# EMS MEMORIAL CO-OPERATIVE HOSPITAL
## & RESEARCH CENTRE, PERINTHALMANNA
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## QUOTATION NOTICE FOR PURCHASE OF MEDICAL EQUIPMENT FOR NEUROSURGERY DEPARTMENT

EMCH / QTN / GEN / 12 / 2026

17th September 2026

Sealed quotations are invited from reputed manufactures / authorised supplies / dealers for the supply & installation of various equipment for Department of Neurosurgery – Neuro Navigation System, Cranial Skull Clamp System, Spinal Endoscopy, Automated Brain Stereotaxic surgery equipment & Portable (Transport) Ventilators

Technical specifications of the equipment can be obtained from www.emshospital.org.in/about/tender

Quotations should be in Two sealed covers

- First cover super scribed "Technical cover " should include technical specifications, list of installations authorization for the supply, safety certificates etc.
- Second cover super scribed " Commercial cover " should include commercial terms such as Price, Warranty items, tax if any, AMC / CMC details for next 5 years, cost of consumable / spare parts / consumable regularly required etc.
- Technical quotation will be scrutinized by a technical committee.
- Technically qualified quotations will only be considered for opening of Commercial quotations.
- The quotationers should submit their authorization for supply of the quoted items from the Manufacture.
- Common Terms & Conditions (Page No.14 of this notice) to be strictly adhered by each quotationer

Sealed quotations addressed to The General Manager, EMS Memorial Co-operative Hospital, Perinthalmanna should reach the Administrative Office of the hospital on or before **30th September 2026**

EMS MEMORIAL CO-OP. HOSPITAL & RESEARCH CENTRE No: M.549 Perinthalmanna

**General Manager**

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**EMS MEMORIAL CO-OPERATIVE HOSPITAL & RESEARCH CENTRE**
**PERINTALMANNA**

## NEURO NAVIGATION SYSTEM

### 1 General System Hardware Specifications:

1. The System should be High End model, easy to set up, user friendly, intuitive and should work under Linux operating system environment.

2. System should offer two cart systems with two touch screen monitors (either on the same cart or different carts) should be able to operate from both carts or monitors. Both the monitors should be at least 21 or 27" or higher and it is must, widescreen of full HD up to resolution 1920 x 1080.

3. The system should have facility of keeping camera cart and viewing cart together or separately to allow optimal use of O.T. Space. The system should have easy access for storage of accessories and instruments.

4. Data Transfer to be possible with inbuilt and not external CD, DVD & USB stick for quality work.

5. System should have Wi-Fi connectivity & connectivity to PACS system for image transfer. System should have inbuilt firewall and antivirus, security for cyber security, System should have password security for software access.

6. System must have inbuilt Keyboard and mouse as an alternate back up to touch screen.

7. The system should have inbuilt & not external UPS system due to space constraint in OT & durability for power back-up with backup up to 6-10 minutes in case of power failures.

8. System should have an inbuilt 1 TB or higher solid- state drive which ensures ample space to store examinations of patients. System should have at least 16 GB RAM for fast performance and image manipulation.

9. System must have both Optical & Electromagnetic Tracking modules for various advanced cranial, Skull base procedures. This specification is must to have high end machine.

10. The manufacturer must have at least 50 installations in neuro application of the quoted model in India.

11. The system should be USFDA & CE approved for both optical & Electromagnetic navigation system.

### 2 Cranial Navigation Module:

**A. Navigation Software:**

1. The System should have self-descriptive software interface which allows you move quickly through the all-cranial procedures workflows and to give you easy access to system-wide tools for common features. System should allow selecting tasks related to procedure as per user preference. The system software should have ability to design customized surgeon profile. The System should have ability to create and edit multiple surgical plans.

2. The navigation system should have point as well as surface registration with accuracy prediction system. It should also allow combination of point and surface registration techniques for better accuracy. Should have facility for fiducially marker-less registration.

3. The navigation software should be able to correlate with pre-operative MR/CT images. Also, system should have 3D graphics capability and software to merge various data sets like CT/CTA, MRI (T1/T2, FLAIR, Contrast), F-MRI, PET, DTI should be possible.

