Notice Inviting e-Tender

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Supply and Commissioning of 500 mA X-Ray Machine (Digital) for Bolpur Sub-Division Hospital, Birbhum

(Submission of Bid through *online*)

Bid Reference No.: WBMSCL/NIT-450/2023	Dated-01.08.2023

Amendment-I

REVISED TECHNICAL SPECIFICATION

500 mA X-Ray Machine (Digital)

A fully Integrated single console controlled Digital Radiography System with 50KW High Frequency X-Ray Generator for General Radiography with a Dual flat panel detector along with table bucky and vertical bucky capable of taking the complete range of radiographic examinations with the following Specifications & Configuration.

HIGH FREQUENCY X Ray GENERATOR:

50kW or more Generator should be of latest technology with high frequency offering 30 kHz or more. Generator should offer 3 Point technique & user should have following parameters selection range.

- KV range should be 40 to 125KV insteps of 1KV.
- mA output: 500 mA or more.
- mAs range should be 1 to 600mAs or more.
- Exposure time should be 1ms to 5 secs or better.

Fully Integrated CONSOLE System:

Single integrated console system shall have following functions & indications should be provided. Following features should be available on the console.

- Digital Display for display of X-ray parameters of KV & mAs. There should be option of selecting mA station.
- mA, KV & mAs increase and decrease switches.
- Tube focal spot selection Switch.
- Ready and X-Ray on switch with Indicators
- Bucky Selection Switch
- Self-diagnostic Programme 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.
- All anatomical Programming should be available.
- A dual action hand switch with retractable cord should be provided.
- The DR Console should be offered with latest high end image processing capability console software and high speed processor with 1 mega pixel 19" Medical Grade Monitor. The DR work station should be based on latest high speed processor of at least 32bit also have image storage disc 500GB or more.
- Selection of Patient demography.
- Selection of the Anatomical parts to be X-rayed.
- Windows and Level Adjustments
- Annotations must be possible
- Previews of images should be available in about 3 Sec or less
- Zooming, ROI, Image Cropping and Masking, automatic grid removal function
- Soft tissue processing must be possible
- Should offer capability of local image storage
- Should be capable of connecting minimum of 2 Flat panels simultaneously.
- Should be capable of connecting directly to the dry laser printer.
- The dry laser printer should be two tray with 500 Dpi or more and should accommodate all available film size
- Full range of basic Image Processing tools such as Zoom, Pan, Window, Annotation.
- Should have high resolution medical graded monitor with minimum size of 19 inches or more .
- The workstation should be capable of configuring Multi Format images for DICOM Printers.
- The console should have provision for remote diagnostic capability.
- Manual Stitching should be possible and be provided with suitable hardware and software.
- It should have the possibility of acquiring the image directly from the detector system.

- Dicom 3.0compliant system .all features mentioned below should be quoted as standard
- Dicom work list management
- Dicom print
- Dicom query/retrieve
- Dicom export.
- Dicom CD creation /DVD creation with embedded viewer.
- Dicom MPPS
- Easy integration & network capability with the existing /future networking including other modalities RIS/HIS/PACS.
- Post processing facility must be possible like addition of anatomical marker, image annotation, magnification etc. please specify all the functions.

TUBE:

Dual focus Rotating anode X-ray tube with Small Focus 0.6 mm & Large focus 1.2mm

Anode Heat storage capacity of the tube should be 300 KHU or more.

Collimator with auto shut off facility should be provided.

HV TANK:

A very compact H.V. Tank filled with high dielectric transformer oil should be provided. The H.V. Tank should contain H.V. transformer, Filament Transformers, H.V. Rectifiers & H.V. Cable receptacles.

Tube Stand:

- Floor to ceiling or ceiling free tube stand with counter balanced tube head
- It should have movements to make all radiographic positions (erect & supine studies) possible
- The horizontal movement for the tube stand should be minimum 200 cm
- Tube should have minimum vertical Travel of 150cm with minimum floor to focus distance of 35cm.
- Tube should have angulations of minimum ±135° with detents at 0°, ± 90°
- Tube Head should have SID measuring tape and should have collimation light source.

Table:

- Horizontal table with 4 way movement and elevating (optional) of the table top should be provided. Radiographic table with 3 chambers AEC.
- Transverse and longitudinal movements of the tabletop should be locked by electromagnetic locks.
- Table should consist of Motorized reciprocating bucky with grid or removable grid of Ratio 8:1

- The bucky should cover the entire length of the table & should be locked at any desired position by an electromagnetic Lock.
- The table top should be made of low radiation absorption, water proof material.
- Table should be wide with minimum 200cm x 80cm (LXW).
- Table accessories like stainless steel cassette tray, compression band should be provided.
- Bucky tray should be equipped with cassette type wired cum wireless Flat panel detector of minimum 35cm x 43cm size or more.

