Date: 30th July 2024

Tender

To Whom It May Concern

This RFQ (Request for Quote) seeks proposals for planning, supplying, installing, testing, commissioning, and training of personnel with respect to the medical equipment including Photon Counting/ Spectral/Conventional CT scan and related items from OEMs applicable to CT scan system for IISc, Bangalore.

At IISc, the planned infrastructure includes a comprehensive range of medical equipment integral to support advanced imaging capabilities for patient care, teaching and research. The vendors are requested to factor this exposure's value into their quotes. Details of IISc can be gleaned from:

https://medicine.iisc.ac.in/

A. Procedure:

1. Vendors are required to submit a technical proposal and a commercial proposal in **two separate sealed envelopes**. Only vendors who meet the technical requirement will be considered for the commercial negotiation.
2. The deadline for submission of proposals is **21st Aug 2024, 5:30 pm** Indian Standard Time.
3. Bids in the sealed envelope should arrive at the **Office of Deans of Administration, Main building, Indian Institute of Science, Bangalore 560012**, India, by the above deadline.
4. The technical proposal should contain a technical compliance table with 5 columns.
    a. The first column must list the technical requirements in the order that they are given in the technical requirement below in tender specifications (Page No:3 -11)
    b. The second column should provide specifications of the equipment against the requirement (please provide quantitative responses wherever possible.)
    c. The third column should describe your compliance with a "Yes" or "No" only. Ensure that
        i. the entries in column 2 and column 3 are consistent.
    d. The fourth column should state the reasons/explanations/context for deviations, if any.
        i. The fifth column can contain additional remarks from the OEM. You can use this opportunity to highlight technical features and qualify the response of previous columns.
5. Vendors are encouraged to highlight the advantages of their equipment over comparable equipment from the competitors
6. In the commercial bid, please provide the itemized cost of the equipment and required accessories, etc.
7. Please provide itemized cost for any suggested/optional accessories/add-on items that may enhance the equipment usability, capability, accuracy or reliability. Vendors are encouraged to quote for as many add-ons as their product portfolio permits.
8. In the quote, you are requested to provide itemized cost for spares, accessories, consumables expected over 2 years of use.
9. Please indicate the warranty provided with the equipment
10. Any questions or clarifications can be directed to:

Dean (A & F)
Main building, Indian Institute of Science,
Bangalore 560012
office.admindeans@iisc.ac.in

II. Terms and Conditions

1. The decision of the purchase committee of IISc will be final.
2. The vendor is responsible for the planning, supply, installation, testing and commissioning of the equipment & the training of personnel of the installed equipment at the IISc.
3. The RFQ must include references to previous installations including the list of all customers where similar systems were installed in past 5 years. Please provide the names and contact addresses of the referees so that the committee can contact them independently. Details of such systems with model numbers and users should be provided. The reference letters can be used to disqualify vendors with poor track records of service, build quality, system performance, or poor availability of spares.
4. The vendor should have qualified technical service personnel for the equipment based in India and must assure a response time of <2 hours after receiving a service request. The schedule for periodic preventive maintenance for the equipment and all the items related to OEMs should be provided.
5. The indenter reserves the right to withhold placement of the final order and to reject all or any of the quotations and to split up the requirements or relax any or all of the above conditions without assigning any reason.
6. Wherever requested in this specifications sheet, data must be supplied along with technical compliance documents. Technical bids without supporting data will be deemed as technically non-compliant.
7. Upon request, all guaranteed specifications will have to be demonstrated in an active installation. Failure to demonstrate any promised specifications will be deemed as technical non-compliance.
8. Printed literature and published papers to support compliance with the prescribed specifications may be provided duly authenticated by qualified personnel in the company.
9. Technical evaluation by the IISc may include a demonstration to verify the functionalities and capabilities of the equipment quoted. Any discrepancy between the promised and demonstrated specifications will be deemed technical non-compliance. If the need arises, the vendor must be ready to visit IISc for a techno commercial discussion physically.
10. The validity of commercial quotations should be at least 90 days from the last date for the submission of tender documents.
11. The quotations should be on FOR-IISc Bangalore basis.
12. Payment terms: LC will be opened with 70% payment on shipment of the documents and remaining 20% on installation, testing & commissioning and 10% on user satisfaction. Insurance coverage should be till the commissioning of equipment.

