OFFICE OF THE DIRECTOR ACHARYA HARIHAR REGIONAL CANCER CENTRE, CUTTACK.

TENDER PAPER FOR TENDER NOTICE NO.2559/Dt.25.06.13

Director, A.H. Regional Cancer Centre, Cuttack invites sealed tenders in two bid system (Technical Bid, Price Bid) from the manufacturers/authorized dealers/DGSD Rate Contract holder/EPM Rate Contract holders, having after sale service centres in Odisha for the purchase of the following medical equipments with accessories, as per specifications mentioned against each equipment in Annexure – IV. The tenders should reach the office of the undersigned on or before **22.07.13 by 5.00 PM**. The tenders (Technical Bid) shall be opened on **23.07.13 at 11.30AM**. The tenderers or their authorized representative (one person only) may remain present at the time of opening of the tender. The bidder should quote unit price including taxes, terms and conditions and filled up the formats of Annexure-I,II,III accordingly with page Nos., signed in all pages with seal along with Earnest money deposit of Rs. 50,000/- (Rupees Fifty thousand only) by way of DD in favour of the Director, Acharya Harihar Regional Cancer Centre, Cuttack and submit in double sealed cover duly super-scribed with tenders for Medical Equipment with tender notice No. & Date. Complete tender as per formats given, should be submitted with all the required documents, failing which the tender shall not be considered. Tenders shall not be received beyond the date and time fixed. The undersigned reserves the right to cancel any or all the tenders without assigning any reason thereof.

List of Medical Equipments

1. Digital X-ray 1000 MA
2. Portable X-ray 60MA
3. Mammography
4. CR with Dry Laser Camera
5. Vessel Sealing Device
6. Rotary Microtome
7. Binocular Microscope with Computer attachment
8. Multi-headed Microscope

The detail scheduled of tender is as under.

1) The date and time of pre-bid meeting :- 09.07.13 at 11.00 AM
2) The last date of submission of tender :- 22.07.13 at 5.00 PM
3) Opening of technical bid :- 23.07.13 at 11.30 AM
4) Method of submission of tender :- By Post/Courier/Hand

GENERAL TERMS AND CONDITIONS

1. 50% value of the equipment/instrument shall be paid after installation and successful demonstration in this institute. Balance 50% shall be paid after 3 months from the date of satisfactory demonstration and working of the equipment.

   In case of the equipment for which a Foreign Letter of Credit is required to open, 50% value of the equipment shall be paid by way of L/C and the rest 50% shall be paid after 3 months from the date of satisfactory installation, demonstration and working of the equipment. In case of Foreign L/C, the

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exchange rate will be calculated as on the date of opening of FL/C in all transactions. Bank commission towards amendment if any shall be borne by the supplier Custom clearing, transportation, loading, unloading, insurance, up to site shall be borne by the supplier.

2. The accepted tenderer shall have to deposit performance security amount @5% of the Invoice value of the equipment by way of DD/Bank Guaranty form a Nationalised Bank in favour of Director, Acharya Harihar Regional Cancer Centre, Cuttack for a period of 10 years/life of equipment before submission of bills/invoice. On maturity the amount shall be released to the supplier on successful fulfilment of all terms and conditions of the purchase order. If the firm fails to pay any penalty charges, the same shall be realized from the performance security deposit.
3. The supplier shall take full responsibility and bear all the expenditures of transportation, loading, unloading and insurance of the material during delivery till installation and demonstration of the equipment at AHRCC, Cuttack.
4. The supplier has to maintain the instrument and equipment including accessories under warranty for a period of three years from the date of satisfactory demonstration and commissioning of the equipment.
5. The supplier shall bear all the cost of accessories and consumables if required for completion of installation and demonstration of the equipment. Only 220V power supply shall be provided by the centre. UPS/CVT/Stabilizer or any electrical protection device required for the functioning of the equipment shall be provided by the supplier without any extra cost. In case of any specific electrical power supply required to run the equipment, that must be mentioned in the tender.
6. The supplier shall bear the cost of inspection and training of the personnel of the institute where-ever applicable/necessary to handle the equipment.
7. It is the responsibility of the supplier to keep their consignment/machine in safe custody in the campus of AHRCC from the time of arrival till the time of successful demonstration of the same at their own risk and cost. The institute shall provide the space to keep the consignment inside the campus.
8. There will be an (Tripartite/Bipartite) agreement with the successful tenderer regarding supply of equipment accessories, spare parts, consumables, payment terms, warranty period, after sales service during warranty period and after warranty period during AMC/CMC up to the life of equipment, scope of service, payment terms of AMC/CMC etc. before placing the purchase order where necessary.
9. The authority reserves the right to reject any or all the tenders without assigning any reason thereof. The authority also reserves the right to alter the terms and conditions of supply, payment, warranty etc. without assigning any reason thereof.
10. No tender will be accepted beyond the date and time fixed.

