MINISTRY OF NATIONAL DEFENSE ARMY MILITARY HEALTHCARE MEDICAL SUPPLY CORPS	TECHNICAL SPECIFICATIONS FOR ANESTHESIA MACHINE آلة التخدير والإنعاش	SPECIFICATION № AHC26EQU-ANES-001-1 VALIDITY:2030

1- TECHNICAL SPECIFICATIONS

A- ANESTHESIA MACHINE:

(1)- The anesthesia machine must be suitable for anesthesia in a rebreathing system and provided with an anesthetic ventilation facility for the ventilation of adult, pediatric, and neonatal patients:
(2)- The anesthesia machines must be suitable for low-flow and minimal-flow anesthesia with specific Software to prevent hypoxia.
(3)- The anesthesia machines must be equipped with integrated gas monitoring systems.
(4)- All the parameters must be built in or integrated into the machine.
(5)- Control Knobs are preferred to be in one panel for easy manipulation of the instrument while operating.

B- DEVICE CAPABILITY:

(1)- Basic unit with integrated facilities for gas supply and anesthetic gas scavenging.
(2)- Fresh gas flow control with control panel integrated in the basic unit.
(3)- Connections for two vaporizers integrated in the basic unit.
(4)- Compact breathing system integrated in the basic unit.
(5)- Anesthetic ventilation facility with control panel integrated in the basic unit.
(6)- Ventilation and gas monitoring for the display and control of all legally required measuring and monitoring parameters integrated in the basic unit.
(7)- Infinitely adjustable emergency oxygen delivery integrated in the basic unit.
(8)- Intelligent tool for control of low flow anesthesia.
(9)- Two reserve cylinders, one O_2 and one N_2O.

C- BASIC UNIT:

(1)- Trolley with drawer, on castors which can be locked into position.
(2)- Pull-out writing surfaces, with a locking mechanism.

D- INTEGRATED GAS SUPPLY :

(1)- Central supply connections for O2, N2O and air and integrated display of central supply pressures.
(2)- Automatic switch-over to reserve gas cylinders in case of failure of central gas supply.

E- OPTIONAL INTEGRATED ANAESTHETIC GAS SCAVENGING (TO BE QUOTED AS OPTIONAL):

Anaesthetic exhaust hose for connecting the scavenging system to the central ejector system, length 3m.

F- FRESH GAS DELIVERY INTEGRATED IN THE BASIC UNIT:

(1)- Electronic fresh gas delivery for gas mixtures of O2 and N2O or O2 and Air.
(2)- Flow Adjustment range: min: 0.2 lit/min max: 18 lit/min or better.
(3)- Electronic regulator to ensure at least 25 Vol% or 200 ml/min of oxygen in the nitrous oxide - oxygen mix when delivering gas flows of below 0,8 L/min so that the mixture does not become toxic.
(4)- Safety Automatic N2O cut-off in case of O2 shortage.
(5)- Automatic switch -over to 100% Air in case of O2 shortage at constant fresh air flow.
(6)- Self- resting O2 flush with a capacity above 20L/min for operation from central supply.
(7)- O2 safety flow adjustable via Knob from 0 to 12 L/min running through the vapor.
(8)- Audible alarms which cannot be silenced in case of oxygen shortage.
(9)- Audible and visual alarms in case Air /N2O .
(10)- No pressure increase in vaporizer when O2 flush is activated.

G- CONNECTIONS FOR VAPORIZERS (DOUBLE PLUG-IN VAPORIZERS AT SAME TIME):

(1)- Unit should be able to take both mechanical and electronic vaporizers.
(2)- Closes automatically when vaporizer is removed.
(3)- Possibility to change between two volatile anaesthetic agents without replacing the vaporizer .

H- COMPACT BREATHING SYSTEM INTEGRATED IN THE BASIC UNIT :

(1)- Integrated infinitely adjustable positive valve APL .
(2)- Adjustment range: min: 5 max: 70 hPa.
(3)- Integrated quick vent valve for rapid manual pressure relief of the breathing system.
(4)- Reusable CO2 absorber with a minimum volume of 1.5 Liters
(5)- Integrated pneumatic and electric interface for warming up the compact breathing system.
(6)- Breathing system should be designed to reduce condensation.
(7)- Can be used as a rebreathing system for low flow and minimal flow anesthesia.

I- ANESTHETIC VENTILATION FACILITY:

(1)- Electronically controlled pneumatically driven advanced proportional flow valve technology.
(2)- Suitable for ventilation of all patients (neonates to adults) without changing components.
(3)- Suitable for time -cycled, volume-controlled ventilation.
(4)- Suitable for volume-controlled ventilation with automatic regulation of inspiratory flow and measure (option).
(5)- Suitable for pressure controlled ventilation.
(6)- Suitable for synchronized volume controlled ventilation.
(7)- Suitable for synchronized volume controlled ventilation with automatic regulation of inspiratory flow and measure (option).
(8)- Suitable for synchronized pressure controlled ventilation.
(9)- Suitable for additional pressure support of volume, volume automatic regulation of inspiratory flow and pressure controlled ventilation modes.
(10)- Suitable for pressure support ventilation as stand-alone mode with apnea ventilation (option).
(11)- Manual ventilation still possible even in the event of external and internal power supply failure.
(12)- System compliance can be checked after replacing patient hoses.
(13)- Configurable pre settings of patient age and weight.
(14)- Fully automatic activation of integrated ventilation and gas monitoring upon start-up of anesthetic ventilation facility.
(15)- Small dead space.
(16)- Adjustment ranges of ventilation parameters in Volume Mode:
  (a) Tidal volume: 20 to 1400 ml or better.
  (b) PEEP: 0 to 20.
  (c) Ventilation frequency: 3 to 100.

J- ADJUSTMENT RANGES OF VENTILATION PARAMETERS IN PRESSURE MODE:

(1)- Inspiratory pressure: 5 to 70 (hPa).
(2)- Inspiratory flow: min 0.2 max 15 (L/min).
(3)- PEEP 0 to 20 (hPa).
(4)- Ventilation frequency 3 to 100 (L/min).
(5)- I:E ratio 2/1 to 4/1.
(6)- Parallel adjustment if inspiratory pressure possible in case of change of Peep.
(7)- Adjustable flow trigger for synchronized volume and pressure controlled ventilation: 0,3 to 15 (L/min).

(1)- Ventilation modes:
(a) VCV.
(b) SIMV.
(c) PCV.
(d) PSV .
(e) SIMV+PS.
(f) Manual .
(g) PCV-VG.
(h) Volume guaranteed mode.
(i) Ventilation and gas monitoring integrated in the basic unit for display and control of all legally required measuring and monitoring parameters:
(aa) Configurable basic setting of screen.
(ab) Fully automatic self-check that includes a vaporizer test as part of the system.
(ac) Fully automatic compliance and leak test.
(ad) Fully automatic calibration pf all sensors.
(ae) Display of three real-time curves to be chosen from:
(j) Airway pressure.
(k) CO2 concentration.
(l) O2 concentration.
(m) P/V and V/flow loops.
(n) Concentration of the volatile anesthetic agent.
(o) Insp. and expiratory flow.

(2)- Inspiratory and expiratory measurements.
(3)- Side stream measurement with sampling line.
(4)- Return flow only of sampling gas removed from the patient system .
(5)- Fully automatic calibration without accessories .
(6)- O_2 measurement principle: paramagnetic sensor.
(7)- Automatic recognition of volatile anesthetic agent.
(8)- Age-adjusted MAC calculation, taking account of several anesthetic gases in the gas mixture and the nitrous oxide concentration .
(9)- Automatic recognition of mixtures of different volatile anesthetic agents .
(10)- Quantitative measurement of two volatile anesthetic agents in the gas mixture.
(11)- No cross-sensitivity with gases such as methane, water vapor, acetone and helium

K- MULTIFUNCTIONAL PATIENT MONITOR:

(1)- Multi-page screen
(2)- Touch screen
(3)- Size 19” touch screen
(4)- 6 to 12 signal traces and up to 10 parameters: HR, NIBP . RESP, IBP(up to 4)

(5)- ECG (up to 12 leads).
(6)- SPO2, 2 Temp, Gas interface , ETCO2 , TOF , multi gas module of CO2 , N2O and O2.
(7)- Drug calculation.
(8)- cardiac output
(9)- Intracranial pressure
(10)- BIS

L- DIRECT CONNECTIVITY WITH PATIENT MONITOR TO PRINT OUT ANESTHESIA MACHINE DATA AND MONITOR DATA ON A PRINTER:

(1)- HL7 direct output .
(2)- Possibility to switch SPO2 technology at any point without any upgrade.
(3)- SPV and PPV measurement.

2- STANDARDS:

A- All medical electric and electronic equipment and others shall comply with all relevant (EMC / Electromagnetic Compatibility), CE (European), FDA (USA), and Japanese standards, electrical safety IEC 60601-1 and ultrasound-specific IEC 60601-2-37
B- All parts making the system proposed must individually and as a system be CE or FDA approved.
C- All relevant documentation and certificates of conformity to the standards shall be presented in the Tender.
D- ISO 13485 compliance and biocompatibility certification for patient-contact probes.

3- TRAINING

A- The bidder shall provide:
(1)- Procedures adopted by the tenderer for maintenance in detail.
(2)- Disposables needed for the functioning of the equipment during the training.
B- The bidder shall provide the proper training completely at his cost including accommodation, to assure the proper functionality of the equipment (a letter should be submitted) to the following:
(1)- 1 doctor training at the manufacturer's facilities outside Lebanon
(2)- 1 biomedical engineer (maintenance training) at the manufacturer's facilities outside Lebanon.
(3)- 4 technicians and 4 biomedical technicians, training in Lebanon.

MINISTRY OF NATIONAL DEFENSE ARMY MILITARY HEALTHCARE MEDICAL SUPPLY CORPS	TECHNICAL SPECIFICATIONS FOR OPTICAL BIOMETRY جهاز القياسات الحيوية البصرية	SPECIFICATION № AHC26EQU-OPHT-004-1 VALIDITY:2030

1- TECHNICAL SPECIFICATIONS:

A- GENERAL :

Optical biometry machine is non-invasive ophthalmic device that uses optical technology to measure the anatomical dimensions of the eye,especially axial length, for accurate calculation of intraocular lens (IOL) power before cataract surgery.

B- GENERAL REQUIREMENT & CONDITIONS (TO BE PROVIDED BY THE SUPPLIER/MANUFACTURER):

(1)- Model number
(2)- Date first introduced to the market
(3)- Country of origin
(4)- Country of assembly
(5)- Technique: (to be specified by the supplier)

C- MEASUREMENTS:

(1)- Automated
(2)- Axial length: 15mm - 37mm ±1 or better
Lens Thickness: 1- 10 (±0.5) or better, and 0.15 - 2.5 (±0.05) or better
Pupil size 0.5mm (±0.2) - 10mm (±1.5) or better
(3)- Anterior chamber depth: 0.8 (±0.1) - 8 mm (±1) mm or better
(4)- Central corneal thickness: 0.300mm (±0.1) – 0.800mm (±0.2) or better
(5)- White-to-white: 9 - 16 mm ±1 or better
(6)- Fixation Check: (To be specified by supplier)
(7)- OCT Analysis review: (To be specified by supplier)
(8)- Scan review:(To be specified by supplier)

D- MEASUREMENT RELIABILITY AND PRECISION (STANDARD DEVIATION):

(1)- Axial Length: 6 µm ±1
(2)- Corneal Radii: 0.1 D ±0.02
(3)- Cylinder: > 0.8 D ±0.05 , axis 3.7° ±0.5
(4)- Anterior Chamber (Depth): 8 µm ±1.5
(5)- Central corneal thickness: 3 µm ±0.5
(6)- Lens thickness: 7 µm ±1
(7)- White to white: 110 µm ±3

E- CALCULATION FORMULAS:

(1)- Barret modes: to specify which modes available.
(2)- Haigis modes: to specify which modes available.
(3)- Holladay: to specify which modes available.
(4)- SKR: to specify which modes available.
(5)- Other modes :to be specified by the supplier.

F- INTERFACES:

(1)- DICOM connectivity: EMR integration HL7 standard

(2)- Streamlined Workflow:
(3)- PDF export
(4)- Printout

G- MONITOR :
(1)- Touch Screen
(2)- Size: 9 inch or better

H- COMPUTER:
(1)- Windows OS
(2)- 4Gb RAM or better
(3)- 512Gb SSD or better
(4)- Ethernet port
(5)- minimum 2 USB ports

I- SOFTWARE UPDATE:
(1)- to be supplied FOC for the period of use of the device

J- CERTIFICATES:
(1)- Manufacturer's Declaration of Conformity for the offered ocular biometry device
(2)- Valid market clearance, market authorization or registration from one GHTF founding member, such as CE certificate under MDR 2017/745, US FDA clearance, Health Canada licence, TGA inclusion or PMDA approval, as applicable.
(3)- Valid ISO 13485 certificate covering the relevant manufacturing site and scope
(4)- Evidence of conformity to applicable safety and performance standards, including IEC 60601-1 and IEC 60601-1-2, supported by certificates or test reports
(5)- Evidence of conformity to applicable software, risk management, usability and labelling standards, where applicable.
(6)- Factory calibration certificate, inspection report and/or factory acceptance test report for the offered device.
(7)- Any other applicable certificates or test reports supporting conformity with the claimed standards.

K- WARRANTY:
(1)- Full system warranty (hardware and software) 1 year from the date of installation (To be submitted by Supplier) in addition to complimentary year's labor. (i.e: 1 year full warranty, 1 year extra labor FOC)
The full warranty include: parts, labor, travel, preventive and corrective maintenance, software support, and 24 hours onsite response time.
(2)- Submit a yearly maintenance agreement proposal (full warranty including spare parts and labor cost) (to be submitted by supplier)

L- REFERENCE
(1)- Reference list of the installation base of system in the Lebanese market (to be submitted by supplier)
(2)- Training certificates of engineers who are eligible to perform service/application procedures (to be submitted by supplier)

M- OPERATING ENVIRONMENT:

(1)- The unit shall be capable of operating in ambient temperature of 15°C to 30°C and relative humidity of 10-95%

(2)- The unit shall be capable of being stored continuously in ambient temperature up to 50°C and relative humidity of 10-95%

N- DOCUMENTATION

(1)- User, technical and maintenance manuals to be supplied in english language along with machine diagrams.datasheet, brochures, catalogues and any document that provides detailed specifications of each item.