III. Tender specification

SL. No.	**Specification for Multi slice CT scanner having photon counting capability**
1	**General Specification**
A	The quoted system should be latest state of the art and top of the line. The system should have Photon counting detector based on direct signal conversion of X-RAY photon to electronic signals. In this process Number of physically independent rows of detector must be 256 or more, capable of acquiring 256 slices or more/rotation. The scanner should be capable of comprehensive whole-body imaging including cardiac, abdomen, neuro and vascular imaging applications, high resolution volume acquisition. it should also be capable of 3-D reconstructions at fast speeds, quantitative calcium scoring in the vessels using all documented qualification algorithms, 2D image display during acquisition on-line as well as real time, 3-D vessel imaging with feasibility for volume rendering.
B	The AERB compliances for the equipment and its installation would be the responsibility of the vendor.
2	**Gantry:**
A	Gantry Aperture should be ≥80 CM
B	The Minimum scan time for a 360-degree rotation should be less than or equal to 0.3 seconds or better for all modes (i.e., sequential, helical, dual energy, or spectral mode).
C	The gantry should be provided with user control panels or either side for easy positioning.
D	The system should be in position to perform 256 acquisition slices per Rotation for general cardiac/vascular application. Vendor should specify the Z – axis total detector width.
E	The Gantry should have 3D positioning laser lights.
F	The Maximum scan field of view (FOV) in acquisition mode should ≥ 40cm with intermediate Steps for Scanning different anatomies.
3	**X ray Section:**
A	The X ray Generator should be compact and inbuilt in the Gantry.
B	The System X ray power should be at least 200 KW (actual power)
C	The Tube current should be at least 2500 mA with increments in steps of not more than 20 mA.
D	The X ray Tube should be essentially Triple focus. The heat storage capacity should be at least 8mHU or equivalent. Specify the method and technique of cooling. Any special feature of the Xray tube to be highlighted with literature.
E	Specify the focal Spots of the X ray tube (Size and number)
F	Multiple focal spots should be available with the smallest focal spot being 0.5 X 0.5 mm or less
G	The X ray tube should have a cooling rate of not less than 2500 KHU per MIN
H	The X ray tube Cooler unit should be in built in the Gantry
4	**Detectors:**
A	The Detector Offered should be Solid State or crystal type. Specify the material

B	The 256-acquisition slice or more per Rotation should be possible.
C	Specify the fan Angle of the X rays and the geometry. The detectors should not require frequent calibration.
5	**Patient Couch:**
A	The patient table offered should have a minimum load bearing capacity of at least 300 KG
B	The Minimum tabletop height should not be more than 65 cm from the floor level for easy transport of trauma patients.
C	The longitudinal table speed should be ≥ 700 mm per second.
D	The range of metal free scan should be at least 200cms
E	The vertical range should be at least 35 cm (max heights – min height)
F	Specify the reproducing accuracy of the table.
G	Remote up/down, forward/backward movement of the patient couch should be standard.
6	**Topogram:**
A	Views: should be feasible in frontal and lateral views
B	It should be possible to interrupt acquisition manually if necessary.
7	**Spiral/helical Sections:**
A	The system offered should have Spiral capability of at least 60 seconds & above. Real-time spiral at 10 frames per second should be standard.
B	The range of spiral facility in Axial Direction should be more than 180 cm.
C	Specify the reconstruction time for Spiral scan
D	The system should have an injector interface.
E	The system along with the injector interface should have the ability to track contrast medium to trigger scan should be included in the scope of supply.
F	High Resolution scan package should be offered as standard and specify the minimum slice thickness for which High Resolution scan package is possible.
G	High contrast spatial resolution for the entire width of the detector should be not less than 44 lp/cm or better maximum at 2% Modulation transfer function (MTF) with full dose efficiency.
H	The low contrast resolution for CATPHAN should be at least 5 mm at 3 HU with CTDI 6 mGy dose, or better
I	There should be an integrated patient intercom with automatic patient instruction. A standard set of commands for patient communication before, during, and after scanning should be available in at least English and at least five Indian languages.
8	**Console & Workstation**
A	The Console offered should be with the latest multi-tasking Processors and a menu driven platform with minimum quad core processor, 1TB hard disk 64 GB RAM. The best available option should be quoted by the vendor.
B	CT console should be of dual monitor design. All the monitors should be medical grade. Color TFT/LCD, The Twin monitor system should work on either shared or Common data base.