Vertical Bucky Stand:

- Vertical bucky stand with oscillating grid ratio of 8:1, to be provided.
- The bucky should move up & down and should be equipped with up to 43cm x 43cm (17"x17") size cassette type wired cum wireless Flat panel detector.
- Wall stand should have minimum of 3 Chamber AEC.
- Vertical bucky stand should removable grid be provided.
- The stand should be floor mounted type.

Flat Panel Detector (FPD with TFT technology):

- The Digital Detector should be latest wire cum wireless Flat Panel Detector (FPD)
- One 14"x17" size detector for table and one 17"x17" size detector for table bucky should be provided.
- The detector Scintillator material should be made up of Cesium Iodide (CSi) and sensor with Thin Film Transistor (TFT) and Amorphous Silicon technology.
- The detector should be water resistance. The detector should have sensor protection and should have ingress protection rating minimum IP X3 or more.
- Wireless detector provided should be free from any integration with x ray machine. The same should be able to use with any mobile x ray machine with dedicated mobile console.
- The detector should be capable of doing out of bucky radiography in wireless mode and also Lateral supine Radiography must be possible.
- The detectors should have high DQE. Provide technical data from manufacturer.
- The detectors should have a minimum spatial resolution of 3 lp /mm.
- Detector array Size: Should be a minimum of 2.0K x 2.0K pixels (optional) or higher.
- Pixel Pitch: 150 microns or less.
- A to D conversion: 14 bits or more.
- The detector 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 4secs after exposure and the cycle time should be less than 10 seconds.
- The detector must be capable of working on both wired as well as wireless mode and switch over must be less than 2 sec.
- The battery must be of latest Lithium Ion type. 5 Nos Batteries along with battery charger should be provided. Company should replace batteries free of cost for next 5 years. The battery offered should be replaced irrespective of charge cycle

limitations. In case of inbuilt Battery, detector manufacturer should either replace battery or detector in case of any breakdown of battery. Kindly specify the battery type and life of offered model.

- Detector offered should be capable of handling 150 or more exposures or 8 hours of operation in single full charge.
- Detector offered should be capable of integrating with any x-ray system or mobile x-ray and should be readily switchable within multiple x-ray machine in case there is breakdown in the x-ray system.
- The detector should be able to work at normal room temperature and humidity. The detector system should not require frequent calibrations on daily start-up.
- Offered detector should have load bearing capacity of 150 kgs or more.
- Bidder must offer warranty certificate in original issued by original manufacturers for FPD`s. the original manufacturer must also give an undertaking the guarantee to support during the entire life of the detector.

Additional Work Station:

- The digital work station should be based on the latest high speed processor of at least 32bit.
- It should have image storage disc of 1 TB or more and 4 GB RAM or more
- It should have the ability of multi format printing
- It should have the ability to adjust the contrast ratio and add annotations
- It should have the ability to print hospital name with patient details.
- It should have the provision of adding patient photo in film or data.

Power Requirement:

- The unit should be operable on 3 Phase, 380/400/480Volts AC 50Hz with line resist less than 0.4 Ohms. Line Regulation +10%.
- The power requirement should be furnished by the vendor during bid submission.

Mandatory Requirements:

- The company should be ISO certified company.
- The whole systems should have USFDA /European CE(4 digit notified body) / BIS approved and the entire system and model should have AERB type approved.
- These three major components i.e flat panel detector, X-ray generator and X ray tube must be from the same manufacturer (OEM) and/or from the reputated company of the world but not from the land border sharing country of India and bidder.
- Bidder should have proven track record in government sector and should have installed similar DR system during last one year. Please provide customer satisfaction report.
- The bidder and the principal company should have a good reputation and never been black-listed or debarred in any state and central government organization.

- If the bidder is not the manufacturer of detectors warranty support documents should be made available in the form of undertaking from detector manufacturer.
- Easy availability of spares in India
- Trained engineers to maintain and support the system
- All specifications to be provided with original product data sheet.

Following accessories should be supplied with the machine at the time of installation:

- Suitable stabilizer for DR system should be provided.
- Lead barrier 1.5mm equivalent with lead glass window of 2x3 ft. -1No should be provided.
- Lead Apron 0.5mm Pb equivalent – 2 No.
- Dry laser technology imager with 500dpi or more with minimum 2online universal tray to be provided. Each tray should print minimum 4sizes.
- One Packet of films of each size should be provided
- Suitable online UPS for providing minimum 30 Mins power backup for Console, workstation PC & printer.
- Suitable electrical work to be done by vendor at terminated raw power inside the room. Also need to provide required electrical wiring for lights and air conditioners.
- Earthing for DR should be provided by vendor.
- 3- Nos 2 Ton split AC with 5 star rating should be provided
- Floor and wall tiles to be supplied and laid.
- Godrej steel almara (beeruva) 6ft to be provided
- False ceiling with 2x2 ft light should be provided by vendor for X Ray room and console room.
- 2sets of computer table and chairs (godrej) to be provided. The inner wires & cables everything by the vendor
- LED 2 film X ray lobby, 1 no of LED apron.
- LED door with 2mm lead equivalence should be provided based on requirement.
- Photo camera.
- Patient emergency wheel chair -1 No