

Amendment No. XXXXI Dated 09.10.2018
HSCC/PUR/CNCI/Kolkata/Medical Equipment/03 dt. 15.11.2017

Procurement of Medical Equipment CNCI 2nd Campus.

All bidders are requested to note the following:

Item No	Name of the equipment / Instrument	Last date & time sale/downloading of Tender document	Last date & time closing/submission for receipt of tender	Date of opening of Techno – Commercial bids.	Earlier date of opening	Amendment Status for opening date
2	CT Scan 128 Slice	22.10.2018, up to 13.00 hrs IST	22.10.2018, 14.00 hrs IST	22.10.2018, 14.30 hrs IST	10.10.2018	Tender opening date extension.

Name of Equipment	May please read as
CT Scan 256 Slice	CT Scan 128 Slice

TECHNICAL SPECIFICATION OF 128 SLICE CT SCAN UNIT

State-of-the-art, USFDA approved, 128 slice per rotation whole body CT scanner should be quoted with following essential specifications. Quoted model must have AERB type approval. Radiation safety requirements must be followed in during installation and subsequently during lifetime of the equipment. Vendor should assist in site approval, registration and licensing of the facility with AERB (ELORA).

1. **X-Ray Generator:**
 - a. High frequency generator with output of at least 70 KW.
 - b. The mA range available should be 30mA to 600mA or better.
2. **X-Ray Tube:**
 - a. Anode heat storage capacity of 7.0 MHU or higher or the tube with direct cooling technology.
 - b. Tube cooling rate of 1600 KHU per minute or more.
 - c. Tube voltage 80kV to 130kV or better.
3. **Detector and Data Acquisition System:**
 - a. Solid state detector: specify the detector material.
 - b. Specify number of detector rows & number of elements in each row.
 - c. The detector should generate 128 or more slices per rotation with slice thickness of 0.625mm or lower for all types of scans and applications.
 - d. The detector should have 700 or more effective elements / channels per slice (this number should not include the reference elements / channels and channels required for calibration).
4. **Gantry:**
 - a. The gantry should be provided with user friendly control panels on both sides.
 - b. Gantry aperture should be 70 cm or more in diameter.
 - c. Maximum scan field of view should be 50cm or more.
 - d. The scan time for a 360 Degree rotation should be 0.35 second or lower.
 - e. The gantry tilt of minimum 25 degree which can be operated both from gantry and console room.
5. **Patient Table:**
 - a. Carbon fibre (or equivalent Radiolucent material) table top with a metal free scan able range of 160 cm or more.

- b. Patient load capacity of 200 kg or more.
 - c. Minimum horizontal table speed at least 100 mm/sec.
 - d. The vertical table travel range should be 35cm or more.
 - e. Additional flat, calibrated, carbon fiber table top for Radiotherapy planning.
6. **Operator Console:**
- a. The latest computer should be offered with 64 Bit processor with minimum RAM of 4 GB
 - b. Main Console should include a high resolution, TFT/LCD color monitor of 19" or more.
 - c. The display matrix should be 1024 x 1024.
 - d. The Hard Disk capacity for both image and raw data should be 250 GB or more.
 - e. It should have facility to store at least 10,000 images.
 - f. DICOM compliant to Send Store, Print, Receive.
 - g. The console should support Filming in user defined formats.
 - h. Ready to seamlessly integrate with RIS/PACS
 - i. OEM Computer desk and cabinet should be provided.
7. **Spiral Scan:**
- a. Should generate 128 or more slices per rotation with slice thickness of 0.625mm or lower for all types of applications.
 - b. The scan time for a 360 Degree rotation should be 0.35 second or lower.
 - c. Bolus Triggered or bolus chase Spiral acquisition should be possible.
 - d. Slice increment - specify scan and selectable slice thickness.
 - e. Single Continuous spiral scan time should be at least 60 sec or more.
8. **Dose Reduction:**
- a. In built mechanism for adapting the tube current during each scan. This should enable radiation dose reduction where body part thickness is less. Specify mechanism used in the offered system.
 - b. The scanner should have inbuilt pediatric protocols
 - c. Latest Modality based Iterative Reconstruction Technique to be quoted as standard (Admirer/Asir-V/IMR/or equivalent). Certified document showing extent of dose reduction by these techniques should be attached.
9. **Image Reconstruction:**
- a. Real Time reconstruction speed should be 35 images/sec or more.
 - b. Display Matrix: 512 x 512.
 - c. Reconstructed slice thickness should be up to 10mm and should be freely selectable.
10. **Image Resolution:**
- a. The system should have a high contrast resolution of at least 15 lp/cm for axial and spiral scan 0%MTF with full 50cm FOV.
 - b. Specify low contrast resolution of the system achieved with 20cm CATPHAN phantom. Specify surface dose, mAs, slice thickness and HU used.
11. **Operator Console Image Processing Section:**
The following applications should be standard at the console and it should be able to use the following without requirement of a satellite workstation:
- a. Registration, scheduling and protocol selection.
 - b. Real-time Multi-Planar Reconstruction (MPR) of secondary views, with viewing perspectives in all planes including curved and orthogonal MPR.
 - c. CT Angiography: MIP and MinIP.
 - d. 3D Volume Rendering (VRT), 3D Surface Shaded Display.
 - e. CT number display, window width, window level.
 - f. Cine display.
 - g. HRCT lung.

