

COMPLIANCE MATRIX FOR TECHNICAL PROPOSAL

RFQ NO. 629307 – 3D Water Phantom and Dosimetry Equipment			
Ref.	Specification.	Compliant Yes/No	Bidder's Comments
4.	Requirements		
	4.1. Functional and Performance Requirements The System shall include the following equipment and functionality:		
	4.1.1. A portable water tank, reservoir, lift table, controller, dual-channel electrometer, detectors, software and computer capable of automated measurement of relative beam dosimetry, suitable for setup with the linear accelerator.		
	4.1.2. The relevant software and license for the generation of beam data file, suitable for export to the defined treatment planning system.		
	4.2. Technical Requirements The System shall meet the following technical requirements:		
	4.2.1. Acrylic water tank with minimum scanning range of 480 x 480 x 400 mm ³ in x, y and depth axes respectively;		
	4.2.2. Detector position accuracy: ± 0.1 mm and position reproducibility: ± 0.1 mm;		
	4.2.3. Water tank with a motorized scanning capability in user-defined points and planes, including depth, diagonal and profile scans, for various ionization chambers/detectors		
	4.2.4. Computer-controlled reservoir pump, sensor and lift table with a minimum vertical travel range of 500 mm for positioning the detector for TPR/TMR measurements.		
	4.2.5. Provision for levelling the scanning arm(s) of the water phantom		
	4.2.6. Water valve keeping the waterflow under control		
	4.2.7. The control unit that controls the movement of the ion chambers in XYZ direction and acquires detector data from the electrometer		
	4.2.8. A transportable water reservoir required for filling and draining the scanning tank with bidirectional water flow;		
	4.2.9. One portable laptop computer with Windows operating system with connectivity to the control unit and dosimetry server;		
	4.2.10. Wired connection (Minimum 25 m) between the portable laptop computer (with required interface and software driver) and the control unit of the water tank, in adequate quantity for the number of radiotherapy treatment equipment installed;		
	4.2.11. Equipment for dosimetry		
	4.2.11.1. A dual electrometer and control unit with bias range: 0 through +/- 400 V, minimum resolution of 10 fA, and leakage current < 250 fA; with connector suitable for this User;		
	4.2.11.2. Two (2) waterproof cylindrical or spherical ionization chambers (Active volume approximately 0.13 cm ³) for relative dosimetry with holders for use as scanning and reference chambers.		
	4.2.11.3. Two (2) cables compatible with ionization chamber detectors and dual electrometer; and		
	4.2.12. Software with one License for beam data acquisition with scan optimization (variable speed and resolution), data handling and analysis and Treatment Planning System (TPS) transfer environment;		

	4.2.12.1. software feature to allow export of beam profile data (full and half), TPR/TMR or depth dose data in ASCII format;		
	4.2.12.2. software module shall allow conversion, processing, modelling and transfer of beam data to the identified treatment planning system(s).		
	4.2.12.3. software capable to perform beam data analysis according to various protocols:		
	4.2.12.3.1. AAPM-TG51		
	4.2.12.3.2. IEC 60976		
	4.2.12.3.3. IPEM		
	4.2.12.3.4. IAEA TRS398		
	4.2.12.3.5. IAEA TRS483		
	4.2.12.4. software shall include		
	4.2.12.4.1. Generation of TMR from PDD measurements;		
	4.2.12.4.2. Generation of PDDs from relative ionization measurements with electron beams, if applicable.		
5	Marking The System shall have all safety markings in the English, and if available country-specific languages.		
6	Packing The System, for shipment to the User, shall be packed in accordance with international standards that are applicable for the shipment by air/road of this kind of equipment		
7	Quality Requirements		
	7.1. The System shall be manufactured, packed and installed in accordance with the Contractor's ISO quality assurance system or an equivalent quality assurance system.		
	7.2. The Contractor shall document the compliance with this quality assurance system.		
8	Testing and Acceptance		
	8.1. The System, prior to shipment, shall be tested for conformance of the System with manufacturer's performance specifications and the minimum requirements specified herein.		
	8.2. The System, after installation, shall be tested by the Contractor together with the End-User to demonstrate that the performance meets the manufacturer's performance specifications and the minimum requirements specified herein as determined by the IAEA and the End-User.		
	8.3. The results of the testing of the System shall be documented by the Contractor in an acceptance test protocol that shall be signed by the End-User		
9	Installation and Training		
	9.1 The Contractor shall install the System at the End-User location.		
	9.2. The Contractor shall provide two (2) days training for up to three (3) medical physics staff of the End-User in the operation and maintenance of the System at the End-User's location immediately after the installation of the System		
10	Deliverable data Items		
	The Contractor shall provide two (2) complete sets of operation and servicing manuals in the English language and if available country-specific languages.		
	Dosimetry Equipment		
	4.1 Single channel electrometer for radiotherapy dosimetry, reference class according to IEC 60731, TNC connector, including carry case		
	4.2 Calibrated 0.6cc cylindrical farmer type waterproof ion chamber With NDw for Co-60		