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11. The tenderer should quote the price of AMC/CMC per annum separately in price bid with scope of services, and other terms and conditions etc. if any up to the life of the equipment after warranty period.
12. The payment towards AMC/CMC shall be made in two phase. 50% shall be paid in advance and balance 50% shall be paid after completion of AMC/CMC period.
13. In case where turnkey job is required, the bidder has to quote the details of the turnkey work with specification list of materials, quantity, completion period of work, guarantee period of the supplied materials after sale service of the materials and payment term.
14. The bidder may inspect the site of installation of the equipment where turnkey job is required.
15. The payment towards turnkey job if any shall be made after satisfactory completion of the work and demonstration of the equipment.
16. The penalty charges shall be applicable as under:

a) If one fails to deliver the equipment in time, the EMD shall be forfeited with cancellation of purchase order.

b) If one fails to complete the installation of the equipment in stipulated time after arrival of the material as per order/negotiation, the penalty per day shall be charged as will be decided by the undersigned at that time which will be deposited by the supplier within the stipulated time, failing which the penalty amount shall be deducted from the EMD/ any payment due to the supplier.

c) During warranty period the uptime of the equipment should be maintained minimum 340 days/ year. For downtime exceeding 25 days in a year the company shall have to pay a penalty of Rs.500/- per day per machine.

d) During AMC/CMC period, the uptime of the equipment should be maintained minimum 340 days/ year. For downtime exceeding 25 days in a year the company shall have to pay a penalty of Rs.500/- per day per machine.

e) The penalty charges shall be deducted from EMD/Security money/any balance payment due to the concerned supplier if they fail to fulfil the terms and conditions of the tender/ purchase order.

17. The cost of tender paper Rs.2000/- (Non refundable) is applicable to all, in shape of DD. Those who download the tender paper from the website, they have to submit a DD of Rs. 2000/- in favour the Director, AHRCC, Cuttack along with their Bid.
18. All the tender documents should be typed on the letter head of the bidder and duly signed with page No. in all pages. The tender paper of AHRCC should not be enclosed along with the bid.
19. The validity of tender bid must be minimum 90 days from the date of tender opening.
20. Dispute if any with regard to the tender shall be settled in the court in the jurisdiction of Cuttack, Odisha.

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The technical bid must be accompanied with the following documents.

1. Technical specification of each quoted equipment supported by manufacturers printed Catalogues/ Instruction Manuals/ Literature of the equipment / instruments separately.
2. Technical specification of turnkey job if any with details of materials and quantity.
3. Earnest money deposit of Rs. 50,000/- by way of DD in favour of the Director, Acharya Harihar Regional Cancer Centre, Cuttack
4. Photocopy of DGSD rate contract/ EPM rate contract if any.
5. Under-taking to maintain the equipment for a period of three years under warranty and bear the penalty charges as per format enclosed (Annexure - I).
6. Under taking that the price as obtained on the date of issue of purchase order shall be the price at which the equipment in question shall be supplied by the firm. (as per format enclosed at Annexure – I).
7. The tender application performa as per Annexure – II enclosed should be filled in, typed in the letter head of the tenderer, signed by the bidder and to be submitted along with the tender for each equipment separately.
8. Copy of up-to-date VAT clearance certificate valid up to 31.03.14.
9. Copy of up-to-date letter of authority from the principal/manufacturer in case of authorized dealer.
10. Copy of up-to-date letter from the concerned authority as a manufacturer of the quoted item in case of manufacturer.
11. Undertaking by the manufacturer/principals to maintain the equipment and provide required spare parts, consumables if any as and when required to maintain the equipment up to the life time.
12. List of maximum number of users of the quoted equipment with full address and present telephone number.
13. Performance certificate at least from three users with full address and present telephone number.
14. Cost of tender paper Rs. 2000/- (Rupees Two thousand) by way of DD in favour of Director, A. H. Regional Cancer Centre, Cuttack.

Annexure-I

UNDERTAKING

(Should be typed in the letter head of the Bidder)

I/We on behalf of _____
hereby undertake that we shall bear all penalty charges as and when will be charged by AHRCC, Cuttack in case we fail to complete the following works as per the condition of purchase order.

a) Delivery of the equipment as per specification and quantity.
b) Complete the installation as per purchase order.
c) Commissioning the equipment for treatment.

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d) Maintain the system during warranty period for a period of 3 years.
e) Maintain the system after warranty through AMC/CMC up to the life of the equipment that is_____ years as per order/contract.
f) Completion of turnkey job if any as per specification and time.

