Required documents from suppliers:

Each technical bid shall include the following documents:

o Technical specifications compliance sheet for each item, filled with “Yes” or “No” line by line

o Technical datasheet and technical brochure for each item o Certificate of country of manufacturing

o Technical offer describing in detail the offered configuration with all accessories and options

o Installation requirements sheet including but not limited to equipment footprint, power requirements, water connections and any other special engineering service required on site.

o Local supplier / agent representation letter and agreement (to be issued by the manufacturer with history and years of representation in Lebanon)

o Local supplier / agent service engineer's documents (CVs and experience and copy of product specific certifications for all the engineers to be involved on the project.)

o Installation Base details in Lebanon for the offered equipment / model

o Proposed matrix of training programs and schedule where applicable (to include end user biomedical, clinical application, allocated number of attendees and location.)

o List of major spare parts (to freeze the price for 5 years post warranty)

o List of consumables, reagents, disposables, etc. where applicable (to freeze the price for 5 years post warranty).

o Storage requirements and special storage conditions or utilities if applicable

o Certificate of warranty.

AlShifa Clinic

Naher Al Bared Camp, North Lebanon

Medical Equipment and furniture technical specifications report

Beirut - Lebanon

May 27th 2024

Introduction

This report provides an itemized and detailed technical specification for the various biomedical systems planned for AlShifa Clinic.

These technical specifications provide a platform upon which the gradient of the medical equipment can be chosen and consequently acquired. The level of technology; basic and optional requirements within every stated device; and overall mode of function all can be found within this document.

Technical specifications are intended to be specific enough to serve the purpose of writing them. However, it shall remain a rule that at least three marketed products (from three different manufacturers / suppliers, typically represented by three different local agents) will comply with the written specs.

General Specifications

Medical items reflect all medical equipment, medical furniture, medical devices, medical accessories, medical instruments, medical transport or medical technology items. All Medical items noted will need to meet the requirements set forth:

Regulatory: Only items sanctioned for intended use in Lebanon and the manufacturer's country to domicile will be permitted to be procured for the clinic.

Specifications: All items will, at a minimum, meet the detailed recommended specifications.

Warranty: All items shall be subject to a two-year comprehensive warranty.

Accessories: The term Accessories reflects all software versions or modalities, attachments, adaptations, probes, etc. that a particular item could use or require. All optional accessories will need to be individually listed and priced along with every item. No exceptions or omissions will be permitted. The client will be the entity to choose which optional accessory he wishes to procure.

Labeling: Labels and markings should be clear and durable to withstand routine cleaning and normal wear. Appropriate warning legends should be provided on the equipment. The unit shall be labeled with (at minimum) the manufacturer, model number, serial number, lot number and date of manufacture.

Effects of Fluid: Patient and operator safety and system performance should not be adversely affected by fluid spills. Electrical components should be protected from inadvertent chemical spills or leakage.

Over current Protection: Loss of power to other equipment on the same branch circuit due to internal equipment faults should be prevented by using fuses or circuit breakers that are clearly labeled and easy to replace or reset. If fuses are used, a spare fuse should be provided in a labeled holder located next to the main fuse holder. Permanent markings near each fuse holder should indicate fuse ratings.

Line Voltage Variation: The equipment should operate satisfactorily at line voltages from ± 10% of the nominal line voltage of 220 volts for single phase, 380 volts for three phase. The equipment should not be damaged by voltages from -21% to +12.5% of the nominal line voltage of 220 volts for single phase, 380 volts for three phase.

Electromagnetic Interference (EMI): The equipment performance should not be affected by EMI radiated or conducted through the power lines from another device. If the equipment is affected, it should be fail safe.

Construction Quality:

- Electromechanical systems should be of high quality, no corroding parts.
- The equipment should have no sharp edges or protrusions.

