

## MOBILE C-ARM WITH FLAT PANEL DETECTOR

### **A) X-RAY GENERATOR**

- 1) Must have Rotating anode X-Ray tube
- 2) Must have dual focus :0.3 / 0.6mm
- 3) Must have maximum anode heat content of 300 KHU or more
- 4) The Generator should be Monoblock with 40 kHz high frequency or more with microprocessor controlled.
- 5) X-ray generator output should be 25 kW or above
- 6) It should be powered by integrated heat exchanger systems, so that the system has the heat withstanding capacity of minimum 4 MHU to prevent system failure due to overheating during procedure.
- 7) 900 W continuous heat dissipation should be possible
- 8) It should have Total filtering :  $\geq 4.3$  mm Al, including 0.1mm cu
- 9) Power technology of the system should be such a way that will avoid the need to replace the battery package.

### **B) OPERATING VALUES**

#### **Fluoroscopy:**

- 1) kV Range : 40 to 120 kV or more
- 2) mA range : 1.5 to 250mA or more
- 3) pulse rate : 1,2,4,8,1 2.5,25 pulses per second

### **C) Digital Radiography**

- 1) kV Range : 40 to 120 kV or more
- 2) mAs range : up to 250mA or more

### **D) Collimator system:**

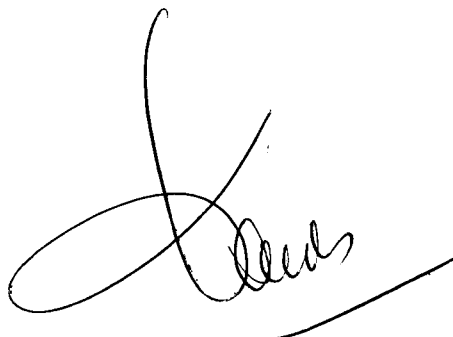
- 1) Dedicated pre collimator for FPD
- 2) Collimator Rotation:  $\pm 90^\circ$
- 3) Virtual Collimation
- 4) Image rotation without radiation

### **E) Flat Panel Detector system**

- 1) Field Size: 29X 29 cm or more.
- 2) Detector Matrix should be of 1.5 K X 1.5 k pixels,
- 3) Laser localizer integrated in the detector housing for avoiding unwanted exposure

### **F) Monitors:**

- 1) Monitors should be of High resolution & High brightness twin flat screen monitors
- 2) Screen size : 18 " or more
- 3) Resolution :1280 x 1024 pixels
- 4) Viewing Angle (Horizontal & Vertical) :  $170^\circ$
- 5) Contrast Ratio : 1000:1 or more
- 6) Brightness: 600cd/m<sup>2</sup> or more

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**G) The following real-time and post processing digital processing functions should be possible**

- 1) Edge enhancement filter.
- 2) Zoom 3 levels ( post processing)
- 3) Windowing and step windowing
- 4) Digital image rotation and reversal should be possible without radiation
- 5) Recursive filter at 4 levels
- 6) Grayscale inversion
- 7) Digital Shutters ( Image cropping)
- 8) Digital measurement functions ( post processing)
- 9) Anatomical programs to determine ideal noise reduction, pulse width, etc. specific to anatomy should be possible
- 10) Should include DSA package with 25 frames per second, with remasking capability , road mapping, MSA and RSA
- 11) Digital memory with storage capacity of at least 100,000 images or more and Digital Image processing up to 32 bit should be possible
- 12) System should have DICOM interface for digital network integration with storage, query, retrieve and print capability.

**H) User Interface:**

- 1) TFT touch screens should be available on C-arm stand and monitor stand it should be synchronized
- 2) Intuitive icons for easy use
- 3) Multifunctional foot switch with advanced functionality