We on behalf of the Principal further undertake that we shall supply spare parts, consumables on payment basis/free of cost as and when required on receipt of purchase orders/opening of LC, up to the life of the equipment.

We hereby undertake that the rate as obtained on the date of issue of purchase order shall be the rate at which the equipment in question shall be supplied by us.

Signature of the Bidder

Annexure-II

FORMAT FOR TENDER APPLICATION
(Should be typed in the letter head of the Bidder and enclosed with technical bid for each equipment separately)

Tender No._____/Date_____ Validity of tender up to_____.

1. Name of the equipment.
2. Make
3. Model
4. Catalogue of the quoted equipment at page No. :-
5. Life of the equipment.
6. Name and address of the Principal firm.
7. Name and address of the authorized Indian dealer/firm.
8. Name and address of after sales service station in Odisha.
9. Telephone/FAX/E-mail No.
10. Delivery period.
11. Mode of delivery.
12. Time required for installation and demonstration.
13. Guaranty period.
14. EMD DD No., Date and Amount.
15. Up-to-date VAT clearance certificate at page No. :-
16. Up-to-date letter of authority from the Principal at page No. :-
17. Copy of up to date DGSD/EPM rate contract if any at page No. :-

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18. Undertaking as per format enclosed (Annexure – I) at page No. :-
19. Name and address of users of the quoted Equipment with telephone No at page No. :-
20. Performance certificate from 3 users with address and Telephone No. at page No. :-
21. Payment terms of the equipment at page No. :-
22. Payment term of AMC/CMC at page No. :-
23. Payment term of turnkey job if any at page No. :-
24. DD No., Date & amount for downloading the tender paper.
25. Optional accessories if any required, mentioned at page No. :-
26. Consumables if any required, mentioned at page No. :-
27. Spare parts if any required, mentioned at page No. :-
28. Scope of services during AMC period at page No. :-
29. Scope of services during CMC period at page No. :-

Signature of the Bidder

Annexure-III

Format of The price bid

1) Name of the equipment
2) Make
3) Model
4) Price of the equipment
5) Taxes
6) Installation and Demonstration charges if any.
7) Unit price of the optional accessories.
8) Unit price of the required consumable.
9) Unit price of recommended spare parts.
10) Price of AMC per year after warranty period.
11) Price of CMC per year after warranty period.
12) Service charges of the engineer per day.
13) Price of turnkey job if any with materials and quantity.

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Annexure-IV

1. Technical Specification of Digital X-ray Machine 1000mA

A fully digital radiography system capable of detector exposure in vertical, horizontal and oblique positions to perform all skeletal body and chest radiography. The unit should be completely integrated (integrated Generator and Image Acquisition) and comprise the following along with auto quality control features incorporated.

A	**Generator**
1	Generator should be of latest technology with high frequency/inverter technology for constant output.
2	Output 100 KW or more.
3	KVP range 40 KV – 150 KV.
4	Output at 100 KV should be 1000mA or more.
5	It should have automatic exposure control device.
6	It should have digital display of KVP & mAs.
7	Anatomical programming radiography should be possible.
8	It should have over loading protection.
B	**X-Ray tube and Collimator.**
1	The x-ray tube should be rotating anode high speed, compatible with the generator and must have dual focus. Focal spots of the following sizes: Large focus: 1.2/2.0 mm or less with a minimum output 80 KW. Small focus: 0.6/1.0 mm or less with a minimum output 30 KW. Tube with anode heat storage capacity 1.0 MHU or more.
2	Multi leaf collimator having halogen lamp/bright light source and auto shut provision for the light.
3	X-Ray Tube and Generator must be from the same Manufacture or Should have a manufacturing base in India.
C	**Ceiling suspended 3 D Column stand:**
1	It should be ceiling suspended.
2	It should have movements in all directions i. e. 3D transverse 200 cm or more, longitudinal 300 cm or more (up and down-ward i.e. vertical 125 cm or more).
3	It should have electromagnetic brakes with fully counter balanced mechanism.
4	It should have facility to display FFD/SID.
5	It should have provision of auto centering with table bucky centering.
6	Tube rotation at vertical axis and horizontal axis $\pm$ 180 degree.
D	**X – Ray Table:**
1	Horizontal table with floating table top.
2	It should have transverse movements of + 10 cm or more and longitudinal movements + 40 cm with electromagnetic brakes.
3	It should have height adjustments facilities.
4	It should have flat top of carbon fiber.
5	It should have built in flat detector system of 40x40 cm size or more
E	**Vertical Bucky stand (Optional): price to be quoted separately**
1	The unit should be provided with vertical bucky having tilting facility.
2	It should have provision to do chest radiography without grid.
3	It should have built in flat detector system of at least 40 x 40 cm size.
4	It should have automatic exposure control.
F	**Detector System:**
1	The detector should be of solid state flat detector of latest technology.
2	The size of the detector should be 40 cm x 40 cm or more.
3	The resolution should be minimum of 3.5 lines pair/millimeter.
4	The pixel size should be 140 um of less.
5	Detector Quantum Efficiency (D.Q.E) should be more 55% @ Zero Line Pairs.
6	The active matrix size should be 2k x 2k or more.

