

## Technical specification of Computed Radiography (CR) System

S.N.	Purchaser's Technical Specifications	Bidder's Compliance Sheet			
		Yes	No	Page No. in Catalogue	Remarks
	<b>Computed Radiography (CR) System</b>				
	<b>Manufacturer</b>				
	<b>Brand</b>				
	<b>Type / Model</b>				
	<b>Country of Origin</b>				
<b>1.</b>	<b>Description of Function</b>				
a.	Radiography system to replace conventional Film/Screen based X-Ray processing techniques with Photostimulable Phosphor Plate technology to obtain digital X-ray images.				
<b>2.</b>	<b>Operational Requirements</b>				
a.	The system shall be able to record X-Ray images on Imaging Plates (IP)				
b.	Convert these images from the IP into digital values and transfer these values to an image evaluation computer with predefined Image Processing Parameters.				
c.	Operationally and functionally equivalent to and better than the present film based system.				
<b>3.</b>	<b>System Configuration</b>				
a.	Image Reader system: 01				
b.	CR Workstation: 01				
c.	RIS Interface: 01				
d.	Remote ID and Preview station: 01				
e.	Archiving System: 01				
f.	Dry view imaging printer(film based), and double tray type :01				
<b>4</b>	<b>Technical Specifications</b>				
<b>4.1</b>	<b>Image Reader</b>				
a.	IP processing rate minimum 40 films/hr or more for 14 x 17 inches cassette				
b.	Scanning mechanism to read, erase and process the images from the imaging plate. (IP)				
c.	Panel for indicating online status of the CR Reader in case of machine malfunction				
d.	Emergency Mode for accepting exposed cassettes without patient demographics for casualty trauma workflow requirements				
e.	Verification of the connectivity status of configured image destination				
f.	Spatial resolution of digital image 6-10 pixels/mm.				
g.	CR System should have data acquisition of 14 bits or more				
h.	X-Ray Generator compatibility with reputed manufacturers.				
i.	CR system should have the capability of processing the cassettes both in standard and high speed mode.				




j.	Image matrix at standard resolution (14 x 17) - 3000 x 4000 Row x Column				
<b>4.2</b>	<b>CR Workstation:</b>				
a.	Capable of Archiving and printing selected images to a standard DICOM destination in DICOM 3.0 format				
b.	Storing images in the local disk for predefined period.				
c.	Sorting of patient image based on name, date, exam etc				
d.	Using predefined parameters or user defined and stored image parameters				
e.	Correcting typographical in patient demographic module, in case RIS connection was down and manual data entry was done.				
f.	Capability of changing R/L, Flipping, Rotating, Zooming, Collimating, annotating the incoming image.				
g.	Multi-image and slide formats				
h.	Capability of storing in CD/DVD.				
i.	Software for Advance Image processing, applications, display and quality monitoring.				
j.	Connectivity and compatibility to communicate to RIS/HIS and DICOM Compatible devices such as MR/CT/DSA Work station,				
k.	Scanning gray scale resolution- 14 bits/pixel or better.				
<b>4.3</b>	<b>Console:</b>				
a.	Software should have graphic selection to allow quick and easy picking of body parts and views				
b.	Software should have minimum 4 web enablement license for viewing of images to enhance productivity				
c.	Multifunctional console having all image optimization and post processing software like zooming, annotation, flipping, windowing and centering.				
d.	Additional computer with necessary software should be provided at the reception to feed the patient information to help ease the workflow.				
e.	19" LCD Monitor with CPU.				
<b>4.4</b>	<b>Dry view imaging printer(film based) 1unit:</b>				
a.	Print images from CR workstation, in DICOM 3 format				
b.	Printer should provide image depth of 14 bits or more				
c.	Mechanism to print images to 14x17 and 8x10 film sizes simultaneously.				
d.	Docked in processor.				
e.	Resolution > 500 DPI.				
f.	Processing capacity should be more than 50 films/hour or more for 14x17 inch film size				
g.	Shall be able to switch between Receiver Mode and Processor mode				
h.	Printer should have dry Laser imager Technology				
<b>4.5</b>	<b>IP/Cassettes size:</b>				





