

# Medical LINAC

## Brief Description

The Medical Linear Accelerator (LINAC) is a high energy X-Ray machine used for treatment of deep seated cancers by Radiation Therapy using high energy photons. The 6MeV LINAC is an Integrated Oncology System with computerized controls. Main Sub-systems of the machine are:

- LINAC tube and computerized beam control system
- Computer controlled LINAC handling & collimation system
- Computer controlled Patient Support System
- Field optics and Range optics
- ASHA 3-D TPS, virtual simulator & 3-D treatment planning system

Agencies involved in development of this project are SAMEER-Mumbai, CSIO-Chandigarh, PMT-Bangalore and TSG-New Delhi under the sponsorship of DIT, New Delhi CSIO developed gantry & patient support system with computerized movement controls and Field & Range optics in the project.



## Specifications

### Beam

- Beam Energy : 6 MeV
- Dose Rate : 50 – 250 rads/min at iso-centre
- Field Size : 0x0 to 40x40 cm
- Field Flatness :  $\pm 3\%$
- Leakage Radiation :  $< 0.1\%$  except 0.5% on rear

### Movement Range

- Gantry Rotation :  $0^\circ$  to  $\pm 185^\circ$  (about horizontal axis)
- Jaws (X & Y) : 0x0 to 40x40 cm
- Collimator Rotation :  $\pm 95^\circ$  (about vertical axis)
- PSA Vertical : 68 to 168cm from floor
- PSA Longitudinal : 120 cm
- PSA Lateral :  $\pm 20$  cm
- PSA Rotation :  $\pm 95^\circ$  (about vertical axis)
- PSA Floor : Automatic (Up & Down)

## **Movement Control**

- Controls : From Pendant & Control Panels
- Display : Electronic & GUI

## **Electrical Requirement**

- Input Power Supply : 3-Phase, 50 Hz, 440 V $\pm$ 5%
- Maximum Load : 15 KVA

## **Salient Features/Uniqueness**

- Indigenous Linac Tube (Developed by SAMEER)
- Computerised controls
- Virtual Simulator & 3D-TPS
- Comparable to contemporary LINACs

## **Applications**

- For the treatment of cancers in Radiotherapy

## **Field Trials**

- Acceptance test trials of the machine have been conducted by Atomic Energy Regulatory Board (AERB) and certificate has been granted for its clinical use.

## **User Agencies**

- Mahatma Gandhi Institute of Medical Sciences, Wardha
- Cancer Institute, WIA, Adyar Chennai