(2)- Service and operation manuals (original and copy) to be provided**.**

(3)- Advanced maintenance tasks documentation**.**

(4)- Certificate of calibration and inspection**.**

(5)- List of important spare parts, accessories and consumables with their part numbers and cost.

(6)- Assured availability of spare parts for 10 years post acceptance testing and commissioning date**.**

(7)- List of equipment and procedures required for local calibration and routine maintenance**.**

(8)- QC and software kits**.**

(9)- Factory acceptance testing report**.**

(10)- Installation and commissioning manual, including site readiness requirements**.**

(11)- Preventive maintenance schedule and troubleshooting guidance**.**

(12)- Cleaning and disinfection instructions for reusable or patient-contacting components**.**

(13)- Calibration, inspection and quality control procedures**.**

(14)- Software version information, software update procedure and qc/software tools, where applicable**.**

(15)- Safety warnings, precautions, contraindications, limitations of use and disposal instructions**.**

(16)- Documentation shall correspond to the exact offered model and configuration and be consistent with the submitted regulatory documentation, declaration of conformity, labeling, ifu and technical specifications**.**

2- TRAINING:

A- The bidder shall provide:

(1)- Procedures adopted by the tenderer for maintenance in detail.

(2)- Disposables needed for the functioning of the equipment during the training.

B- The bidder shall provide the proper training completely at his cost including accommodation, to assure the proper functionality of the equipment (a letter should be submitted) to the following:

(1)- 1 doctor training at the manufacturer’s facilities outside Lebanon

(2)- 1 biomedical engineer (maintenance training) at the manufacturer’s facilities outside Lebanon.

(3)- 4 technicians and 4 biomedical technicians, training in Lebanon.

MINISTRY OF NATIONAL DEFENSE ARMY MILITARY HEALTHCARE MEDICAL SUPPLY CORPS	TECHNICAL SPECIFICATIONS FOR CAD/CAM DIGITAL DENTAL LAB آلة التصميم والتصنيع الرقمي في طب الاسنان	SPECIFICATION № AHC26EQU-DENT-003-1 VALIDITY:2030

1- TECHNICAL SPECIFICATIONS

A- MILLING MACHINE

(1)- 5 Axis High-performance Milling machine (highly precise)
(2)- Maximum range of materials and indications dry processing in one unit (with ability to upgrade or perform wet processes in case CoCr milling is needed)
(3)- Range of material: Zirconia, PMMA, wax, composite, glass ceramics, CoCr
(4)- Rotation axis in range up to 25 degrees (±10%) or better, which gives a great advantage for all Implantology and prosthodontics, surgical guides, and model cast work.
(5)- Open system via Material, and Software that can receive any STL file, and is capable of milling any brand of disks from different suppliers
(6)- A Cast Body, which is closed at 5 sides, absorbs vibrations and ensures a high stability of the whole machine.
(7)- Blanks from 10mm up to 30mm thickness.
(8)- Working chamber with Anti-Graffiti coating for minimum cleaning effort.
(9)- Drawer with handle, with integrated Wi-Fi and WebCam in the working chamber for the purpose of remote assistance if needed.
(10)- Massive internal machine bed made of aluminium cast.
(11)- Automatic tool change for ≥12 tools with color-coded tools (optional color-coded)
(12)- Power Output: up to 2500W(specify), Dimensions: (specify), Weight: minimum weight to ensure stability 90Kg up to 250Kg (specify)
(13)- Motor type: stepper motor, servo motor (specify)
(14)- Motor Speed: 60,000 rpm ±10%, type of spindle movement from High Class Linear guide and BallScrew drives
(15)- Software License and update for life
(16)- Compressor with dryer has to be supplied, to be compatible with the quoted system
(17)- Automation: 7-disc changer with automatic blank measurement
(18)- an accessory drawer holds the blanks and mounting tools (optional)

B- GRINDING MACHINE

(1)- 4 Axis (or better) High-performance grinding machine (highly precise).
(2)- Maximum range of materials and indications for wet processing.

(3)- Range of material: glass ceramic, composites, titanium abutments, hybrid ceramics, zirconia.
(4)- System should be well protected (electronics and electric installations) during wet procedures.
(5)- Open system via Material, and Software that can receive any STL file, and is capable of milling any brand of disks from different suppliers.
(6)- Software License and update for life.
(7)- Smart touchscreen operation.
(8)- Tool-free material mount (1 click mounting) (optional).
(9)- Working chamber with Anti-Graffiti coating for minimum cleaning effort
(10)- Drawer with handle, with integrated Wi-Fi and WebCam in the working chamber (Optional).
(11)- Massive internal machine bed made of aluminium cast.
(12)- Automatic tool change (color-coded tools if available).
(13)- Power Output: up to 2500W (specify), Dimensions: (specify), Weight: minimum 60Kg up to 250Kg(specify).
(14)- motor type: stepper motor, DC motor (specify).
(15)- Motor Speed: 60,000 rpm ±10%, type of spindle movement from High Class Linear guide and BallScrew drives.
(16)- Extremly Quiet machine due to internal insulation and thick-walled die casting housing (sound level should be less than 60dB).
(17)- Compressed air supply with dryer necessary (external or internal: specify).

C- LAB SCANNER

(1)- Full jaw scan with results for unlimited use with minimum possible time (specify times of scans for full arch, die, full arch impression), a PC & screen has to be supplied with the system with licensed Windows, a high-resolution VGA card, a high-capacity solid-state drive, and compatible with the dedicated scanner software.
(2)- High precision digitization of models with jaw relation.
(3)- Versatile use (e.g., impression scan triple tray, models, multi die).
(4)- Universal-carrier plate allows flexible scanning of numerous different model systems.
(5)- Software: crown & bridge, full crown and reduced crowns, veneers, inlay and onlay, implant, full denture, partial denture.
(6)- Model builder, bite splints, surgical guides, orthodontic archiving.
(7)- Scan speed:full arch ≤ 30 seconds, die ≤ 15 seconds) to specify scan speed for every scan type.
(8)- Number of cameras: minimum 2 with high resolution 2MP or better.
(9)- Multi-Axis scanner (capable of performing the total scan and covering all the areas).

(10)- Open system, where we need to open the inbox file.
(11)- License for life with at least 5 years of updates for free.
(12)- High accuracy≤10 μm to be able to work in implantology.
(13)- Power output: (to be specified by the supplier).

D- INTRAORAL SCANNER

(1)- High-quality intraoral scanner for comprehensive dental applications.
(2)- Compatible with dental chair setup and ergonomic use during patient treatment.
(3)- Full-mouth scanning capability, suitable for all dental treatments (restorative, orthodontic, prosthodontic, implantology).
(4)- Scanning Accuracy: ≤ 20 microns (high precision for clinical and lab applications).
(5)- Field of View: Wide scanning window to capture the full arch efficiently.
(6)- Speed: real-time scanning with minimal lag; average full arch scan ≤ 2 minutes.
(7)- Image quality: high-resolution 3D color images with natural shade reproduction.
(8)- Anti-fog/Heating: Scanner tip with anti-fog technology for uninterrupted scanning.
(9)- Software Updates: Lifetime free updates included.
(10)- Licensing: perpetual license with no annual renewal fees.
(11)- Features:
  (a) AI-assisted scanning for margin detection and occlusion analysis.
  (b) Automatic bite alignment and occlusal clearance measurement.
  (c) Export in standard formats (STL, PLY, OBJ) for lab compatibility.

(12)- Digital Lab integration: Direct connectivity to dental digital lab platforms (CAD/CAM systems, milling machines, 3D printers).
(13)- Data Transfer: Secure cloud-based sharing and local export options.
(14)- Compatibility: Open system architecture for integration with multiple lab software solutions.
(15)- Scanner Tip: autoclavable, multiple sizes available for pediatric and adult patients.
(16)- Weight: Lightweight (< 400 g) for ease of use during long procedures.
(17)- Export Formats: STL, PLY, OBJ,DICOM compatibility for integration with radiology workflows.
(18)- Cable/Wireless Options: USB-C or wireless connectivity, depending on clinic setup.
(19)- Device Lifetime: Minimum 5–7 years operational life with manufacturer's warranty.
(20)- Warranty: 5 years standard warranty starting after installation and application training, extendable upon request from the customer.
(21)- Service: Local technical support and training included.

E- SINTERING SYSTEM

(1)- High-quality heating elements made of molybdenum disilicide offer the best possible protection against chemical.
(2)- Double-walled stainless steel housing.
(3)- Outstanding temperature uniformity due to all-round furnace chamber heating.
(4)- Easy handling via touch display and Internet connection for programmes and protocols.
(5)- Ability to modify programs while running for multiple users.
(6)- Speed and normal Sintering, with rapid cooling and a controller with memory for 50 programs or better.
(7)- Offers space for a minimum of 14 elements at once.
(8)- Energy efficiency:low power consumption mode or energy certification.
(9)- Maximum temperature of 1600 °C (±10%) and large furnace chamber.
(10)- Usable for sintering blanks of all leading manufacturers.
(11)- Power output: less than 3500W monophase.
(12)- Recording of process data with a USB flash drive.

F- DENTAL 3D PRINTER

(1)- Accurate, reliable, surface finish.
(2)- Ability to print: Dentures, orthodontic models, crown and bridge models up to full mouth, partials, Surgical Guides, Bite splints, partial cast, with the ability to use biocompatible resins certified for Class IIa medical use.
(3)- Can print any STL, SLC, or STM file from an impression or an intraoral scanner
(4)- Long-life DLP 385nm (zero maintenance), SLA laser, or LFS technology
(5)- Throughput: ≥10 full arches in 4 hours.
(6)- Pixel size or resolution: should be in the range 25-34 μm (±10%) or better (specify your pixel size).
(7)- Wi-Fi and ethernet network / USB.
(8)- Lifetime software and updates.
(9)- Platform 119X67X75mm or better.

2- STANDARDS

A- All medical electric and electronic equipment and others shall comply with all relevant standards IEC 601-1 (General Requirements for safety) and IEC 601-1-2 (EMC / Electromagnetic Compatibility), CE (European), FDA (USA), and Japanese standards.

B- All parts making the system proposed must individually and as a system be CE or FDA approved.
C- All relevant documentation and certificates of conformity to the standards shall be presented in the tender.

3- TRAINING

A- The bidder shall provide:

(1)- Procedures adopted by the tenderer for maintenance in detail.

(2)- Disposables needed for the functioning of the equipment during the training.

B- The bidder shall provide the proper training completely at his cost including accommodation, to assure the proper functionality of the equipment (a letter should be submitted) to the following:

(1)- 1 doctor training at the manufacturer's facilities outside Lebanon

(2)- 1 biomedical engineer (maintenance training) at the manufacturer's facilities outside Lebanon.

(3)- 4 technicians and 4 biomedical technicians, training in Lebanon.

MINISTRY OF NATIONAL DEFENSE ARMY MILITARY HEALTHCARE MEDICAL SUPPLY CORPS	TECHNICAL SPECIFICATIONS FOR CENTRIFUGE SWING OUT ROTOR 28 TUBES جهاز طرد مركزي (٢٨ انبوب)	SPECIFICATION № AHC26EQU-LABE-001-1 VALIDITY:2030

1- TECHNICAL SPECIFICATIONS

A- GENERAL REQUIREMENTS

(1)- Type: laboratory centrifuge dedicated for blood sample processing.
(2)- Tube capacity: Compatible with 5–10 ml blood collection tubes (Vacutainer type).
(3)- Rotor type: Swing-out rotor.
(4)- Tube capacity 28 – 32 tubes.
(5)- Buckets: 4 buckets with secure lids, autoclavable and removable.
(6)- Accessories: Tube holders/adapters for 5–10 ml tubes included.

B- PERFORMANCE

(1)- Maximum speed: ≥ 5,000 rpm (or better).
(2)- Relative centrifugal force (RCF): ≥ 4,000 × g.
(3)- Speed control: Digital, programmable with fine adjustment.
(4)- Timer: programmable (0–99 minutes minimum).
(5)- Display: LCD/LED panel showing speed, time, and RCF.

C- SAFETY FEATURES

(1)- Imbalance detection: Automatic stop in case of load imbalance.
(2)- Lid locking system: Automatic lock during operation; cannot open while rotor is spinning.
(3)- Emergency stop: Manual override button.
(4)- Overheat protection: Automatic cut-off if motor overheats.
(5)- Certifications: CE, ISO 13485 compliance (FDA clearance optional but preferred).

D- CONSTRUCTION & ERGONOMICS

(1)- Chamber material: Stainless steel, corrosion-resistant.
(2)- Rotor material: High-strength aluminum or equivalent.
(3)- Noise level: ≤ 60 dB during operation.
(4)- Cooling: Ventilated.
(5)- Power supply: 220–240 V, 50/60 Hz.

E- ACCESSORIES & OPTIONS

(1)- Tube adapters: Compatible with 5–10 ml vacutainer tubes.
(2)- Buckets: Removable, autoclavable, with lids.
(3)- Spare rotor & buckets: Optional supply for redundancy.
(4)- Documentation: User manual, calibration certificate, warranty terms.

2- STANDARDS

A- All medical electric and electronic equipment and others shall comply with all relevant standards IEC 601-1 (General Requirements for safety) and IEC 601-1-2 (EMC / Electromagnetic Compatibility), CE (European), FDA (USA), and Japanese standards.

B- All parts making the system proposed must individually and as a system be CE or FDA approved.

C- All relevant documentation and certificates of conformity to the standards shall be presented in the tender.

3- TRAINING:

A- The tenderer shall describe, in details:
(1)- Procedures adopted by the tenderer for maintenance.
(2)- Disposables needed for the functioning of the equipment.

B- The tenderer shall provide and specify, in detail, the training component included in his offer, which shall cover: The detailed schedule of the necessary training sessions and educational workshops targeted for relevant staff on the safe and competent handling of major equipment and systems, and the associated cost.