- h. Automated Bone Removal.
- i. Parallel evaluation of multiple ROI in circle, irregular and polygonal forms.
- j. Statistical Evaluation for area/ volume, S.D, Mean/Max and Histograms.
- k. Distance & angle measurement, freely selectable positioning of coordinate system, grid and image annotation.
- l. 2-D post processing, including image zoom and pan, image manipulations, including averaging, reversal of grey-scale values, and mirroring.
- m. Image filter functions, including smoothing algorithm.
- n. Posterior Fossa Optimization for reduction of beam hardening artifacts.
- o. Metal Artifact Reduction software.

12. Archival (Operator Console):

- a. Post processing and filming parallel to scanning should be possible, separate console and keyboard should be available for this purpose.
- b. CD/DVD archival along with viewer software to open these on PC should be provided.
- c. Software for Remote Diagnostics Service over a telephone line.
- d. System must be ready for seamless integration with RIS/PACS.

13. Post Processing and reporting with Client Server Architecture:

- a. A Client Server Architecture based solution (Intellispace Portal 3.0/Advantage Workstation / Syngo Via / equivalent)
- b. Software must support at least 20,000 concurrent slices for data post-processing.
- c. Integration: Imaging processing server must be integrated with RIS and PACS.
- d. Server Hardware: Dell/HP/IBM dual CPU; RAM- 64 GB minimum; Data Disc: RAID level5; Graphical processing unit: NVIDIA GPU or equivalent; Image storage minimum 4 TB (as PACS will be there).
- e. Client hardware specification - 3 clients to be supplied: Each client should have Z820 or equivalent CPU unit with 2 six core processors, Minimum 32 GB RAM, NVIDIA 1 GB or equivalent, 500 GB hard drive, two 3MP monitors per client, 5button mouse and individual Online continuous UPS of at least 2kVA.

14. Basic Post Processing applications (3 concurrent users for all applications):

- a. The clients should be capable of simultaneously viewing and performing all post processing functions as well as filming independently without the help of the main console.
- b. Two way data transfer between operator console and the server should be possible.
- c. Standard evaluation applications: Distance, Angle, Marker, Region of Interest, Arrow, Pixel lens, Anatomical Registration, Synchronized Scrolling, Correlated Cursors.
- d. Statistical Evaluation: Area/ volume, Standard deviation, Mean value, Image annotation and labeling, Histogram, Time-intensity curves, Peak-enhancement images, Time-to-peak images.
- e. ROI evaluation: Parallel evaluation of multiple ROI in circle, irregular and polygonal forms.
- f. 2D: 2-D, including image zoom, pan and window; image manipulations, including averaging, reversal of grey-scale values, and mirroring; image filter functions, including advanced smoothing algorithm and advanced bone correction.
- g. Image presentation: 2D, MPR, MPR thick, MPR/MPR fusion, MIP, MIP thin, MinIP, VRT.
- h. Real-time Multi-Planar Reconstruction (MPR) of secondary views, with viewing perspectives in all planes including curved and orthogonal MPR.
- i. 3D Volume Rendering (VRT), Volume measurements.
- j. Volume Calculation.
- k. Interactive & Automatic Cine display should be available.
- l. Bone removal, Table removal.