C	Operator on console should be able to see video of injector and patients in gantry.
D	The console display matrix should be at least 1024 x 1024
E	Specify the console reconstruction time for an Axial scan
F	The console hard disk Capacity for both image and Raw data should be more than 1 TB.
G	Console should have facility to store at least 2,50,000 images.
H	The system should be supported with archiving facility of DVD & CD at main console.
I	At console – DICOM facility to send, store, print, receive, Query/ Retrieve, MWM , MPPS etc. should be standard . Should perform the functions like scanning image reconstruction, film documentation, MPR, CT angiography, MIP, 3D SSD, Fly through, neuro perfusion for stroke imaging.
J	Patient radiation dose should be displayed on the monitor as well as on the patient films.
K	PC based connectivity should be standard for easy transfer to images & Report. The image transfer from main console to workstation should be automatic and immediate.
9	**Workstations & Server:**
A	A multimodality client server architecture-based solution with minimum concurrent 16,000 slices rendering capacity, with 96 GB RAM with total storage (internal and external). Console reporting hardware specification – 2 no's Workstation with 01 concurrent licenses: dual quad core processor. 32 GB RAM, 1TB hard drive, DVD Writing with medical grade monitor of minimum 2 MP resolution & 3 button mouse. The Server client solution offered should of OEM, Should be able to send & retrieve images (same or other modality) from the PACS. Should be able to load studies from the archiving system of the organisation. (Online/Physical onsite). Client server Should be able to perform multiple post processing including.
(i)	MPR (standard and curved)
(ii)	Multiple easy cutting /splicing options
(iii)	Minimum and maximum intensity projection
(iv)	3D volume rendering
(v)	3D SSD (Shaded Surface Display)
(vi)	Advanced vascular analysis
(vii)	Auto bone removal
(viii)	Virtual endoscopy
(ix)	Dedicated colonoscopy
(x)	At least 2 Time point comparison
(xi)	Whole organ (brain) perfusion CT Scanner should have capability of whole brain acquisition of Minimum 11 cm of coverage
(xii)	Coronary analysis: Prospective ECG triggering facility, Retrospective ECG gated facility, Facility for ECG editing for removing irregular or ectopic beat should be available. Automated 3D processing of coronary arteries. calcium scoring. stent analysis, L.V analysis AND RV analysis should be available.
(xiii)	Minimum temporal resolution on single segment / sector reconstruction should be specified.
(xiv)	Neuro DSA with automated bone removal should be available.