1- TECHNICAL SPECIFICATIONS:

A- CO2 FRACTIONAL LASER SYSTEM:

(1) Fractional and/or full-ablative CO2 laser system for dermatologic/plastic-surgery skin resurfacing and scar treatment. System shall be intended / cleared for laser skin resurfacing.
(2) Console-based medical CO2 laser with articulated arm or equivalent rigid beam delivery designed for precise dermatologic use.
(3) CO2 wavelength 10,600 nm (10.6 µm).
(4) The bidder shall declare the CO2 source architecture and excitation method of the offered system. Sealed RF-excited premium medical CO2 source or equivalent high-performance architecture is preferred.
(5) System shall support fractional ablative resurfacing and continuous-wave or equivalent freehand / surgical mode.
(6) Articulated arm or equivalent delivery assembly allowing stable positioning and ergonomic operation is required.
(7) Color touch-screen user interface with parameter display and procedure / program support is required.
(8) Pre-programmed clinical protocols or user-storable presets for common dermatologic indications are preferred.
(9) At minimum,the system shall support treatment of wrinkles / fine lines, texture irregularities, acne scars, surgical scars, and benign keratotic lesions or equivalent resurfacing indications according to the offered clearance / labeling.
(10) System shall support superficial to deep resurfacing through adjustable power, pulse duration, density, and passes.
(11) New equipment only; year of manufacture shall not be earlier than 12 months before delivery. Refurbished units are not accepted.

B- LASER PERFORMANCE AND FRACTIONAL DELIVERY:

(1) Power output:Maximum CO2 output power shall be not less than 30 W.
(2) Higher output is acceptable and shall be stated clearly in the offer.
(3) Bidder shall state maximum average output power, peak power if applicable, pulse duration range, and repetition rate / scan speed where relevant.

C- PULSE CONTROL AND FRACTIONAL DELIVERY:

(1) Adjustable pulse duration with short-pulse capability suitable for controlled superficial resurfacing and longer pulses for coagulative effect is required.
(2) Fractional scanner or dedicated fractional applicator is required, with selectable density / coverage and pattern size.
(3) Bidder shall state fractional microbeam / pixel / spot diameter in µm, scan pattern size(s), and adjustable density / coverage. System shall provide fine

fractional beam delivery suitable for precise dermatologic resurfacing and scar treatment.

(4) Availability of at least one fine fractional microbeam size approximately 120–150 µm or equivalent precision class is preferred.

(5) Selectable pattern geometry and / or scan shapes for facial and focal resurfacing areas are required.

(6) Visible aiming beam is required.

(7) Medical-grade footswitch for laser firing is required.

D- SAFETY, COOLING AND INSTALLATION REQUIREMENTS:

(1) Equipment shall have valid CE marking and FDA clearance for the offered dermatologic indications. Documentary evidence is mandatory.

(2) System shall be supplied with integrated smoke evacuation or be fully compatible with medical smoke evacuator and appropriate filters / nozzles.

(3) If smoke evacuation is not integrated, the bidder shall include smoke evacuator, tubing, filters, and handpiece adapters necessary for normal operation.

(4) Closed-cycle or equivalent manufacturer-approved cooling / thermal management system is required.

(5) Power input shall be 230–240 VAC, 50 Hz. Bidder shall state exact rating and installation load.

(6) Bidder shall specify all site preparation, electrical protection, grounding, room ventilation, and environmental requirements.

E- ACCESSORIES, SOFTWARE AND DATA MANAGEMENT:

(1) System shall be supplied complete with handpieces / scanners needed for offered indications, articulated arm, footswitch, eye protection, user manuals, and starter consumables if required.

(2) Vendor shall submit official product brochure, operator manual excerpt, and regulatory clearance / certificate.

(3) All software licenses necessary for standard operation shall be included and stated explicitly.

(4) If treatment log or digital export exists, bidder shall state format and included reporting functions.

(5) All technical and service documents shall be in English.

F- DOCUMENTATION, ACCEPTANCE AND SUPPORT:

(1) Acceptance shall include installation, calibration, function verification, safety checks, and submission of all manuals / certificates.

(2) Local service capability in Lebanon or through an officially appointed local representative is required. Bidder shall provide response time, engineer count, spare-parts strategy, and reference installations.

(3) Bidder shall provide detailed preventive maintenance schedule and list of recommended spare parts / consumables for 5 years.

(4) Bidder shall provide priced list of consumables, disposables, accessories, and optional applicators.

(5) Offered equipment shall clearly state country of origin and country of manufacture.

2- TRAINING

A- The bidder shall provide:

(1)- Procedures adopted by the tenderer for maintenance in detail.

(2)- Disposables needed for the functioning of the equipment during the training.

B- The bidder shall provide the proper training completely at his cost including accommodation, to assure the proper functionality of the equipment (a letter should be submitted) to the following:

(1)- 1 doctor training at the manufacturer's facilities outside Lebanon

(2)- 1 biomedical engineer (maintenance training) at the manufacturer's facilities outside Lebanon.

(3)- 4 technicians and 4 biomedical technicians, training in Lebanon.

MINISTRY OF NATIONAL DEFENSE ARMY MILITARY HEALTHCARE MEDICAL SUPPLY CORPS	TECHNICAL SPECIFICATIONS FOR COMPLETE DENTAL UNIT FOR SURGERY عيادة أسنان كاملة لصالح قسم جراحة الاسنان	SPECIFICATION № AHC26EQU-DENT-001-1 VALIDITY:2030

1- TECHNICAL SPECIFICATIONS:

A- GENERAL :

The chair, Stool, Unit (except rotary instruments) and assistant side must be of the same brand. Frame color in harmony with the whole.
The color of the stool is the same as that of the chair.

B- CHAIR :

(1)-The weight of the chair must ensure its stability.
(2)-Length between 180 and 190cm.
(3)-Width between 50 and 60cm at the base.
(4)- Electromechanical operating system.
(5)-Electrical adjustment for at least the following positions:
- (a) Ascent and descent of the chair
- (b) Toggle front and back of the backrest.
- (c) Synchronizable movements at will.
- (d) Back to zero.
- (e) Trendelenburg movement.
- (f) Emergency function.

(6)-In its lowest position the chair must be at most 30cm from the ground.
(7)-Manual operating buttons accessible to the practitioner.
(8)-Cushion of total thickness. (Chassis - coating) less than or equal to 7cm, which can arrive in a strictly horizontal position.
(9)-The seat in relation to the horizontal must be inclined 5 degrees towards the rear. The knees being higher.
(10)-Headrest articulating from 0 -15 ° forward and 45 ° backward.
(11)-Armrest left side.
(12)- Replaceable polyvinyl cover with protection at the feet.
(13)-The motor must support more than the weight of the Armchair, unit, light, assistant side, at least 180 kg of patient weight.
(14)-Integrated water reservoir (autonomous water supply/feed system), to supply distilled water (in case of malfunction of main water supply system) the system must have a capacity of 1.5-2L and built in the main dental unit.

C- STOOL :

(1)- One medical stool for dentist and another for the assistant.
(2)- Completely mobile and not attached to the chair.

(3)- Maximum stability 5 wheels with foot support for the assistant and without support for the dentist.
(4)- Seat wide (diameter at least 38cm), thickness between 5 and 10cm with notch (for dentist).
(5)- Pneumatic system for height adjustment.
(6)- Minimum height greater than or equal to 55cm.
(7)- Minimum height less than or equal to 45cm.
(8)- With backrest (for dentist) and armrest (for assistant).
(9)- Polyvinyl cover easily replaceable.

D- UNIT :

(1)- Attached to the chair, modular system with reflex arm lever with long tubing to reduce wrist strain.
(2)- Has 5 modules: the water regulation is independent from one module to another, these modules are equipped with a non-return valve.
(3)- The electrical system is adopted for the operation of rotary instruments (and not the pneumatic system).
(4)- Trans-thoracic tablet:
(a)Ascent and descent with the chair.
(b)Possibility of horizontal and vertical adjustment independently of the chair.
(c)It contains:
(aa)A stainless steel tray.
(bb)A negatoscope (Option)
(cc) Keys to control: chair movements (2 work programs + return to zero), the spittoon, the water dispenser (Goblet), the scialytic light, the negatoscope, etc.
(dd) Two modules for turbines
(ee) A module for electric micro-motor (Restorative + Endo-mode).
(ff) A module for a triple or six-function syringe.
(gg) A module for ultrasonic scaler.
(hh) Pedal not secured to the chair allowing progressive work, controlling the rotary instruments of the unit and preferably that of the movements of the chair.
(ii) Intra Oral camera with screen mounted on the unit.
(jj) Integrated Endo-mode, with integrated apex locator (the apex locator should be visible on the screen integrated in the chair, with all the measurements needed.
(kk) Endo database should be also available on the chair software for different endodontic files.
(ll) Endodontic mode on the software should allow the Dr. to set the torque/speed ratio, in addition to the automatic sets available in the program.

E- ASSISTANT SIDE:

(1)- Attached to the chair.
(2)- Ascend and descend with the chair.
(3)- Spit on in opaline or enamelled metal or porcelain with rinse jet.
(4)- Water dispenser.
(5)- A tip for saliva pump.
(6)- A tip for surgical suction.
(7)- A triple function syringe.
(8)- Control of chair movements.

F- SCIALYTIC LIGHT:

(1)- Attached to the chair: up and down with the chair.
(2)- LED light source.
(3)- Adjustable intensity.
(4)- Light intensity ≥50,000 LUX.

G- TWO MULTIFLEX TURBINESWITH LED:

(1)- Ball bearing, push button (one mini head, one regular head).
(2)- Speed between 300,000 and 400,000 rpm.
(3)- With accessories: spray bottle, special oil bottle for turbine.
(4)- 3 to 4 spray outlets and unifix system (rotoquick).
(5)- Non-return valve.

H- MICRO-MOTOR:

(1)- Electric, brushless, high torque, restorative and Endo mode.
(2)- Progressive speed reaching 40,000 rpm, internal spray, push button with reverse rotation.
(3)- LED.

I- CONTRE-ANGLE :

(1)- Blue ring 1/1
(2)- LED.
(3)- Internal spray speed up to 40.000 rpm.

J- CONTRE-ANGLE ENDO :

(1)- 4:1 or 16:1 Ratio, dedicated to endodontics.
(2)- Autoclavable

K- CONTRE-ANGLE SURGERY :

(1)- 20 :1 ratio gear, dedicated for dental surgery applications
(2)- Autoclavable
(3)- Internal cooling system, for high performance and longevity
(4)- LED light

L- HAND PIECE :

(1)- Blue ring 1/1
(2)- Internal spray.
(3)- Speed up to 40.000 rpm.

M- X-RAY WITH DIGITAL SENSOR :

(1)- Long cone, 70kVp, DC, 220-240V, 50 Hz.
(2)- Respecting the international security standards.
(3)- Digital display.
(4)- Ergonomic handle facilitating the positioning of the cone, several joints with a gentle and precise balancing system.
(5)- Chair integrated(Optional), the Xray system should be mounted on the chair.
(6)- The digital sensor must be:
(a) The sensor should be Embedded in the chair
(b) Technology: CMOS > 18 µ
(c) Fiberoptic.
(d) Active area: standard
(e) Gray scale : 12 bits
(f) Resolution : ≥18lp/mm
(7)- Compatible laptop for the digital sensor (core i7 or better, 2Gb VGA, 1TB SSD harddisk, 32GB RAM, software, License, free update.…)
(8)- Accessories for the sensor: positioners and mounting holders.

N- COMPRESSOR WITHOUT OIL:

(1)- Monocylindrical with a sound level of 40-60db with silencer (same brand or equivalent).
(2)- Air tank: 22 - 25 L, with a maximum air pressure of 8 bar (or 120 psi)
(3)- Single Phase Electric Motor: 1-2 HP, 220-240.50 HZ
(4)- Equipped with a soundproofing cabinet that reduces compressor noise.
(5)- Equipped with an air dryer and a series of filters to deliver clean, dry air.

O- METAL CUPBOARD:

(1)- Metal plastic, oven paint (color on request), removable shelves inside, drawers with ball bearings, with wrists.
(2)- Approximate dimensions (± 10%), width 220cm, height 82 cm, depth 45cm
(3)- With 4 leaves:
(a)One of the wings has a basin that houses the sink.
(b)A space designed to house the mobile cabinet which contains 4 to 6 drawers with approximate dimensions (± 10%): width 50cm, depth 40cm and height 75cm.
(c)The third is equipped with a door covering 2 to 3 shelves.
(d)The fourth contains 4 to 5 drawers

N.B: The top of the cabinet housing the sink, is formed of a substance hydrophobic, resistant to heat, scratches and especially chemical substances, such as resin or other.

P- SMALL INSTRUMENTATION:

(1)- Miror: N: 4(22 mm);N: 5(24mm) + handles. (24 pieces)
(2)- Explorer 6, 17 & 23 (24 pieces)
(3)- Tweezers : type Flagg,College or Meriam (24 pieces)
(4)- Doubleheadedexcavators (24 pieces)
(5)- MixingSpatula (6 pieces)

(6)- Composite Spatula (12 pieces)
(7)- Universal Matrix holder (6pieces)
(8)- Periodental probe (6 pieces)
All of the above instruments should be stainless steel.

Q- AUTO-CLAVE:

(1)- Class B
(2)- Automatic sterilization cycle with automatic pressure regulation and temperature between 121° & 134°.
(3)- Independent drying cycle (10 to 15 min)
(4)- Strelization cycle time does not exceed 25 min.
(5)- 3 perforated stainless steel plates.
(6)- Chamber capacity 20-25 litres.
(7)- Low water level sensor with indication.
(8)- Voltage ratings 220-240V, 50 Hz.

R- WATER DISTILLATION MACHINE :

(1)- Grade 3.4 interior Stainless steel tank.
(2)- Electronically controlled.
(3)- Over-heat protection.
(4)- Distilling capacity minimum 1L/1hour.
(5)- voltage rating: 220-240V, 50Hz.
(6)- Power consumption less than 1000 Watts.
(7)- Tank capacity 3-5 liters.