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G	**Image acquisition and image Processing based on body part and viewing position:**
1	The digital workstation should be based on the latest high speed processors of at least 32 bit.
2	It should have the possibility of acquiring the image from the detector system.
3	It should have image storage disk of 80 Gigabyte or more.
4	The system should have ready DICOM interface and networking capability with RIS/HIS/PACS.
5	Post processing function must be available.
6	Workstation must be provided for image processing, image display, post processing functions and net working with color monitor LCD type size 19" with matrix 1024x1024.
7	Dry Laser camera 600 dpi or more for printing the digital images should be available.
8	A CD – R/W based long term archiving must be offered along with 1000 No. of CD's.
H	**Essential Accessories:**
1	Voltage stabilizer should be quoted separately along with the unit of the required capacity. The capacity and make of the voltage stabilizer should be specified.
2	Online UPS with 30 minutes back up for complete system.
3	Warranty of 36 months of all parts as well as accessories and auxiliary units supplied with the main equipment including x-ray tube.
	C.M.C.:
	C.M.C. for 5 years including labor cost and spare cost including x-ray tube for whole equipment including all accessories supplied with the unit as well as A.C.
	2. Portable X-ray Machine
a	**Operation Requirement**
1	Compact, light weight easily transferable portable X-ray unit suitable for bedside X-ray (Box type)
2	Effective breaking system with tube stand fully counter balanced with rotation in all direction.
3	Exposure with remote control should be available.
4	Cassette storage facility for all size cassettes along with cassettes screen 15" x 12" =4 Nos., 12" x 12" = 4 nos., 12" x 10"= 4 nos., 10" x 8" = 4 nos. (800 speed cassettes.)
5	Lead blocker 15" x 6" =2 nos.
6	Lightweight lead apron = 2 nos.
7	Lead letters & numbers 2 sets = 4 nos.
b	**Technical Specification**
1	mA range : 60 mA, light weight, kV range : 40 kV to 90 kV.
2	Should have digital display of mAs and kVs.
3	Microprocessor controlled high frequency, output 15 kW or above.
c	**X-ray Tube**
1	Stationary Anode
2	Light beam collimator of multi leaft type of auto cutoff switch.
3	Exposure release switch should be detectable with a cord of sufficient length minimum 30 meters as per IRCP recommendation.
d	**Standard Safety**
1	Should comply with AERB/BIS/IRCP guidelines for radiation leakage and X-ray equipments.
e	**Documentation**
1	Comprehensive warranty for 3 years on complete system including X-ray tube & accessories, all vacummated items.
2	CMC for 7 years for complete system including X-ray tube and all vaccummated items & accessories.
	3. Mammography
a	**X-ray tube**
1	Should have Molybdenum doped dual angle rotating anode tube for separate target angle for large focal spot (<0.3mm) and small focal spot (0.1mm).
2	Anode Heat storage capacity of 1,60,000 HU or more.
3	Total heat storage capacity of the tube unit should be 6, 00,000 HU of more.
b	**X-ray Filter**
1	Dual filtration system of Molybdenum and Rhodium should be available.

