22.05.2023

TAMILNADU MEDICAL SERVICES CORPORATION LTD.,

SUPPLY AND INSTALLATION OF ANGIOGRAPHY BIPLANE SYSTEM FOR CARDIAC HYBRID OR FOR TERTIARY CARE HOSPITALS AT GOVT. RAJAJI HOSPITAL, MADURAI, GOVT. KILPAUK MEDICAL COLLEGE HOSPITAL, CHENNAI AND GOVT. COIMBATORE MEDICAL COLLEGE HOSPITAL, COIMBATORE IN TAMIL NADU

TENDER REF.: PKG60/C1.2/P2/ICB/TNUHP/ JICA/TNMSC/ENGG/2023, dated 09.03.2023

CORRIGENDUM

a) The following corrigendum is issued:-

Sl. No.	Tender document reference	Instead	Read as
1.	Page No. 1-144 Tender Ref. No. PKG60/C1.2/P2/ICB/TNUHP/ JICA/TNMSC/ENGG/2023, dated 09.03.2023 **In all the pages of bidding document**	Angiography Biplane Plane System with 3D Echocardiography System for Cardiac Hybrid OR	**Angiography Biplane System for Cardiac Hybrid OR**
2.	**Page No.96** **Section VI: Schedule of Requirements** **3. Technical Specifications** Technical Specification for Angiography Biplane System for Cardiac Hybrid OR	Existing technical specification	Revised technical specification at **Annexure – A**
3.	**Section IV. Bidding Forms** **Price Schedule** Page No. 61 Schedule No. 1. Goods Supplied from Abroad (outside the Purchaser's Country) Row:- 8, Column:- 2	Large display of minimum 58 inch or more as per specification	Large display of minimum **55 inch** or more as per specification
4.	**Section IV. Bidding Forms** **Price Schedule** Page No. 61 Schedule No. 2. Goods Supplied from within the Purchaser's Country Row:- 8, Column:- 2	Large display of minimum 58 inch or more as per specification	Large display of minimum **55 inch** or more as per specification

b) The following clarification is issued:-

Sl. No.	Tender document reference	Point raised	Clarification Furnished
1	Page No.96 **Section VI: Schedule of Requirements** **3. Technical Specifications** **Technical Specification for**	Request to amend as to clarify the point.	No Change. Hence, published specification prevails.

Sl. No.	Tender document reference	Point raised	Clarification Furnished
	Angiography Biplane System for Cardiac Hybrid OR **A. Gantry** 2. The lateral C-arm should be mounted on Dual c-arc with moveable pivot to provide flexible movement and true projections in the extreme lateral arc positions.		
2	Page No.96 **Section VI: Schedule of Requirements** **3. Technical Specifications** **Technical Specification for Angiography Biplane System for Cardiac Hybrid OR** 4. All movements of the gantries should be controlled by the joystick on the table side as well as from the control room.	Request to amend as all movements of the gantries should be controlled by the joystick on the table side	No Change. Hence, published specification prevails.
3	Page No.96 **Section VI: Schedule of Requirements** **3. Technical Specifications** **Technical Specification for Angiography Biplane System for Cardiac Hybrid OR** 6. Both gantries should have fast speed for angulations and positioning. The frontal system should have a speed of at least 15 degree/sec. For all positions and lateral plane should have a speed of at least 8 degree/sec.	Request to amend as Both gantries should have fast speed for angulations and positioning. The frontal system should have a speed of at least 15 degree/sec. For all positions and lateral plane should have a speed of at least 8 degree/sec. The system should have seed of at least 10 degree/sec in biplane mode.	No Change. Hence, published specification prevails.
4	**Section VI: Schedule of Requirements** **3. Technical Specifications** **Technical Specification for Angiography Biplane System for Cardiac Hybrid OR** 4. Table Trendelenburg should be provided as standard.	Request to amend as to delete the point.	No Change. Hence, published specification prevails.
5	**Section VI: Schedule of Requirements** **3. Technical Specifications** **Technical Specification for Angiography Biplane System for Cardiac Hybrid OR** 8. System should have foot switch for releasing fluoroscopy, acquisition and table breaks.	Request to amend as System should have foot switch for releasing fluoroscopy, acquisition	No Change. Hence, published specification prevails.
6	**Section VI: Schedule of Requirements**	Request to amend as 3D Reconstruction and tools	No Change. Hence, published