S- SURGICAL ASIPRATOR:

(1)- Monocylindrical with noise level between 20 & 30 dB
(2)- Monophasic electric motor: 0.5-1 HP, 220-240, 50 HZ.
(3)- Silent cabinet to reduce the noise level of the aspirator.
(4)- Turbine fan polymer or hardened plastic (not aluminum).
(5)- Wet suction with silencer (same brand) (flow rate 4 L/min)

T- ULTRASOUND – Fiber optic SCALER HAND PIECE :

(1)- Internal spray with 4 tips or more.
(2)- Detachable and autoclavable.
(3)- Ability to regulate power and water intensity.

U- LIGHT CURING LED :

(1)- Fixed on assistant side.
(2)- Luminos intensity 1800mW/cm2 to 2200mW/cm².
(3)- Anodised aluminum (to reduce the heat).
(4)- Five program modes or better.

V- SEALING MACHINE:

(1)- Sealing temperature range 140 – 190 degrees or better
(2)- Energy saving function
(3)- Over-heating protection
(4)- Warranty minimum 1 year

W- INTRAORAL SCANNER:

(1)- High-quality intraoral scanner for comprehensive dental applications
(2)- Compatible with dental chair setup and ergonomic use during patient treatment
(3)- Full-mouth scanning capability, suitable for all dental treatments (restorative, orthodontic, prosthodontic, implantology)

(4)- Scanning Accuracy: ≤ 20 microns (high precision for clinical and lab applications)
(5)- Field of View: Wide scanning window to capture full arch efficiently
(6)- Speed: Real-time scanning with minimal lag; average full arch scan ≤ 2 minutes
(7)- Image Quality: High-resolution 3D color images with natural shade reproduction
(8)- Anti-Fog/Heating: Scanner tip with anti-fog technology for uninterrupted scanning
(9)- Software Updates: Lifetime free updates included
(10)- Licensing: Perpetual license with no annual renewal fees
(11)- Features:

(a) AI-assisted scanning for margin detection and occlusion analysis
(b) Automatic bite alignment and occlusal clearance measurement
(c) Export in standard formats (STL, PLY, OBJ) for lab compatibility

(12)- Digital Lab integration: Direct connectivity to dental digital lab platforms (CAD/CAM systems, milling machines, 3D printers)

(a) Data Transfer**:** Secure cloud-based sharing and local export options
(b) Compatibility**:** Open system architecture for integration with multiple lab software solutions
(c) Scanner Tip**:** Autoclavable, multiple sizes available for pediatric and adult patients
(d) Weight: Lightweight (< 400 g) for ease of use during long procedures
(e) Cable/Wireless Options**:** USB-C or wireless connectivity depending on clinic setup
(f) Device Lifetime**:** Minimum 5–7 years operational life with manufacturer warranty
(g) Warranty: 5 years standard warranty starting after installation and application training, extendable upon request from customer.
(h) Service**:** Local technical support and training included.

2- STANDARDS:

A- All medical electric and electronic equipment and others shall comply with all relevant standards IEC 601-1 (General Requirements for safety) and IEC 601-1-2 (EMC / Electromagnetic Compatibility), CE (European), FDA (USA), and Japanese standards.

B- All parts making the system proposed must individually and as a system be CE or FDA approved.

C- All relevant documentation and certificates of conformity to the standards shall be presented in the tender.

3- TRAINING:

A- The bidder shall provide:

(1)- Procedures adopted by the tenderer for maintenance in detail.

(2)- Disposables needed for the functioning of the equipment during the training.

B- The bidder shall provide the proper training completely at his cost including accommodation, to assure the proper functionality of the equipment (a letter should be submitted) to the following:

(1)- 1 doctor training at the manufacturer's facilities outside Lebanon

(2)- 1 biomedical engineer (maintenance training) at the manufacturer's facilities outside Lebanon.

(3)- 4 technicians and 4 biomedical technicians, training in Lebanon.

MINISTRY OF NATIONAL DEFENSE ARMY MILITARY HEALTHCARE MEDICAL SUPPLY CORPS	TECHNICAL SPECIFICATIONS FOR ECHOCARDIO HIGH DEFINITION WITH 5 PROBES آلة تصوير صوتي للقلب عالية الجودة	SPECIFICATION № AHC26EQU-ECHO-004-1 VALIDITY:2030

1- TECHNICAL SPECIFICATIONS

A high-end ultrasound system designed for advanced 2D, 3D, and 4D cardiac imaging

A- SYSTEM ARCHITECTURE:

(1)- 21" color ≥HD resolution (1920×1080) or better, with ergonomic design, mounted on a flexible arm move up/down, swivels, and tilts.
(2)- Control Panel (minimum 12" Touchscreen; Height Adjustable), with programmable shortcut keys for workflow efficiency.
(3)- Full keyboard with built-in trackball.
(4)- Probe active ports: Minimum four, Pinless with 600 connection points each.
(5)- Operating system should be Windows 10 & above.
(6)- User-friendly software.
(7)- System must have a fast boot-up time with a maximum of 20 sec from sleep mode to on.
(8)- High digital processing channels.(20 Million or better)
(9)- Image Depth: 40 cm or more.
(10)- High frame rate system capability (≥ 2500 fps).
(11)- Noise level: ≤50 dB during operation **for** patient comfort.

B- PROBES:

(1)- Probe technology (system should support matrix, single-crystal and operate within a frequency range of 2 – 24 MHz).
(2)- 2D Adult probe 1 – 5 MHz, single crystal and 2D Matrix
(3)- 3D Adult probe 1 – 5 MHz, single crystal and x matrix.
(4)- vascular probe (linear, 5–12 MHz**)** for carotid and peripheral vascular studies.
(5)- pediatric probe (2D and 3D, 5–12 MHz) for congenital cardiology.
(6)- Linear probe 2 – 11 MHz, single crystal.
(7)- Convex probe 1 – 5 MHz, single crystal.
(8)- TEE 3DAdult probe, single crystal and x matrix.

C- SCANNING MODES:

(1)- 2D (B-mode), M-mode, Color & power doppler, PW, CW, CPD, TDI, Mode 3D, 4D, Color D 4D.
(2)- Anatomical M mode and color M mode online with degrees for the quality of the data show. High resolution and sensitive to anatomical M mode.
(3)- Extending 2D view with linear probes (panoramical view).

D- IMAGE CONTROL:

(1)- Optimization function (Automatic adjustment of image quality "gain and TGC").
(2)- Off line change 2D grayscale, coloring scale, gain, and TGC.
(3)- Dual 4D image.
(4)- Smart rotate, smart cropping.
(5)- Smart exam.
(6)- 3D stress echo, automatic angle rotation stress echo with zero click.
(7)- Automatic detection of standard echo views (PSSA, PSLA, 2ch, 3ch, 4ch …).
(8)- Auto Doppler calculation.
(9)- 4D calculation on MPR and 4D image on the screen.
(10)- The system allow to enter measurements/calculations package not integrated in the system.
(11)- The system upgradable to add new cardiac/vascular feature applications.
(12)- Cine memory: More than 2200 images.
(13)- Structured reporting templates (ASE/EACVI compliant)**.**

E- CONNECTIVITY:

(1)- Storage capacity: minimum 1TB SSD with expandable storage option.
(2)- DVD/ CD drive, USB port.
(3)- Full DICOM 3 package with Life time license, and IHE compliance.
(4)- B/W video printer.
(5)- UPS, to be compatible for the proper functioning of the machine for 30 min.

F- ADVANCED QUANTIFICATION:

(1)- Comprehensive measurement tools
(2)- Auto EF/ LV in 2D
(3)- Auto EF LA in 2D
(4)- Auto LV Strain
(5)- Global longitudinal strain (GLS)
(6)- Real-time 4D full-volume acquisition with ≥7 cm depth.
(7)- Dedicated auto LA strain
(8)- Dedicated auto RV strain
(9)- Automated 3D LV & LA EF and Volume at the same time
(10)- Echo–CT/MRI fusion capability
(11)- Contrast agent imaging compatibility.
(12)- AI-assisted valve quantification (mitral, aortic regurgitation).

2- STANDARDS:

A- All medical electric and electronic equipment and others shall comply with all relevant (EMC / Electromagnetic Compatibility), CE (European), FDA (USA), and Japanese standards, electrical safety IEC 60601-1 and ultrasound-specific

IEC 60601-2-37

B- All parts making the system proposed must individually and as a system be CE or FDA approved.

C- All relevant documentation and certificates of conformity to the standards shall be presented in the tender.

D- ISO 13485 compliance and biocompatibility certification for patient-contact probes.

3- TRAINING

A- The bidder shall provide:

(1)- Procedures adopted by the tenderer for maintenance in detail.

(2)- Disposables needed for the functioning of the equipment during the training.

B- The bidder shall provide the proper training completely at his cost including accommodation, to assure the proper functionality of the equipment (a letter should be submitted) to the following:

(1)- 1 doctor training at the manufacturer's facilities outside Lebanon

(2)- 1 biomedical engineer (maintenance training) at the manufacturer's facilities outside Lebanon.

(3)- 4 technicians and 4 biomedical technicians, training in Lebanon.

MINISTRY OF NATIONAL DEFENSE ARMY MILITARY HEALTHCARE MEDICAL SUPPLY CORPS	TECHNICAL SPECIFICATIONS FOR ECHOGRAPHY HIGH DEFINITION 4D الة تصوير صوتي عالية الجودة	SPECIFICATION № AHC26EQU-ECHO-003-1 VALIDITY:2030

1- TECHNICAL SPECIFICATIONS

(a) A high-end ultrasound system dedicated to OB/GYN applications.

(b) Application :Abdominal, small parts, vascular, OB/GYN, Fetal Heart, 3D/4D imaging

A- SYSTEM ARCHITECTURE

(1)- 23" color HD monitor or better, with ergonomic design, mounted on a flexible arm move up/down, swivels, and tilts

(2)- Control panel (minimum 14" Touchscreen; Height Adjustable)

(3)- Full keyboard with built in trackball

(4)- Probe active ports: Minimum four, pinless.

(5)- Operating system should be Windows 10 & above

(6)- User-friendly software

(7)- System must have a fast boot-up time with a maximum of 30 seconds from sleep mode to on

(8)- High digital processing channels(≥ 9m)

(9)- Image depth: 48 cm or more

(10)- High frame rate (≥ 3000 fps)

(11)- Dynamic range (Up to 390 db)

B- PROBES

(1)- Probe technology (system should support single-crystal technology across all applications and operate within a frequency range of 1–18 MHz)

(2)- Linear probe 3 – 11 MHz, for vascular and small parts.

(3)- Convex probe 1 – 8 MHz

(4)- Endo cavitary 3-9 MHz

(5)- 4D Convex probe 2-8 MHz

C- SCANNING MODES

(1)- Primary modes (2D (B-mode), M-mode, Color & power doppler, duplex, and triplex)

(2)- Pulse wave doppler (PW)

(3)- 3D/4D Real-time volume rendering

D- ADVANCED IMAGING TECHNIQUES

(1)- Tissue harmonic imaging (THI)

(2)- Compounding imaging with minimum 8 lines.

(3)- Speckle noise reduction
(4)- Automatic doppler tracing.

E- IMAGE CONTROL

(1)- Gain, TGC, LGC, zoom, focus, depth.
(2)- Optimization function (Automatic adjustment of image quality “gain and TGC”)
(3)- Steering angle: can steer ± 20° “CFM- Mode."
(4)- Split screen
(5)- Simultaneous display of B/W & color doppler in real-time
(6)- Presets: 10 or better
(7)- Cine memory: More than 10,000 images
(8)- Measurement: distance, area, volume, angle, continuous trace as minimum.

F- ADVANCED FEATURES

(1)- Automatic obstetric measurements with AI.
(2)- Flow viewer (color visualization enhancement).
(3)- Photo-realistic volume display.
(4)- Spatio-temporal image correlation (STIC) imaging
(5)- AI-assisted automatic render line placement for fetal face surface rendering.
(6)- fetal imaging trace tool that takes the effort of the Spine Trace out of 3D, allowing you to acquire the coronal view of the spine in ½ the time.
(7)- AI-Automatic detection of fetal CNS Views and measurements
(8)- AI-guided workflow with step-by-step instructions to help identify if the fetal heart is normal with a focus on fetal situs.
(9)- AI intelligent imaging recognition during live scanning conditions to help identify anatomy – automatically grades and saves images to the clipboard.

G- CONNECTIVITY

(1)- Storage capacity: not less than 1TB SSD .
(2)- DVD/ CD drive, USB port.
(3)- Full DICOM 3 package with lifetime license.
(4)- B/W video printer
(5)- UPS, to be compatible and manufacturer-approved for the functioning of the machine up to 30 min.

2- STANDARDS:

A- All medical electric and electronic equipment and others shall comply with all relevant (EMC / Electromagnetic Compatibility), CE (European), FDA (USA), and Japanese standards, electrical safety IEC 60601-1 and ultrasound-specific IEC 60601-2-37
B- All parts making the system proposed must individually and as a system be CE or FDA approved.

C- All relevant documentation and certificates of conformity to the standards shall be presented in the Tender.

D- ISO 13485 compliance and biocompatibility certification for patient-contact probes.

3- TRAINING

A- The bidder shall provide:

(1)- Procedures adopted by the tenderer for maintenance in detail.

(2)- Disposables needed for the functioning of the equipment during the training.

B- The bidder shall provide the proper training completely at his cost including accommodation, to assure the proper functionality of the equipment (a letter should be submitted) to the following:

(1)- 1 doctor training at the manufacturer's facilities outside Lebanon

(2)- 1 biomedical engineer (maintenance training) at the manufacturer's facilities outside Lebanon.

(3)- 4 technicians and 4 biomedical technicians, training in Lebanon.

MINISTRY OF NATIONAL DEFENSE ARMY MILITARY HEALTHCARE MEDICAL SUPPLY CORPS	TECHNICAL SPECIFICATIONS FOR LAPAROSCOPY AND UROLOGY TOWER-CONF (a\b\c\d\e\f\g\h\i\j\k\l\m\n) جهاز تنظير للعمليات الجراحية وجراحة المسالك البولية	SPECIFICATION № AHC26EQU-ENDO-003-1 VALIDITY:2030

This specification defines the minimum technical requirements and selectable configurations for a complete 4K laparoscopy and urology/endourology tower.