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c	**Generator**
1	High frequency type up to 100 kHz constant potential output, inherently short circuit proof.
2	The kV range should be 20 to 35 kV in 1 kV Increments.
3	Tube current should be at least 30mA for small focal spot and 100 mA for lagre focal spot.
4	The mAs range should be 5 to 500 mAs.
5	Automatic exposure control facility should be available as standard.
6	Should have integrated control panel with digital display and radiation shield.
d	**X-Ray Stand**
1	Balanced rotation of at least -180^{o} to +180^{o} Rotation should be motorized & electromagnetic with user selectable preset angle stops.
2	Collimation light with automatic and manual turn on/off
3	Motorized vertical movement from 65 to 135 cm above the floor.
4	Motorized compression with microprocessor controlled automatic force device and best image quality and patient comfort. Selectable preset force from 3-20 kg compression force.
5	Motorized dual speed vertical drive
e	**Safety Features**
1	Automatic motorized compression release in case of power loss.
2	System should have AERB type approval certificate.
f	**Recording System**
1	AEC, pivoting, bucky selector and film formats for 18 x 24 cm.
g	**Others**
1	Two cassettes of each; sizes 10” x 8” and 12” x 10” both for conventional and digital use.
2	Warranty for 3 years from the date of installation and post warranty CMC for 7 years including X-ray tube and other accessories.
	Turn Key i) 2 nos. of 1.5 ton AC (split type) ii) Stand screen iii) Table (1) iv) Chairs (2) v) Stair step vi) Small cupboard vii) Vitrified tile flooring and ceiling of the room as required viii) Training for technicians and doctors.
	4. CD with Dry laser Camera
*	**Technical Requirements – CR system configuration shall include:**
a	Image plates (IP)
b	Image reader system
c	CR workstations
d	RIS interface
e	Remote ID and Preview stations
f	Accessories and consumables
g	Laser Imager
*	**CR Compatible imaging plates** Following sizes are required -
a	35 cm x 43 cm – 20 Nos.
b	35 cm x 35 cm – 14 Nos.
c	24 cm x 30 cm – 14 Nos.
d	18 cm x 24 cm – 12 Nos.
e	15 cm x 30 cm - -
*	**Image reader shall meet the Functional requirements:**
a	Various image-processing protocols available for the respective regions of the body
b	IP processing rate should be about 90 plates/hour
c	Mechanism for accepting exposed Imaging Plates without patient demographics, for Causality/Trauma workflow requirement

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d	Mechanism for Re-routing the newly acquired Images to the preconfigured CR workstation
e	Capability of retrieving (Service Intervention) at least last 10 scanned images, as part of contingency plan
f	Capability for quick check of the image and exam data of at least the last 4 Imaging Plates scanned at the x-ray room
g	Protocol for verifying the connectivity status of configured image destinations
h	Spatial resolution of the digital image shall preferably be 2kx2kx16 bits for optimal resolution
*	**Identification and Preview** System Functional requirements:
a	Capability of interfacing to HL7, Non-HL7, Proprietary, DICOM Work list or user defined Windows/DOS/Linux based interface protocols to HIS/RIS.
b	Please specify whether you have tested interfacing with HL7-DICOM Bridge.
c	Mechanism for retrieving Demographics of at least last 10 patients identified on a particular Identification Terminal
d	Customizable Graphic User Interface (GUI) in Identification station with facility of selecting DICOM print and Storage destination.
e	Indication of Over Exposure on the preview module.
f	Mechanism for User release from Preview terminal in case of auto-routing Images to Pre-defined DICOM Destinations.
g	Customizable Graphic User Interface (GUI) for Preview terminal.
h	Solution for storing patient demographic data for multiple exams in RIS/non RIS environment.
i	It should be possible to put a custom configurable data field in the demographic information of the patient linked with the image.
*	**Software** System should include the following software applications: Please list all the optional software(s) which are available with you for enhancing the workflow and service in the Digital Radiology environment for the following
a	Advanced Processing Software
b	Application Software
c	Connecting Software
d	Visual Output Software
e	Quality Monitoring Software The system should include the following SW applications as standard: Full Leg/Full spine image processing. Quality control software. Software, which enables to see in the preview terminal the deviation from normal exposure and with the details of the deviation on the CR workstation. Software masking of the collimation areas. Special attention should be placed on pediatric applications. Software for storing images on any DICOM 3 (or newer versions) compliant stations. Software for printing on any DICOM printer
*	**CR Workstation** System configuration requirements.
a	Accept images from CR Reader without any loss of data
b	Capable of Archiving and Printing selected image to a standard DICOM destination in DICOM 3.0 Format.
c	Storing images in the local disk for pre-defined period.
d	Mechanism for accepting New images when the local disk is full.
e	Should include 21” antiglare flicker free TFT/LCD color monitor
f	Should include 21” Monochrome antiglare flicker free Medical Grade TFT/LVD monitor with at least 2k X 2k resolution.
g	CD/DVD Burner
h	80 GB or more on board storage
	System Functional requirements:
a	Support DICOM Work list or user defined Windows/Dos based interface to HIS/RIS.
b	Mechanism for retrieving Demographics of at least last 10 patients identified on that Terminal