15. Advanced applications (one floating user license for each application).

- a. **CT Angio:** Automatic table and bone subtraction in CT angiography, Single click bone removal, manual vessel tracking, ability for a bone free visualization of vessels, Stenosis measurement.
- b. **Lung CT:** Low dose lung CT protocols for advanced lung nodule detection, segmentation and analysis, computer aided detection (CAD).

- c. **Dental CT:** High-resolution evaluation of teeth and jaws with automatic panoramic and paraxial reconstruction, evaluation of mandibular canal and life size filming.
- d. **Tumor Comparison:** Four time point comparison with previous imaging studies using RECIST criteria, PET CT cross time point evaluation, quantification of tumor growth rates.
- e. **Multimodality Image fusion:** Between PET-CT, PET-MR, CT-MR, MR-SPECT, MR-MR, MR-US, CT-US etc.
- f. **Colonography:** Noninvasive evaluation of the entire colon including external and endoscopic SSD views, 3D VR views and virtual dissection views.
- g. **CT Brain Perfusion and CT Body Perfusion**
- h. **Advanced vessel analysis**
- i. **Liver lesion analysis**
- j. **Virtual endoscopy**

16. **Accessories:**(Make and Model of all the quoted accessories should be specified)

- i) Dry chemistry camera of DPI 500 or more of any reputed make.
- ii) Lead Glass of 150 x 100 cm.
- iii) UPS with half an hour back up to run the entire CT, Computers, Dry chemistry camera, Work Stations etc.
- iv) Dual Head Pressure Injector of reputed make with 100 sets of Syringes & 500 sets of tubings. Specify the make of Injector.
- v) Multi Para monitor with pulse oximeter of a reputed make for monitoring vitals.
- vi) ULTRA LIGHT WEIGHT lead free aprons - 4 Nos.
- vii) Apron stand — 1 No.
- viii) Apron Hanger suitable for the supplied aprons, shields.
- ix) LEAD Free Thyroid Shields – 4 nos.
- x) CT Phantom with various densities for CT no. check.
- xi) Necessary QA tools essential for running CT machine.
- xii) Lead Free Gonadal Shields – 4 nos.
- xiii) Tumour ablation system with treatment planning solution & RF generator.
Specifications as below.
 - a) Computerized needle positioning guiding tool along with certified radio frequency ablation system for CT guidance in tumor ablation with necessary accessories (in consultation with Department).
 - b) System should support different ablation system.
 - c) Registration of the data, post processing segmentation before and after ablation should be possible
 - d) Overlay of non-contrast images with contrast images to be possible.
 - e) Should include radio frequency ablation generator and RFA accessories- Intelliflow pump, RFA probes, multiprong electrodes and coaxial biopsy gun of 9cm and 15cm with 20cm throw.

xiv) Patient Positioning Accessories: Head Rest, Head and Arm Support, Knee and Leg Support, Coronal Supine Head Holder. Paediatric Immobilizer.

17. **Patient Communication System:** An integrated intercom and Automated Patient Instruction System (API) should be provided.

18. **Installation**

- a. The unit will be installed on site-modification basis. The vendor should inspect the site before quoting and ensure that the unit can be installed in the available space without any functional compromise. Complete layout site map and details of work (BOQ) should be part of technical bid. Provisions should be made for console room, changing room, wash basin, work-station and printer locations. It should also include Lead lined door with lead glass peeping window, radiation warning indicators and signages, Aluminium false ceiling, GVT floor tiles and full height wall tiles. All turnkey work should comply with specified standards of the hospital.
- b. Necessary furniture and fixtures for comfortable working conditions, storage of system components and consumable stand for protective aprons and gonad shields. etc. should be provided.
- c. Power and Air-conditioning requirement must be mentioned. AC of adequate capacity should be provided. Power supply by the institute will be terminated at existing point. All electrical provisions including earthing etc. will be vendor's responsibility.