a.	CR system should be provided with the following cassettes and imaging plates				
b.	14 x 17 in: 1 Pcs.				
c.	10 x 12 in: 1 Pcs.				
d.	8 x 10 in: 1 Pcs.				
4.6	Bidder must submit the rate of different sizes of the film otherwise it might be the reason for the rejection of the offer				
5.	<b>Accessories, spares and consumables</b>				
5.1	<b>Accessories:</b>				
a.	<b>Computer and Printer</b>				
b.	Desktop Computer with 4 GB RAM, 160 GB ROM and 19"LCD Monitor- 1 set				
c.	All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer.				
d.	Suitable UPS with maintenance free batteries, voltage regulation and spike protection for minimum 30 min. back-up shall be supplied with the system.				
e.	CR Film of the following sizes must be supplied with machine without any extra charge: 10 x 12 in: 500 pcs 8 x 10 in: 500 Pcs.				
6.	<b>Operating Environment</b>				
a.	The system offered shall be designed to be stored and to operate normally under the conditions of the purchaser's country. The conditions include Power Supply, Climate, Temperature, Humidity, etc.				
b.	Power supply: 220 - 240 VAC, 50Hz fitted with appropriate plug.				
7	<b>Standards and Safety Requirements</b>				
a.	Must submit ISO13485:2003/AC:2007 for Medical Devices AND				
b.	CE (93/42 EEC Directives) or USFDA approved product certificate				
c.	Electrical safety conforms to standards for electrical safety IEC 60601-1 General requirement for Electrical safety of Medical Equipment.				
8.	<b>User Training</b>				
a.	Must provide user training (including how to use and maintain the equipment).				
9.0	<b>Warranty</b>				
a.	Comprehensive warranty for 2 years after acceptance.				
10.	<b>Maintenance Service During Warranty Period</b>				
a.	During warranty period supplier must ensure preventive maintenance & corrective/breakdown maintenance whenever required				
11.	<b>Installation and Commissioning</b>				

  
 प्रवेश संस्कार  
 सामाजिक विकास मंत्रालय  
 प्रवेश नं. ३  
 प्रवेश स्वास्थ्य आपूर्ति कार्यक्रम के तहत  
 जनकपुर नगरपालिका, धनुषा, नेपाल

a.	The bidder must arrange for the equipment to be installed by certified or qualified personnel; any prerequisites for installation to be communicated to the purchaser in advance, in detail.				
12	<b>Documentation</b>				
a.	User (Operating) manual in English				
b.	Service (Technical / Maintenance) manual in English.				
c.	Certificate of calibration and inspection from factory.				
d.	Authorization letter of the product must be submitted				

Bidder must completely fill the Technical Specification Form (TSF). Only Yes/no/all complies should not be written. Page number in the catalogue of all the required parameters must be clearly mentioned and highlighted. Failure in doing so may lead to rejection of bid from technical committee.



## Technical Specifications of X- Ray machine

S. N.	Purchaser's Specifications	Bidders Offer	Page No.	Remarks
	<b>X Ray machine</b>			
	<b>Manufacturer</b>			
	<b>Brand</b>			
	<b>Type/Model</b>			
	<b>Country of Origin</b>			
<b>1</b>	<b>Description of Functions</b>			
<b>1.1</b>	A general purpose 500mA X Ray machine with output power of at least 40kW.			
<b>2</b>	<b>Operational Requirements</b>			
<b>2.1</b>	It shall operate on three phase line frequency electrical supply.			
<b>3</b>	<b>System Configurations</b>			
<b>3.1</b>	500mA X Ray imaging system, 1 unit.			
<b>3.2</b>	X -Ray High Voltage Tank, 1 unit			
<b>3.3</b>	Dual Focus Rotating X Ray Tube 500mA , 1 unit			
<b>3.4</b>	Multi pose X Ray Table, 1 unit			
<b>3.5</b>	Floor to Ceiling Stand, 1 unit			
<b>4</b>	<b>Technical Specifications</b>			
<b>4.1</b>	<b>X Ray Generator:</b> <ul style="list-style-type: none"> <li>500mA, 125KVP, 40kW full wave solid state silicon rectified x-ray generator for radiography suitable for single tube operation</li> <li>Microprocessor based, high frequency inverter generator, the generator shall have at least 50kHz.</li> <li>Generator Output: not less than 40 kW (500mA at 100kV).</li> <li>Radiographic voltage: 40 kV to 125kV. in 1kV step.</li> <li>Radiographic current: 50 to 500mA.</li> <li>Anatomical Programmable Radiographic mode shall be available.</li> <li>Manual &amp; automatic exposure control and automatic brightness control shall be available</li> <li>Shall come with overload protection device.</li> <li>Power supply: 3 phase, 380-440V 50/60Hz.</li> </ul>			
<b>4.2</b>	<b>Control Console:</b> <ul style="list-style-type: none"> <li>Digital display</li> <li>Minimum 3 point exposure technique.</li> <li>Status display, error display.</li> <li>Shall come with radiography remote control in control room</li> <li>Shall have area dose product determination and display.</li> </ul>			
<b>4.3</b>	<b>Radiography: 40 to 125 KVP.</b>			