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c	Customizable Graphic User Interface (GUI) in Identification with facility of selecting DICOM print and Storage destination.
d	Indication of Over Exposure on the preview module.
e	Mechanism for User release in case of auto-routing Images to Pre-defined DICOM Destinations.
Functional requirement for CR workstation:	
a	Built in routine for using pre-defined image processing parameters for image quality enhancement.
b	Mechanism for storing the patient image based on name, date, exam, etc.
c	Capability of storing user defined image processing parameters
d	Capability of overwriting predefined image parameter with user-defined parameters and storing these two images separately.
e	Correcting typographically in patient Demographic module, in case the RIS connection was down and manually data entry was done.
f	Capability of changing W/I, Flipping, rotating, Zooming, Collimating Annotating incoming image.
g	Auto-routing incoming image to predefined DICOM Store (SCP storage) or Print Destination (SCP Print Destination)
h	Mechanism for printing Multiple Images in one film, with the possibility of slide and True Size printing
*	**Laser Imager System Configuration requirements: Print Images from CR Workstation**
a	Capable of Printing Images in DICOM 3.0 format
b	Mechanism to print images 14 x 17, 11 x 14, 8 x 10 film sizes simultaneously.
c	Resolution should be 600 dpi or more.
d	Capable of handling mammography plates.
*	**Functional requirement for Laser Imager:**
a	Capable of Printing Images in high quality.
b	Mechanism for printing images in 14 x 17, 11 x 14 and 8 x 10 film sizes simultaneously.
c	Mechanism for printing Multiple Image in one film, with the possibility of slide printing.
	Laser Paper Printer
	Provision for Distributed CR System should be present. Please quote separately for additional workstation image reader preview stations and image planes
	Warranty/CMC: As per the tender document.

5. Technical Specification of Vessel Sealing Device

Radio Frequency Vessel Sealing System	➢ The system should Monopolar Cut & Coagulation, Bipolar and Vessel Sealing technology all integrated in one system.
	➢ The equipment should have **Microcontroller** based device incorporating closed loop control for all out put modes in the microcontroller firm wire.
	➢ The equipment should take **tissue feedback** on real time basis and it should have the **technology to convert electrical energy to radiofrequency energy thus providing radiofrequency seal.** It should also identify the tissue type and adjust power accordingly to get the desired surgical effect on the tissue.
	➢ The **input operating range** of the system should be 90 to 270 AC volts. Maximum current should be 5 to 9 amperes in Monopolar Cut, 3 to 6 amperes in Monopolar Coagulation and 3 to 7 amperes in Vessel Sealing mode.
	➢ The **operating parameters** should be as follows:- Ambient Temperature Range-should be between 10 to 50 degree Centigrade. Relative Humidity –should be between 25% to 80% no condensing Atmospheric Pressure-.should be between 700 to 1200 millibars. Display-Digital or Preferably Touch screen Display.
	➢ The **Output wave forms** should be between460 to 480 KHz sinusoid in all modes.
	➢ The **Low Frequency Leakage** should be less than 65 Hz
	➢ The Equipment should have the following **Alert Tones :-** Patient Pad monitoring Error Alert Reactivate/Regrasp Tissue Error Alert Instrument Checking Alert Complete or Incomplete Seal Alert Malfunctioning or System Error Alert

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	➢ The **Power Efficiency Rating (PER)** should be between 96 to 100 in bipolar modes, 96 to 100 in Monopolar cut mode and 92 to 100 in Monopolar Coagulation mode.
	➢ Monopolar outputs should have minimum two cutting modes: - • Pure cut for clean, precise cut in general surgery having maximum power of 400 W. • Blend mode for cutting with homeostasis having maximum power of 300 W.
	➢ It should have two minimum Coag Modes with maximum power of 120 W. o Fulgurate mode for efficient non-contact coagulation in most applications. o Spray mode should have effect of varying amplitude and frequency for coagulating large tissue areas with minimum depth of necrosis.
	➢ The system should be integrated with all necessary modes and **instruments** for various **surgical specialties and procedures** both for **Lap as well as open surgery**.
	➢ The system should have twin monopolar socket with independent power setting but only one can be activated at a time. The system should also have one universal adaptor socket for footswitch operation and one bipolar socket.
	➢ The system should have **recall facility** to recall the last setting used by user.
	➢ The system should be compatible with **Argon machine and CUSA.**
	➢ The System should have **Auto Bipolar** start and stops where users can set the Auto start delay time and Auto Stop impedances range.
	➢ The System should have user friendly 3 independent **digital or preferably touch screen display** for monopolar, bipolar and Vessel sealing technology.
	➢ The System should have **LCD Backlight** adjustment for good visibility in operating room.
	➢ Vessel Sealing system should have the **user control mechanism** so that the surgeon can decide for a repeat seal before actually cutting it or even not cutting it.(No Auto-Cut)
	➢ Vessel Fusion system should be able to **seal** artery, veins along with tissue **bundle up to 7mm**, and fused vessels should be able to withstand more than 2 **times the systolic blood pressure**.
	➢ The **thermal spread** or collateral thermal spread should be minimal preferably less than 2mm on both sides.
	➢ The generator should provide a high degree of protection against electric shock, particularly regarding allowable leakage currents and should be **Defibrillator Proof**. When placed on or beneath an activated electrosurgical generator, this should operate without interference and should minimize electromagnetic interference to video equipment used in the operating room.
	➢ **The Vessel Sealing technology should be FDA or CE approved.**
	➢ It should have **Patient plate monitoring** facility and should give audiovisual alarm and deactivate output if contact between patient and patient plate is not proper to eliminate the risk of patient burns.
	➢ The system should be able to **Seal** vessels or tissue bundles faster than any Conventional devices (preferably within 5 seconds).
	➢ The Equipment should have **On Screen review** of error codes and diagnostics.
	➢ The system should have USB, Ethernet port or any other computer connectivity for on field software **downloads upgrades and serviceability**.
	➢ The **weight** of the machine should be less than 15kgs, **height** not more than 12 inches, **length** not more than 24 inches, **width** not more than 20 inches.
	➢ The unit should not have **RF leakage current** more than 150 mA.
	➢ The Equipment Should be **FDA & CE** approved.
	➢ Installation should be made by the Trained Engineers.
	➢ **Accessories** to have individual/combo footswitches for Monopolar, Bipolar and vessel sealing.
	➢ All **Laparoscopic instruments** should have facility for both 5 mm and 10 mm and should have a **blade** for instant cutting.
	➢ Instruction manuals and proper training should be provided to all the concerned persons of the Department. .