4. The system should have advanced auto segmentation and semi-auto segmentation capabilities and should be able to perform following segmentations. Brain tumor, Vasculature, Skull, Skin, Ventricles

and custom, Software should fuse fMRI activation maps into the software and viewed 3D model in Navigation.

5. System should incorporate rescue points to recover navigation, registration during surgery in case of registration accuracy loss during surgery.

6. Look ahead view capability to show the images at 1mm to 15mm (increments of 5mm) in front of the probe.

7. System should be able to display virtual craniotomy & safety margin to help surgeon to plan minimal craniotomy.

8. Should have DTI-Tractography software

   - The Tractography software performs white-matter tractography to generate tracts in two techniques
   1. Standard DTI processing
   2. Enhanced CSD processing.
   - The user should be able to select which algorithm above to use for building the tracts.
   - It enables, co-registration with other anatomical and functional datasets, and tensor calculations. It provides forinter active fiber-tracking with start, mid, and end regionsin the same software used for Cranial Navigation.
   - Fully automated DICOM DTI data processing including Eddy current correction option is available in the software.
   - The software also should allow ROI based fiber building using simple tools like brush/paint.
   - Intuitive user interface for manual adjustment of tracking parameters and instant update of fibre tracking results overlayed on the anatomical scans.
   - Automatic calculation of colored fractional anisotropy (FA) and anistropic diffusion coefficient (ADS) maps.

9. System should support surgeries in following positions
a) Supine
b) Prone

10. The system should have Virtual Projection option with adjustable width and length of the probe order to get better trajectory understanding. The projection should be possible in both forward & reverse direction.

11. Software should have video recording at least 30 mins or more and snapshot Capture feature to capture the navigation screen.

12. The system should be able to navigate the 3rd party instrument set with universal tracking system.

13. The system should provide dynamic referencing so that registration is not lost even if camera and patient moves.

14. The system should support frameless biopsy procedures with real time tip tracking navigable biopsy needle.

**B. Optical Cranial Navigation Instrumentation:**

1. Complete optical cranial referencing set with Frames (2 nos.) & 2 Clamping arm.

2. The system should include navigable needle with tip tracking providing up to 5mm cut, for smaller lesions as well.

**C. Advanced Cranial DBS & Stereotaxy Software:**

1. The navigation system should have inbuilt software for stereotactic surgery including functional stereotactic procedures. The software should re-orient the scan images along the AC-PC plane. The stereotactic system should be adaptable to major frames like Leksell and CRW.

2. System must provide DBS Software for planning & implementation for DBS implementation for Parkinson's disorder patients.

3. Software can also be used for planning stereo EEG – Epilepsy cases

**D. Electromagnetic Navigation Module:**

1. The system should have electromagnetic Navigation Module should be able to support surgery such as tumor resection, shunt placement, Trans-nasal, Skull Base, Awake craniotomies for adult as well as pediatric, Neonatal cases without any compromise on accuracy & sterility.

2. System must provide real time navigable malleable flexible probes for shunt; malleable navigable instruments help to define critical anatomy which is not possible with rigid instruments with real time tip tracking technology.

3. Complete flexibility to move the patient head during procedure, no need to fix head on Mayfield / sugita & no compromise on accuracy as well as workflow limitations due to line of sight issues.

Ability to use both Optical & EM System parallel in case of multiple procedures.

**F. Microscope Interface Kit:**

Microscope integration should be possible with HUD overlay option. System must be integrable with high end microscope (Zeiss/Leica).

**3 SPINE NAVIGATION MODULE:**

**A. Spine & Trauma Navigation Software**

1. The Spine Application should be unified Spine Application which should comprise of 3D Spine (Spine Navigation with Spine CT Data) and Virtual 2D Fluoroscopy Navigation.

2. Should be integrable with 2D C-arm & 3D C-arm - optional

3. The Application should be able to memorize multiple surgeon preferences for each procedure.

4. Spinal navigation package should allow the application of region mapping and pre-op screw planning.

5. Software should have capability to merge CT and Fluoro images for Navigation.

6. It must be an Open system compatible with all company spine implants.

**B. Spine Navigation Pre-Calibrated Instrumentation:**

1. The system should have broad portfolio of pre-calibrated image guided spinal instruments.

**4 UPGRADES POSSIBILITY SHOULD BE INCLUDED :**

1. The system should have facility to use pre-calibrated Navigable drill for various spine procedures like Cervical, Open, MIS spine with navigable burs.

