ANNEX 2

SPECIFICATIONS: Digital Radiography System **Quantity: 1 unit**

Description:

A Digital Radiography System with a base model High Frequency X-Ray Generator for General Radiography with dual flat panel detectors along with table bucky and vertical bucky capable of taking the complete range of radiographic examinations with the following Specifications & Configuration.

Generator: -

- **It should be a basic model that requires approximately 15kw, 125kv, and 250mA of power.**
- The Kv ranges from 40 to 125Kv.
- The mAs range from 1 to 200mAs.
- The exposure time should be between 0.004 and 10s, and it should be able to capture 10 to 30 cases per day.

Control Panel: -

- Soft Touch Control Panel having following functions & indications should be provided.
- It should be a floor-mounted type design with no ceilings.
- Should be an integrated control panel for exposure and image parameters control.
- Fully motorized 3D ceiling suspended stand with auto-tracking facility of tube with table & vertical Bucky.
- Auto Positioning of system tube & detector as per Anatomical Programming Radiography.
- Image Preview is available in less than 3 seconds (no long wait for patients).
- It should available a Digital touch display on tube stands for various parameters & selection.
- Should be an Efficient and user-friendly workflow or DICOM based system.
- It should be easy to connect with existing HIS / HMS / RIS / PACS in a hospital environment.
- Reporting Workstation should be available.
- There should be at least 200 APRs.
- There should be the ability to select mA, KV, and mAs increase and decrease switches.
- Tube focal spot selection Switch.
- Ready and X-Ray on switch with Indicators
- Bucky Selection Switch.
- Self-diagnostic Program with Indicators for Earth fault error, KV error, filament error & Tube's Thermal Overload.
- Anatomical Programming Radiography (i.e., APR) should be provided in which KV & MAS are automatically selected depending upon the physique of the patient and part of the body to be X-rayed.
- A dual action hand switch with retractable cord should be provided.

Tube

- X-Ray Tube Anode heat capacity should be at least 100khu or standard.
- Focal spot should be 1.0/2.0mm or 0.6/1.2mm or better.
- Target angle should be 16° or 12° or Standard.

Table: -

- Horizontal table with 4-way movement of the tabletop should be provided.
- Transverse and longitudinal movements of the tabletop should be locked by electromagnetic locks.
- The bucky should cover the entire length of the table & should be locked at any desired position by an electromagnetic Lock.
- Table Bucky should be motorized oscillating grid along with electromagnet lock facility with foot pedal switch for release.
- The tabletop should be made of low radiation absorption, waterproof material.
- Table accessories like stainless steel cassette tray, compression band should be provided.
- Bucky tray should have facility to accommodate cassette type wired cum wireless Flat panel detector.

Vertical Bucky Stand: -

- Vertical bucky stand with suitable removable grid to be provided.
- The bucky should move up & down and should have arrangements to be equipped with wired cum wireless Flat panel detector.
- The stand should be flooring mounted type.
- The stand should have tilting facility from -20° to + 90° or better.
- The stand should have facility for rotation of the bucky, so that the detector can be used in landscape or portrait mode without removing it outside.

Flat Panel Detector (FPD with Appropriate technology): -

- Two detectors should be offered, one for table bucky and one for vertical bucky.
- The Digital Detectors should be wired or wireless Flat Panel Detector (FPD).
- Should be a High-resolution detector. (Detector specific)
- The detectors should be water resistance with minimum IPX6 standard. Test certificates should be provided along with technical documents.
- The detectors should be capable of doing out of bucky radiography and Lateral supine.
- The detectors should have a minimum spatial resolution of 2.5 lp mm or standard.
- Detector array Size: Should be a minimum of 2K x 2.4K pixels or better.
- Pixel Pitch: 200 microns or standard
- At least 14 or 16 bits should be used for AD conversion or standard.
- The detectors offered should be light in weight with less than 4 kgs, enabling ease of use for operations and easy positioning at the time of out of bucky exposures.
- Images pre-viewing should be available in about less than 3secs after exposure and the cycle time should be less than 12 seconds or better.
- The detectors must be capable of working on both wired as well as wireless mode and switch over must be less than 5 sec or better.
- Detectors offered should be capable of integrating with any x-ray system or mobile x-ray in future.
- The detectors should be able to work at normal room temperature and humidity

Image Processing sub system and Console: -

- The DR Console should be offered with latest high end image processing capability console software and high-speed processor with high resolution monitor of 19” or more.
- Should available the features such as Patient Entry (Manual Emergency and MWL), Patient Search Based On PID, NAME, DAYS, Exam window, Process window, View Window, Print Window
- Post processing features such as WW/WL, Rotate, Zoom, Flip, Invert, Annotations, Measurements.
- DICOM Compatible features such as DICOM MWL, DICOM print, DICOM Send
- Image Portability such as E Mail, CD/DVD, X-ray Film.
- Should be able to send DICOM images to a DICOM viewing station / PACS and should be able to connect to HIS/RIS.
- Should be equipped with DICOM CD writer for allowing examination of a patient to be written onto a CD in DICOM format for referral purposes with inbuilt DICOM Viewer to allow viewing on any PC

X-Ray Film Printer/Dry Imager:

This Xray should be supplied along with the Digital Radiography unit.

