कोइराला स्वास्थ्य विज्ञान प्रतिष्ठान धरानको

कोटेशन माग गरिएको सूचना ।

(सूचना प्रकाशित मिति:२०८३।०६।०३)

यसै साथ संलग्न Specification अनुसारको High End 3 Tesla Magnetic Resonance Imaging Machine(MRI) अन्तराष्ट्रिय बोलपत्रको माध्यमबाट खरिद गर्ने प्रतिष्ठानको योजना रहेकोले लागत अनुमान बनाउने प्रयोजनको लागि इच्छुक आपूर्तिकर्ताहरूबाट व्यवसाय (फर्म) दर्ता प्रमाणपत्र, मु.अ.कर दर्ता प्रमाणपत्र र आ.व. २०८१/०८२ को कर चुक्ताको प्रमाणपत्र, आधिकारिक विक्रेताको प्रमाणपत्र, क्याटलग/Brochures लगायतका अन्य आवश्यक कागजातहरू संलग्न गरी यो सूचना प्रकाशन भएको मितिले ७ सात दिन भित्र USDollor मुल्यमा आफ्नो कोटेशन प्रतिष्ठानको दर्ता, चलानी फाँटमा दर्ता गर्नुहुन वा quotation.procurement@bpkihs.edu मा email मार्फत पेश गर्नुहुन अनुरोध गरिन्छ । यस वारेमा थप जानकारी आवश्यक परेमा प्रतिष्ठानको इलेक्ट्रो-बायोमेड शाखा ०२५-५२५५५५, EXT. 5314 मा सम्पर्क गर्न सकिनेछ ।

Date: 16th Sep 2026

TECHNICAL SPECIFICATIONS OF "HIGH END 3-TESLA MRI MACHINE"

S.N.	Purchaser's Required Specifications	Bidder's offer/ Statement of Compliance
1.	**GENERAL**	
	a. Manufacturer: Specify	
	b. Brand: Specify	
	c. Model: Specify	
	d. Country of Origin: Specify	
	e. Year of launch: Specify	
	f. Description: New 3 Tesla MRI system for whole body imaging with superconducting magnet, high performance gradients and Digital Radio Frequency system.	
	g. The quoted model must be of latest (launched year for magnet and model should be latest) technology and must be of all available functions and applications. **The vender should provide updates (if any) for the quoted model free of cost for smooth functioning of the system during warranty or CMC period. A commitment letter of the same must be provided from the vendor and principal manufacturing company.**	
	h. It should be both US FDA and European CE approved.	
	i. It shall be installed on a full turnkey basis as described below under turnkey works.	
	j. The Bidder should provide committed compliance sheet duly signed for each parameter of specification.	
2.	**MAGNET**	
	a. 3 Tesla active shielded super conductive magnet.	
	b. It should have 70 cm or more patient bore diameter across the tunnel.	
	c. Magnet length should be less than 180 cm.	
	d. Facility for quick shutdown of the magnet in case of emergency should be available in both console and MRI room.	
	e. It should be well ventilated and illuminated with facility of 2-way intercom for communication with the patient.	
	f. **Homogeneity:** i. Best homogeneity possible should be offered.	
	ii. The guaranteed homogeneity of the magnet at 40 cm DSV should be ≤ 0.5 ppm and at 50 cm DSV should be ≤ 3 ppm.	
	g. **Magnet Cooling System** i. It should have minimum helium consumption rate or zero boil off technology. Please specify the helium consumption rate.	
	ii. Helium level monitoring device should be provided.	
	iii. Mention the helium tank capacity and helium refill interval.	
	iv. The helium should be refilled by vendor/ company during the warranty and CMC period.	
	v. Maintenance and replacement of the Cold Head should be done by the vendor/company during the warranty and CMC period.	