2. Navigation system must be Intra operative imaging system Compatible with automatic image registration.

- The navigation system should be able to compatible with existing Ziehm 3D C-Arm machine
- Suitable 3D Tracker, hardware and software should be supplied along with navigation system for smooth integration.

## CRANIAL SKULL CLAMP SYSTEM

1. The 3 point cranial rigid & stable fixation system should be light weight & meet all the international safety standards, should be US FDA approved and should have visual indication of clamping force on all three skull pins and should provide user an ability to adjust and visually see the clamping force and quick release lock enabling easy removal of skull clamp.

2. Support device that facilitates attachment of Skull clamps & head rest system to the OR table and should be US FDA approved which meets all the international safety standard like provide internal isolation against stray electrical current.

3. **Ball Socket / Swivel adaptor** to provide optimal flexibility in positioning via 360 degree rotation.

4. It should have reusable autoclavable stainless steel skull pins for Adult - 3 nos & Pediatric – 3 nos to reduce artifact.

5. It should have adult horseshoe headrest which should provides cranial support in the prone or supine position for Adult and older children in which Vertical & lateral adjustment should be possible & should connect directly to Transitional member. Adjustable pad base to accommodate various head sizes. Fluid resistance gel pads provide comfort & reduce the incidence of pressure necrosis.

6. Cross bar adaptor for posterior fossa craniotomy or posterior cervical Laminectomies procedure allowing unobstructed viewing to posterior cervical spine & occipital area.

7. A pair of universal side rail fitting compatible with most currently available OR table.

8. Mounting device that allows attachment of base units to the OR table when receptacle holes are absent or inappropriate. Should fits a wide variety of table widths by easily fitting on the OR Table Side rail. Should have multiple mounting holes for better laterally adjustment setup.

9. Each Unit will be supplied with following:

    - Ultra Base Unit (1 No.).
    - **Ball Socket / Swivel adaptor** (1No.).
    - Skull clamp (1No.).
    - Adult Reusable Skull Pins (3 Nos.).
    - Child Reusable Skull Pins (3 Nos.).
    - Adult Horseshoe Head Rest (1No.).
    - Horseshoe Conversion Adaptor (1No.).
    - Crossbar Adaptor -1No.
    - Universal Side rail- 2Nos.
    - Support/Mount device for base unit to any OR table(1No.).

All the above product should be US FDA / CE Approved.

## SPINE ENDOSCOPY

1. Endoscope: Scopes available for Interlaminar, Transforaminal and Pain Management. Scopes should be in angulation of 15°- 20° and 25° -30° both in Combo mode and Occular mode.
2. Endoscope for Interlaminar has Outer diameter of 10 mm Working length of 125 mm Outer diameter of 7.3mm with working length 150mm or equivalent . Working channel of 6 mm 4.7 mm or equivalent and Irrigation and aspiration channel of 1.5 mm or equivalent . Working Tubes should have outer diameter of 13.7mm or 8.5mm and inner diameter of 10.2 mm or 7.5mm or equivalent

3. Transforaminal Endoscopes has Outer diameter of 6.3 mm, Working length 171 mm and 208 mm 120 mm . Working channel 3.7 mm, Irrigation and aspiration channel 1.5 mm. Working Tubes should have outer diameter of 7.5mm and inner diameter of 6.5mm or equivalent

4. Thermocoagulation : Outer diameter 7.5mm, 3 possible versions simple ou double lips or 45° stainless steel only, Orientation handle integrated to the tube, Working channel 3.7mm, Irrigation and aspiration channel 1.5 mm or equivalent