SECTION	CONF	TITLE	MINIMUM REQUIREMENTS
A- SCOPE & INTENDED USE	a	Clinical Configuration & Applications	(1) General laparoscopy: The offered system shall be a complete mobile 4K laparoscopic visualization, documentation, insufflation, and surgical-smoke-management tower suitable for general laparoscopic surgery, including gastrointestinal, bariatric, hepatobiliary, hernia, and diagnostic procedures. (2) Urology / endourology: The offered system shall be a complete mobile 4K urology/endourology visualization and documentation tower suitable for cystoscopy, transurethral urology procedures, ureteroscopy, and endoscopic stone treatment.
	--	System Architecture	The system shall be modular, allowing the main components and applicable specialty modules to be replaced, serviced, or upgraded independently.
	--	Validated System Compatibility	The main visualization components shall be supplied by one manufacturer or as a manufacturer-approved integrated system and shall be fully compatible for the intended clinical use.
B- REGULATORY, QUALITY & GENERAL REQUIREMENTS	--	Equipment Condition	The complete system and all accessories shall be brand new and currently manufactured. Refurbished, remanufactured, or discontinued equipment shall not be accepted.

SECTION	CONF	TITLE	MINIMUM REQUIREMENTS
	--	Manufacturer	The system shall be manufactured by an established medical-endoscopy manufacturer. The bidder shall state the manufacturer, model, country of origin, and country of assembly for each major component.
	--	Year of Manufacture	All major electronic components shall be manufactured within one year before delivery.
	--	Regulatory Compliance	The offered devices shall be CE marked under the applicable European medical device regulation and/or cleared or approved by the US FDA or another recognized regulatory authority. Supporting documents shall be submitted with the offer.
	--	Applicable Safety Standards	The system and applicable components shall comply with IEC 60601-1, IEC 60601-1-2, and IEC 60601-2-18, or equivalent nationally adopted standards.
	--	Power Supply	All powered components shall operate within 220–240 VAC, 50/60 Hz, either directly or through the supplied medical-grade power-distribution or isolation system.
C- COMPLETE BASE SYSTEM CONFIGURATION	--	Complete Scope of Supply	The bidder shall supply a complete and functional tower according to the selected configuration, including all specified components, cables, adapters, and accessories required for clinical operation.
	--	Itemized Configuration	The bidder shall provide an itemized list identifying every included component, model number, quantity, excluded item, separately quoted item, and optional upgrade.

SECTION	CONF	TITLE	MINIMUM REQUIREMENTS
D- VIDEO PROCESSOR& IMAGING PLATFORM	--	4K Imaging Platform & Output	The system shall provide a 4K UHD surgical imaging platform with processor output resolution of at least 3840 × 2160 pixels. The bidder shall state the processing resolution, output resolution, and displayed resolution.
	--	Progressive High-Frame-Rate Imaging	The system shall provide progressive-scan imaging at not less than 50 frames per second at the offered 4K output. The bidder shall state the actual frame rate and any resolution-dependent limitations.
	--	Dynamic Range & Low-Light Performance	The processor shall provide high-dynamic-range, tone-management, shadow-enhancement, or equivalent technology to preserve detail in bright and dark regions without excessive image noise.
	--	Automatic Image Control	Automatic white balance, exposure, gain, color regulation, and anti-saturation or equivalent automatic image-control functions shall be available.
	--	User Interface	The processor shall provide an easy-to-use interface with touchscreen and/or direct controls. Essential functions shall be readily accessible.
	--	Advanced Image Enhancement	The system shall provide at least one built-in image-enhancement mode. The bidder shall state its name and intended clinical use.
	--	User & Procedure Presets	The platform should preferably allow storage of surgeon profiles, procedure presets, or configurable workflow shortcuts. The bidder shall specify how many profiles can be stored.

SECTION	CONF	TITLE	MINIMUM REQUIREMENTS
	--	4K Digital Outputs	The processor shall provide at least two simultaneous digital video outputs, including at least one 4K-capable professional output such as 12G-SDI, HDMI 2.0, DisplayPort, or equivalent, to permit connection of the primary monitor and recorder or secondary display.
E- CAMERA HEAD, COUPLER & OPTICAL COMPATIBILITY	b	4K Camera Head	(1) Standard camera head: One reusable camera head compatible with the offered visualization platform and capable of providing the required 4K image quality shall be supplied. (2) Urology camera head: One reusable camera head compatible with the offered visualization platform and suitable for rigid urological endoscopy shall be supplied; a pendulum or stable-horizon design is preferred.
	--	Camera Resolution	The camera head shall have a native image-sensor resolution of at least 3840 × 2160 pixels and shall support the offered 4K imaging chain. The bidder shall state the sensor technology and number of sensors.
	--	Focusing Workflow	The camera system shall provide a simple and stable focusing method suitable for sterile-field use. Manual focus, autofocus, or focus-free operation shall be accepted. The bidder shall state the focusing method.
	--	Ergonomics & Weight	The camera head shall be lightweight, balanced, and ergonomically suitable for prolonged endoscopic procedures. The bidder shall state the approximate weight and dimensions.
	--	Programmable Camera Controls	The camera head shall provide at least two programmable or user-assignable buttons for functions such as image capture, recording, white balance, zoom, enhancement modes, or light control.

SECTION	CONF	TITLE	MINIMUM REQUIREMENTS
	--	Optical Coupler	A compatible optical coupler shall be supplied where required for connection of the camera head to the quoted telescopes.
	--	Optical or Digital Zoom	Zoom controllable from the sterile field should preferably be available. The bidder shall state whether the zoom is optical or digital and specify the zoom range.
	--	Camera Cable	The camera cable shall be not less than approximately 3 m in length and suitable for routine operating-room handling. The bidder shall state whether the cable is replaceable separately from the camera head.
F- MEDICAL-GRADE 4K MONITOR	--	Monitor Quantity & Size	One medical-grade surgical monitor of at least 32-inch, shall be supplied.
	--	Native Resolution	The monitor shall have native 4K resolution of at least 3840 × 2160 pixels and a widescreen aspect ratio suitable for endoscopic surgery.
	--	Input Compatibility	The monitor shall provide digital inputs fully compatible with the processor output, including the required 4K interface and at least one additional input or loop-through/output for flexible system connection.
	--	Low-Latency Display	The monitor and processor combination shall provide real-time surgical display with no clinically significant image delay. The bidder shall describe any low-latency or endoscopy mode.
	--	Image Controls & Presets	Endoscopy-appropriate presets and adjustable brightness, contrast, color, sharpness, gamma, and aspect-ratio controls shall be available.
	--	Viewing Angle & Surface Treatment	The monitor shall provide wide-angle viewing and an anti-reflective or equivalent surface treatment suitable for the operating room.

SECTION	CONF	TITLE	MINIMUM REQUIREMENTS
	--	Advanced Display Technology	Premium display technology such as OLED, HDR, wide-color-gamut, local-dimming, or equivalent should preferably be available. The bidder shall state the offered technology.
	--	Secondary Display Capability	The system should preferably support a second 4K monitor or teaching display without reducing primary-monitor image quality.
G- LED LIGHT SOURCE & LIGHT TRANSMISSION	--	LED Light Source	A medical-grade LED light source suitable for the selected laparoscopic or urological endoscopy configuration shall be supplied.
	--	Illumination Performance	The light source shall provide stable, uniform, flicker-free illumination sufficient for the quoted telescope diameters and selected clinical applications.
	--	Brightness Adjustment	Manual brightness adjustment shall be available over a clinically useful range.
	--	Automatic Light Control	Automatic light-intensity control, exposure-linked light regulation, or equivalent anti-saturation control shall be available.
	--	Rated Service Life	The rated LED service life shall be at least 20,000 hours. The bidder shall state the manufacturer's rated life and replacement policy.
	--	Standby & Thermal Protection	The light source shall incorporate standby or safe-light functionality, protection against overheating or excessive light output, and manufacturer-recommended handling instructions to minimize the risk of thermal injury.
	--	High-Transmission Light Cable	The supplied light cable shall provide high light transmission, resistance to routine bending and thermal stress, and full compatibility with the light source and quoted telescopes.

SECTION	CONF	TITLE	MINIMUM REQUIREMENTS
H- CO_2 INSUFFLATOR & SURGICAL SMOKE MANAGEMENT	c	High-Flow CO_2 Insufflator	(0) Not required. (1) A high-flow electronic CO_2 insufflator suitable for routine and advanced laparoscopy shall be supplied as part of the complete system. **Maximum Flow Rate:** The insufflator shall provide a maximum flow rate of at least 40 L/min. The bidder shall state the maximum flow rate and available operating modes. **Pressure Setting Range:** The adjustable pressure range shall extend from approximately 1 mmHg to at least 25 mmHg, with fine adjustment suitable for routine laparoscopy. **Low-Flow Capability:** The system shall provide a low-flow setting of 1 L/min or less for initial insufflation, Veress-needle use, or other low-flow applications. **Display & Gas Consumption:** The unit shall continuously display selected and actual pressure, flow rate, and accumulated gas consumption. **Automatic Pressure Regulation:** The insufflator shall automatically regulate flow to maintain the selected pneumoperitoneum pressure and compensate for clinically expected leakage. **Safety Alarms:** Visual and audible alarms shall be provided for overpressure, occlusion, inadequate gas supply, abnormal pressure, system fault, and other critical operating conditions. **Overpressure Relief:** The system shall provide automatic interruption of gas flow and active or passive pressure-relief protection when intracavitary pressure exceeds the safe limit. **Gas Heating & Humidification:** Gas heating and/or humidification should

SECTION	CONF	TITLE	MINIMUM REQUIREMENTS
			preferably be available. The bidder shall state whether these functions are integrated, optional, or dependent on proprietary tubing.
	d	Active Smoke Management	(0) Not required. (1) A complete active surgical smoke-management system shall be supplied, either integrated into the insufflator or as a separate manufacturer-approved device. The system shall maintain pneumoperitoneum during smoke evacuation. **Smoke Filtration:** The system shall use a manufacturer-validated high-efficiency particulate and odor filter. The bidder shall state the filtration type, efficiency, particle-size rating, filter life, and replacement indication. **Automatic Smoke Activation:** Automatic, synchronized, or algorithm-based smoke detection and evacuation should preferably be available in addition to manual or footswitch control. **Starter Set:** An initial set of compatible tubing and filters shall be included for commissioning, acceptance testing, and training.
I- DOCUMENTATION, RECORDING & CONNECTIVITY	--	Still-Image Capture	Still-image capture shall be available from the sterile field using camera-head controls, footswitch, or an equivalent method. Captured images shall be stored at the highest available clinical resolution.
	--	Video Recording	The base system shall include built-in recording or a compatible medical recorder capable of recording at least Full HD video with synchronized audio where applicable.
	--	Native 4K Recording	Native 4K video recording should preferably be available.

SECTION	CONF	TITLE	MINIMUM REQUIREMENTS
	--	Data Export	Captured images and videos shall be exportable through USB and/or network transfer using commonly readable file formats.
	--	Patient & Procedure Data	The documentation system shall permit entry or import of patient identification, procedure information, surgeon name, and date/time for association with captured media.
	--	Network & Hospital Integration	DICOM, HL7, network storage, PACS/VNA transfer, OR integration, or equivalent connectivity should preferably be available. The bidder shall state included licenses and cybersecurity requirements.
	--	Storage Capacity	The bidder shall state internal storage capacity, recording duration, export methods, and whether storage expansion is supported.
J- REPROCESSING, CLEANING & INFECTION CONTROL	--	Reprocessing Instructions	Manufacturer-approved cleaning, disinfection, sterilization, drying, inspection, and storage instructions shall be supplied for all reusable components.
	--	Sterilization Trays	Dedicated sterilization and storage trays shall be supplied for each reusable telescope and for reusable camera components requiring tray processing.
K- STANDARD ACCESSORIES	--	Original Mobile Tower	One original manufacturer or manufacturer-approved mobile endoscopy tower/cart shall be supplied with sufficient ventilated shelves for all components, stable construction, smooth surfaces, and at least four antistatic lockable castors.
	--	Monitor Arm	The cart shall include an adjustable monitor arm or mount permitting secure positioning, tilt, swivel, and height adjustment of the supplied monitor.

SECTION	CONF	TITLE	MINIMUM REQUIREMENTS
	--	Medical Power Distribution	The cart shall include a medical-grade power-distribution and isolation arrangement sized for the complete system, with overload protection, equipotential grounding, and organized cable routing.
	--	Light Cables	Two compatible high-transmission light cables shall be supplied, one for routine use and one as a spare.
	--	Camera Sterile Covers	If sterile covers are required, an initial supply of manufacturer-approved covers and application accessories shall be included.
	--	Data-Export Media	At least one manufacturer-approved USB storage device or equivalent data-export accessory shall be supplied.
	--	Uninterruptible Power Supply	A medical-grade online UPS shall be supplied and sized for the complete tower. It shall maintain operation of all supplied electronic components for at least 20 minutes at the connected system load and shall provide automatic voltage regulation, surge protection, and audible/visual alarms.
L- LAPAROSCOPY ACCESSORY PACKAGES	e	General Laparoscopy Telescope Package	(0) Not required. (1) A high-definition/4K-optimized general-laparoscopy telescope package shall be supplied, including at minimum one 10 mm 0° telescope, one 10 mm 30° telescope, and one 5 mm 30° telescope, complete with compatible light-post adapters.
	f	Bariatric Telescope Package	(0) Not required. (1) Two long-length bariatric laparoscopic telescopes, preferably 10 mm 30° or equivalent, shall be supplied with compatible accessories.