Sl. No.	Tender document reference	Point raised	Clarification Furnished
	3. Technical Specifications **Technical Specification for Angiography Biplane System for Cardiac Hybrid OR** 9. 3D Reconstruction and tools should be possible from the exam room table side touchscreen and from console room.	should be possible from the exam room table side control panel / touchscreen and from console room.	specification prevails.
7	**Section VI: Schedule of Requirements** **3. Technical Specifications** **Technical Specification for Angiography Biplane System for Cardiac Hybrid OR** 3. Radiography KVP range should be 40 KV — 125 KV or more.	Request to amend as Radiography KVP range should be 50 KV — 125 KV or more.	No Change. Hence, published specification prevails.
8	**Section VI: Schedule of Requirements** **3. Technical Specifications** **Technical Specification for Angiography Biplane System for Cardiac Hybrid OR** 2. Anode heat storage capacity should be 5 MHU or more having liquid bearing technology or metal lubricant or specify the alternative cooling method available. High heat dissipation should be offered.	Request to amend as Anode heat storage capacity should be 3 MHU or more having liquid bearing technology or metal lubricant or specify the alternative cooling method available. High heat dissipation should be offered.	No Change. Hence, published specification prevails.
9	**Section VI: Schedule of Requirements** **3. Technical Specifications** **Technical Specification for Angiography Biplane System for Cardiac Hybrid OR** 3. The system should have cooling rate or 1500KHU/min for the x-ray tubes for uninterrupted performance. Companies should quote model having highest cooling rate.	Request to amend as The system should have cooling rate or 7500HU/sec or more for the x-ray tubes for uninterrupted performance. Companies should quote model having highest cooling rate.	No Change. Hence, published specification prevails.
10	**Section VI: Schedule of Requirements** **3. Technical Specifications** **Technical Specification for Angiography Biplane System for Cardiac Hybrid OR** 3. The collimator should have the facility for the dose measurement chamber in order to display the skin dose on the monitors in the lab.	Request to amend as The collimator should have the facility for the dose measurement chamber in order to display the dose on the monitors in the lab.	No Change. Hence, published specification prevails.
11	**Section VI: Schedule of Requirements**	Request to amend as Dynamic flat detector system with high	No Change. Hence, published

