

SPECIFICATIONS DIGITAL X-RAY MACHINE WITH FLUOROSCOPY 1000 MA

Digital Radiography/Fluoroscopy System with dynamic fixed Flat Panel Detector in Remote Controlled RF table.

The unit should be capable of doing all types of Fluoroscopic examinations like GI examination, ERCP, barium studies, along with radiography procedures. 1000 mA unit with microprocessor controlled high-frequency X-Ray generator with a power output of 80KW or more. Also, the system should have a facility for pulsed fluoroscopy.

X-RAY GENERATOR:

1. High-Frequency X-Ray Generator should be provided.
2. Power output of the generator should be 80KW.
3. KV Range should be:
 - a. Radiographic KV: 40 to 150KV.
 - b. Fluoroscopic KV: 40 to 120KV.
4. mA Range (Rad.): up to 1000mA.
5. mA Range (Fluoroscopy): Normal Flr. Mode: -up to 3mA
 - a. HD/Boost Flouro/Cine mode: up to 6mA.
6. Exposure time (Rad.): 1ms to 2Sec or more.
7. Cumulative flouro. timer to cut off exposure
8. mAs Range (Rad.): 1 to 200mAs or more.

CONTROL:

X-Ray/Image Control Console

Fully integrated system with the following features:

1. Digital Display of Radiography kV & mAs and Fluoro kV & mA and Cine kV & mA Spot kV and mAs.
2. Integrated touch panel TFT display for various X-Ray functions and indications.

3. Exposure parameters can be controlled from Acquisition software as well as from Touch Panel Display.
4. Manual and Automatic brightness stabilization (ABS) in fluoroscopic Modes.
5. Exposure indication on Acquisition Software.
6. Self-diagnostic Program with Indicators for Earth fault error, kV error, Filament error & Tube Thermal Overload, Rotor fault and Phase failure indications.
7. Anatomical Programming Radiography (i.e. APR) is provided in which exposure parameters are automatically selected depending upon the physique of the patient and part of the body to be exposed and more than 200 preprogrammed APR programs are provided that can be edited or expandable as per user's requirement.
8. Foot switch is provided for initiating the exposure for performing Fluoro and Cine and Digital Spot Procedures
9. Hand switch with retractable cord for initiating the exposure for performing radiography Procedures.
10. 2-Point mode and 3-point mode exposure techniques for manual exposures in Radiography mode.

X-RAY TUBE (01No.):

1. A dual focus Rotating Anode X-Ray tube thermally protected having a focal spot of 0.6 mm or less & 1.2 mm or less
2. Anode rotation speed should be 9000 RPM minimum.
3. Anode heat storage capacity of the tube should be min 500kHU
4. One Pair of H.V. Cable of suitable length should be provided.
5. Mention the heat dissipation rate.
6. Multileaf collimator having halogen lamp/bright light source, with auto shut off the provision of the light, should be available- Yes

COLLIMATOR:

1. Motorized L.B.D (light beam diaphragm) with "white power led" (for higher luminosity and lower electrical consumption for adjustment of exposure area) should be provided and there should be the provision of auto shut off after 45seconds.

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2. Collimator should be automatic and remote controlled.

HV TANK:

1. A very compact H.V. tank filled with high dielectric transformer oil. The H.V. tank contains an H.V. transformer, filament transformers, H.V. rectifiers and H.V. cable receptacles.

TABLE:

Remote controlled, motorized RF Table should be provided. The table should have an integrated console. The table should have a scratch-resistant tabletop.


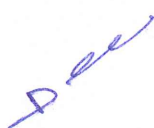
Table should have a soft start and stop with the following minimum features.

1. Motorized Tilt: Vertical $+90^{\circ}$ to -15° or more Trendelenberg.
2. Table top material with low attenuation and scratch-resistant surface - Carbon fibre
3. Table has an automatic stop at Horizontal & Vertical positions during tilt movement
4. Motorized Transverse movement of tabletop: 30cm or more
5. Motorized Longitudinal movements of imaging unit i.e Tube column – detector movement: 100cm or more.
6. Integrated bucky for flat panel detector for general radiography and fluoroscopy.
7. Remotely operated compression device.
8. Footswitch for releasing fluoroscopy and acquisition.
9. Patient weight carrying capacity: 180kg.
10. Intercom system to communicate with the patients.
11. System should have provision for collision protection
12. Movable Grid with grid ratio: 10:1 or more

Table accessories: 1No. Each Handgrip, compression band, footrest.

DYNAMIC FLAT PANEL DETECTOR (FPD):

(Inbuilt in Remote controlled, motorized RF Table)



A complete imaging solution with cutting-edge performance integrated with our X-ray systems.