(xv)	Body CT Perfusion: The system should support multi-slice calculation of blood flow, blood volume, and permeability images, including VOI measurement tools for perfusion characteristics with a minimum scan coverage of 20 cm should be available.
(xvi)	4D Dynamic Multi-Phase Angiography/ Kinematic Joint Study. This feature should be offered with a minimum coverage of 50 cm or more should be available
10	**Application:**
A	The system should have standard software like 3D Volume Rendering, MIP, CT Angio, Color Angio Display, and CT Perfusion.
B	The following software should be offered as standard: MPR, ROI, Volume Calculation, CT Number Display, Window Width, Window Level, Topogram Display, Cine Display, HRCT Lung, and Dynamic Scan.
C	The system must have true spectral detection capability by capturing the energy of X-Ray photons
D	There should be the possibility of virtual removal of calcium to visualize the underlying pathology of the vessel wall and its degree of impairing the blood flow in the coronaries.
E	There should be the possibility of virtual removal of iodine from CT Coronary Angiography to evaluate calcium deposition in the coronaries.
F	System must be capable of reconstructing minimum slice thickness of 0.3 mm and with matrix size of 1024x1024.
G	The system must have ECG gated Coronary/Cardiac imaging with a minimum slice thickness of 0.3 mm, matrix of 1024x1024.
H	The system should have complete spectral information in ECG gated coronary angiography studies for Iodine maps of coronary arteries with slice thickness of 0.3mm or better. This should be available with all modes viz. ECG gated- Prospective, Retrospective and High pitch spiral acquisition modes.
I	Mono Energetic Imaging should be available for every scan including ECG gated coronary/cardiac and other studies done with high pitch spiral acquisition.
J	The system should be capable of performing CTA/CTCA with a high calcium score without calcium blooming artifacts to visualize the vessel lumen properly
K	The ASPECT score (automatic/manual) for NCCT Brain Scans should be available.
L	Bone subtraction/removal software should be available for bone-free images of cerebral and carotid angiography
M	There should be whole brain coverage for functional and perfusion analysis of the brain.
N	Post-processing software for dynamic neuro perfusion should provide perfusion maps and quantification of blood flow, blood volume, mean transit time, and time to peak, etc.
O	There should be whole organ coverage for functional and perfusion analysis of body organs, e.g., liver perfusion
P	The system should be capable of performing at least a 50 cm range of dynamic acquisition.
Q	There should be differentiation of brain haemorrhage from contrast media.
R	Neuro CTA with accurate bone removal in complex body regions using a multi energy method should be available.
S	Whole Body CTA with accurate bone removal in complex body regions using a multi energy method should be available
T	The system should enable the assessment of lung blood perfusion using multi-energy techniques.

U	Color coded visualization of deposited uric acid crystals in peripheral extremities should be available
12	**Dose reduction Techniques:**
A	Noise Suppression protocols to maintain LCR at low dose should be standard.
B	Special software (such as MA modulation in Routine & Cardiac Mode) to ensure dose efficiency should be standard.
C	Specify the CT Dose index
D	The system should have the latest model-based iterative reconstruction techniques for X-ray dose reduction. The best available image reconstruction technique should be quoted as standard.
E	Low dose Pediatric CT mode should be available
F	Radiation dose reduction techniques i.e mA modulation in X, Y & Z axis, etc. should be avalable
G	It Should have iterative images reconstruction capabilities.
11	**Accessories: (Make and Model of all the quoted accessories should be specified)**
a)	Dry chemistry camera of DPI 500 or more of any reputed make
b)	Lead Glass - Minimum size should be 1200 x 1000 mm or more based on site condition
c)	UPS with maintenance free batteries capable of 15 minutes back up to run the entire CT, Computers, Dry chemistry camera, Workstations etc.
d)	Dehumidifier (QTY: 1)
e)	Dual Head Injector (QTY: 1) with Injector Syringes (QTY: 10)
f)	Lead Apron (QTY: 4) with Thyroid Shield (QTY: 2) and Gonad Shield (QTY: 2),Lead Gloves (2 QTY)
g)	Lead Apron Stand (QTY: 1)
h)	Physiological monitor, multi-parameter (QTY: 1) with Reusable Adult Probe (QTY: 5), Reusable Paediatric Probe (QTY: 5), Reusable Neonatal Probe (QTY: 2), ECG 3/5 Lead Cable (QTY: 2)
i)	Trolley Mount (QTY: 1)
j)	Photo Quality Printer (QTY: 1)
k)	Table cover paper dispenser
12	Should have import / manufacturing license from central licensing Authority or state licensing authority of CDSCO for medical devices and copy of valid license should be submitted for the quoted model.
B	The system should be AERB type approved, and the copy of E-LORA listing should be submitted along with bid. if the quoted model has not been yet installed In India, vender should submit NOC from AERB.
C	Regular QA according to AREB norms will be responsibility of bidder during warranty and CMC period.
13	1) CT fluoroscopy with all accessories should be available 2) Complete liver segmentation (automated) should be available 3) Tavi valve planning on CT should be available.
14	All the software's related to patient management which is being used in this equipment should be: interfaceable with the hospital EMR/HIS using HL7/ FHIR standards

15	The software should also be compliant with the requirements of the National Health stack and should have undergone ABDM sandbox testing if indicated in the NHA guidelines.
16	For all patient related data which may be generated in the equipment, guidelines given in the DPDP act are to be followed.
17	The portal for integration with building management system should be provided at no additional cost.