Sl. No.	Tender document reference	Point raised	Clarification Furnished
	3. Technical Specifications **Technical Specification for Angiography Biplane System for Cardiac Hybrid OR** **F. Biplane Digital System:** 1. Dynamic flat detector system with high spatial and 16-bit contrast resolution. Frontal plane with High resolution of 2K matrix (2480 x 1920) acquisition with minimum pixel size of 160 micrometer.	spatial and 16-bit contrast resolution. Frontal plane with High resolution of matrix (1024 x 1024) acquisition with minimum pixel size of 195 micrometer.	specification prevails.
12	**Section VI: Schedule of Requirements** **3. Technical Specifications** **Technical Specification for Angiography Biplane System for Cardiac Hybrid OR** 2. Dynamic flat detector system with high spatial and 16-bit contrast resolution. Lateral plane with minimum pixel size of 190 micrometer.	Request to amend as Dynamic flat detector system with high spatial and 16-bit contrast resolution. Lateral plane with minimum pixel size of 195 micrometer.	No Change. Hence, published specification prevails.
13	**Section VI: Schedule of Requirements** **3. Technical Specifications** **Technical Specification for Angiography Biplane System for Cardiac Hybrid OR** 3. Size of frontal plane should be at least 48 cm diagonal.	Request to amend as Size of frontal plane should be at least 42 cm diagonal.	No Change. Hence, published specification prevails.
14	**Section VI: Schedule of Requirements** **3. Technical Specifications** **Technical Specification for Angiography Biplane System for Cardiac Hybrid OR** 4. Size of lateral plane detector should be at least 39 cm diagonal	Request to amend as Size of lateral plane detector should be at least 42 cm diagonal	No Change. Hence, published specification prevails.
15	**Section VI: Schedule of Requirements** **3. Technical Specifications** **Technical Specification for Angiography Biplane System for Cardiac Hybrid OR** 6. Spatial resolution should be at least 3.0 LP/mm in frontal plane and 2.5 LP/mm in the lateral plane.	Request to amend as Spatial resolution should be at least 2.5 LP/mm in frontal plane and 2.5 LP/mm in the lateral plane.	No Change. Hence, published specification prevails.
16	**Section VI: Schedule of Requirements** **3. Technical Specifications** **Technical Specification for Angiography Biplane System for**	Request to amend as All the 3D postprocessing, analysis should be possible from the exam room control panel / Touch screen and also from	No Change. Hence, published specification prevails.

Sl. No.	Tender document reference	Point raised	Clarification Furnished
	Cardiac Hybrid OR 13. All the 3D postprocessing, analysis should be possible from the exam room Touch screen and also from the console room.	the console room.	
17	**Section VI: Schedule of Requirements** **3. Technical Specifications** **Technical Specification for Angiography Biplane System for Cardiac Hybrid OR** 14. System should have capability to optimize and standardize system set-up for Doctor's cases, from routine to mixed procedures.In addition the system should have the capability to upload the hospital checklists and/or protocols to help safeguard the consistency of interventional procedures and help to minimize preparation errors.	Request to amend as to clarify the point.	No Change. Hence, published specification prevails.
18	**Section VI: Schedule of Requirements** **Page no. 93** **1. List of goods & delivery schedule** Shortest Delivery Period (calculated from the Contract Effective Date) – 90 days Longest Delivery Period (calculated from the Contract Effective Date) – 120 days	Request to amend as Delivery Timeline 150 to 180 days from: a) Issuance of Supply order, b) Opening of Letter of Credit for 90% of Imported Order c) Release of 10% advance payment, d) Site handover along with Permanent Power & statutory approvals whichever is later.	No Change. Hence, published terms prevail.
19	**Section VI: Schedule of Requirements** **Page no. 94** **2. List of Related Services and Completion Schedule** The date of Completion for Services (calculated from the Contract Effective Date) - 120 days from Contract Effective Date	Request to amend as Delivery Timeline 150 to 180 days from: a) Issuance of Supply order, b) Opening of Letter of Credit for 90% of Imported Order c) Release of 10% advance payment, d) Site handover along with Permanent Power & statutory approvals whichever is later.	No Change. Hence, published terms prevail.
20	**Section VIII: Particular Conditions (PC)** **Page no.134** **Point no. GC 18.1** Performance Security to the Purchaser shall be Required. Performance	Request to amend as Chain Warranty Page no.140 Point no. GC 18.1 Performance Security to the Purchaser shall be Required. Performance Security to the	No Change. Hence, published terms prevail.