- All external components should be securely mounted.
- The unit should be secure and provide adequate protection against moving and electrically energized parts.
- The unit should be well constructed with durable materials to withstand typical abuse and cleaning.
- Where applicable: switches, knobs and other controls should be designed for conditions of heavy use.
- Were applicable: wiring and tubing should be neatly arranged and bundled as appropriate.
- Where applicable: mechanical, electric and pneumatic terminators, connectors, sockets, and solder joints should be designed to prevent fluid penetration, incorrect connections, and mismatching of fittings and couplings.
- Connections should be secure to resist accidental disconnection.

Controls

- The controls (switches, knobs, etc.) should be visible and clearly identified, and their functions should be self-evident.
- Device design should prevent misinterpretation of displays and control settings.
- Switches and controls should be protected against accidental setting changes (i.e., due to someone brushing against the panel).
- Controls should be sealed against penetration of liquids.

Casters (When applicable):

- The casters should have a minimum of 12.5 cm (5 inches) in diameter.
- At least two casters should have locks.
- If the casters are equipped with locks, they should be able to maintain the device stationary on a 10 deg. incline.
- The casters should be conductive and should swivel.
- Maneuvering the equipment should require minimal physical effort.

Ease of Use:

- The unit should be simple to use, operate, and maintain.
- Abbreviated operating instructions should be included on or with the equipment
- The equipment should be easy to clean and disinfect as appropriate
- Removal of components that require routine cleaning should be easy and require minimum effort.
- Where applicable: filters should be provided to remove particulate matter.
- The unit should be designed for easy access to serviceable parts.
- Where applicable: equipment should resist staining by the chemicals used during routine operation.

Consumables / Disposables / Reagents / Chemicals etc...

- Where applicable: all consumables, disposables, reagents and or chemicals delivered with the medical equipment and or systems (if any) should have a shelf-life valid for not less than 6 months after the issue of Acceptance Certificate.
- Upon delivery all such material should be stored in conditions according to manufacturer's requirements, taking into consideration all precautions for hazardous materials, if any.

Data Connections to HMIS

- Where applicable: Provision for data connections to HMIS is required in the equipment. Such equipment includes, but not limited to, Medical Imaging Equipment, Laboratory Analyzers, Physiological Monitoring Systems, Anesthesia Equipment, Radiotherapy Equipment, Infusion Devices, etc.

Abdominal & endo-vaginal ultrasound convex probes

The following probes shall be compatible with the Vinno E10 ultrasound system:

1- Abdominal convex probes: 2 probes to cover the whole patient size spectrum, specify the frequency range, the number of elements, the convex radius, the FOV and the physical footprint.
2- Endo-rectal/vaginal convex probe: specify the frequency range, the number of elements, the convex radius, the FOV and the physical footprint (Biopsy guide shall be included).

Automated External Defibrillator

The Defibrillator/Monitor shall have the following specifications:

1. It shall be lightweight, made of durable material to withstand minor accidental shocks
2. Variable energy output
   - 2.1. Biphasic waveform
   - 2.2. Energy Selection:
   - 2.3. Adults: 50 - 200 J delivered energy in at least 7 steps
   - 2.4. Pediatric: 2 – 20 J. Specify no. of steps
   - 2.5. Automatic charge depletion if not used within 2 minutes with warning tone.
3. The unit shall be compatible for use with all patient range
4. Paddles Controls should include: Charge, discharge.
   - 4.1. Optional: Energy Selection, impedance Ok indicator, event/print or others
5. Waveform Shape: Specify if Biphasic, truncated exponential, Biphasic Multipulse Biowave, Rectilinear Biphasic.
6. Manual as well as Automatic Defibrillation modes.
7. Automatic Defibrillation mode adjustable parameters shall include (provide information pertaining to each):
   - 7.1. Real-time CPR feedback
   - 7.2. CPR Record (for later event review)
   - 7.3. Other Feedback parameters: Depth, frequency, recoil, Compression Rate
   - 7.4. Number of shocks in series
   - 7.5. Timer
   - 7.6. Visual & Voice prompts
   - 7.7. Other, please list
8. ECG monitoring via paddles or ECG cable (3, 5, 12 leads):
   - 8.1. Variable sensitivity
   - 8.2. HR display and Adjustable HR alarms.
   - 8.3. ECG electrodes supplied with the unit
   - 8.4. Minimum Lead Configuration: Paddle, I, II, III, aVR, aVF, aVL
   - 8.5. Optional: 12 lead
   - 8.6. Audible and Visual Lead-fault indicator
9. Recorder with automatic/manual start and automatic annotations including:
   - 9.1. Date
   - 9.2. Time
   - 9.3. Lead
   - 9.4. Heart Rate
   - 9.5. Energy and sync (when active)
   - 9.6. Capability to operate in real time or delay modes (at least 6 seconds delay).
   - 9.7. Others. Specify.
10. Cardioversion mode with clear QRS flagging and tone when sync mode is activated.
    - 10.1. SYNC message shall clearly appear on the display.
11. Capacitor charging time less than 5 seconds to max energy (battery operation, when fully charged). Please specify charging time and maximum energy level
12. Battery capacity of at least 2 hrs monitoring and 15 discharges (to max energy).
    - 12.1. Rechargeable Lithium-ion battery

12.2. Light weight, Removable
12.3. At least 4 hours monitoring or 200 shocks with maximum energy.
12.4. Recharge time to 100% < 3 hours

13. The unit shall operate fully on AC power when battery has depleted or with no battery at all.
14. Adult and pediatric (external) paddles easily interchangeable (incorporated pediatric paddles). Paddles shall be supplied with the unit
15. Display (LCD or EL) at least 5" diagonal showing:
    15.1. Heart rate
    15.2. ECG input source
    15.3. Sync marker and indicator when activated
    15.4. Selected energy level
    15.5. Low battery warning message
    15.6. Pacing parameters
    15.7. SpO2 value
    15.8. Alarm limits
16. The unit should give a signaling tone when capacitor is charged to selected level
17. Should have clearly visible "Battery Charging" and "AC" input indicators for easy and frequent nurse's inspections.
18. Internal self-testing capability is an asset.
19. Internal storage memory: 55 events summaries and 12 hours ECG

Centrifuge, Bench Mounted, Fixed Rotor

Microprocessor controlled, bench top centrifuge for routine clinical laboratory use

1. To incorporate digital display for speed (actual and set), RCF and time, as well as other operating indicators such as lid locked, door closed/open, status, etc. (list details)
2. Manually adjustable parameters as well as user programming capability. State number of user defined programs and programmable parameters (speed, time, acceleration, rotor type, brake, etc.)
3. Large, Bright LED display
4. Variable centrifugation speed up to ~ 3900 rpm
5. Variable acceleration with acceleration and brake ramping. Specify range.
6. Variable Relative Centrifugation Force. Specify range.
7. Variable timer up to 60 min or better as well as continuous operation
8. Acceleration/deceleration specs should be provided.
9. Fixed angle rotor
10. Spin up to 6 tubes of 75-100mm / 3-10mL or 6 tubes of 125mm / 15mL
11. To incorporate air circulation system to prevent excessive temperature increase within the centrifugation chamber
12. The unit shall possess advanced features and characteristics, especially those relating to sample and user safety. These features shall include but not be limited to:
    - 11.1. Brushless induction drive
    - 11.2. SS bowl and lid interior
    - 11.3. Easily removable rotor for cleaning the bowl
    - 11.4. Internal safety chamber (steel or similar) between the bowl and outer case
    - 11.5. Insulated interior for noiseless and vibration-free operation. Specify noise level.
    - 11.6. Smooth, low noise motor (state motor suspension method)
    - 11.7. Rubber positioning feet to prevent the unit from slipping
    - 11.8. Lid opening prevention mechanism when the rotor is turning
    - 11.9. Emergency stop capability
    - 11.10. Audiovisual alarm with identification of problem or error code for easy troubleshooting. List all alarms.