SECTION	CONF	TITLE	MINIMUM REQUIREMENTS
	g	NIR/ICG Fluorescence Package	(0) Not required. (1) A complete manufacturer-supported NIR/ICG fluorescence package, fully compatible with the offered visualization platform, shall be supplied. The package shall include one additional dedicated 4K NIR/ICG-compatible camera head in addition to the standard camera head, together with all required components and accessories.
	h	3D Visualization Package	(0) Not required. (1) A complete manufacturer-supported 3D laparoscopic visualization package shall be supplied with all required components and accessories.
M- UROLOGY / ENDOUROLOGY ACCESSORY PACKAGES	i	Rigid Cystoscopy Telescope Package	(0) Not required. (1) A high-definition/4K-optimized rigid-urology telescope package shall be supplied, including at minimum one 4 mm 12° telescope, one 4 mm 30° telescope, and one 4 mm 70° telescope, complete with compatible light-post adapters.
	j	Cystoscopy Sheath & Bridge Package	(0) Not required. (1) A compatible diagnostic cystoscopy sheath and bridge package shall be supplied, including a sheath, obturator, bridge, irrigation connectors, and required accessories.
	k	TUR / Resectoscopy Package	(0) Not required. (1) A complete monopolar and/or bipolar continuous-flow resectoscopy package shall be supplied, including telescope-compatible sheaths, working elements, obturators, loops, electrodes, cables, and required accessories.

SECTION	CONF	TITLE	MINIMUM REQUIREMENTS
	l	Ureteroscopy Package	(0) Not required. (1) A rigid and/or flexible ureteroscopy package shall be supplied according to the predefined clinical requirement, including access sheaths, irrigation accessories, baskets, and laser-compatible accessories.
	m	Blue-Light Cystoscopy Package	(0) Not required. (1) A complete manufacturer-supported blue-light or fluorescence cystoscopy package shall be supplied with all required components and accessories.
N- OPTIONAL FLUID MANAGEMENT / IRRIGATION SYSTEM	n	Fluid Management / Irrigation System	(0) Not required. (1) A complete manufacturer-compatible fluid-management or irrigation system suitable for cystoscopy, resectoscopy, and/or ureteroscopy shall be supplied. **Pressure & Flow Control:** The system shall provide controlled irrigation pressure and flow with stable, non-pulsatile visualization appropriate to the selected urology procedures. **Operating Display:** Selected and actual pressure/flow values and system status shall be displayed clearly. **Fluid Monitoring:** Bag-volume monitoring, low-fluid warnings, suction control, and fluid-deficit monitoring should preferably be available where applicable. **Fluid Warming:** On-demand irrigation-fluid warming should preferably be available. **Tubing & Accessories:** All required reusable accessories and a starter quantity of compatible proprietary tubing sets for commissioning and training shall be included.

SECTION	CONF	TITLE	MINIMUM REQUIREMENTS
O- OPERATIONAL SAFETY FEATURES	--	Alarm Visibility	Critical alarms and system-status indications shall be clearly visible and/or audible to operating-room staff.
P- INSTALLATION, TRAINING, WARRANTY, SERVICE & SUPPLIER DOCUMENTS	--	Installation & Commissioning	Installation, assembly, software configuration, commissioning, and final operational testing shall be performed by factory-trained or manufacturer-authorized personnel without additional cost.
	--	Local User Training	Comprehensive on-site training in Lebanon shall be provided for the required clinical and technical personnel, including at minimum four technicians and four biomedical technicians. Training shall cover system operation, cleaning, reprocessing, and basic troubleshooting. All disposables required during training shall be supplied at no additional cost.
	--	Manufacturer Training	The supplier shall provide manufacturer-facility training outside Lebanon for one doctor and one biomedical engineer. The biomedical engineer’s training shall include maintenance and troubleshooting. All training costs, including accommodation, shall be covered by the supplier, and a confirmation letter shall be submitted.
	--	Manuals & Technical Documentation	One printed and one electronic operator manual and one electronic service manual shall be supplied in English, together with installation requirements and spare-parts identification.
	--	Warranty	The complete tower, including the monitor, camera, processor, light source, cart, all configuration-specific equipment, and supplied accessories, shall be covered by a comprehensive warranty of not less than two (2) years from final acceptance.

SECTION	CONF	TITLE	MINIMUM REQUIREMENTS
	--	Spare Parts Availability	Original spare parts, accessories, consumables, and technical support shall remain available for at least ten (10) years after installation.
	--	Local Service Support	The supplier shall maintain qualified local service personnel and shall submit training certificates for engineers authorized to perform service and application procedures. The supplier shall state the guaranteed response time, normal repair time, and escalation arrangements.
	--	Preventive Maintenance & Updates	The bidder shall provide the recommended preventive-maintenance schedule. Software and firmware updates required for safety, compatibility, or normal operation during the warranty period shall be included without additional cost.
	--	Local Installation References	The supplier shall submit a reference list of the offered or comparable systems installed in Lebanon.

1- TECHNICAL SPECIFICATIONS

A- NEBULIZER MACHINE UNIT:

(1)- Electrically powered compressor nebulizer system for aerosol delivery of physician-prescribed inhalation medication.
(2)- Suitable for homecare, clinic or outpatient respiratory use for one patient at a time.
(3)- The unit shall be mains operated and supplied as a complete, fully functional system ready for use.
(4)- Compressor/nebulizer technology shall be pneumatic jet compressor type or equivalent accepted medical nebulizer technology.
(5)- Complete unit with compressor, nebulizer cup, patient interface, tubing, filters and accessories required for normal operation.
(6)- Medical-grade enclosure, stable, durable and easy to clean.
(7)- Compact tabletop design with integrated handle, storage compartment or portable arrangement preferred.
(8)- The device shall be suitable for adult and pediatric nebulization when supplied with appropriate masks/accessories.
(9)- Simple front operating control readable by patient or caregiver.
(10)- Clear ON/OFF switch and normal-operation indication preferred.
(11)- All labels and warnings shall be durable and readable.
(12)- Current production or currently supported manufacturer model.
(13)- New equipment only; refurbished units are not accepted unless approved.
(14)- Bidder shall state exact brand, model, part number and configuration offered.

B- PERFORMANCE REQUIREMENTS:

(1)- Aerosol performance:
- (a) Particle size MMAD: preferred approximately 2.5 to 3.5 microns; acceptable range approximately 2 to 5 microns.
- (b) Fine particle fraction: minimum 60% below 5 microns preferred; bidder shall state measured value.
- (c) Nebulization rate: minimum 0.20 mL/min; 0.30 mL/min or higher preferred.
- (d) Medication cup capacity shall be at least 6 mL; 8 to 10 mL preferred.
- (e) Residual volume shall be low and shall be stated by the bidder.

(f) Aerosol output shall be stable during the normal treatment cycle.

(2)- Compressor / flow performance:

(a) Free air flow shall be sufficient for efficient nebulization; 5 L/min or higher preferred.

(b) Operating pressure shall be suitable for the supplied nebulizer kit; typical 8 to 16 psi or manufacturer equivalent.

(c) Maximum pressure and compressor output shall be declared by the bidder.

(d) Treatment time for a 2.5 mL dose shall be stated; shorter treatment time is preferred.

(e) Compressor shall include thermal protection or equivalent protection against overheating.

(3)- Noise level shall preferably be not more than 60 dBA; 55 dBA or lower is preferred.

(4)- Duty cycle shall be declared; intermittent 30 minutes ON / 30 minutes OFF is acceptable, continuous operation is preferred if offered.

(5)- Weight shall preferably be not more than 2 kg for homecare and portable use.

(6)- Dimensions shall be compact for bedside, clinic and homecare placement.

C- SAFETY AND USABILITY REQUIREMENTS:

(1)- Simple one-button operation or equivalent user-friendly control is required.

(2)- Power-on or ready indicator is preferred.

(3)- Stable base with anti-slip feet or equivalent stability arrangement is required.

(4)- Medication cup shall be easy to assemble, fill, disassemble and clean.

(5)- Patient interface shall support adult and pediatric use when supplied with appropriate masks.

(6)- Air tubing shall connect securely and resist kinking during normal use.

(7)- Manufacturer cleaning, disinfection and replacement instructions shall be provided.

D- ELECTRICAL AND ENVIRONMENTAL REQUIREMENTS:

(1)- Electrical supply:

(a) Input voltage: 220 - 240 VAC.

(b) Input frequency: 50 Hz.

(c) Power cord and plug suitable for local use.

(d) Protection against abnormal operation as per manufacturer design.

(2)- Environmental conditions:

(a) Operating temperature range shall be declared; 10°C to 40°C preferred.
(b) Storage / transport temperature range shall be declared.
(c) Operating and storage humidity limits shall be declared.
(d) Device shall be suitable for normal homecare and clinic environment use.

E- ACCESSORIES AND CONSUMABLES:

(1)- Reusable or disposable nebulizer cup / medicine chamber.
(2)- Adult mask.
(3)- Pediatric mask.
(4)- Mouthpiece.
(5)- Air tubing.
(6)- Spare air filters according to manufacturer recommendation.
(7)- Nosepiece is optional and shall be stated if offered.
(8)- Carry bag or storage compartment is optional and shall be stated if offered.
(9)- All consumables shall be listed with part numbers and prices.
(10)- Replacement intervals for filters, nebulizer cup, masks and tubing shall be stated.
(11)- All supplied accessories shall be new and medically compatible.

F- DOCUMENTATION, SERVICE AND TRAINING:

(1)- English IFU / user manual shall be supplied with each unit.
(2)- Cleaning and disinfection instructions shall be supplied.
(3)- Preventive maintenance schedule shall be supplied.
(4)- Spare parts and consumables list with prices shall be submitted.
(5)- Spare parts availability period shall be stated.
(6)- Local service contact in Lebanon shall be provided.

2- STANDARDS:

A- All medical electric and electronic equipment and others shall comply with all relevant standards IEC 601-1 (General Requirements for safety) and IEC 601-1-2 (EMC / Electromagnetic Compatibility), CE (European), FDA (USA), and Japanese standards.
B- All relevant documentation and certificates of conformity to the standards shall be presented in the tender.

MINISTRY OF NATIONAL DEFENSE ARMY MILITARY HEALTHCARE MEDICAL SUPPLY CORPS	TECHNICAL SPECIFICATIONS FOR OPERATING TABLE WITH ACCESSORIES-CONF (a\b\c\d\e) طاولةعمليات جراحية مع متمماتها	SPECIFICATION № AHC26EQU-CHIR-005-1 VALIDITY:2030

This specification defines the minimum technical requirements and selectable configurations for a mobile operating table for general and orthopedic surgery.

SECTION	CONF	TITLE	MINIMUM REQUIREMENTS
A- SCOPE & INTENDED USE	a	Clinical Configuration & Applications	(1) General surgery: The operating table shall be intended for multidisciplinary use in general surgery, gynecology, urology, ENT, and ophthalmic procedures. (2) General + orthopedic surgery: The operating table shall be intended for multidisciplinary use in general surgery, gynecology, urology, ENT, ophthalmic, orthopedic, and trauma procedures.
	--	System Type	The operating table shall be fully electrically operated using electro-hydraulic or electromechanical technology.
B- REGULATORY, QUALITY & GENERAL REQUIREMENTS	--	Equipment Condition	The operating table and all supplied accessories shall be brand new and currently manufactured. Refurbished, remanufactured, previously used, or discontinued equipment shall not be accepted.
	--	Manufacturer	The operating table shall be manufactured by an established operating-room equipment manufacturer. The bidder shall state the manufacturer, model, and country of origin.
	--	Year of Manufacture	The operating table shall be manufactured within one year before delivery.

SECTION	CONF	TITLE	MINIMUM REQUIREMENTS
	--	Regulatory Compliance	The operating table shall be CE marked under the applicable European Medical Device Regulation and/or cleared or approved by the US FDA or another recognized regulatory authority. Supporting documents shall be submitted with the offer.
	--	Quality Management	The manufacturer shall maintain a certified ISO 13485 quality-management system covering the offered operating table.
	--	Applicable Safety Standards	The operating table shall comply with applicable IEC 60601 series standards, including electrical safety and electromagnetic compatibility, or equivalent nationally adopted standards.
	--	Dimensions & Weight Declaration	The bidder shall state the overall dimensions, base dimensions, net weight, and transport dimensions, where applicable.
C- CONSTRUCTION & DESIGN	--	Mobile Base	The operating table shall have a mobile base providing safe maneuverability, stability, and access for surgical staff and imaging equipment.
	--	Floor Locking / Braking System	A centrally controlled floor-locking and/or braking system shall ensure stable positioning during surgery.
	--	Castors	At least four heavy-duty antistatic swivel castors shall be provided for safe and smooth transport.
	--	Directional Steering System	The operating table should preferably be equipped with an integrated fifth steering wheel or equivalent directional steering system. The bidder shall describe the offered mechanism.
	--	Support Column Design	The table shall use a stable central support column providing access for the surgical team and C-arm imaging equipment.

SECTION	CONF	TITLE	MINIMUM REQUIREMENTS
	--	Table Frame Construction	The frame and load-bearing components shall be made of high-strength, corrosion-resistant materials suitable for long-term operating-room use.
	--	Surface Finish & Cleaning	External surfaces shall be smooth, non-reflective, corrosion-resistant, and suitable for repeated cleaning and disinfection with hospital-approved products.
	--	Antistatic Design	The table shall incorporate antistatic materials and/or design features suitable for operating-room use.
	--	Fluid Protection	Critical electrical and mechanical components shall be protected against fluid ingress during normal clinical use and routine cleaning.
D- TABLETOP CONFIGURATION	--	Tabletop Configuration	The table shall have a modular tabletop with at least five sections: head, back, seat, and separate right and left leg sections. The head and leg sections shall be removable or interchangeable where applicable, and accessories shall attach without specialized tools.
	--	Longitudinal Sliding Tabletop	The tabletop shall provide electrically controlled longitudinal travel of at least 300 mm. The bidder shall state the maximum travel.
	--	Tabletop Locking Mechanism	All removable tabletop sections shall have secure locking mechanisms.
	--	Accessory Mounting Rails	Standard accessory side rails, such as 25 × 10 mm European-standard rails or equivalent, shall be provided.
	--	Tabletop Extension Capability	The table should preferably support manufacturer-approved tabletop extension modules for specialized procedures. The bidder shall state the available modules.
	--	Quick-Exchange Tabletop	The table should preferably support a quick-exchange or interchangeable tabletop system.