Sl. No.	Tender document reference	Point raised	Clarification Furnished
	Security to the Purchaser shall be for an amount of 5% of the contract value, valid upto 28 days after the date of completion of performance obligations including warranty obligations. In the event of any correction of defects or replacement of defective material during the warranty period, the warranty for the corrected / replaced material shall be extended to a further period of 12 months and the Performance Bank guarantee for proportionate value shall be extended 28 days over and above the extended warranty period.	Purchaser shall be for an amount of 5% of the contract value, valid upto 28 days after the date of completion of performance obligations including warranty obligations. Kindly delete this clause.	
21	**Section I. Instructions to Bidders (ITB)** **16. Documents Establishing the Conformity of the Goods and Related Services** **Page no. 19 Cl 16.2** The documentary evidence may be in the form of literature, drawings or data, and shall consist of a detailed item by item description of the essential technical and performance characteristics of the Goods and Related Services, demonstrating substantial responsiveness of the Goods and Related Services to the technical specification, and if applicable, a statement of deviations and exceptions to the provisions of the Schedule of Requirements.	Request to amend as The documentary evidence may be in the form of literature, data, and shall consist of a detailed item by item description of the essential technical and performance characteristics of the Goods and Related Services, demonstrating substantial responsiveness of the Goods and Related Services to the technical specification, and if applicable, a statement of deviations and exceptions to the provisions of the Schedule of Requirements.	No Change. Hence, published terms prevail.
22	**Section VII. General Conditions (GC)** **Page no. 121 Cl 26.2 Subject to GC Sub-Clause 26.3**, if conducted on the premises of the Supplier or its Subcontractor, allreasonable facilities and assistance,including access to drawings and production data, shall be furnished by the Supplier at no charge to the Purchaser.	Request to amend as Subject to GC Sub-Clause 26.3, if conducted on the premises of the Supplier or its Subcontractor, all reasonable facilities and assistance, includingaccess to basic drawings and production data relevant to the inspection and not containingconfidential and proprietary information, shall be furnished by the Supplier at no charge to thePurchaser.	No Change. Hence, published terms prevail.
23	**<u>Section VIII: Particular Conditions (PC)</u>**	Request to amend as During the maintenance period	No Change. Hence, published

Sl. No.	Tender document reference	Point raised	Clarification Furnished
	Page no.132 **Point no. GC 11.3** During the maintenance period the unit must be made functional within 4 working days (including response time) from the time a defect is reported to the contractor. In case, a replacement of defective goods needs more than 7 working days, as an interim solution the bidder must make available a service Goods / part for complete functioning of the goods within the same specified time frame as mentioned above. However, the defective goods must be replaced within 15 days.	the unit must be made functional within 5 working days (including response time) from the time a defect is reported to the contractor. During Comprehensive Maintenance Contract (CMC) period in case of non-compliance of the above beyond 15 days in a year, then liquidated damages (LD) is levied at 0.075% of the CAMC price per non-functional unit per day beyond 20 days in a year subject to a maximum of 10% of the CAMC contract value and equivalent amount shall be deducted from the CMC payment.	terms prevail.
24	**Section VIII. Particular Conditions (PC)** Page no. 135 GC 25.1 The Supplier is required under the Contract to transport the Goods duly insured to the specified final destination, and all related costs shall be included in the Contract Price. The clarifications to customs for appraisal, payment of customs duty and clearance are the responsibility of the supplier only and charges for such requirement are also to be included in the contract price	Request to amend as The Supplier is required under the Contract to transport the Goods duly insured to the specified final destination, and all related costs shall be included in the Contract Price. The Purchaser shall provide all necessary documents including CDEC certificate (if applicable) for timely clearance of shipment. The clarifications to customs for appraisal, payment of customs duty and clearance are to be coordinated by supplier only and charges for such requirement are to be claimed by supplier at actuals.	No Change. Hence, published terms prevail.
25	**Section IV. Bidding Forms** **Form MAN: Manufacturer's Authorization** Page. No. 67 We hereby extend our full guarantee and warranty in accordance with the Contract, with respect to the goods offered by the above firm.	Request to amend as We hereby authorise our Indian Affiliate to extend warranty and after sales services in accordance with the Contract, with respect to the goods offered by the above.	No Change. Hence, published terms prevail.
26	Page No. 100 **<u>Section VI: Schedule of Requirements</u>**	Request to clarify as is it for Cathlab room only or for the entire suite of Biplane.	It is for the entire suite of BiPlane Cathlab.