	h. **Shim System** i. It should have high performance and highly stable shim system with global and localized manual & automated shimming for high homogeneity magnetic field for imaging and spectroscopy. High order (2nd order) Shim should be offered as standard.	
	ii. Auto shim should be available to shim the magnet with patient in position. Specify the time for shimming.	
	iii. Mention the number of shim coil.	
3.	**GRADIENT SYSTEM**	
	a. Actively shielded gradient system in X, Y, Z planes.	
	b. The gradient should be actively shielded with each axis having independently and simultaneously a slew rate of at least 200 mT/m/msec or more and peak amplitude of 44 mT/m or more at maximum FOV.	
	c. It should have 100% duty cycle for full FOV.	
	d. The FOV in X, Y and Z axis should be 50 cm or more. Specify the linearity of the gradients at full FOV.	
	e. Effective cooling system for gradient coil and power supply should be available. The system should have efficient and adequate provision for eddy current compensation.	
	f. The above required parameters should be mention in data sheet or should be verified by principal manufacturer.	
4.	**RADIOFREQUENCY (RF) SYSTEM**	
	a. RF Transmitter i. It should be digital RF System capable of transmitting power of at least 30 KW or more. Please provide the details.	
	ii. Specify maximum transmitter RF power available.	
	b. RF Receiver i. Optical / Digital RF receiver system with / high efficient RF receiver system / or its equivalent located on the magnet inside the shielded active room.	
	ii. It should have 48 or more simultaneous channels connectivity or should be channel independent system. It should have at least 32 bits frequency control and receiver signal resolution. Please mention the bandwidth of each receiver channel in MHz	
	iii. It should have necessary hardware to support quadrature phased array and flex coils.	
	iv. It should support Parallel Acquisition Technique (PAT) examination of whole-body parts with a factor of a least 4. Mention the highest available PAT factor.	
	v. It should allow remote selection of coils and / or coil elements.	
5.	**RF COILS** The main body coil integrated to the magnet should be Quadrature / Circular Polarized (CP). In addition to this, following coils should be provided and the channel number should be quoted for single FOV.	
	a. Dedicated Head Coil (32 channels or more) for ultra-fast, high-resolution and advanced brain imaging.	
	b. Head Neck Coil (20 channels or more) for ultrafast high-resolution imaging	

	and routine imaging of head and neck.	
	c. Spine Array/Matrix Coil (32 channels or more) for thoracic and lumbar spine Imaging. It should be possible to image entire spine without repositioning the patient. d. Body Array/ Matrix Coil (32 channels or more) for Cardiac, Whole Abdomen, Pelvis, Hip, MRCP and Peripheral Imaging of at least 50 cm coverage by single or by combination coils. e. Suitable Single coil or Coil combination (32 channels or more) for peripheral angiography.	
	f. Multipurpose flex coils: Multipurpose flex coils of two different sizes should be provided. Highest available channels should be offered.	
	g. Dedicated Bilateral Breast Coil of 16 channel or more	
	h. Dedicated Shoulder Coil of 16 channel or more	
	i. Dedicated Knee Coil of 16 channel or more	
	j. Dedicated rigid Hand/Wrist Coil of 16 channel or more	
	k. Dedicated rigid Foot/Ankle Coil of 16 channel or more	
	l. Bidder must mention the total number of coils offered.	
6.	**Patient Table**	
	a. It should be motorized with computer-controlled movements in vertical and horizontal directions.	
	b. MR compatible cushions and other patient comfort accessories should be provided.	
	c. There should be provision for moving table angiography. It should have provision for automatic bolus chasing in angiography with automatic table movement.	
	d. Two-way intercom for communication with the patient should be available.	
	e. CCTV system with LCD/LED display to observe the patients should be offered.	
	f. Light localizer for patient positioning.	
	g. Patient load bearing capacity should be 200kg or more. Please specify the load bearing capacity of the table.	
	h. The table should have facility for manual traction in case of emergency.	
	i. Specify the table movement coverage of patient in cm without patient repositioning.	
7.	**Measurement System**	
	a. Largest Field of View should be at least 50 cm in all three axes.	
	b. The measurement matrix should be from 128x128 to 1024x1024. Please specify the highest matrix available.	
	c. Minimum 2D slice thickness should be equal to or less than 0.5mm.	
	d. Minimum 3D slice thickness should be equal to or less than 0.1mm.	
	e. Minimum TE & TR in 2D/3D should be specified in relation to the sequences.	
8.	**Host Computer and Array Processors (Operator Console) Workstation**	
	a. Latest state-of-art computer system with sufficient RAM (64 GB or more) and computational speed to match the single shot Echo Planar Imaging (EPI), interactive angiogram, multi-planar 3D reconstruction, surface rendering and dynamic imaging, vascular imaging/ angiography, and adequate storage for	