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	The instrument should supplied along with following accessories : 1. Monopolar Dual Footswitch 2. Bipolar foot switch 3. Vessel sealer system activating foot switch 4. 3 button electro surgical pencil with cord and with facilities of adjusting the power by surgeon during surgery. 5. Patient return electrode with adaptive monitoring facilities 6. Bipolar forceps with Bipolar forceps cord 7. Universal active adaptor for LAP and underwater cutting surgery 8. 10mm hand/foot activating sealer/divider hand instrument for LAP surgery 9. 5mm hand/foot activating sealer/divider hand instrument for LAP surgery 10. Hand instrument(sealer/divider) for any open surgery (Jaw length should be more than 3 cm) 11. Hand instrument for FACIAL, LIVER etc. surgery`

6. Technical Specification of Rotary Microtome

LOCATION CONDITIONS	
Operating temperature range	- 10^0C to 35^0C
Temperature range during storage	- 5^0C to 55^0C
Relative humidity	- max.80%, non-condensing
Storage humidity	- <80%
GENERAL INFORMATION	
Section thickness setting range	- 0.5-60um
Section thickness selection	- from 0.5-2um in 0.5um-steps from 2-10um in 1um- steps from 10-20um in 2um- steps from 20-60um in 5um-steps
Total horizontal specimen feed	- 25mm
Vertical specimen stroke	- 59mm
Specimen retraction	- ON/OFF
Specimen orientation	
Horizontal	- 8^0C
Vertical	- 8^0C
Rotation	- ±90^0C
Trimming thickness	- 10um, 50um
DIMENSIONS AND WEIGHT	
Width	- 438mm 17.24”
Depth	- 472mm 18.58”
Height	- 265mm 10.43”
Working height (knife edge)	- 105mm 4.134”
Weight (without accessories)	- 29kg 63.9lbs
OPTIONAL FEATURES AND OPTIONAL ACCESSORIES	
Knife holder base with lateral Displacement feature	
North-south	- ±25mm
East-west	- ±20mm
Knife holder base without lateral Displacement feature	
North-south	- ±25mm

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7. Technical Specification of Binocular Microscope with Computer Attachment