Sl. No.	Tender document reference	Point raised	Clarification Furnished
	3. Technical Specifications **Technical Specification for Angiography Biplane System for Cardiac Hybrid OR** 16. Specification of Turnkey Works: **point 1(c)** Flooring -Shall provide and lay Anti-static flooring of 2 mm thick, manufactured by reputed standard manufacturers as per BS 2050-1978. Colour as per Purchaser's requirement.		
27	Page No. 100 **Section VI: Schedule of Requirements** **3. Technical Specifications** **Technical Specification for Angiography Biplane System for Cardiac Hybrid OR** 16. Specification of Turnkey Works: **point 1(f)** Scrub area with an Automatic Surgical scrub sink (Double) and catheter wash area. (Lump sum)	Request to clarify as Inlet and Outlet for Supply and drain will be in the scope of PWD or the facility team	Scrub Area work to be quoted is excluding Inlet and Outlet for Supply and drain.
28	Page No. 100 **Section VI: Schedule of Requirements** **3. Technical Specifications** **Technical Specification for Angiography Biplane System for Cardiac Hybrid OR** 16. Specification of Turnkey Works: Point 2(a) The power required for the operation of equipment will be provided by the hospital near the site.	Request to clarify as The power required for the operation of equipment will be provided by the hospital near the site to be terminated in the UPS room.	Bidder may visit the site to confirm the Termination of power cabling. It will be provided near the site.
29	Page No. 61 **Price Schedule** Price Schedules as given in Tender	Request to clarify as Line item in the price schedule to capture the prices for the Local bought outs as required in the specifications.	Price breakup for the local accessories may be indicated in the price bid separately.

All other terms and conditions of the tender remain unaltered.

The above forms part of the bidding documents. The bidder shall attach the copy of this corrigendum duly signed by their authorized signatory, in their bid.

S/d
General Manager (E)

Annexure – A

3. Technical Specifications

1. Technical Specification for Angiography Biplane System for Cardiac Hybrid OR

Technical Specifications for Biplane System
System should be state of the Art Biplane for Vascular interventions and necessary 3D tools.
The system should be the state-of-the-art equipment with essential features as mentioned below.
A. Gantry
1. The system should have two gantries: one floor mounted and one ceiling suspended. The lateral plane should have motorized longitudinal C-arm movement.
2. The lateral C-arm should be mounted on Dual c-arc with **full body coverage>180cm without patient repositioning, moveable pivot** to provide flexible movement and true projections in the extreme lateral arc positions.
3. It should be possible to pre-program the gantries for multiple examination positions.
4. All movements of the gantries should be controlled by the joystick on the table side as well as from the control room.
5. The system should have adequate collision protection for the safety of the patient.
6. Both gantries should have fast speed for angulations and positioning. The frontal system should have a speed of at least **18** degree/sec. For all positions and lateral plane should have a speed of at least **10** degree/sec.
7. Gantry angulations in both planes frontal and lateral should be freely user selectable to satisfy clinical imaging needs.
8. Both the gantries should have an automatic positioning capability dependent on the reference image being selected and possibility to select reference image depending on the gantry position. Storage and recall of gantry positions should be possible. Storage and recall of Position of Frontal, Lateral, Table, SID, Shutters, Wedges, Magnification. It should have auto stops in isocenter in various positions like Park position, Cardiac or Peripheral positions.
B. Patient Table:
1. The table should have motorized longitudinal, horizontal, and vertical travel.
2. Should be possible to do CPR without retracting the table to the center
3. It should have the facility for automatic bolus chase for peripheral angiography.
4. Table Trendelenburg should be provided as standard.
5. Table Cradle / Lateral tilt should be provided as standard
6. It should be possible to lock the table in any position.
7. The table should support weight of 200 kg excluding accessories.
8. System should have foot switch for releasing fluoroscopy, acquisition and table breaks.
9. 3D Reconstruction and tools should be possible from the exam room table side touchscreen and from console room.
10. Companies to quote fully compatible OR table (Maquet / Trumpf **/ OEM**) should be standard **with wide table top along with Neuro Table Top to be provided.** The OR table should be fully compatible with Cathlab and should be operatable from the cath lab controls.
C. X-Ray Generator:
1. Generator should be multi-pulse/high frequency for constant output.
2. Output should be 100 KW or more **with Fluoro mode power >3000 W**.
3. Radiography KVP range should be 40 KV — 125 KV or more.