SR NO	SPECIFICATION FOR MULTI SLICE CT SCANNER (128 OR MORE NUMBER OF SLICES)
1	The equipment should be a continuously rotating low-voltage slip-ring type with volume scan function, capable of performing 128-slice spiral CT scanning of the whole body, including the head, coronary, thorax, spine, and abdomen, and producing high-resolution images. The system should be supplied with an acquisition workstation and a post-processing workstation. The system should conform to the following essential specifications
2	Scan Time: The minimum scan time should be less than 0.35 seconds for a full 360-degree scan, with the capability to select different scan times. This feature should accommodate the minimum scan time for all applications, including coronary cardiac CT and routine adult patient scans
3	Slice per Rotation: The system should produce 128 slices per 360-degree rotation
4	Image Reconstruction: Real-time image display in a 512 x 512 matrix during spiral acquisition, with a minimum of 15 images per second reconstruction time.
5	Slice Thickness: Various slice thicknesses should be available, with a minimum of 0.625 mm.
6	Field of View (FOV): The FOV should be 50 cm or greater.
7	Extended FOV, If available should be specified and provided
8	High Contrast Resolution: Spatial resolution should be 15 lp/cm or more at 0% MTF.
9	Low Contrast Resolution: Please specify the low contrast resolution with the acquisition parameters and dose.
10	Image Quality**:** Isotropic resolution of 0.6 mm x 0.6 mm x 0.6 mm at any pitch or scan speed and at all positions.
11	Temporal resolution: Should be better than 170 milliseconds or better for single sector/segment reconstruction.
12	Metal Artefact Reduction: Latest single-energy metal artifact reduction technique based on iterative reconstruction to reduce artifacts when scanning large orthopaedic implants should be available.
13	Detectors: There should be at least 64 rows of detector of Solid-State Ceramic material.
14	Gantry: Gantry aperture should be 60 cm or larger, with minimum tilt of +/-30 degrees or digital tilt. Gantry tilting should be possible remotely from the console. The gantry should have an in-built display of ECG and X-ray parameters
15	Patient Table: Table should have a metal-free scan range of 160 cm or more. Table movement control should be possible remotely from the console. Patient weight capacity of 210 kg.
16	X Ray Tube: The X-ray tube should have an anode heat storage capacity of 7 MHU or more. Details such as anode heat storage capacity, heat dissipation or cooling rate, focal spot size, mA and kV ratings are to be given
17	X Ray Generator: The generator should be a high-frequency type with 75 kW and a tube voltage range of 80-140 kV.
18	Computer System of Acquisition workstation: It should be a multi-CPU workstation type with complete multitasking capability, equipped with a 19" TFT monitor. The system should allow for image processing, 3D reconstruction, image manipulation, and the ability to store and retrieve images from disk parallel with scanning. Additionally, the system must be DICOM 3.0 compatible and have an in-built image storage capacity of 200,000 images, with CD and DVD capabilities for additional image storage.
19	Computer System of Post-processing workstation: The computer should be a multi-CPU workstation type with complete multitasking capability. The system should be supplied with a minimum of 19" TFT monitor and