**I) Dimensions & mechanics:**

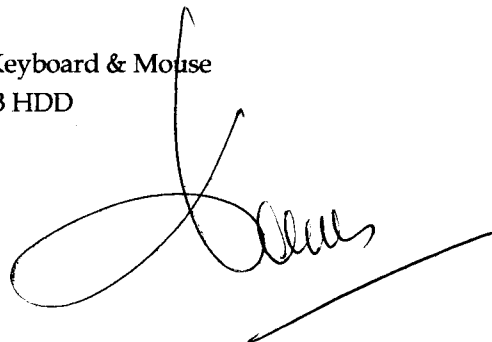
- 1) C-arm should have the following movements
- 2) Vertical travel : > 40 cm or more
- 3) Horizontal travel : > 20 cm or more
- 4) Orbital Rotation should be at least 140 ° or better
- 5) Angulations :  $\pm 200^\circ$  or more
- 6) Should be integrated with the distance control as a safety measure for the patient and collision prevention.
- 7) Focus image receptor distance : 100cm or more
- 8) C-Arm vertical free space: 77 cm or more
- 9) C-Arm depth : 65 cm or more
- 10) Brakes: Steering and breaking lever with parallel movement of the mobile stand in all directions should be possible

**J) Certification:**

- 1) Should be **CE / FDA / BIS / cdsco** approved
- 2) Should have type approval from **AERB**
- 3) Should be approved with **CDSCO (MD-15)**

**K) Work station:**

- 1) DICOM viewer Work station software
- 2) Computer Hardware, 23-inch Square Monitor, Keyboard & Mouse
- 3) Workstation with Intel i3 Processor & 500 GB TB HDD
- 4) CD/DVD Writer
- 5) Vessel distance measurement functions

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Adopted from Ministry of Health & Family Welfare (CNCI) Hscc under tender rules as per site requirement.

2/4/24

**Technical specification for Imaging Table**

- 1) Motorized up down and side to side float movements.
- 2) Table top length should be at least 230 cm
- 3) Table top should be fully made up of carbon fibre
- 4) The table top material should be high-performance carbon fibre polymer material to enhance image quality while reduces the X-ray dosage.
- 5) Table should have a weight bearing capacity of at least 200 kg or more.
- 6) Table minimum height range should be 80 cm or lesser and maximum 106 cm.
- 7) Table should have longitudinal travel 80cm
- 8) Should have lateral travel 220mm or more
- 9) Manual Hand control is easily operating, and takes control of the horizontal move of table top, the brake system is safe and sensitive
- 10) Base with the ABS industrial plastic, helps prevent glare, impact and it is easily clear up and lusterize
- 11) Should provide mattress pad, arm boards and IV Pole
- 12) Lead Lining on the sides of the table for the scattered radiation under the table.
- 13) Lead aprons - 2 no's Skirt Type and feather weight, Lead Goggles - 2 No's , Gonadal Shields - 2 No's , Thyroid Shields - 2 No's
- 14) Should be CE/ FDA/BIS approved
- 15) All movements for the table should be motorized

Warranty - 5 years from the date of installation. All the parts of the C-Arm and the table supplied along with the machine must be covered under warranty and there after 5 years CMC like Tube, Generator, Flat Panel Detector and all accessories supplied along with the machine.

Additional scope of work must be included in the tender

Trunkey	Scope of site modification work:
1	Site modification required for the installation of the complete system will be done by the supplier as per AERB norms. Area of 400sq ft and Air- conditioning of Tonnage 4 TR (2 no's- 2tr ) will be considered for Ranking / Evaluation purpose.
2	Lead glass window of minimum size 5 ft X 5 ft with frame in between console room and ESWLroom
3	Flooring: Vinyl flooring with two different colors in the procedure area
4	False Ceiling: Modular type metal ceiling with coving light with adequate LED lighting
5	Wall: Ceramic tiles up to ceiling height in ESWL procedure room and console room or wall paint with enamel coating after proper preparation and all the side wall thickness must be 8-inch brick with plaster both the sides.
6	Electrical: All necessary electrical works (including electrical panel, wiring, switches) will be done by the vendor, adequate light and power point to be provided in the whole area.
7	One dedicated earthing
8	2mm Lead shielding in door and window
6	Suitable online UPS should be supplied with 30 mins backup - 1 no
7	Wall mounted SS sink with temperature controlled optoelectronic tap with geyser (Square type - 10Ltrs 5 star )with automated soap/Liquid dispenser
8	MGPS related work must be included
9	Name plates/Sinages as per requirement
10	Dismantling of old system is the responsibility of the bidder
11	Decommissioning of old existing system & commissioning of new ESWL as per AERB guidelines

Specification adopted from CNCI, Kolkata