4. Output at 100 KV should be 1000 MA or more.
5. It should have automatic exposure control device for radiographic fluoroscopy and angiography mode.
6. It should have digital display of I<VP & mAs.
7. Anatomical programming radiography should be possible.
8. It should have over loading protection.
9. It should have the facility for pulsed fluoroscopy at variable rates for reducing the x-ray dose to the patient during intervention procedure.
10. Should be able to store Fluoroscopy images.
D. X-Ray Tubes:
1. Both planes should be provided with rotating anode high speed tubes allowing high power of heat dissipation.
The focal spot should have the following sizes:
1.0 mm or less and 0.5 mm or less **and 0.3 mm or less.**
2. Anode heat storage capacity should be **3.3** MHU or more, **should not be effective value**, having liquid bearing technology or metal lubricant or specify the alternative cooling method available. **OEM should submit tube insert/X-ray tube datasheet.** High heat dissipation should be offered.
3. The system should have cooling rate or **500KHU/min** for the x-ray tubes/inserts for uninterrupted performance. **Anode inputpower should be 3000W after 30 min**
4. **Both** Tube should provide 80 KW Output
5. Both Tubes should have **primary/**secondary Grid-switch**/equivalent** technology to reduce secondary radiations to doctors and technicians.
6. Companies to offer the latest dose saving features like Clarity IQ, **Care & Clear**, Auto right
E. Collimator:
1. One collimator for each plane is to be provided.
2. The collimator leaf should have IRIS / rectangular type arrangement **with facility of synchronized detector & collimator rotation for upright images.**
3. The collimator should have the facility for the dose measurement chamber in order to display the skin dose on the monitors in the lab.
4. a) The system should have positioning of collimator blades without radiation.
b) It should be possible to create and print the DICOM based dose report of the patient
5. Based on the last image hold should be able to move the stand, table and Detector SID to the region of interest before a new acquisition is started, without any radiation.
F. Biplane Digital System:
1. Dynamic flat detector system with high spatial and 16-bit contrast resolution. Frontal plane with High resolution of 2K matrix (2480 x 1920) acquisition with minimum pixel size of 160 micrometer.
2. Dynamic flat detector system with high spatial and 16-bit contrast resolution. Lateral plane with minimum pixel size of **160 micrometer**.
3. Size of frontal plane should be at least 48 cm diagonal.
4. Size of lateral plane detector should be at least **48 cm** diagonal
5. It should provide multiple formats/fields at least of 4 sizes.
6. Spatial resolution should be at least 3.0 LP/mm **in both plane**.
7. 6 nos. 19 inch or more Monitors in Exam room to display the images live image (frontal and later I), reference (frontal and lateral), 3D rotational Angio and unsubtracted image, h o and 3D should be seen simultaneously.
OPTIONAL: Kindly quote large display of minimum **55 inch or more** in place of the above display. The large display to have two displays on the top / back as backup displays. Slaving of the entire large display to HDTV / Conference purpose should be