	images and other applications.	
	b. Necessary image processor for ultra-fast image reconstruction capable of performing real-time image reconstruction should be provided. Please specify reconstruction speed in images per second for full FOV 256 matrix.	
	c. Total hard disk memory to be sufficient to store at least 2000000 images of 256x256 matrix data size.	
	d. Monitor: 21" or more TFT/LED monitor to interpret high-resolution MRI images comfortably.	
	e. It should be capable of data acquisition, all calculations and post processing for all the applications.	
	f. The system should have DVD/CD/flash drive facility for writing/storing of images.	
	g. The system should be DICOM compatible to enable networking with PACS through RIS/HIS. Latest version of DICOM connectivity should be provided.	
9. A	**Additional 2 workstations**: Multimodality client workstation: A Multimodality thin Client server workstation with hardware and software. From OEM - Original Equipment Manufacturer & the same user interface as of main console is required with 2 permanent licenses. Each of the advanced post processing applications like neuro perfusion evaluation, fiber tracking, functional MRI, Spectro evaluation and cardiovascular applications including myocardial perfusion, cardiac function analysis should be concurrently available to two users at any point of time. All necessary post processing applications should be offered including the following features and tools.	
	Both workstations should have 21" or more color TFT/LED display to interpret high-resolution MRI images comfortably.	
	Hardware Server: The server should have image storage capacity of at least inbuilt or external 5 Tera bytes, and at least 96 GB RAM.	
9. B	**Additional 3 workstation required:** 24 inch or more iMAC: latest generation and chip configuration of highest available configuration in Nepal- 3 qty Permanent Licensed Osirix or equivalent Medical grade software- 3 qty The offered iMAC should be interconnected with MR and existing CT modality by DICOM nodes for multi-modality reviewing	
	a. All the workstations should have color TFT/LED display (24" or more) with evaluation capabilities for all the basic and advanced applications.	
10.	**Networking:** a. It should be DICOM compatible to enable networking with PACS through RIS/HIS. b. The system should be compatible for fusion imaging with other imaging modalities.	
11.	**Printing solutions**:	
	a. Film Printer: State-of-art, DICOM compatible Dry Laser Camera with integrated processor, of resolution 500 dpi or more, capable of printing images up to 1024x1024 matrix size or higher in various formats without loss of resolution for filming. It should have at least three film size and should be capable to print of any of the 8x10, 10x12, 14x14 and 14x17 inch size film. b. Color Paper Printer: Color Printer for printing of color CSI/Perfusion/BOLD	

	maps & images on A4 size paper.	
12.	**Data Acquisition/Pulse Sequences/Processing**	
	a. The system should have basic and advances imaging pulse sequences package such as Spin Echo, Fast Spin Echo, Inversion Recovery, Gradient Echo, Echoplanar Imaging, Dynamic acquisition, and Fat suppression techniques. Please provide the details.	
	b. The system should be capable of 2D and 3D image acquisitions.	
	c. Facility for gating of physiological signals should be available	
	d. All the basic and advanced image post processing techniques should be available. Please provide the details.	
	e. Advanced post-processing capabilities including artifact reduction, imaging enhancement, image filtering, and mathematical operations such as image subtraction. Please provide the details.	
	f. **Neuro-Imaging:** Comprehensive package for Neuro Imaging must be provided. Bidder must provide details.	
	g. **Angiography:** Comprehensive package for Angiography must be provided. Bidder must provide details.	
	h. **Cardiac Package:** Comprehensive package for cardiac package must be provided. Bidder must provide details.	
	i. **Diffusion and DTI:** Comprehensive package for diffusion and DTI must be provided. Bidder must provide details.	
	j. **Perfusion:** Comprehensive package for perfusion must be provided. Bidder must provide details.	
	k. **Body Imaging:** Comprehensive package for body imaging must be provided. Bidder must provide details.	
	l. **Musculoskeletal Imaging:** Comprehensive package for musculoskeletal imaging must be provided. Bidder must provide details.	
	m. **SWI:** Sequences for susceptibility imaging must be provided.	
	n. **Prostate imaging:** Comprehensive package for Prostate Imaging must be provided. Bidder must provide details.	
	o. **Breast imaging:** Comprehensive package for Breast Imaging must be provided. Bidder must provide details.	
	p. **Motion correction:** Comprehensive package for motion correction must be provided. Bidder must provide details.	
	q. **MR Spectroscopy:** Comprehensive package for MR Spectroscopy must be provided. Bidder must provide details.	
	r. **BOLD Analysis:** Comprehensive package for functional MRI/ BOLD images analysis must be provided. Bidder must provide details.	
	s. **Image Statistics and Measurement Techniques:** Comprehensive package for image statistics and measurement techniques must be provided. Bidder must provide details.	
	t. **Complete acceleration technique package** available with the principal company should be offered as standard without any exclusion. Please provide details.	

