial as it extends the TTC capability to be provided even in the remote high seas where future manned reentry and recovery capsules might land. Also TTC terminals located at strategic high sea locations are critical so as to provide an uninterrupted coverage and backup during launches.

This indigenous development is being carried-out by BARC and ECIL in the framework of a contract by ISTRAC/ ISRO on ECIL.

The unit is undergoingintegration, functional and qualification tests on an indigenously developed single axis ship motion simulator. ISRO is expected todeploy several more SBTs in future.

RCnD, BARC is responsible for the development of the three axis gimbals, controller electronics and the motor drives. BARC has also designedthe drive unit for the rapid deployment tilting mechanism and interlocks for the SBT. Earlier, BARC in association with ECIL had successfully developed a variety of antenna pedestals and controllersof various sizes for ground station applications for tracking satellites and RPVs. India's first deep space network terminal –the 32 metre antenna- which was deployed for the Indian moon and mars missions was developed by ECIL in collaboration with BARC.

Fig. 2: Three axis pedestal without reflector