SECTION	CONF	TITLE	MINIMUM REQUIREMENTS
	b	Orthopedic Tabletop Compatibility	(0) Not required. (1) The tabletop shall be compatible with the supplied orthopedic traction accessories and manufacturer-approved orthopedic extension devices.
	--	Tabletop Dimensions	The tabletop shall be at least 2000 mm long and 500 mm wide, excluding accessory rails. The bidder shall state the actual dimensions.
	--	Perineal Cutout	The seat section shall include a perineal cutout or manufacturer-approved equivalent suitable for gynecological and urological procedures.
E- PATIENT POSITIONING & MOTIONS	--	Height Adjustment	The tabletop height shall be electrically adjustable from not more than 600 mm to not less than 1050 mm, measured without the mattress.
	--	Trendelenburg & Reverse Trendelenburg	Electrically controlled Trendelenburg and reverse Trendelenburg of at least 30° in each direction shall be provided.
	--	Lateral Tilt	Electrically controlled left and right lateral tilt of at least 20° shall be provided.
	--	Back Section Adjustment	The back section shall be electrically adjustable from at least 40° downward to at least 80° upward.
	--	Head Section Adjustment	The head section shall be manually or electrically adjustable from at least 90° downward to at least 45° upward.
	--	Leg Section Adjustment	The split leg sections shall be individually adjustable from at least 90° downward to at least 20° upward.
	--	Flex & Reflex Positioning	Electrically controlled flex and reflex positioning shall be provided. The bidder shall state the maximum angles.
	--	Return-to-Level Function	A one-touch automatic return-to-level function shall be provided.

SECTION	CONF	TITLE	MINIMUM REQUIREMENTS
F- PATIENT LOAD CAPACITY	--	Dynamic Patient Load Capacity	The table shall support a dynamic patient load of at least 300 kg throughout its full range of powered movements.
	--	Static Patient Load Capacity	The table shall support a static patient load of at least 450 kg.
	--	Reverse Orientation Capacity	The table shall support at least 200 kg in reverse patient orientation.
G- IMAGING COMPATIBILITY & RADIOLUCENCY	--	Radiolucent Tabletop & Imaging Area	The tabletop shall be made of high-strength radiolucent material and provide an effective imaging area suitable for routine fluoroscopic and radiographic procedures. The bidder shall state the radiolucent imaging length and imaging-window dimensions.
	--	C-Arm Access & Minimal Interference	The base, column, and tabletop support shall minimize imaging obstruction and permit C-arm access from both sides and from the head and foot ends, within the manufacturer's intended use.
	--	Accessory Compatibility During Imaging	Standard accessories shall be removable or repositionable to permit routine C-arm imaging.
	--	Digital Detector Compatibility	The table should preferably permit secure positioning of a wireless digital-radiography detector of at least 35 × 43 cm beneath the patient through an integrated channel, removable tray, or manufacturer-approved equivalent. The bidder shall state the compatible detector dimensions and insertion method.
	c	Orthopedic Imaging	(0) Not required. (1) The table shall permit unobstructed C-arm imaging of the pelvis and lower extremities when used with the supplied orthopedic traction accessories.

SECTION	CONF	TITLE	MINIMUM REQUIREMENTS
H- CONTROL SYSTEM & ELECTRICAL FEATURES	--	Primary Control Unit	An ergonomic hand-held control unit shall provide control of all powered table movements.
	--	Emergency & Backup Controls	An independent emergency control system and integrated backup controls on the column and/or base shall permit essential movements if the primary hand control is unavailable.
	--	Battery Power System	An internal rechargeable battery shall permit normal operation without continuous AC power. The table shall remain operational during charging and provide battery-status and low-battery indications. The bidder shall state the battery operating capacity.
	--	Power Supply	The table shall operate from 220–240 VAC, 50/60 Hz.
	--	Electrical Protection	Protection against overload, short circuit, abnormal operating conditions, and electrical faults shall be provided.
	--	Hand-Control Protection	The hand control shall be fluid-resistant and suitable for routine cleaning and disinfection. The bidder shall state the protection rating, where available.
	--	Footswitch Control	The table should preferably be supplied with a footswitch or equivalent hands-free control for selected essential movements. The bidder shall describe the controlled functions.
I- MATTRESS & PATIENT SAFETY FEATURES	--	Patient Mattress & Pressure Redistribution	A complete set of fitted, pressure-relieving, medical-grade, latex-free mattresses shall be supplied. The bidder shall state the material, construction, and thickness.
	--	Mattress Cover & Infection Control	Mattresses shall have seamless or sealed, waterproof, antistatic covers resistant to blood, body fluids, and manufacturer-approved hospital disinfectants.

SECTION	CONF	TITLE	MINIMUM REQUIREMENTS
	--	Mattress Attachment & Stability	Each mattress section shall be securely attached while remaining easy to remove for cleaning or replacement, and shall remain stable throughout table movements.
J- STANDARD ACCESSORIES	--	Anesthesia Screen	One adjustable anesthesia screen with mounting clamp(s) shall be supplied.
	--	IV Pole	One height-adjustable stainless-steel IV pole with at least four hooks and mounting clamp shall be supplied.
	--	Arm Boards	Two radiolucent adjustable arm boards with pads and fixation clamps shall be supplied.
	--	Shoulder Supports	One pair of adjustable padded shoulder supports with fixation clamps shall be supplied.
	--	Body Supports	One pair of adjustable lateral body supports with fixation clamps shall be supplied.
	--	Knee Crutches	One pair of adjustable Goepel-type knee crutches or equivalent, with cushions and fixation clamps, shall be supplied.
	--	Foot Supports	One pair of adjustable foot supports suitable for lithotomy procedures shall be supplied.
	--	Hand Surgery Table	One detachable hand-surgery table or extension with fixation mechanism shall be supplied.
	--	Head Rest	One standard headrest or head-positioning pad shall be supplied.
	--	Patient Safety Strap	At least two adjustable patient safety strap shall be supplied.
	--	Accessory Compatibility & Hardware	All supplied accessories shall be original or manufacturer-approved and shall include the required clamps, adapters, fixation devices, and mounting hardware.
	--	Accessory Storage Trolley	One accessory storage trolley or rack suitable for the supplied accessories shall be provided.

SECTION	CONF	TITLE	MINIMUM REQUIREMENTS
K- SPECIALTY ACCESSORY PACKAGES	--	Urology Accessory Package	A urology package shall be supplied with one pelvic extension, one drainage bowl, and all required clamps, adapters, and mounting hardware.
	--	ENT Accessory Package	An ENT package shall be supplied with one horseshoe headrest and all required adapters, clamps, and mounting hardware.
	--	Ophthalmology Accessory Package	An ophthalmology package shall be supplied with one ophthalmology adapter, one horseshoe headrest, and all required clamps and mounting hardware.
	--	Genupectoral (Jackknife) Package	A genupectoral package shall be supplied with one one-piece leg section, one pair of knee supports, one jackknife positioning pad, one prone head pad, and all required mounting hardware.
	--	Bariatric Accessory Package	A bariatric package shall be supplied with two-piece foot supports, widening back and seat extensions, one bariatric safety belt, and all required mounting hardware.
	d	Lower-Limb Orthopedic Traction Package	(0) Not required. (1) A complete lower-limb traction package shall be supplied, including traction boots, perineal post, traction and extension bars, traction devices, and all required fixation hardware.
	e	Upper-Extremity Orthopedic Package	(0) Not required. (1) A complete upper-extremity orthopedic package shall be supplied, including arm-traction and positioning accessories and all required fixation hardware.
L- DOCUMENTATION, TRAINING, WARRANTY, SERVICE & SUPPLIER DOCUMENTS	--	Installation & Commissioning	Installation, assembly, commissioning, operational testing, and final acceptance shall be performed by factory-trained or manufacturer-authorized personnel without additional cost.

SECTION	CONF	TITLE	MINIMUM REQUIREMENTS
	--	Demonstration & Acceptance Testing	The supplier shall demonstrate all operating modes, safety features, movements, electrical functions, and supplied accessories during commissioning. Final acceptance shall follow successful testing and verification of compliance.
	--	Local User Training	On-site training in Lebanon shall be provided for surgeons, nurses, operating-room staff, and technical personnel, including at minimum four technicians and four biomedical technicians. Training shall cover operation, positioning, cleaning, inspection, and basic troubleshooting. Required training disposables shall be supplied at no additional cost.
	--	Manufacturer Training	The supplier shall provide manufacturer-facility training outside Lebanon for one doctor and one biomedical engineer. The biomedical-engineer training shall include maintenance and troubleshooting. All training costs, including accommodation, shall be covered by the supplier, and a confirmation letter shall be submitted.
	--	Manuals & Technical Documentation	One printed and one electronic operator manual and one electronic service manual shall be supplied in English, including preventive-maintenance procedures, troubleshooting guidance, spare-parts identification, and wiring diagrams where available.
	--	Warranty	The operating table and all supplied accessories shall be covered by a comprehensive manufacturer’s warranty of at least two years from final acceptance.
	--	Spare Parts Availability	Original spare parts shall remain available for at least ten years after installation.

SECTION	CONF	TITLE	MINIMUM REQUIREMENTS
	--	Preventive Maintenance & Updates	The manufacturer shall state the recommended preventive-maintenance procedures and intervals. Applicable software and firmware updates released during the warranty period shall be included without additional cost.
	--	Local Service Support	The supplier shall maintain qualified local technical personnel and submit training certificates for engineers authorized to perform service and application procedures. The bidder shall state the guaranteed response time and normal maximum repair time.
	--	Site Preparation Requirements	The bidder shall submit applicable site-preparation and installation requirements, including electrical supply, charging location, access clearances, and floor-loading requirements, before delivery.
	--	Accessory & Option Price List	The bidder shall submit an itemized catalogue and unit-price list for compatible accessories and options not included in the selected configuration.
	--	Local Installation References	The supplier shall submit a reference list of the offered or comparable systems installed in Lebanon.
M- SAFETY FEATURES	--	Movement Safety Protection	Powered movements shall include measures to minimize entrapment or crushing and prevent unsafe movement combinations.
	--	Emergency Stop & Warnings	The control system shall allow immediate interruption of powered movements when required for patient safety and shall provide appropriate visual and/or audible indications for system faults and abnormal operating conditions.

MINISTRY OF NATIONAL DEFENSE ARMY MILITARY HEALTHCARE MEDICAL SUPPLY CORPS	TECHNICAL SPECIFICATIONS FOR OPTICAL COMPUTED TOMOGRAPHY(OCT) جهاز التصوير المقطعي للترابط البصري	SPECIFICATION № AHC26EQU-OPHT-003-1 VALIDITY:2030

1- TECHNICAL SPECIFICATIONS:

A- GENERAL :

Optical coherence tomography(OCT) is a non invasive imaging technique that uses light waves to produce high-resolution,cross sectional images of biological tissues especially the retina and other structures of the eye.

B- OCT SPECIFICATIONS:

(1)- A scan: 70,000 and above
(2)-Axial resolution µm: Below 8 µm
(3)-Transversal resolution µm: Below 20 µm
(4)- Scan depth µm: 2mm and above
(5)- Fundus preview: Yes, describe
(6)-Minimum pupil size: 3 mm
(7)- Working distance: precise im mm
(8)-Fundus tracking: Yes, describe
(9)-Layer segmentation: number of segments generated
(10)-Scan modes: Name the scan modes
(11)-3D reports:
- (a) Reports analysis: Describe the reports analysis
- (b) Scanned area: 10 mm and above

(12)-Automated operation: Describe operation procedure and timing
(13)-OCT light source: Describe and origin.

C- ANTERIOR SEGMENT OCT:

(1)- Modes:
- (a) 3D Anterior OCT reports
- (b) Corneal thickness
- (c) Anterior OCT measuring tools- describe
- (d) Corneal layers segmentation

D- SOFTWARE AND CONNECTIVITY:

Describe and upgrade policy

E- E MISCELLANEOUS:

(1)- PC, screen and motorized table, precise origing, local or from supplier
(2)- Dimensions (WxDxH)
(3)- Weight
(4)- User patient layout and seating
(5)- Mention additional needed accessories
(6)- Warranty: 2 years standard warranty starting after installation and application training, extendable upon request from customer.

2- STANDARS:

A- All medical electric and electronic equipment and others shall comply with all relevant standards IEC 601-1 (General Requirements for safety) and IEC 601-1-2 (EMC / Electromagnetic Compatibility), CE (European), FDA (USA), and Japanese standards.

B- All parts making the system proposed must individually and as a system be CE or FDA approved.

C- All relevant documentation and certificates of conformity to the standards shall be presented in the Tender.

3- TRAINING:

A- The bidder shall provide:

(1)- Procedures adopted by the tenderer for maintenance in detail.

(2)- Disposables needed for the functioning of the equipment during the training.

B- The bidder shall provide the proper training completely at his cost including accommodation, to assure the proper functionality of the equipment (a letter should be submitted) to the following:

(1)- 1 doctor training at the manufacturer's facilities outside Lebanon

(2)- 1 biomedical engineer (maintenance training) at the manufacturer's facilities outside Lebanon.

(3)- 4 technicians and 4 biomedical technicians, training in Lebanon.

MINISTRY OF NATIONAL DEFENSE ARMY MILITARY HEALTHCARE MEDICAL SUPPLY CORPS	TECHNICAL SPECIFICATIONS FOR 5 LPM OXYGEN CONCENTRATOR مكثف أكسجين قدرة ٥ ليتر/دقيقة	SPECIFICATION №: AHC26EQU-SINT-001-1

1- TECHNICAL SPECIFICATIONS

A- OXYGEN CONCENTRATOR UNIT

(1)- Stationary medical oxygen concentrator for therapeutic oxygen delivery.
(2)- Suitable for homecare or clinic use for one patient at a time.
(3)- Pressure swing adsorption or equivalent proven concentrator technology.
(4)- Complete unit with compressor, sieve beds, flowmeter and alarms.
(5)- Medical-grade cabinet, stable, durable and easy to clean.
(6)- Integrated handle and wheels for safe movement.
(7)- Hour meter or equivalent operating-time counter.
(8)- Compatible with standard nasal cannula, tubing and humidifier bottle.
(9)- Simple front control panel readable by patient or caregiver.
(10)- Clear ON/OFF switch and normal-operation indicator.
(11)- All labels and warnings shall be durable and readable.
(12)- Current production or currently supported manufacturer model.
(13)- New equipment only; refurbished units are not accepted unless approved.