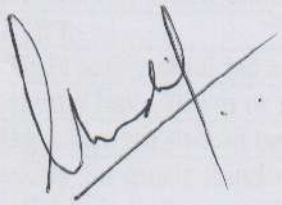
	u. **Complete package of artificial intelligence (AI)** based examination protocols and application available with the principal company should be offered as standard without any exclusion for the better productivity. Complete package of AI based deep learning applications for reducing scan time and sharper image quality both in 2D and 3D mode should be offered.	
13.	**Safety features**	
	a. The magnet system should include an Emergency Ramp Down unit (ERDU) in both magnet room and console room for fast reduction of the magnetic field. Specify the Ramp Down time.	
	b. The magnet should have quench bands that contain the fringe fields to a specified value in the event of a magnet quench.	
	c. Real time SAR calculation should be performed by software to ensure that RF power levels comply with regulatory guidelines.	
	d. The system should have manual override of the motor drive for quick removal of the patients from the magnet bore.	
	e. Temperature sensor (built in) for magnet refrigeration efficiency.	
	f. Electrical safety and electromagnetic compatibility for electro medical equipment should be guaranteed.	
14.	**Standard MRI Accessories:**	
	a. Imaging phantoms for regular QA/QC studies.	
	b. Water chillers for Cold Head/Gradients.	
	c. MR compatible patient shifting trolley: 1 piece.	
	d. MR Compatible wheel chair: 1 piece.	
	e. MRI Compatible IV Fluid stand: 1 piece.	
	f. Hand held metal detectors: 2 pieces.	
	g. MRI compatible pulse oximeter for monitoring pulse rate and oxygen saturation of patient: 1 piece (If it is not in-built in MRI system, please specify the availability)	
	h. Metal detector gate: one	
	i. MRI compatible coil storage carts/ coil cabinets	
	j. MRI Compatible dual power head Pressure Injector: One set ➢ 30 sets of compatible syringes and tubing for initial training/demonstration purpose.	
	k. MRI compatible suction and oxygen pipeline to be provided inside the RF enclosure.	
	l. UPS: Compatible UPS for entire MRI system including power injector, console and workstation with at least 30 minutes back up with no cut-off of the power supply even during the scan.	
	m. MRI compatible firefighting system: Adequate numbers of detectors and 4 or more fire extinguishers.	
	n. MRI compatible audio system and noise-reducing stereo headphones.	
	o. Heating, Ventilation and Air Conditioning (HVAC) of adequate capacity for UPS, Console, RF Room, Reporting Room and Duty Room.	
	p. Patient Weighing Scale/ machine: 2 pieces	
	q. Closed circuit TV cameras for surveillance in UPS room, Console, Reporting Room, Patient preparation & waiting area etc. with complete set of computers	

	and accessories..	
	r. Complete set of computers and Printers (B/W) for report writing and printing: 5 sets	
	s. Furniture: ➢ Revolving chair - 10 for console & reporting room. ➢ Patient's couch-1, writing table-1, revolving chair-2 for patient preparation room. ➢ Suitable desks/stands to accommodate computers/monitors/printers in console and workstations. ➢ Other required furniture as per the standard guidelines.	
15.	**Suitable RF Enclosure**	
	The system should be supplied with the US or European standard RF cabin with RF room shielding, RF Door screen, and interiors for the same should be carried out suitably. a. The system should be supplied with the RF cabin; cladding and interiors for the same with sound reduction system. Please specify the maximum sound reduction in dB. b. All the shielding requirements of the room will have to be done by the supplier. c. Installation of all the air conditioning along with humidification and dehumidification control should be done by the supplier.	
16.	**Heat Dissipation**: The system should have efficient heat dissipation and cooling mechanism.	
17.	**Standard and Certification**: The system should be both US FDA and European CE approved product. Certificate of the same must be attached in the tender documents.	
18.	**Warranty**	
	a. Two Years of Comprehensive Warranty of complete MRI system along with all equipment and accessories including UPS which should include services as well as spare parts, coils, helium refill etc.	
	b. Must quote frozen rate for CMC period of 8 years after the completion of warranty period which should not exceed more than 5% of the bid cost annually. CMC must cover spare parts, accessories, coil, helium refill and service along with stationed service personnel. CMC price will be taken in consideration during financial bid evaluation for machine's 10 years life evaluation.	
	c. Warranty shall start from the day of complete satisfactory installation of equipment.	
	d. 95% uptime during warranty/CMC period must be provided. If downtime is more than 5%, penalty of double the downtime would be added to the warranty/CMC.	
	e. Attach a complete list of parts/accessories which would be provided with the equipment.	
	f. During the warranty period supplier must ensure planned preventive maintenance (PPM) at least 4 times in a year and corrective/breakdown maintenance with immediate effect.	
	g. The vendor and manufacturing company should guarantee the service and	