| Sl no | SURGICAL APPROACH | OUTER DIAMETER OF WORKING TUBE | INNER DIAMETER OF WORKING TUBE | ENCOSCOPE ANGULATIONS | ENDOSCOPE OUTER DIAMETER | ENDOSCOPE WORKING CHANNEL |
|---|---|---|---|---|---|---|
| 1 | Interlaminar | Outer diameter 8-13.7 mm 4 possible version $0^0$plastic &stainless steel , $90^0$plastic &stainless steel Exists in 2 materials plastic or stainless steel | Inner diameter 7-10.2 mm | 15-25 °-in combo or occular version | Outer diameter 6-10 mm Working length of 125mm | Working channel of4-6 mm Irrigation &aspiration channel of 1.5 mm. Scope to provide access through single incision. Instruments access to be through the scope. Scope to have lateral irrigation channels. |
| 2 | Inter laminar | Outer diameter of 8.5 mm 3 possible angulations $0^0$,$30^0$,450only in stainless steel. | Inner diamter 7.5 mm | $15^0$in combo or ocular version | Outer diameter of 7.3 mm. Working length of 150 mm | Working channel of 4.7 mm. Irrigation &aspiration channel of 1.5 mm. |
| 3 | Transforminal | Outer diameter 7 – 8mm possible version $0^045^0$steel. Tube with orientation handle irrigated to the tube. Only stainless Working | Inner diameter 6-7 mm | 15 - $30^0$ combo or occular version &$45^0$ | Outer diameter of 6-7mm. Working length 120 – 260 mm. | Channel 3-4.5mm. Irrigation &aspiration channel 1.5 mm. |
| 4 | Thermocoagulation | Outer diameter 7.5 mm 3 possible version simple or double lips or $45^0$stainless steel only. Orientation handle irrigated to the tube. Inner diameter 6.5 mm, $30^0$combo or occular version, Outer diameter 6.3 mm. | Inner diameter 6.5 mm | $30^0$combo or occular version | Outer diameter 6.3 mm. Working length 124 mm | Working channel 3.7 mm. Irrigation &aspiration channel 1.5 mm. |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | Working length 124 mm. Working channel 3.7 mm. Irrigation &aspiration channel 1.5 mm. | | | | |

**I. Camera Control Unit & Camera Head:**

**A. HD 3 chip / CMOS or 4K High definition Camera System with recording facility (External or Internal)**

- The system should be truly Digital HDTV **or 4K** endoscopic video camera.
- The system should have the minimum Resolution of 1920 x 1080 pixels FHD/3840x2160pUHD, progressive scan and the consistent use of 16:9 format.

**B. HD 3 chip / CMOS or 4K High definition Camera Head**

- 3 chip HD **or 4K** Camera Head resolution 1920 x 1080 pixel**or 4K** , 3 x1/3" CMOS Progressive Scan 60HZ with 3 freely programmable Camera Head buttons and optical zoom lens of 2x dynamic optical / digital zoom range. Options available for Single Cable technology and split cable technology.
- The system should have special features:

a. Should optimize image quality & Digital Source Sampling thus maximizing hi-fidelity image transmission.

b. The system should have Optical Zoom/ digital Zoom to enhance the quality of Image size & cross specialty Standardization of the camera system, regardless of the telescope used.

**C. HD 3 chip / CMOS or 4K High definition Camera Control Unit**

1. AGC: Microprocessor controlled
2. The system should have the following features:

a. Camera system should have at least two camera buttons to control the various functions of the camera from the camera head.

3. All the camera head button functions can be also controlled by the keyboard/touch screen froma non sterile field.
4. Video Outputs – DVI,HD SDI,RGB/ S-Video Converter
5. DVI Connecting Cable
6. Power supply — 220-240 VAC 50/60 HZ
7. Should have safety certificate from a competent authority CE issued by a notified body registered in European Commission / FDA(US)

**A. Light Source**

Standalone / Integrated LED Light Source (100Watts) with the Camera System. The integrated Light Source should last at least 30,000 hrs. The Light source should be integrated through the touch screen system.