	4.3 Calibrated parallel plate ionization chamber for electron beam scanning –With NDw for Co-60		
	4.4 Detector for small field dosimetry with TNC connectivity		
	4.5 1D water phantom Manual – for absolute dosimetry and depth dose measurements		
	4.6 Detector holders for Item 4.2, 4.3, and 4.4 for the 1D water phantom in Item 4.5		
	4.7 Heavy duty 20 m TNC cable		
	4.8 Set of solid water plates of size 30 cm×30 cm of consisting of slabs with thicknesses of: i. 1mm plate ii. 2mm thick plate iii. 5mm thick plate iv. 10 mm thick plate		
	4.9 Solid water adapter plates of size 30 x 30 cm ² for Farmer chamber (item No 4.2)		
	4.10 Solid water adapter plates of size 30 x 30 cm ² for plane parallel chamber (item No 4.3)		
	4.11 Radiochromic film 8" x 10" for Radiotherapy Quality Assurance		
	4.12 Radiochromic film 10" x 10" for Radiotherapy Quality Assurance		
	4.13 Portable Survey meter for Radiotherapy with calibration certificate		
	4.14 Calibrated Thermometer - Glass thermometer (spirit type) 0o to 50o with scale resolution 0.5o or less		
	4.15 Digital barometer with calibration certificate		
	4.16 Constancy meter System for automated measurement on a daily basis of medical linear accelerator beams or a coblat-60 teletherapy unit beam. Multiple detectors (at least 5) to check beam symmetry as well as beam output are required. The meter shall include software for control and calibration of the linac, as well as long term display and storage of readings. The device shall allow to set tolerance limits for daily readings and the associated software to notify out-of-tolerance readings. The system shall support connectivity with the dosimetry server (4.20		
	4.17 Two-dimensional detector array (for dynamic wedge or IMRT). A detector array for radiotherapy dosimetry with more than 700 individual detectors, with centre-to-centre spacing less than or equal to 1 cm and covering at least 20 cm x 20 cm in a 2D array. The system should include the accessories, devices and software required for routine patient and linac QA appropriate for all major radiation therapy techniques available to the hospital. Software shall allow the user to control the collection of data from the detection system, import dose plans from the TPS, provide tools for comparing measured and calculated dose plans as well as provide connectivity with the hospital dosimetry server (4.20		
	4.18 Laser alignment phantom (CT simulator); PMMA phantom with 2 mm wide notches for alignment to lateral, ceiling and sagittal lasers		
	4.19 Electron density calibration and Image Quality phantom;		

	4.20 CTDI phantom (16 and 32 cm diameter) and pencil ionisation chamber, calibrated in terms of RQT beam qualities with TNC connectors		
	<p>4.21 Dosimetry server:</p> <ul style="list-style-type: none"> -Desktop or portable computer including operating system, Microsoft Office and all dosimetry analysis software to enable offline analysis and data manipulation -Flat bed scanner EPSON 10000 or above and A4 laser printer; -Planar image/film analysis and calibration software. -Direct connectivity to the beam acquisition laptop, treatment planning system to allow data transfer TPS, CT scanner , to the external beam treatment unit to allow EPID image transfer and scanner to allow automated 1D or 2D analysis of film. -Hardware and performance should adequate to accept additional dosimetry software packages, e.g. IMRT verification software. -External hard drive backup system and 30-minute UPS to allow controlled shut down in the event of a power failure -The system shall form part of the departmental intranet and should not have access to the internet. Software installation and upgrades/updates should be performed using CD/DVD and all other external data device inputs should be disabled to enhance data protection and minimise virus infection. 		
	4.22 In-vivo Dosimetry system software including one (1) licence for the use of EPID		
	EPID QA phantom and software for automated analysis		