FPD should have the following specifications or better:

1. Receptor type: Amorphous Silicon
2. Scintillator: Cesium iodide (CsI)
3. Size of detector: 43 x 43cm or more
4. Image matrix size : 3K x 3K or more
5. A/D conversion: 16bits
6. Pixel size: less than 150µm.
7. Detector resolution should be more than 3.3 lp/mm.
8. DQE: 65% or more at 0 lp/mm.
9. Field of view of at least 40cms X 40cm or more

IMAGE ACQUISITION SOFTWARE should have the following features available

Exposure Modes

RF (Flouro, Cine and Spot)

DX (Radiography)

Frames per second

RF:

- 1024×1024 (1K×1K Image resolution)
- continuous fluoroscopic operating mode up to 15 FPS
- In pulsed fluoroscopy mode, it should be at least 6 frames per second

DX:

- 3072×3072 (3K×3K Image resolution)

Major Module

- Patient Entry Module
- Examination Module
- Viewing Module

Generator Controls

- kVp
- mAs
- ABS ON/OFF



- AEC ON/OFF
 - AEC Chamber
 - Filament Selection
- Examination Layout
- 1x1 (Live)
 - 1x2 (1st: Live, 2nd: Reference)
- Live Parameters
- WW/WL
 - Zoom
 - Flip
 - Frame Rate
 - Software Shuttering
- DICOM Compatibility
- DICOM 3.0 compatible:
 - DICOM MWL
 - DICOM Send
- WL/WW Adjustment
- Automatic WW/WL adjustment for Radiography
 - Automatic WW/WL adjustment for Fluoro, Cine, and Spot according to the selected procedures
 - Manual WL/WW adjustment
- Post-processing Parameters**
- WW/WL
 - Zoom
 - Magnify
 - Invert
 - Flip Horizontal
 - Flip Vertical
 - Annotations
 - Image Layouts
 - Play DICOM Loops
 - Frame by Frame Image View

- Software Shutter
- Crop
- Tagging of Images
- Angle and Length measurement

Advance Features

- ABS for Fluoro and Cine
- AEC for Radiography
- Configurable RF Procedures and Radiography Protocols
- Live image WL/WW adjustment
- Stenosis
- DSA package

Image Acquisition System Configuration

- Image Acquisition system with Intel core i7 processor (3.1GHz), 24GB RAM, 1TB HDD & 500GB SSD and OS Window 7 Pro, 64Bit or Higher.
- 27" widescreen Monitor with 4K Resolution (2 Nos.)
- Keyboard
- Mouse
- 3KVA online UPS
- A High-Resolution Graphic Card
- Gigabit LAN Ports (3 No.)

Additional reporting workstation with 19" Medical display monitor with a resolution of 1 Megapixel or more with below feature is provided

Advance Features: -

1. DICOM Store
2. DICOM Print
3. Job Queue

4. Post-acquisition image processing, viewing, reprocessing, hard copy documentation and onward transmission should be possible while doing fluoroscopy or radiography

POWER REQUIREMENT: The unit should be operable on 400V AC, 50 HZ 3 Phase – Max. Allowable line Regulation $\pm 10\%$.

IMAGE STORAGE AND TRANSMISSION

1. Image storage capacity of at least 30,000 images in 1024 x 1024 matrix at 10 / 12 bits on the main system disk
2. The systems should support storage of images on compact discs/DVD/USB drive
3. The system should be DICOM 3.0 (or higher version) ready (like send, receive, print, record on CD/DVD, acknowledge etc.) for connectivity to any network, computer/PC etc. in DICOM format
4. Vendor should connect this with existing LAN systems and other laser cameras already existing in the department without any extra cost. Easy integration and networking should be possible with existing RIS including patient work list and study completion

ACCESSORY:

1. A servo voltage stabilizer of suitable rating for a complete unit.
2. Suitable UPS with complete backup for the computer system for at least 30 minutes.
3. One Dry Chemistry, Multiport, multiple films (14"x17", 11"x14" and 8" x 10") camera with a resolution of 500 DPI or more, DICOM ready and online. At least three size film trays should be active. The vendor should connect this camera with other existing cameras in the department of Radiodiagnosis, KGMU.
4. DICOM Software with fast speed DVD Combo (Reader and Writer separately).
 - iii. Lead glass 100x 150 cm
 - a. for the console room.
5. Lead apron 3 (ultra-lightweight), thyroid and gonad shields 3 each, pediatric gonadal shields, lead goggles, and lead gloves (all sizes both for males and females). Hanger for

lead aprons.

6. Radiation protection flaps
7. Minimum necessary furniture like office chairs, office tables, patient chairs, etc.
8. Fire extinguisher system to be connected to the central system by the vendor.
9. Hand grip x. Footstep
10. Patient fixing belts and compression device (for performing excretory urography)

INSTALLATION:

1. All site approval and layout approval from AERB shall be the responsibility of the supplier. Following commissioning, permission to operate should also be the responsibility of the supplier.
2. Complete turnkey project: The cost of alteration and preparation in a specified built-in area on a turnkey basis which will include civil, electrical and air conditioning is to be borne by the firm.
3. Power supply and AC requirements to be clarified and approved.
4. AC should be maintained for at least 5 years by the vendors. Also, the vendor should assist in pesticide and rodent control mechanisms.