**B. Recording Device**:

1. HD **or 4K** Image capture facility with External/ Inbuilt recording; should supply the necessary storage hardware.

2. Internal hard disk / USB drive of at least 250GB capacity- along with. In case of external recording device it should be from the same manufacturer

3. Should be able to take video and still images during surgeries.

4. The system should support to take still images from recorded video footages

5. In case of inbuilt recorder, price can be quoted along with the Camera system and left blank for the slot allotted for quoting the rate of recorder in BOQ

**C.** Multifunctional Drill and Resection System: Minimum 10,000 rpm with high torque accelaration ramp, clockwise and oscillating modes shaver blades must include deflector shaver blades to drill in the corner, can be angulated at 12, 24 and 36°.Automatic detection of blades for increased safety

**D.** Radio Frequency System: RF system designed for spine surgery with arc control for increased safety, enable to coagulate blood vessels on the dura without any damage and to shrink tissues . Specific Spine Vap and Spine coag modes, Bipolar and Monopolar neurotomy modes for pain management. Reusable handle

**E.** .Instruments: 2 separated trays: Access and dissection tray

**F.** Irrigation system to be provided along with the unit

## Automated Brain Stereotaxic surgery equipment

Automated Stereotaxic Instrument (with laptop and its software included) for mouse brain surgeries with following specifications

1. The operation arm can be rotated 180° in the vertical direction and can be locked at any position within the range with a resolution of 2°； The horizontal direction can be rotated 360° and can be locked at any position within the range, with a resolution of 5°

2. Speed adjustment function must be following :

   three axis moving speed can be set in the software, of which AP axis and ML axis must have 5 kinds of moving speed options: 2.00mm /s, 1.00mm /s, 0.50mm /s, 0.20mm /s, 0.10mm /s;DV axis has 9 moving speeds: 2.00 mm/s, 1.00 mm/s, 0.50 mm/s, 0.20 mm/s, 0.10 mm/s, 0.05 mm/s, 0.01 mm/s, 0.005 mm/s, 0.001 mm/s; 2. At the micro end, the three axes can be moved at a certain speed by pressing the button.

3. Self-developed software must be there to control the automatic operation of the stereotaxic; this can be configured with two arms, support atleast two arms operation and, the software should be ableto switch the left and right arms with one key

4. The fixed point displacement must be divided into two parts: "cross arm coordinate area" and "brain area coordinate area".

5. One key must be there to set Bregma/Lambda point . When users reach Bregma/Lambda point with the locator, they should be able to mark it. Bregma/Lambda point can be set with one key, or returned to the origin with one key;

6. Probe position and brain atlases display: when the user finds and sets the Bregma/Lambda point, the computer interface should be able to display the brain atlases and the location of the probe, and should display the movement process in real time

7. The brain area could be directly scanned and marked on the brain atlases, and then the coordinates of the point can be stored, fixed point displacement or transferred into the multi-site program;

8. Ability to position calibration function: when used for a long time, when the computer displays the position parameters and the reading of the locator deviation, the user should be able to calibrate by one key

9. Location storage function: the equipment should be able to store up to 10 sites, and they can be named, edited, deleted, moved to the target site and move to the target entry point

10. Automatic craniotomy program:2 shapes to choose from: square or round, length width or diameter parameters (input range: 0~20mm) and depth (input range:0~20mm), AP axis and ML axis 5 kinds of movement speed, DV axis 9 kinds ofmovement speed;

11. Tissue removal program must be there

12. The software should be able to directly access the user manual

13. Mobile collision prompt and double arm collision prompt can be opened and closed, and the movement after opening should remind the operator to pay attention to whether there is a collision, which is safer.

14. Alarm function, real-time detection, stop the movement of all components whenencountering faults, PC side pop-up prompt

15. Be able to receive or output TTL signals, such as receiving TTL signals to trigger automatic brain stereolocator to move automatically according to the set program, or to output TTL signals when reaching a specific location;

16. The system must have Control box, craniotomy program, tissue removal programwith emergency stop button

17. The equipment must have built-in injection program that, can directly control the matching injection pump, the program can be enabled after connecting the injection pump, the software can control the injection pump for injection, filling, retracting and other operations.