Name of the instrument & equipments		Technical Specification
Main body	Port	- 4 ports - Eyepiece 100%, left 100%, right 100%, bottom 100% - Manual optional path switching
	Focusing	- Via nosepiece up/down movement - Stroke (manual): up 8mm, down 3mm - Coarse stroke: 5.0mm/rotation - Fine stroke:0.1mm/rotation - Minimum fine reading: 1 μm
		- Coarse refocusing mechanism
Intermediate magnification		- 1.5x
	Other	- Light intensity control, Light on/off switch, VPD on front of body, Operation with controller
Eyepiece tube	Eyepiece tube body	- TI-TD Binocular Tube D, TI-Ts Binocular Tube S, TI-TERG Ergonomic Tube
	Eyepiece tube base	- TI-T-B Eyepiece Tube Base Unit, TI-T-BPH Eyepiece Tube Base Unit for PH, TI-T-BS Eyepiece Tube Base Unit with Side Port
	Eyepiece lens	- CFI 10x, 12.5x,15x
Illumination pillar		- TI-DS Diascopic Illumination Pillar 30W, TI-DH diascopic Illumination Pillar 100W
Condenser		- ELWD condenser, LWD condenser, HMC condenser, ELWD-S condenser, High NA condenser, Dark field condenser, CLWD condenser
Nosepiece		- TI-ND6-PFS-S Perfect Focus Unit with Motorized Nosepiece, TI-ND6-PFS-MP Perfect Focus Unit with Motorized Nosepiece for MP. - TI- ND6-E Motorized Sextuple DIC Nosepiece, TI-N6 Sextuple Nosepiece, TI-ND6 Sextuple DIC Nosepiece
Objectives		- CFI60 objectives
Stage		- TI-S-ER Motorized Stage with Endcoders, TI-S-E Motorized Stage-Cross travel X110 x Y75 mm, Size: W400 x D300 mm (except extrusions) TI-SR Rectangular Mechanical Stage-Cross travel;X70 x Y50 mm, Size: W310 x D300 mm
Epi-fluorescence attachment		- Sextuple fluorescence filter cube rotating turret, Filter cubes with noise terminator mechanism, Field diaphragm centerable, 33mm ND4/ND8 filters, 25mm heat absorbing filter - Option: Motorized sextuple fluorescence filter cube rotating turret, Motorized excitation filter wheel, Motorized barrier filter wheel
Nomarski DIC system		- Contrast control: Senarmont method (by rotating polarizer) - Objective side prism: for individual objectives (installed in nosepiece) - Condenser side prism; L WD N1/N2/NR (Dry), HNA N2/NR (Dry/Oil) types

8. Technical Specification for Multi-headed Microscope

Name of the instrument & equipments		Technical Specification
Main body	Optical system	- CFI60 Infinity Optical System
	Illumination	- High luminescent White LED Illuminator (Eco-illumination) - Automatic intensity reproduction function
	Controls	- Image capture button - Nosepiece rotating buttons - Remote control pad
	Eyepieces (F.O.V. mm)	- CFI 10x (22) - CFI 10xM photo mask (22) - CFI 12.5x (16) - CFI 15x (14.5) - CFI UW 10x (25) - CFI UW 10xM photo mask (25)

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	Focusing	- Coaxial Coarse/Fine focusing, Focusing stroke: 30 mm, Coarse: 9.33 mm/rotation, Fine: 0.1 mm/rotation - Coarse motion torque adjustable, Refocusing function
Tubes	F.O.V. 22 mm (Eyepiece/ Port)	- C-TB Binocular Tube - C-TE2 Ergonomic Binocular Tube (100/0, 50/50 via optional c-TEP2DSC Port) - Inclination angle: 10-30 degree, Extension: up to 40 mm
	F.O.V. 25 mm (Eyepiece/ Port)	- CTF Trinocular Tube F (100/0, 0/100) - C-TT Trinocular Tube T (100/0, 20/80, 0/100)
Nosepiece		- Motorized Sextuple Nosepiece with Analizer - Solt (Built-in main body) - Switching between two objectives function
Stages		- Cross travel 78 (X) x 54 (Y) mm, with vernier calibrations, stage handle height and torque adjustable for all stages - C-SR2S Right Handle Stage with 2S Holder - C-CSR1S Right Handle Ceramic-coated Stage with 1S Holder - C-CSR Right Handle Ceramic-coated Stage (C-H2L Specimen Holder 2L or C-H1L Specimen Holder 1L can be attached)
Condensers	**Motorized**	- CI-C-E Motorized Swing-out Condenser Focusing stroke: 27 mm
	Manual	Focusing stroke: 27 mm - CI-C Abbe Condenser NA 0.9 - C-C Achromat Condenser NA 0.9 - Darkfield Condenser for X/Y (oil or dry) - C-C Phase Contrast Turret Condenser - C-C Achromat/Aplanat Condenser NA 1.4 - C-C Slide Achromat Condenser 2-100x - C-C Achromat Swing-out Condenser 1-100x - Achromat Swing-out Condenser 2-100x - X LWD Condenser
Observation methods*		- Brightfield, Epi-fluorescence, Darkfield, Phase contrast, Simple polarizing, Sensitive color polarizing
Epi-fluorescence attachment		- CI-FL Epi-fluorescence Attachment 4 filter cubes mountable, ND4/ND8/ND16 filters, Noise Terminator mechanism for Ci
Epi-fluorescence light source		- C-HGFI/HGFIE HG Precentered Fiber Illuminator Intensilight (130W) - Hg Lamphouse and Power Supply (100W) - Xe Lamphouse and power Supply (75W)
Power consumption		- 13W (Brightfield configuration)
Weight (approx.)		- 15.4 kg (Binocular standard set)