Dental Apex locator

The apex locator is used to measure the length of apical teeth, helping dentists to finish the endodontic treatment. The unit shall meet or exceed the following specifications:

1. Portable lightweight unit
2. Clear bright LCD, clear image and different colors that indicate the trajectory of the file clearly
3. Precision Digital Multi-Frequency measurement
4. Should ensure great accuracy in wet or dry canal or bleeding canals
5. Instant accurate measurement of canal length
6. Audible warning system
7. Auto power shut-off
8. Rechargeable battery. Specify battery life and charging time.
9. Automatic calibration
10. The file clip, lip hook and touch probe shall be reusable and autoclavable under high temperature and high pressure.
11. The unit shall be offered with instrument holders
12. Bidder shall list all the necessary accessories for proper installation and functioning

Dental X-Ray Unit, Wall Mounted

1. Microprocessor controlled dental X-ray unit, wall mounted with programming facility of exposure parameters with digital display of settings.
2. Intra-oral digital sensors to be included with computer and software for viewing / analysis / DICOM
   printing on the laser printers specified separately in this tender
3. The PC must be a high end with monitor.

Client workstation shall have the following minimum requirements:

- 3.1. Processor 1 GHz
- 3.2. RAM: 1 GB
- 3.3. Hard disk space: 40 GB
- 3.4. Monitor: 1280 x 1024
- 3.5. Peripherals: CD R/W or DVD RJW drive
- 3.6. Java platform

4. DICOM compatibility: Storage, print, image archive, patient management...
5. X-ray generator:
   - 5.1. High frequency, constant potential Converter type.
   - 5.2. Micro-Processor controlled.
   - 5.3. Up to 70 KV. Up to 8 mA.
   - 5.4. Exposure time: 0.01 – 3 s
   - 5.5. Pre-programmed and manual technique.
   - 5.6. Remote-controlled hand switch for exposure release.
   - 5.7. SID: 200- 300 mm
6. X-ray tube:
   - 6.1. Focal spot size: 0.7x0.7 mm.
   - 6.2. Fixed anode.
   - 6.3. Cone diameter 60 mm
   - 6.4. Exposure time: 0.01-3.2 s. Specify number of steps.
7. Control Panel: Digital display, help messages, error codes, remote station standard
8. Digital sensor specifications:
   - 8.1. CCD digital technology
   - 8.2. Hermetically sealed and fully submersible. Impact resistant housings to minimize damage from a biting patient
   - 8.3. Sensors size to be offered with each unit (4 mm thin or less):
     - 8.3.1. 20 x 30 mm
     - 8.3.2. 25 x 36 mm
   - 8.4. Shades of gray: 4,096 (12 bits dynamic range)
   - 8.5. Optical imager resolution: 17 lp/mm
   - 8.6. Pixel size: 30 µm x 30 µm
   - 8.7. Sensor cable length: to be coordinated with the medical drawings in order to have enough length to reach the desk
   - 8.8. Power supply: USB powered device- no external power supply needed

9. Articulated arm. The supplier is requested to check the medical drawings to ensure proper positioning of the X-ray unit relative to the dental unit and patient position to provide the required length of the articulated arm for effective and efficient practice.

10. Tube head shall be able to rotate 270 deg. in the vertical plane and 360 deg. in the horizontal plane. Exposure hand switch with 3m cable.
11. 10 cm pointed cone to be provided.
12. A dedicated UPS shall be provided to ensure continuous operation during power outage.

