

CONSTRUCTION PROGRAMME

During 1990, work on the construction of the Prototype Development Laboratory, Chemical Cleaning and Glass Blowing Laboratory, was completed. The prototype development laboratory was inaugurated by Dr. P K Iyengar, Chairman, AEC, on May 26, 1990. The shopping complex and the welfare centre whose construction was completed last year are now fully functional. The welfare centre has already been used for organizing a three week International Workshop on Lasers and Their Applications and a two day seminar in Hindi on "*Vigyan Ki Bhavi Dishayen*". The construction of Fusion laboratory, a 132 kV substation and switchyard is progressing well. Work has also been initiated on the construction of Accelerator Development laboratory, Lasers R&D laboratories and a Fire Station. Work on the construction of additional 105 quarters of various categories has also commenced.

The horticulture group, CAT has developed landscape gardens at various sites in the campus notably Hostel building, Central School, Welfare Centre, and CAT Colony. Work on planting trees along the road to laser fusion laboratory has also been started.

COMPUTER CENTRE

The computer centre at CAT now has three multi-processor minicomputer systems. These systems are based on shared bus architecture, enabling automatic load sharing among processors and splitting of a single job on multiple processors. Two CAD (Computer Aided Design) stations have also been installed. These are being used in solid modeling and electronic design automation applications.

The computer centre has developed software package that incorporates images in multi-user database management system 'UNIFY'. The package can be used for storage and multipoint retrieval of images like photographs, signatures etc. alongwith the alphanumeric information. Softwares have also been developed to operate the telex controller (CTC - 4000) from multi-user UNIX machine instead of a PC, and to provide upto date information on various services at CAT. Several courses were also organized by the computer centre. These include introductory and advanced courses on AUTOCAD, a course on UNIX operating system and a familiarization course on computer for administrative staff.

LIBRARY

The CAT Library aims to build a good collection of literature in the major fields of research at CAT viz. accelerators and lasers. During 1990 the Library has added about 700 books to its collection, the total number of books now being nearly 2600. The library subscribes to 163 journals of which 26 were added during 1990.

EQUIPMENTS COMMISSIONED

A PC/CNC based magnetic field mapping system has been developed indigenously. It consists of a Hall probe as the field sensing element which can be positioned within the pole gap of a magnet. The position of the probe is controlled and measured by a 3 axes positioning system. The probe can be programmed to move along a desired path at different step sizes, speeds of movement and dwell times. The probe position co-ordinates and the measured magnetic field values are transferred online to a PC for data acquisition and analysis. The field mapping of 500 points in a bending radius of 1800 mm can be carried out automatically in an hour with position and field accuracies of 20 microns and 100 ppm respectively.

A 4 axis CNC controlled horizontal boring machine model AZ-11 of M/s HMT has been commissioned. It has a table of size 900 mm x 1200 mm capable of taking a maximum load of 400 kg providing a longitudinal traverse of 1370 mm and a cross traverse of 1570 mm.

A large vertical DYNACUT turret lathe of M/S Kirloskar Bros. has been commissioned. The lathe can take up jobs of diameter upto 1900 mm and height 1000 mm and weighing upto 10 tones. The machine is fitted with Digital Read Out (DRO) on two axes.

A NIKON model K16E optical profile projector has been procured and installed in standards and inspection room. The projector is of vertical optical axis type with an effective screen diameter of 400 mm. It is equipped with three projection lenses with magnifications of 10 x, 20 x and 50 x and a data processor DP301. Its screen sensor has a repeatability of 1 micron.

One CNC Co-ordinate Table has been attached to the radial drilling machine and one milling machine. Two small precision lathes have also been added to the workshop.

Optical workshop has developed techniques for making metal mirrors such as stainless steel mirrors, and Cu-Ni mirrors for CO₂ lasers, grinding polishing of small diameter Nd:Glass and Nd:YAG laser rods, and crystals such as quartz, calcite, KDP and ADP.