possible.
8. One medical grade monitor for frontal and lateral live in the control room should be provided. Separate console Monitor for patient registration should be available
9. Physiology monitor with ECG, Pulse, Temp., Respiratory rate, NIBP, IBP, SpO2 measurement, display with slaving in console room and monitor boom in exam room should be provided.
G. Digital Imaging System and essential software:
1. Road mapping facility (Real time 2D & 3D) should be available with the possibility of superimposing of fluoro image on reference image. Facilities for unlimited subtracted high resolution fluoroscopy should be available. Roadmap should be possible from pre-acquire CT/MR images in addition to the 3D roadmap
2. It should have the capability to acquire and post process images in 1024 X 1024 matrix with a maximum speed of 6 frames or more per second on-line subtraction. Specify the maximum image acquisition rate without subtraction.
3. Post processing software facilities with real time edge enhancement, positive/negative image display windowing, electronic shuttering, roaming, image reversal, zooming and magnifying with text and annotation junctions should be available both on main console and workstation.
4. System to be quoted with 3D rotational angiography. 3D Package should have advance vessel analysis, Aneurysm Analysis, virtual Stenting. Endo view, Cross sectional view of the 3D imaging, see through view of the 3D imaging should be available.
5. 3D Road mapping facility should be available
6. 3D Rotational data acquisition with an output of cross-sectional CT like images **for all body regions including heart** should be possible. These CT like images should be available in control room as well as examination room monitors.
7. 3D Soft Tissue image acquisition should be available with metal artifact reduction and 5 sec fast acquisition
8. Live overlay of pre-acquired CT / MR angio images for EVAR / FEVAR procedure guidance should be possible. Segment & Planning of the CT / MR angio images with ring markers should be available. Live overlay on fluoroscopy of the markers along with the planned CT / MR images should be possible.
9. Last image hold or reference image toggling with fluoroscopy should be available.
10. It should have minimum image storage capacity of 1,00,000 images in the 1024 x 1024/12 bit.
11. Digital subtraction angiography software of automatic pixel shift enhancement for iodine and CO2 contrast should be possible.
12. The digital system should have software for vascular analysis and quantification including stenosis %. All measurement should be possible from the patient table side.
13. All the 3D postprocessing, analysis should be possible from the exam room Touch screen and also from the console room.
14. Separate workstation should be provided with for 3D reconstruction to free the main system for continuation of procedure immediately after 3D acquisition. The 3D reconstruction should be fast and the 3D projections should be displayed both in the control room as well as the examination room. It should be possible to recall and view images acquired in the rotational mode (subtracted & unsubtracted) alongside the 3D images in both the rooms. Review of all images should be fast, interactive and user friendly in both the rooms. All options related to 3D(MIP, SSD, VRT, slicing, measurement tool, volumetry etc.) should be available. Software to fuse CT, angio & MR images of the same patient at the independent workstation is desirable.
The independent workstation should be capable of the following functions:

i. All post processing functions for images including fusion of CT, MR and angio images with 3D display & 3D volume measurement.
ii. Immediate background transfer of all images as soon as they are acquired, to the Server/PACS.
14. System should have capability to optimize and standardize system set-up for Doctor's cases, from routine to mixed procedures. In addition the system should have the capability to upload the hospital checklists and/or protocols to help safeguard the consistency of interventional procedures and help to minimize preparation errors
15. The system should contain functionality to be able to instantly post process images of the same or a different patient in the control room while (or: at the same time) images are acquired in the exam room. Interact with the current patient data/images with no delay in parallel.
16. Based on the last image hold the system should allow Positioning function that let's you pan the table and change the table height or field-of-view / SID on your last image on your region of interest to prepare your next run without using fluoroscopy.
17. View subtracted fluoroscopy next to default non subtracted fluoroscopy Should be possible. Additional 2nd reference also should be possible
18. It should be possible to directly select an image from any stored run and use it as Vessel mask for the device phase.
19. It should be possible to Store and recall stand-related positions. It should be possible to recall the Frontal, Lateral, Table, Mag, Shutter, Wedges, SID.
H. Essential Accessories:
The following essential accessories to be provided with the unit:-
1. On line UPS for the complete system , accessories including both tubes to enable acquisition for both planes with 15 min back up.
2. Pressure injector of reputed make.
3. Ceiling suspended radiation protection system and table side protection system.
4. Focused ceiling mounted light with a handle for positioning the light.
5. Ultra-light weight lead gowns as per the following specifications: 6 Nos. It should have lead equivalent of 0.5 mm. It should be double sided type lead apron. It should be light in weight.
6. Thyroid Guard in— 6 Nos.
7. Lead spectacles — 6 Nos.
8. Multichannel monitoring system (with essential accessories) for monitoring physiology. It should have a 2 IBP, NIBP pulse oximeter module, ECG module, Sp02 module, etc.
9. Lead protected viewing glass (Size: 200cm X 100cm)
10. Set of arm supports with adjustable oath arm support-2
11. Multiarm drip stand mounted and adjustable on the table-2
12. Patient straps.-2
13. Integrated two way communication system between control room and examination room.
14. Cathlab should be of reputed company and FDA approved
15. Note: ***<u>Modular OR, OT Pendants, OT Surgical Light, Anaesthesia Pendants, Laminar Airflow etc which are required for the OR part has to in the customer scope.</u>***
16. **Specification of Turn Key Works:** The turnkey works shall include the following for a floor area of 1500 sq. ft.
1. Civil Works. a. Minor civil works related to installation of the equipment like Platform, Pedestals, finishing works etc., (lump sum) b. False ceiling in all the areas shall be provided of **Armstrong** make with necessary