  
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	<b>Small Focus:</b> 50mA, 100mA <b>Large Focus:</b> 200mA, 300mA, 400mA & 500mA			
4.4	Solid state electronic timer with timing range from 0.01 to 5 sec.			
4.5	<b>X Ray Tube:</b> 1 No. Dual focus rotating anode X-Ray tube having following focal spots: Small focus: 0.6 mm Large Focus: 1.2 mm. Max. Exposure voltage: 125KV. Max. Exposure current: 500mA. It shall come with tube overload and overheat protection. The anode shall be a rotating anode, with a speed not less than 3000rpm Anode Heat Storage Capacity: 300KHU. Cooling method passive or forced air and/or oil cooling			
4.6	<b>Collimator:</b> One manual collimator is provided. Halogen Lamp			
4.7	One pair of high voltage cables of suitable length			
4.8	<b>Floor to Ceiling Stand ( FC Stand ):</b> Floor to ceiling stand and with counter balanced tube head (rotatable $\pm 180$ degree) 360 degree rotatable; mounted on floor ceiling rails for convenient movements.			
4.9	<b>Multi-position table (Multi-pose):</b> Multi position, hand tilt, five position table. Trendelenburg to vertical (-12, 0, 30, 60 & 90 Degree), motorized Bucky consisting of 8:1, 103 lines/inch grid size 17 1/4" X 18 7/8"; stainless steel cassette tray and foot rest			
5	<b>Accessories, Spare Parts and Consumables</b>			
5.1	Compression band – 1No Hand grip – 1No. Spare fuse set – 1No. Halogen lamp – 1No. Operation manual – 1No.			
6	<b>Operating Environment</b>			
6.1	Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metres in length.			
6.2	Suitable Voltage Stabiliser should be supplied with the machine.			
7	<b>Standards &amp; Safety Requirements</b>			
7.1	Must submit ISO 9001: 2008, ISO13485: 2012 for Medical Devices			
7.2	X-Ray Must be AERB approved			
7.3	CE (93/42 EEC Directives) or USFDA approved product certificate.			
8	<b>User Training</b>			



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8.1	The training shall include the use of all operational functions of the equipment, as well as routine checks and maintenance expected by user.			
9	<b>Warranty</b>			
9.1	Comprehensive warranty for 1 year to be provided			
10	<b>Maintenance Service During Warranty Period</b>			
10.1	During the warranty period supplier must ensure preventive maintenance and corrective/breakdown maintenance whenever required.			
11	<b>Installation and Commissioning</b>			
11.1	Supplier must accomplish proper installation & commissioning of equipment onsite.			
12	<b>Documentation</b>			
12.1	User (Operating) manual in English.			
12.2	Service (Technical / Maintenance) manual in English must be provided.			
12.4	List of important spare parts and accessories with their part number and costing.			
12.5	Certificate of calibration and inspection from factory.			
<p>Bidder must completely fill the Technical Specification Form (TSF) Only Yes/no/all complies should not be written. Page number in the catalogue of all the required parameters must be clearly mentioned and highlighted. Failure in doing so may lead to rejection of bid from technical committee.</p>				