19. Warranty:

- i) Warranty of the equipment including crystal & CT tube and all accessories as well as batteries of the UPS and Air-conditioning units should be for FIVE years after the satisfactory commissioning and handing over of the system. Warranty will include all the accessories as well as electronic / electrical consumables /cables / leads etc and third party items.
- ii) Rates for **FIVE** years comprehensive maintenance contract (CMC) after the expiry of warranty with uptime as per the tender terms. CMC will include the crystal, CT tube, batteries of the UPS, Air-conditioning units. All the accessories supplied with the main equipment as well as electronic / electrical consumables /cables / leads etc. will also be part of the CMC.
- iii) **Penalty clause:** Penalty at the rate of RS.10,000/ per day for short falling of 95% uptime guarantee. If the machine lies non-functional for a period of more than two weeks continuously, the same penalty will be imposed even if 95% uptime clause is met with for the given calendar year.
- iv) **Uptime guarantee:** During warranty and the CMC period, the uptime of the system shall be at least 95% of the 365 days in a year. If downtime exceeds 5%, there shall be a penalty of Rs.10,000 / per day.
- v) **Calculation of uptime**

The machine shall remain in working condition/fully functional for minimum 347days (being 95% of 365 days) during the year. For leap year, the machine shall remain in working condition/fully functional for minimum 348 days (being 95% of 366 days) during the year. Sunday and other holidays as per the institute policy would be counted calculation of uptime, if the machine was in working condition/fully functional on both days i.e the day preceding Sunday/holiday and the day succeeding Sunday/holiday. Further, routine maintenance as per scheduled agreed by user would be counted towards calculation of uptime. In case downtime is more than 5 hours on any particular day during normal working hours of the institute the same day would not count towards uptime calculation.

vi) Calculation of down time

Down time calculation would start from the reporting of the down time by the representative of the institute by agreed mode of communication i.e. telephonic communication or email or as per the data of the remote access of the machine(s) by supplier, if any, whichever is earlier?

The down time would be calculated by deducing total uptime period as defined above from total days of the respective year. Year for the calculation of Uptime/downtime as the case may be would be considered from 01st January to 31st December of the respective year. For purpose of the downtime calculation

breakdown of the machine shall be calculated as under. If no imaging is possible then its complete breakdown. If only some functions of the machine are not working in that case it shall be considered as partial breakdown equivalent to 50% of the complete breakdown for calculation purposes.

- vii) Regular preventive maintenance and QA checks as per AERB norms will be part of the warranty and CMC.
- viii) Free software update for 10 years.
- ix) Supplier must ensure the availability of 'expertise service' and maintenance in CNCI, Kolkata.

19. Instructions

- a. There should be at least three installations of the quoted model in India. Satisfactory performance certificate by users on their letterhead must be attached.
 - b. All information asked for must be provided in the compliance statement under the headings given above.
 - c. All information in the tender document must be supported by original product data sheets or should be certified by the principals. Computer generated data sheets, photocopies or email printouts shall not be accepted.
20. If the unit is being quoted by Indian agency which is not a direct subsidiary of the principals; an undertaking from the principals must be provided that in case of discontinuation or change of the agency, merger, acquisition or any corporate rearrangement, the principal will arrange for onsite maintenance of the unit and abide by all terms and conditions of the tender.

20. Training: Onsite training of CT Scan Machine and Tumour ablation system by application specialist for a total of eight weeks (staggered manner) & Departmental books as asked by HOD.

The Turnkey Scope of Work – CT	
1	The Supplier should inspect the proposed site offered by the Consignee Institute in which the CT system has to be installed and they are required to submit the plan for the complete CT Scan Centre on a turnkey basis. The scope of work includes complete Civil work, Electrical, Plumbing, Furnishing, Air-conditioning and Fire fighting for the construction of CT Scan Centre.
2	While preparing the plan, the following aspects have to be addressed.
a)	Care should be taken to provide easy negotiation of the patient stretchers/ trolleys through corridors and doors.
b)	Radiation shielding for doors, walls, windows etc.
c)	Furniture like desk, chairs, shelves etc.
d)	Patient stretcher and other furniture/ accessory to make the scan centre functional.
3.Civil work	
a)	Civil construction work including construction of brick wall if any, plastering, flooring as per the approved plan and equipment layout plan.
b)	Concrete bed at CT equipment area.
c)	Platform for unloading and shifting the CT should be provided if necessary.
d)	Cable tray, trench & channel – necessary trenches, cable tray and channels at required location would be provided.
e)	All the construction work to be done as per the final plan approved by the Consignee.
f)	Active and passive room shielding for magnetic, fringe field should be provided as per the requirement of the equipment.
a)	Flooring
1	600 x 600 mm vitrified tiles with 100mm tile skirting to match in console room etc.
2	50 mm thick cement concrete flooring with Vinyl flooring in CT equipment and UPS room.
b)	Painting