Diagnostic Set, Otoscope/Ophthalmoscope, Portable

1. Complete diagnostic set that should include:
   1.1. Ophthalmoscope head.
   1.2. Otoscope head, with different-size set reusable specula.
   1.3. Large handle with 3.5 V rechargeable batteries: qty of 2.
   1.4. Desktop charger with two wells, and charging LEDs.
   1.5. Disposable specula dispenser.
   1.6. Spare lamp.
2. The handles should be lightweight, easy to grip and clean.
3. The Otoscope/Ophthalmoscope heads, specula and lenses should be easy to change; however, they should lock in place when being used. The heads should be equipped with high-intensity LED lamps.
4. The Otoscope should be made of high-quality stainless steel, with distal fiber optic illumination, insufflation port, and 3x magnification swivel window and an airtight seal.
5. The Ophthalmoscope should be made of high-quality stainless steel or plastics and incorporate aspherical optical system mounted in metal chassis, 6-apertures wheel and separate red-free filter.
6. Reusable specula should be resistant to agents recommended for cleaning and sterilization.
7. The batteries should be easy to recharge and / or replace.
8. The batteries should operate the unit for at least two to three hours.
9. The batteries should require no more than 16 hours of recharging after depletion.
10. The unit should be lightweight and able to be held in one hand.
11. The unit should have no sharp edges and easy to clean.
12. The unit should be well constructed with durable materials to withstand typical abuse and cleaning.
13. Switches, knobs, and other controls should be designed for conditions of heavy use.
14. The controls (i.e., switches, knobs. etc.) should be visible and clearly identified, and their functions should be self-evident.
15. Controls should be sealed against penetration of fluids.
16. The unit should be simple to learn to use, operate, and maintain.

Electrocardiograph (ECG), Digital with Trolley

1. Real time continuous acquisition of 12 leads resting ECG simultaneously, with auto and manual lead selection and pediatric / adult configuration capabilities.
2. User configurable 12-channel continuous recording (simultaneous printed channel configuration for 3, 6 or 12 channels), with speed of 5, 12.5, 25 and 50 mm/sec; variable sensitivity, on A4 (Z-fold or paper roll). To incorporate "copy" function for multi-copy generation. Printed page shall include annotations such as date, time, patient data, medications and instrument settings.
3. High resolution, thermal array printing (8 dots/mm or better) and keyboard for data entry shall be
4. incorporated within the unit
5. Battery operation using built in rechargeable battery (high capacity, at least 30 ECGs when fully charged).
6. Automatic battery charging while unit is plugged in or AC operated.
7. Storage capacity of at least 30 ECG's shall be possible with data transmission and communication capability (using built-in network connection)
8. The unit shall be defibrillator protected.
9. Low battery and lead off warning messages shall be clearly displayed when applicable
10. To incorporate filters for muscle artifact and line noise (50/60 Hz) as well as auto calibration signal.
11. Frequency range shall cover 0.05 - 100 Hz or better.
12. The unit shall incorporate a 12-lead ECG display (LCD or EL) with parameter annotations similar to those of the recorder listed above.
13. The offer shall include measurement and interpretation software including arrhythmia
14. Signal averaging shall be included as option.
15. The offer shall include a mobile trolley designed specifically for use with the offered unit. The trolley shall incorporate a drawer or compartment for accessory storage as well as ECG leads / wires hanger
16. Welch bulbs with Limb clamps, full set, to be included.

Operating Unit, Dental, With Instruments and Handpieces

Complete dental units for dental clinics to be supplied as per below technical specifications:

1. Dental chairs shall have the following features:
    - 1.1. 3 section with removable articulated head rest
    - 1.2. Good lumbar support for patient comfort
    - 1.3. Electrically operated with Zero program. Back tilt and height adjustment
    - 1.4. Upholstered in impermeable washable material
    - 1.5. 2 armrests: 1 fixed and one movable for easy patient access and wheelchair transfers
    - 1.6. Foot control or a touch pad with auto presets positioning of dental chair movements and auto return with safety stop
    - 1.7. Ergonomic contoured design
    - 1.8. Right/left convertibility
2. Chair mounted cuspidor
    - 2.1. Cast aluminum body
    - 2.2. Cuspidor basin shall open out to 90°
    - 2.3. One-piece removable ceramic bowl for simple and effective cleaning
    - 2.4. Easy to position suction outlet terminal
    - 2.5. High & low volume suction tubings
    - 2.6. Removable suction manifold with washable filter
    - 2.7. Removable autoclavable cup and cuspidor fillers
    - 2.8. Brackets shall be suitable for most chair models
5. Dentist's console shall have the following features:
    - 5.1. Agile, lightweight instrument console on a double self-balancing arm with wall or floor fed services.
    - 5.2. Two air turbines: One normal, one with microhead
    - 5.3. 1 micromotor with contra angle and straight hand pieces
    - 5.4. Ultrasonic scalar with power adjustment
    - 5.5. Chip blower
    - 5.6. Mayo tray top Tray holder on articulated arm with two aluminum trays
    - 5.7. Autoclavable tray handles and handpiece rests
    - 5.8. Integral air pressure gauge
    - 5.9. Water coolant adjustment via foot control
    - 5.10. Accommodates 4 instruments
    - 5.11. 3 in 1 Syringe, heated
    - 5.12. Exhaust filter for pneumatic instruments (turbine / micromotor)
    - 5.13. Induction micromotor power / speed adjustment, forward & reverse control
        a) Soft-switch membrane keyboards shall be able to control:
        b) Dental light on/off
        c) chair movements, chair programming and calling up of programmed positions
        d) cup filling and cuspidor rinsing
        e) waterline rinsing
    - 5.14. Foot control for dentist's tools to be incorporated
6. Assistant's tray shall have the following features:
    - 6.1. Wall or floor fed services, with saliva ejector hose
    - 6.2. Two suction cannulas: HVE (High Volume Evacuator, large) and LVE (Low)
    - 6.3. Two supplementary instruments (syringe or LED curing lamp)
    - 6.4. 3 in 1 Syringe
    - 6.5. Mayo tray
    - 6.6. Cuspidor controls
    - 6.7. Chair controls (rinse, reset, direct and programmed movements if available)

6.8. Dental light on/off
6.9. Support, in the operating position, for the extracted suction tubes (handles)
6.10. Removable autoclavable handles
6.11. Detachable autoclavable suction tubes

7. Dental light and monitor
   7.1. The dental light shall be mounted on the unit.
   7.2. Spring balanced articulating arm shall allow optimum ergonomic positioning by the operator.
   7.3. Light intensity shall be easily adjusted by using a dimmer switch.
   7.4. Smooth rounded surfaces for easy and effective cleaning.
   7.5. Variable light intensity, up to 22.000 lux
   7.6. Optional monitor shall be mounted on the light support column
8. Central compressed air system and central vacuum system shall be supplied with the dental unit.
   8.1. The compressed air and vacuum pump shall be of medical grade, designed and manufactured for use with high-grade dental units. They shall possess the required functional features and capacity to supply the dental units under heavy workload conditions. It shall be equipped with automated controls, backup system in case of failure, etc. in accordance with the highest standards and norms of the industry. All system components shall be low-maintenance, low-noise, etc.
9. STOOL, dentist, with back support, mobile
10. Assistant stool, mobile
11. Instruments
    11.1. The unit shall be supplied complete with a full set of dental instruments and handpieces with adequate quantities and types to allow the consecutive work on 3 or more successive patients without the need of the dentist to wait for instruments reprocessing and sterilization.
    11.2. Each set shall be listed by item and quantity separately.