fixing arrangements as per manufacturer's specifications. Colour as per Purchaser's requirement.

c. Flooring -Shall provide and lay Anti-static flooring of 2 mm thick, manufactured by reputed standard manufacturers as per BS 2050-1978. Colour as per Purchaser's requirement.

d. Wall tiles upto ceiling with vitrified tiles 60 cm X 60 cm. Colour as per purchaser's requirement.

e. Radiation shielding of walls, doors etc., as per AERB and BARC regulations.

The area of 1500 sq. ft. will be considered for price evaluation purpose. However the payment will be for the actual area of work done as per site measurement.

f. Scrub area with an Automatic Surgical scrub sink (Double) and catheter wash area. (Lump sum)

2. Electrical Works: (Lump Sum)

a. The power required for the operation of equipment will be provided by the hospital near the site.

b. Electrical wiring of the equipment and its accessories, with separate wiring for light and power circuits through MCBs of suitable capacity. Adequate safety, measures in the electrical power supply system as per standards. Dedicated isolated earthling as per standards.

c. Floor trenches with wooden / concrete covers in blocks for the cables in the Equipment room, necessary concealment with wire mesh / sheet metal at the cable entry / exit points, various openings in the equipment and electrical panels etc., to make the system rodent / pest proof.

d. LED Backlighted Sky ceiling screen should be provided in Cathlab Gantry room for patient comfort.

3. Air conditioning system

Air conditioning system **(Split/Ductable)**: minimum 6 ton capacity AC (3x2ton capacity) for gantry and 4 ton capacity AC (2x2 ton capacity) for console room, maintained throughout the warranty period of the cath lab & subsequently through the AMC period. The CAMC should be quoted along with the CAMC for main equipment.

Note: To quote the prices separately for Spilt Ac and Ductable AC in the price bid.

4. Lead lined Door of required size and thickness and size as per AERB standards:

5. Furniture:

- Revolving chairs height adjustable, medium-back with hand-rest in the Control room, Radiologist room and viewing area. — 4 NO.s
- Wall mounted shelves for catheter and other procedural hardware — 2 Nos.
- Cupboard with laminate door shutters for storage of spare parts and accessories and records as per requirement. — 1 NO.S
- Drug trolley for patient preparation area.-1 No
- Patient trolley with rubber foam mattress to be kept in the patient preparation room.
- Name boards for all rooms
- Tables for Workstation - 2 No.s
- Dustbins-10 No.s

All furniture items should be of standard make. (Prefered make:- Hermen miller, godrej, featherlite, geeken.)