1	Two coats Plastic Emulsion Paint over 2 coats of wall putty including primer in console room, UPS room, CT Gantry & Equipment room etc.
c)	False Ceiling
1	Acoustical tile for ceiling with light weight insulating material of high quality supported on grid or finished seamless with support above ceiling. Finished with white paint or powder coated with white paint, if metallic. Ceiling height to suit the equipment mount and clearances.
Plumbing work	
1	All water pipes and fittings shall be of high density polythene of approved and standard make. The gratings shall be brass chrome plated. All plumbing accessories should be of standard make.
2	Hot water service to be provided if required.
Electrical work	
1	The supplier shall be required to specify the total load requirements for the CT scan centre including the load of air conditioning , room lighting and for the accessories if any. The supply line will be provided by the Institute up to one point within the CT Scan centre area. The distribution panel shall be provided by the vendor. Few lights in each room shall be connected to the UPS to provide emergency lighting.
2	The electrical work shall include the following:
a.	Wiring – All interior electrical wiring- with main distribution panel board, necessary MCBs, DB, joint box, switch box etc. the wires shall be of copper of different capacity as per the load and should be renowned make as listed below.
b.	Switches light and power points should be of modular type and of standard make as listed below.
c.	General lights – LED light fittings with 500 Lux Illumination
3	AIR CONDITIONING:
Ductable package air conditioners / split AC units may be used according to room requirement and suitability. Humidity control should be effective to eliminate moisture condensation on equipment surface. The Air conditioning should be designed with standby provision to function 24 hours a day.	
The outdoor units of AC should have grill coverings to prevent theft and damage.	
Ventilation is required in toilet.	
2	Environment specifications:
a)	Relative Humidity range: To be maintained between 60% and 80% in all areas except equipment room which shall be as per requirement of the equipment.
b)	Temperature ranges: 22± 2° C in all areas except equipment room which shall be as per requirement of the equipment.
c)	Air conditioning load: The heat load calculations and maintaining the desired temperature and humidity shall be the responsibility of the bidder.
Furniture:	
a)	Revolving chairs height adjustable, medium-back with hand-rest in the Control room, Radiologist room and viewing area. – 4 NO.S
b)	Chairs for patient waiting area – Three seater (chrome plated). - 10 NO.S
c)	Cupboard with laminate door shutters for storage of spare parts and accessories and records as per requirement. – 3 NO.S
d)	Drug trolleys for patient preparation area -1 NO.S
e)	Patient trolley with rubber foam mattress to be kept in the patient preparation room-2 NO.S
f)	Name boards for all rooms
g)	Tables for Workstation and Radiologist - 2 NO.S
h)	Changing rooms should have change lockers and dressing table- 1 SET
i)	Dustbins: 10 no.s

j)	Room Signage- as per requirement
k)	Any other furniture item as per requirement.
All furniture items should be of standard make as mentioned in the table below.	
Miscellaneous:	
1	Cabling of Network (LAN) connectivity for camera system, console system, workstation and computers etc as required.
2	Broadband connection: for REMOTE SERVICE of CT system.
3	Fire extinguisher Dry CO2 type as required for the building safety as required
LIST OF ITEMS AND SUGGESTED MANUFACTURERS.	
ITEMS PREFERRED MAKES	
A	FLOORING VITRIFIED TILES -Somany, Kajaria , H&R Johnson, RAK india
B	PAINT - Dulux, Asian Paints , Nerolac
C	PLUMBING - Kohler, Jaguar , Grohe , Roca
D	SANITARY ITEMS - CERA, Hindware, Parryware
E	ELECTRICAL
1	CABLES - Finolex, Havells ,V-Guard
2	SWITCHES - Legrand, L&T, Crabtree , Roma
3	DISTRIBUTION BOX , MCB - Legrand, L&T, Siemens, Havels
4	LIGHT FITTINGS - Philips / Crompton / Wipro/syska
F	AIR CONDINTIONING - Daikin, Hitachi, Blue Star, Voltas,
G	FURNITURE - Hermen Miller , Godrej , Featherlite,Geeken

All other terms and conditions of the tender enquiry document shall remain unchanged. Prospective bidders are advised to regularly visit HSCC website/ CPP as corrigendum /amendments etc. if any, will be notified on this portal only, no separate advertisement will published in the newspapers.

**Sr. Chief General Manager-I, HSCC (I) Ltd
For & on behalf of Director CNCI, Kolkata**