Oxygen Concentrator, 10 L/min

An oxygen concentrator is a medical device that extracts oxygen from the surrounding air and delivers it at higher concentrations than in normal ambient air to individuals who have difficulty breathing adequately on their own due to conditions such as chronic obstructive pulmonary disease (COPD), emphysema, or other respiratory disorders.
The O_2 Concentrator shall meet or exceed the following specifications:

1. Provides a continuous, variable flow of concentrated oxygen (> 82%) derived from room air
2. Maximum rate of 10 L/min.
3. Contains oxygen purity indicator for increased security
4. Equipped with one oxygen outlet, provided with controllable flowmeter.
5. Audible and visual alarms for low oxygen concentration (< 82%) and power supply failure.
6. Audible and visual alarms for high temperature, no flow rate and low/high pressure.
7. Digital meter that displays cumulative hours of device operation.
8. Oxygen outlet(s) with 6 mm (¼-inch) barbed fitting and DISS connector.
9. Flowmeter minimum flow rate of 0.5 L/min.
10. Flowmeter continuously adjustable, with markings of at most 0.5 L/min intervals.
11. Contains flow limiter to prevent overdrawing oxygen flow beyond rated maximum flow rate.
12. Noise level <50 dB.
13. Casing and environment
    13.1. Hard case, cleanable with standard hospital cleaning materials.
    13.2. Whole unit movable with wheels
    13.3. Lightweight with integrated handle for easy transport
    13.4. The unit includes internally and externally mounted filters for cleaning the air intake.
    13.5. All user-removable filters are cleanable. Cleaning instructions for filters are included in the instructions for use.
14. Electrically driven unit, supplied with power cord and electrical protection system.
15. The unit shall be supplied with:
    15.1. Adult and pediatric Cannulas and/or face masks
    15.2. Oxygen tubings
    15.3. Standard Connectors
    15.4. A reusable humidifier bottle
    15.5. Internal and external filters
    15.6. Other spare parts to be included in the offer.

Radiographic Unit, digital, Single Detector

1. Digital flat panel radiography system designed for advanced diagnostic procedures in the imaging department, including skull, chest and skeletal system as well as full body imaging (stitching) capability.
2. Patient table with the following minimum characteristics:

    2.1 Four-way floating top movement with electromagnetic locking system. Foot control function shall include height adjustment, collimator cross light control and floating brake disengage (longitudinal and transverse movements).

    2.2 Low absorption coefficient table top with washable plastic laminate material (≤ 0.75 mm Al equivalent at 100 kV)

    2.3 To support patient weight up to 200 Kg (dynamic load / off-center) and up to 350 kg (static load – centered)

    2.4 Dimensions: ~ 240 x 75 cm

    2.5 Height: variable, motorized: from ~ 60 cm to 100 cm

    2.6 Longitudinal travel ± 60 cm

    2.7 Transverse travel ± 130 cm

    2.8 Incorporated electronic flat panel digital detector (Detector specifications to be detailed in section 4 below)

3. Multipurpose digital detector for wall stand including lateral radiographic examinations

    3.1. Motorized height adjustable stand with digital Bucky unit attached to a multipurpose swiveling arm

    3.2. Manual movements of stand in horizontal direction up to 3650 mm

    3.3. Manual swiveling arm (0 to 90 degree) tiltable

    3.4. Vertical tracking (follow-up control)

    3.5. Motorized tilting of detector unit between -20 and +90 degree

    3.6. Vertical angulations for cross lateral exposures

    3.7. Vertical "move to position" function: motorized movements of detector between predefined positions

    3.8. User interfaces on both sides of the detector housing for motorized movements, collimation and amplimate field override

    3.9. Wireless remote-control unit to:

        a. steer vertical movements

        b. adjust collimation

        c. change X ray field alignment (upper center lower)

        d. Select X ray field orientation (portrait landscape) and wall stand device

    3.10. Bucky unit for digital detector with oscillating grid mechanism changeable grid and parking slit for 2 grids

3.11. Grid 36 lines/cm, for SID between 110 - 180 cm

3.12. Automatic exposure control with minimum 5 ionization chambers.

a. One patient hand grip shall be included at each side of the detector

b. Detector specifications to be detailed in section 4 below

4. One Digital wireless portable flat panel detector be moved between the chest Bucky and the table, with the below specifications:

4.1. Amorphous silicon (a-Si) conductor with cesium iodide (CsI) scintillation
4.2. DQE: minimum 55%
4.3. Detector active size: 43 x 43 cm
4.4. Pixel size: ≤ 150 µm
4.5. Matrix size: 3,000 x 3,000 pixels
4.6. Specify Image resolution
4.7. Radiation dose monitoring, AEC and removable grid
4.8. Specify the number of images it can take after full charge of the battery

5. Floor mounted x ray tube with the following characteristics:

5.1 Shall support the generator specifications (detailed below in section 6)

5.2 Dual focal spot: 0.6 / 1.2 mm

5.3 Anode heat storage capacity: ≥ 300 kHU, with tube overload protection.

5.4 Vertical movement: ≥ 145 cm

5.6 Horizontal movement: ≥ 140 cm

5.7 Tube assembly rotation around the vertical axis: ± 165^{O}

5.8 Tube assembly rotation around the horizontal axis: ± 125^{O} with lock-in at 0^{O}, $+90^{O}$ and -90^{O}.

5.9 Collimator: automatic, motorized with < 0.3 mm inherent filter value at 100 kV. Additional available filters shall be listed.

6. X ray generator with the following characteristics:

6.1 50 kW nominal power

6.2 Voltage output range from ~ 40 to 150 kV in 1 kV increments. Specify exact voltage range and increments

6.3 Current output range up to 630 mA at 70 kV or better. Specify exact current range and increments

6.4 Automatic Exposure Control (AEC) with parameter display following exposure

6.6 Tube overload protection and automatic mains voltage compensation

7. Acquisition console with the following minimum specifications:

7.1. High-end PC with Quad Core Processors

7.2. Display: 19” LCD color touch screen

7.3. Resolution: 1280 x 1024 or better

7.4. Hard disk: ≥ 100 GB dedicated for image data storage (≥ 6,500 images)

7.5. RAM storage: 2 GB or better

7.6. Interfaces: Ethernet (100/1000), DICOM, detector unit, USB memory stick, etc.

7.7. CD writer to allow burning exams on CD with DICOM viewer for external viewing

7.8. Keyboard with mouse

8. All DICOM 3.0 classes shall be fully supported (Store, Image auto transfer, Query, retrieve, Send, Receive, Modality worklist, Storage commitment, DICOM print, Patient edit, DICOM MPPS, etc.). Suppliers are requested to submit their DICOM conformance statements.

9. Anatomical programs shall include but not be limited to the following (suppliers to list additional features):

9.1. Adult & pediatric organ exposure programs Including AEC & synchronization and positioning of detector & tube with automatic collimation

9.2. Automatic positioning of tube and detector with organ program

9.3. Radiation dose monitoring

9.4. Synchronization with generator to display pre-exposure and post-exposure parameters with error information

9.5. Auto-Whole spine radiography (stitching) in standing position and lying on table

9.6. Auto-Whole extremity radiography (stitching) in standing position and lying on table

9.7. Auto-Whole body radiography (stitching) in lying position

10. Post processing functions shall include but not be limited to the following (suppliers to list additional features):

10.1. Window level

10.2. Gray scale invert

10.3. Interpolated zoom w/ roam

10.4. Image rotate

10.5. Image annotation

10.6. Measurements

10.7. Retrospective collimation

11. Below accessories shall be included in the standard configuration:

11.1. Vertical baby holder

11.2. Compression band

11.3. Operator Console Desk

12. A dedicated UPS shall be provided to ensure continuous operation during power outage.

Ultrasound Printer

The printer shall be compatible for use with the Vinno E10 ultrasound system.

1- The printer shall have a built-in digital capture that enables to store images on a connected USB drive
2- 2 Second print speed
3- User-friendly controls on front panel