	spare support for 10 years of the whole system including Helium, Coil, Cold head and all accessories.	
19.	**Power Supply**	
	a. Power input should be compatible with power supply at BPKIHS, Dharan, Nepal.	
	b. Resettable over current breaker shall be fitted for protection.	
20.	**Environmental Factor:** The unit should be capable of operating continuously in ambient environment of BPKIHS, Dharan, Nepal.	
21.	**Personnel:** A factory trained on-site service personnel must be stationed with accommodation at BPKIHS, Dharan at bidder's own cost to assist in the application, troubleshooting and system service/ maintenance during entire warranty and CMC period. Service personnel training certificate must be provided along with bid documents.	
22.	**Installation, Inspection and Commissioning**	
	a. Certificate of calibration and inspection from factory.	
	b. Inspection to verify the compliance of offered equipment as per specification will be conducted by technical team appointed by the BPKIHS.	
	c. All product catalogues should be provided.	
	d. Log book with instruction for daily, weekly, monthly and quarterly maintenance checklist. The job description of the hospital technician and company service engineer should be clearly spelt out.	
	e. The compliance statement must be filled strictly under heading given in the specification. Each parameter of specification corroborated in the compliance statement must give the page number where it is listed in the original technical data sheet along with soft copy. And the same should be highlighted.	
23.	**Documents/Training**	
	a. User and service (Technical /Maintenance) manual to be provided in English.	
	b. Onsite operational training till the familiarity of the system for at least 3 months in total and then multiple times when required during the warranty period for Radiologist and Radiographers.	
	c. Advanced level service training for minimum two staffs of Biomedical Engineering Section must be provided at reputed training center abroad for at least two weeks.	
24	**Works to be done under Turnkey Project**	
	a. This is a full turnkey project which means BPKIHS will only provide site and the bidder has to do all aspects of works including electrical, civil, electronics, computer, and biomedical engineering. The bidder will hand over the key after complete installation and then inspection will be done by the technical team appointed by BPKIHS.	
	b. Under this turnkey project all required electrical materials from UPS room to MRI Building such as 4 core cable, MCCB, MCB, AC etc. shall be supplied and installed by the bidder. **BPKIHS shall only supply required electrical load and 4 core armored cable from electrical substation to MRI Building UPS room and BPKIHS will also do the required earthing and provide earthing connection to the MRI building.**	
	c. Under this turnkey project all required civil related works such as modification (retrofitting) and extension of existing MRI building to	

	accommodate new 3 tesla MRI Machine with all other rooms, RF shielding, Magnetic shielding, painting, required furniture etc. must be done by the bidder. **The bidder must have to send their technical team to visit the site**. The bidder must have to provide their layout diagram of the MRI building which should be as per standard guideline and as per rules and regulations of NEPAL. The building design and layout diagram must include a Magnet room, reporting room, console room, patient waiting area with sitting arrangement, patient preparation room, doctors' room, technical person room, UPS room etc. as per standard guidelines. The magnet room should be of standard size to accommodate anesthesia equipment also.	
	d. Under this turnkey project all required electronics related goods such as UPS, CC Camera, two-way communication, speakers, television etc. must be supplied and installed by the bidder as per standard guidelines.	
	e. Under this turnkey project all required computer related works and goods must be supplied and installed by the bidder as per standard guidelines.	
	f. Under this turnkey project all required biomedical related works and goods must be supplied and installed by the bidder as per standard guidelines.	

Note:

a. This technical specification is not targeted to any single or particular company or model/ brand of the machine.

b. If any application / software / technology words or terminology are specific to any company then they can quote equivalent application / software / technology.