ESSENTIAL CERTIFICATE:

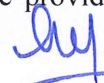
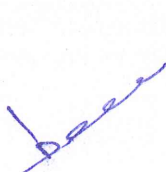
1. Radiation safety certificate: The offered model must have a valid NOC and AERB type approved certificate at the time of submission of tender. The vendor should assist in AERB e LORA registration. Also, a QA report should be submitted.

CONDITIONS FOR TENDERER:

1. All accessories should be from the same Original Equipment Manufacturer for the main unit.
2. Instruments must be ISO certified and a copy should be enclosed. (The ISO Certificate must be issued by any organization accredited by the Bureau of Indian Standard or accredited by the international accrediting forum "IAF" (Certificate to be attached).

3. Should be USA FDA and/ or European CE be approved by 4 digits notified body.
4. Other necessary certifications if any required will be provided by the bidder for the smooth functioning of the machine.
5. Installation process should be performed by O.E.M trained service engineers/ service representatives on OEM letterhead or Service Report within 15 days of supply, with the mandatory provision of providing preventive services visit of OEM trained Service Engineer/ Service Representative quarterly per year till the completion of warranty period (i.e., 20 visits for the first 05 years) & further quarterly visits (04 visits/year) year till the completion of CMC period.
6. The equipment should have a Brand name/ Model Number embossed/etched on the equipment.
7. All the technical specifications in the compliance statement must be supported by Original Literature from the firm/ O.E.M with highlighting Numbering & flagging of all technical certificates.
8. Offered Equipment should have a strong Government Installation base.
9. Offered Equipment should have a Regional Sales Service Centre of the Original Equipment Manufacturer in the region for a 95 % uptime guarantee.
10. For the offered main unit, the essential, optional required consumables'/accessories' shelf life should be declared on the Original Equipment Manufacturer's letterhead.
11. In case of technical snag/failure/breakdown the response time for the inspection should be within 24 hours and repair within 05 days otherwise provide a service machine/ alternate arrangement to be made till the period of recovery of the breakdown of the unit, failing which attracts penal action as per the decision of institute/ hospital.
12. For offered equipment the Training of technical staff and users should be performed by Original Equipment Manufacturer trained Service Engineers at the proper designated place- at bidders' cost.
13. Company should quote their latest model and need to provide an affidavit for the same.
14. As a tendering process the Demonstration of the offered Equipment is Mandatory at hospital/institute premises or other designated places at the bidder's cost.
15. The bidder must comply with the General Financial Rules and their modifications if any issued by the Government of India- 2017.

16. Any bidder from a country that shares a land border with India will be eligible to bid in the tender only if the bidder is registered with the Competent Authority (i.e., Registration certificate issued by the Ministry of Commerce and Industry (Department for Promotion of Industry and Internal Trade- DPIIT after October 2020). If any such bidder is not registered with DPIIT they will be liable for technical disqualification.
17. Principal (OEM) must authorize only one agent to be quoted in the bid otherwise multiple quotes through different agents in the same bid will be canceled.
18. The Bidder and its OEM both have to submit a notarized affidavit on the Indian Non-Judicial Stamp Paper of Rs.100/- that the bidder has not quoted the price higher than the current financial year and last financial year supplied to any government Institute/ Organization/ reputed Private Organization. OEM also has to submit that the price quoted by the bidder in the bid is on its behalf and the lowest in the current and last financial year in the country. Therefore, if at any stage it has been found that the supplier and its OEM have quoted lower rates than those quoted in this bid; the Institute (the purchaser) would be given the benefit of lower rates by the Supplier and any excess payment if any, will become immediately payable to the Institute (the purchaser). The bid will be outright rejected if such an affidavit is not submitted. (Part of technical bid).
19. Guarantee / Warranty Period: Separate offers of Comprehensive Maintenance Contract (CMC on main equipment) and Annual Maintenance Contract (AMC on main equipment) for further 5 years after expiry of 5 years of warranty (i.e., 6th, 7th, 8th, 9th and 10th years) in rupees only (and on basis of percentage of price) should be included in a financial bid in the absence of which the offer is liable to be rejected. Payment for CMC/AMC shall be made only after the warranty expiry of 5 years, in case the Institute (the purchaser) decides to avail of CMC/AMC services. Contract for CMC/AMC shall be decided on expiry of warranty but rates (not more than 5% inclusive of all taxes for 6th to 10th year) will be frozen at the price of an issued purchase order before the release of payment by the Institute (the purchaser). However, the Institute (the purchaser) may decide not to enter into any CMC/AMC contract without assigning any reason for the same, which shall be binding upon the bid. Should provide 5-year CMC. CMC cannot be more than 5% of the contract value.
20. System configured application-specific educational video tutorials shall be provided as standard with the system.



21. Details of service outlet in India to render services during 5 years warranty period.
22. The principals must give a certificate if the supplier/vendor is changed during the course of the guarantee/warranty period, the principals would be responsible for the upkeep/maintenance of the quote/supplied equipment, besides honouring all the terms and conditions of CMC/AMC in letter and spirit.

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