	support functionalities including image processing, 3D reconstruction, image manipulation, simultaneous storing/retrieving of images from disk during scanning, DICOM 3.0 compatibility, an in-built image storage capacity of 200,000 images, and CD/DVD facilities for additional image storage.
20	Reconstruction Filter: The system should provide high-resolution filters for different body regions.
20.1	Please specify the number of filters provided for each body part.
21	Dose Reduction: The system should include software for dose reduction through iterative reconstruction. Please quote the latest technique available.
21.1	Dose Reduction by Real-time Tube Current Modulation: The system should allow for dose reduction through real-time tube current modulation.
22	**Software capabilities:** The system should be supplied with the following software as standard components.
22.1	Real-time Multi-Planar Reconstruction (MPR), MPR thin & thick with views in Sagittal, Coronal, and Axial views
22.2	3D Shaded Surface Display showing different density values such as soft tissues, bones, and contrast-enhanced vessels
22.3	Volume Rendered technique: Advanced 3D application package for the optimal display and differentiation of different organs through independent control of color, opacity, and shading in up to 4 tissue classes
22.4	CT Angiography features including Maximum Intensity Projection (MIP), Minimum Intensity Projection (MinIP), Thin MIP, and evaluation of spiral images for vessels, vascular anomalies, aneurysms, plaques, and stenosis
22.5	Virtual Endoscopy software enabling visualization of vessels, airways, and the intestines
22.6	Complete Coronary cardiac evaluation with ECG-synchronized true isotropic volume acquisition using prospective ECG triggered or retrospective ECG-gating mode should be available
22.7	Basis for 3D cardiac scanning and reconstruction, e.g. CT-Angiography of the coronary and thoracic vessels or Calcium Scoring should be available
22.8	Adaptive ECG-synchronized dose modulation (pulsing) allowing for optimal dose savings
22.9	Fully automated cardiac evaluation should be available
22.10	Automatic quantification of stenosis should be available
22.11	One-click heart isolation should be available
22.12	One-click coronary segmentation should be available
22.13	Full evaluation of left-ventricular function should be available
22.14	Vessel analysis: Automatic vessel segmentation plus accurate quantification of vascular lesions should be available
22.15	Auto Bone removal facility should be available
22.16	Neuro perfusion and Neuro DSA facility should be available
22.17	Dual Energy: All Contrast-based (VNC, iodine mapping, etc.) and non-contrast-based (Calculi characterization, gout, etc.) Dual Energy Applications should be offered. All Dual Energy scans should by default be single acquisition runs. • Differentiation of brain haemorrhage from contrast enhancement • Virtual non contrast CT scan Brain and Body using Dual energy method. • Dual energy-based angiography with bone removal method • Vascular plaque characterization • Assessment of lung perfusion using dual energy • Chemical composition of kidney stones. • Bone density and marrow imaging by calcium removal.
23	Standard Accessories: The system should be supplied with the following accessories as standard.
23.1	Pressure Injector: Dual-head pressure injector from a reputed manufacturer.
23.2	Lead Glass - Minimum size should be 1200 x 1000 mm or more based on site condition

23.3	Uninterrupted power supply: UPS for the entire system with a 15-minute battery backup.
23.4	Dehumidifier: from a reputed manufacturer
23.5	Lead Apron (QTY: 4) with Thyroid Shield (QTY: 2) and Gonad Shield (QTY: 2),Lead Gloves (2 QTY)
23.6	Lead Apron Stand (QTY: 1)
23.7	1) CT fluoroscopy with all accessories should be provided 2) Complete liver segmentation (automated) should be provided 3) Tavi valve planning on CT should be provided
23.8	Further to this, the system should include all the necessary accessories and consumables supplied as standard
24	All the software's related to patient management which is being used in this equipment should be: interfaceable with the hospital EMR/HIS using HL7/ FHIR standards
25	The software should also be compliant with the requirements of the National Health stack and should have undergone ABDM sandbox testing if indicated in the NHA guidelines.
26	For all patient related data which may be generated in the equipment, guidelines given in the DPDP act are to be followed.
27	The portal for integration with building management system should be provided at no additional cost.
28	Should have import / manufacturing license from central licensing Authority or state licensing authority of CDSCO for medical devices and copy of valid license should be submitted for the quoted model.
29	The system should be AERB type approved, and the copy of E-LORA listing should be submitted along with bid. if the quoted model has not been yet installed In India, vender should submit NOC from AERB.
30	Regular QA according to AREB norms will be responsibility of bidder during warranty and CMC period.