18. Should have high injection accuracy, minimum injection speed up to 0.02nL/s,minimum injection volume resolution up to 0.1nL

19. The retraction speed of the needle can be set, 9 options: 2.00mm /s, 1.00mm /s,0.50 mm/s, 0.20 mm/s, 0.10 mm/s, 0.05 mm/s, 0.01 mm/s, 0.005 mm/s, 0.001 mm/s

20. Mouse Adaptors
21. Anaesthesia Adaptor for 20-30g mouse, tube , angle adjustable
22. 60 degree Non-rupture ear bars for mouse, one pair
23. Movable small animal Anaesthesia machine with isoflurane, easy fill
24. Binocular stereo microscope
25. Microdrill
26. Training to be provided by selling company on the equipment and handling and proper maintenance for user
27. All accessories numbered from 2 to 7 must be compatible with main equipment numbered at

## PORTABLE (TRANSPOR) VENTILATOR

**1.** Should be time cycled volume constant pneumatically driven transport ventillator operating on mains , battery or ambulance battery with battery backup for minimum 8 hours

**2**. Should be of ergonomic design with easy to carry inbuilt handle and low weight( not more than 5kg with battery) and tropicalized with operation range from -20 to + 50 degree centigrade .

3. There should be a special CPR Mode for ventillating during CPR with automatic adjustments of pressure settings

**4. Ventilation modes**

4.1 Volume Controlled mode

4.2 Asst.Controlled mode.

4.3 Pressure Controlled mode( optional)

4.4 PEEP

4.5 SIMV

4.6.NIV& Pressure Support

4.7. CPAP

4.8. Shall have NIV

4.9 Upgradable to ETCO2 with capnogram

**5. Parameters:**

5.1. Tidal volume - (100 – 1500or more)ml

5.2. Respiratory rate: 2-50 BPM

5.3. Inspiratory Pressure 20– 60 cm H2O

5. 4 Oxygen Concentration – 40 and 100 %

5.5. Audible alarms for low pressure, Apnea, high-pressure, High respiratory rate, Circuit disconnection,setting errors .

5.6 Peak inspiratory flow rate at least 180 litres/minute

**6. Standard Accessories (with each machine):**

6.1. Patient circuit (Adult) - 1 complete set, Reusable.

6.2. O2 Pressure Regulator - 1 No.

6.3. O2 High pressure hose

6.4. Test lung - 1 No.

6.5. Shall supply with all other accessories necessary to operate the ventilator.

6.6. NIV Mask – 2 No (Adult, Reusable)

**7. Power Source**

7.1. 100/240 V Ac 50 Hz supply. Internal battery (Li Ion) with (5-8) hours minimum operating time

7.2. Internal battery (maintenance free) with 2.5 hours minimum operating

**8. Mounting**

8.1. Should have carry handle / provisions for transport easily.

**9.** Should have safety certificate from a competent authority CE / FDA (US) / STQC CB certificate / STQC S certificate or valid detailed electrical and functional safety test report from ERTL.

**10.** Should have trigger setting facility for pressure/flow.

**11.** Should be electrically driven to prevent wastage of gases and to avoid dry run.

**12.** Patient Circuit –10 numbers (disposable) should be supplied along with the machine.

## COMMON TERMS & CONDITIONS

The Models quoted must be latest and most advanced and spare and service must be available for at least 10 years which means company will be responsible for maintaining the equipment all 10 years in full working conditions at least 95 % Up time.

- AMC and CAMC Rate should be quoted in price bid for 8 years
- Standard warranty: 2 years
- In case of failure of Equipment , standby arrangements must be provided within 48 Hours .
- Should have safety certificate from a competent authority CE issued by a notified body registered in the European commission / FDA (US)/ STQC CB Certificate/ STQC S Certificate or valid detailed electrical and functional safety test report from ERTL. Copy of the certificate/ test report shall be produced along with the technical bid.

- The cost of additional accessories should be quoted in the price bid
- Price of the all spares / accessories required for maintenance of the equipment should be quoted along with the price bid. If the firm fails to provide price of any part / accessories in the price bid the same will be provide free of cost by the company if required.
- Company will be responsible to maintain equipment & accessories in working of the equipment / accessories. Company will replace all the required parts / spares / accessories, labor / service during WARRANY / CAMC period without any extra charges / taxes ( Including & not limited to physical damage. ) .
- In case of any breakdown, fault, repair should be undertaken within 48 hours of receipt of such information. Failure to do so shall make the company liable for a penalty of Rs.1000/- per day.

Please attach a copy of

- CE & FDA certificate if any
- Compliance statement with technical specification
- Product datasheet
- Details of service division
- Sales authorization letter from Manufacturer.
- Details of installations
- Company representative should counter sign the purchase order confirming the terms and conditions in the purchase order.

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