- The system must have a dry imager without need of any wet Chemistry.
- It must be DICOM compatible allowing multiple modalities to be connected at a time.
- The system must be able to print at least 60 films/hr of the largest size.
- The system must deliver its first film within 80 seconds from the request sent.
- The system must have at least three online film sizes and should be capable of printing any of the 8”X10”, 10”X 12”, 11”X14” or 14”X17” films.

Additional accessories

- 3kvA or more online UPS for providing minimum 30 Mins power backup for Console, workstation PC & 2 panel LED view box should be provided.
- Standard accessories including Lead Apron -6 pieces.
- Gonad shields for boys & Girls- 2 each set.
- Stand for lead gowns
- Foot step x 2 pcs
- TLD badge x 4 (Supplier shall provide quarterly analysis of badges. Price of TLD badge analysis per badge per quarter shall be quoted.
- Lead glass of size 39 inches 26 inches for console room. To be installed by successful bidder.
- Vendor to install wireless mike system for calling patients who are waiting outside.
- Film viewing panel for X ray films 3 in 1 of 14"X17" size — Four (LED type Maxx or equivalent)
- Dosimeter with following specs: The survey meter needs to be sophisticated and capable of detecting x-ray, beta, alpha, or gamma radiation. GM detectors should be used for the probe, and high voltages between 500 and 1300 volts should be used for scintillation probes. The Gamma and X-ray ranges should be larger than 6 keV. The Alpha range should be above 3.5 MeV. The Beta range should be above 35 keV, and so on.

Power Requirement:

- The unit should be operable on 3 Phase, 440Volts AC 50Hz with line resist less than 0.4 Ohms. Line Regulation +10%.

Interfacing:

- The successful bidder shall facilitate the process and cost of interfacing the equipment’s to HMS & PACS and patient Apps/Physicians App.
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Preinstallation, Deinstallation & Installation

- The supplier should take the responsibility of dismantling and shifting the existing X-ray unit from proposed site. Supplier can quote along with the Radiography unit bid for this decommissioning work. And transport the dismantled unit to a location allocated by AEH.
- Installation will be performed at no cost by the supplier, who should visit prior to the installation to assess the space requirements and our existing facilities such as AC requirements, Electrical requirements, and overall.
- The successful bidder shall charge no additional cost for any modification of cable trench if required.

Standards and Requirements:

- The X-Ray unit should be approved by BIS/European CE/ USFDA and AERB (mandatory) & the offered detectors should be European CE & USFDA Approved.
- Detectors, Console Software should be mandatorily manufactured from the same principal manufacture of DR System.
- Should include tools for calibrating and checking the radiation dose.
- Aprons of all sizes should be included along with this machine.
- Film cost of each size should be quoted separately.
- Should include a radiation badge with this machine.
- A 2 TB SSD external hard drive is required to store backup data, as well as an external CD/DVD drive for multiple CD or DVD burns.
- Bidders are requested to mandatorily quote the rate of Digital radiography system with high frequency X-ray machine with all accessories and rates of films of each size 14x17, 11x14, 10x12 & 8x10 inches.
- Bidders shall have facilities and means or license to supply compatible films to AEH on signing agreement.

Additional Remarks:

- Complete product details to be enclosed with the original brochure or catalogue (Soft or hard copy).
- Details of the standard accessories, additional accessories, optional items, consumables and minimum supplies to be stated clearly.

Training and Validations Requirements:

- Onsite Application and Operator training for users and technical training for in-house Engineers should be provide by the Authorized trainers.
- Validation procedure should be carried out at the time of installation.

International Training:

- The successful bidder shall provide one international training/conference in related field of radiology for two radiographers within one year.

Warranty & Service:

- The company should have service engineers who should be available 24/7 on phone & at site within 48 hours of reporting an error.
- Operator's manual and Service manual should be provided.
- All access codes to service mode shall be provided.
- Manufacturer's standard warranty with documents should be available.
- Five-year comprehensive on-site warranty of entire system (Spares and labor) including X-ray tube and all accessories and civil, electrical and air conditioning works. This will be followed by 5 years comprehensive CMC. Vendor shall provide the CMC rates along with bid submission.

Distributorship:

- Must submit a letter authorizing submission of tender for this project from manufacturer.
- Suppliers shall have a valid authorized distributer license or reseller license for the country/region at the beginning of agreement or signing of contract.

Demonstration:

- All prospective bidders shall demonstrate the unit online before technical evaluation. This should include detailed explanation about, operation, other accessories utilizations. And also, a short video how the equipment works.

AEH Responsibilities:

- AEH shall provide a place to install the equipment's.
- To conduct awareness among AEH staff on equipment use and functions.
- To ensure users are operating equipment as per manufacturers recommendations and advice.
- To prepare and share with supplier AEH 4 months consumables requirements required to provide services.

Country of origin:

- USA, Canada, UK, Austria, Belgium, Denmark, Finland, Germany, France, Hungary, Ireland, Spain, Japan . Australia, Korea, China, Turkey, India.

Year of Manufacture:

- 2021 or later