B- PERFORMANCE REQUIREMENTS:

(1)- Flow:
  (a) Adjustable continuous flow range: approximately 0.5 to 5 LPM.
  (b) Flowmeter graduated in LPM with clear setting indication.
  (c) Stable flow at normal cannula / humidifier back pressure.
  (d) Standard oxygen outlet connection.
  (e) Suitable for continuous duty according to manufacturer rating.
(2)- Oxygen concentration:
  (a) Oxygen concentration at 5 LPM: 93% ± 3% preferred / minimum target.
  (b) Purity shall remain within specification after normal warm-up.
  (c) Oxygen purity monitoring / status indication is required.
  (d) Low oxygen concentration shall activate visual and audible alarm.
  (e) Purity shall be testable by calibrated oxygen analyzer.
(3)- Outlet pressure: minimum 5 PSI (35 kPa) or better.
(4)- Noise level: preferably ≤ 48 dBA; ≤ 45 dBA is preferred.
(5)- Power consumption: preferably ≤ 400 W at rated operation.
(6)- Weight: preferably ≤ 16 kg.
(7)- Dimensions shall be compact for bedside and homecare placement.

C- ALARMS AND SAFETY FUNCTIONS:

(1)- Power-failure audible alarm required.
(2)- Low oxygen purity visual and audible alarm required.
(3)- Oxygen alarm threshold shall be stated in the offer.
(4)- Very-low oxygen alarm, if available, shall be stated.
(5)- High / low pressure alarm or equivalent system alarm required.
(6)- Low-flow / no-flow alarm preferred.
(7)- Over heating/ compressor protection required.

D- ELECTRICAL AND ENVIRONMENTAL REQUIREMENTS:

(1)- Electrical supply:
  (a) Input voltage: 220 - 240 VAC.
  (b) Input frequency: 50 Hz.
  (c) Power cord and plug suitable for local use.
  (d) Protection against abnormal operation as per manufacturer design.
(2)- Environmental conditions:
  (a) Operating temperature range shall be declared; 10°C to 40°C preferred.
  (b) Storage / transport temperature range shall be declared.
  (c) Operating and storage humidity limits shall be declared.
  (d) Operating altitude limit shall be declared.

E- ACCESSORIES AND CONSUMABLES:

(1)- Power cord.
(2)- Humidifier bottle and connector if compatible with the model.
(3)- Adult nasal cannula and oxygen tubing.
(4)- Cleanable or replacement filters.
(5)- Spare external filters according to manufacturer recommendation.
(6)- Oxygen outlet connector and humidifier shelf if applicable.
(7)- Nebulizer function is optional and shall be clearly stated if included.
(8)- Timer, LCD display or remote control are optional features.
(9)- All consumables shall be listed with part numbers and prices.
(10)- Replacement intervals for filters and consumables shall be stated.
(11)- All supplied accessories shall be new and medically compatible.

F- DOCUMENTATION, SERVICE AND TRAINING:

(1)- English IFU / user manual shall be supplied with each unit.
(2)- Service manual or maintenance instructions shall be supplied when available.
(3)- Preventive maintenance schedule shall be supplied.
(4)- Spare parts list with prices shall be submitted.
(5)- Spare parts availability period shall be stated.
(6)- Local service contact in Lebanon shall be provided.
(7)- Five-year post-warranty maintenance contract value shall be submitted.

(8)- User training should cover operation and alarm response.
(9)- User training shall cover cleaning and filter care.
(10)- Technical training shall cover routine maintenance and troubleshooting.

2- STANDARDS:

A- All medical electric and electronic equipment and others shall comply with all relevant standards IEC 601-1 (General Requirements for safety) and IEC 601-1-2 (EMC / Electromagnetic Compatibility), CE (European), FDA (USA), and Japanese standards.

B- All relevant documentation and certificates of conformity to the standards shall be presented in the tender.

MINISTRY OF NATIONAL DEFENSE ARMY MILITARY HEALTHCARE MEDICAL SUPPLY CORPS	TECHNICAL SPECIFICATIONS FOR SPIROMETER WITH DLCO جهاز اختبار وظائف الرئة	SPECIFICATION №: AHC26EQU-PULM-001-1

1- TECHNICAL SPECIFICATIONS

A- SPIROMETER WITH DLCO SYSTEM:

(1)- Clinical spirometer / pulmonary function system featuring at minimum full spirometry plus single-breath DLCO capability.
(2)- Intended for hospital pulmonary function laboratory and outpatient pulmonary testing.
(3)- Complete system with measuring unit, gas analysis system, workstation / cart and operating software.
(4)- Current production or currently supported manufacturer model.
(5)- Forced spirometry, flow-volume loop, slow vital capacity and MVV required.
(6)- Pre / post bronchodilator workflow required.
(7)- DLCO single-breath measurement required.
(8)- Reporting of DLCO, VA and KCO required.
(9)- Low-resistance high-accuracy flow sensing required.
(10)- Rapid CO and tracer-gas analysis or equivalent validated DLCO method required.
(11)- Suitable for adult use; pediatric workflow or incentives preferred where available.
(12)- Optional expanded pulmonary testing beyond base scope shall be clearly stated.
(13)- Lung-volume capability or equivalent expansion shall be clearly stated and priced if offered.
(14)- New equipment only; refurbished units are not accepted unless approved.

B- TEST PROGRAMS AND MEASUREMENT PERFORMANCE:

(1)- Spirometry:
  (a) Routine reporting of FVC, FEV1, FEV1/FVC, PEF, FEF25-75, SVC and MVV at minimum.
  (b) Measurement performance shall comply with ISO 26782:2009 or current recognized equivalent.
  (c) Real-time flow-volume and volume-time display required.
  (d) Maneuver quality feedback for spirometry required.

(e) Pre / post bronchodilator comparison and reporting workflow preferred.
(f) Adult and pediatric predicted-value support preferred.

(2)- Diffusion capacity:
(a) DLCO measurement shall align with 2017 ERS/ATS single-breath DLCO standard or equivalent validated method.
(b) DLCO, VA and KCO (or equivalent transfer coefficient) shall be reported and stored.
(c) Technically acceptable DLCO inspiration shall be supported; >= 6 L/s inspiratory flow preferred or clear ATS/ERS evidence shall be provided.
(d) Rapid gas-analyzer response suitable for current DLCO standards is required.
(e) Automatic ambient, barometric and temperature corrections shall be provided as applicable.

(3)- Quality-control prompts for diffusion maneuver acceptability and repeatability are required.
(4)- Environmental correction factors shall be applied automatically where appropriate.
(5)- QC / calibration approach shall be declared in detail.
(6)- Calibration / verification tools and procedures shall be supplied.
(7)- 3 L syringe and all start-up QC accessories shall be included as applicable.

C- <u>CLINICAL SOFTWARE AND DATA MANAGEMENT:</u>

(1)- Operator guidance for acceptability and repeatability of spirometry and DLCO maneuvers is required.
(2)- Predicted values with LLN and / or Z-score interpretation are preferred.
(3)- Real-time curves, loops, maneuver quality feedback, and tabulated results are required.
(4)- Patient database and result archive are required.
(5)- Customizable reports and PDF export are required.
(6)- HL7, XML, API, GDT, DICOM or equivalent connectivity are preferred.
(7)- Required software licenses for normal operation shall be included.
(8)- All software licensing details (reactivation fees, duration …) must be clearly cited in the offer.

D- <u>SYSTEM CONFIGURATION AND SITE REQUIREMENTS:</u>

(1)- System configuration:
(a) Complete quoted system shall include medical cart / trolley or integrated unit.
(b) Dedicated PC or workstation, monitor, keyboard and mouse shall be included.

(c) Power input shall be 100-240 VAC or 220-240 VAC, 50 / 60 Hz suitable for local site power.
(d) Site and gas installation requirements shall be clearly stated by the bidder.

(2)- Gas requirements:
(a) Required diffusion gas mixture(s), regulators, tubing and calibration-gas requirements shall be clearly specified and quoted.
(b) Gas-cylinder interfaces, regulators, hoses and sampling lines shall be included as applicable.
(c) Safe gas-handling workflow and consumable replacement intervals shall be stated.
(d) Any optional external modules shall be clearly identified and priced.

E- ACCESSORIES AND CONSUMABLES:

(1)- Hygienic patient interface with single-patient mouthpieces, filters or equivalent barriers is required.
(2)- Starter consumables for commissioning and training shall be included.
(3)- Disposable and reusable consumables shall be clearly listed with part numbers and prices.
(4)- Cleaning and infection-control workflow shall be described clearly.
(5)- All included regulators, hoses, tubing and adapters required for normal operation shall be supplied.
(6)- All supplied accessories shall be new and medically compatible.
(7)- Routine consumables and recommended annual running-cost estimate shall be submitted.
(8)- Optional lung-volume modules or software expansions, if available, shall be listed separately.
(9)- Optional connectivity modules, if not included as standard, shall be listed separately.
(10)- Replacement intervals for consumables and patient-interface items shall be stated.

F- DOCUMENTATION AND SERVICE:

(1)- English IFU / user manual shall be supplied with each unit.
(2)- Service manual or maintenance instructions shall be supplied when available.
(3)- Preventive maintenance schedule shall be supplied.
(4)- Spare parts list with prices shall be submitted.
(5)- Spare parts availability period shall be stated.
(6)- Local service contact in Lebanon shall be provided.
(7)- Five-year post-warranty maintenance contract value shall be submitted.

2- STANDARDS:

A- All medical electric and electronic equipment and others shall comply with all relevant standards IEC 601-1 (General Requirements for safety) and IEC 601-1-2 (EMC / Electromagnetic Compatibility), CE (European), FDA (USA), and Japanese standards.

B- All parts making the system proposed must individually and as a system be CE or FDA approved.

C- All relevant documentation and certificates of conformity to the standards shall be presented in the tender.

3- TRAINING:

A- The bidder shall provide:

(1)- Procedures adopted by the tenderer for maintenance in detail.

(2)- Disposables needed for the functioning of the equipment during the training.

B- The bidder shall provide the proper training completely at his cost including accommodation, to assure the proper functionality of the equipment (a letter should be submitted) to the following:

(1)- 1 doctor training at the manufacturer's facilities outside Lebanon

(2)- 1 biomedical engineer (maintenance training) at the manufacturer's facilities outside Lebanon.

(3)- 4 technicians and 4 biomedical technicians, training in Lebanon.

1- TECHNICAL SPECIFICATIONS:

A- GENERAL :

Wall-recessed unit used in CSSD for sterilizing cleaned/disinfected, wrapped/unwrapped reusable surgical instruments, trays, utensils, and rubber, porous, plastic goods, MIS instruments, rigid scopes, anesthesia and respiratory goods, etc.

B- STANDARD REQUIREMENTS:

(1)- Must be CE or TUV approved.

(2)- Bidder should specify the shelf life or the expiry date for any component, consumable, and accessory whenever applicable.

(3)- Power Supply: Must comply with the project standards in terms of voltage and plug type.

C- PERFORMANCE SPECIFICATIONS AND FEATURES:

(1)- Approximate chamber capacity: 450 Liter (6 STU).

(2)- Approximate chamber dimensions (HxWxD): (600x600x830) mm or better ± 50 mm .

(3)- The chamber shall be fully surrounded by a stainless steel steam jacket.

(4)- Material of chamber and doors shall be 316L stainless steel.

(5)- 12-year or higher factory/manufacturer warranty on the chamber.

(6)- Asbestos-free insulation.

(7)- System for removing vapor from chamber before door opening.

(8)- Chamber pressure sensors.

(9)- Chamber pressure withstanding range of (3.5 - 7) Bar or better, with pressure relief valve.

(10)- Sterilization temperature range: 121-135°C.

(11)- Temperature sensors for: chamber, chamber drain, steam jacket.

(12)- Double-door configuration.

(13)- Automatic vertical door opening and closing with auto-stop safety features if any obstructions occur during door closing.

(14)- Each door shall be sealed with a rubber gasket.

(15)- Door interlock; both doors cannot open at the same time. Door must stay locked while chamber is pressurized.

(16)- Vacuum pump for pulsing air removal(Specify cooling type and horse power).

(17)- HEPA filter for bacteria and particles that are larger than 0.3μm or better.

(18)- Built-in 316L stainless steel electric steam generator.

(19)- Stainless steel piping.
(20)- Stainless steel solenoid valves.
(21)- Seamless stainless steel exterior.
(22)- Steam traps.
(23)- Water level sensors.
(24)- Drain discharge cooling facilities. Specify drained water temperature
(25)- Fully automated with microprocessor/PLC controls.
(26)- Supplier to list the available preset/standards cycles. Supplier to provide details of the cycle, including but not limited to, phases, duration, and the intended use.
(27)- Cycles shall include but not limited to the following:
a) Flash.
b) Prion.
c) Surgical and hollow instruments.
d) Porous materials.
e) Rubber.
f) Liquid.
g) Bowie-Dick test.
h) Vacuum leak test
i) Low water consumption per cycle.
(28)- Control panel:
a) Built-in backup battery for cycle documentation memory.
b) Colored LCD screen with temperature, pressure, cycles, etc.
c) Control panel shall have a colored LCD screen for control and display of temperature, pressure, cycles, etc.
d) On/Off button.
e) Emergency stop button.
f) Audible and/or visual alarms shall include but not limited to end of cycle, overheat of water or air, low detergent level, chamber temperature is below set value, door unlocked, hot water not drained
(29)- Integrated printer. Parameters shall include but not limited to date, equipment malfunction, and cycle failure, operator.
(30)- Top utility connections.

D- <u>ACCESSORIES:</u>

(1)- Shall be supplied with all standard accessories/options/SW packages in order to function properly and to the full capacity/features of the system.
(2)- Bidder to itemizewith unit price all the accessories included in the total quoted price for better technical and financial evaluation. At minimum shall be provided with the following:
(a) Loading/unloading carts.
(b) Shelf racks to cater for full capacity of the sterilizer.
(c) Bidder shall provide an itemized price for all the available accessories/options/SW packages for the client selection.

E- CONSUMABLES AND START KITS:

Shall be supplied with all standard consumables in order to function properly and to the full capacity/features of the system. Bidder to itemize with unit price all the consumables included in the total quoted price for better technical and financial evaluation. At minimum shall be provided with the following:

a) 4 Extra door gaskets.
b) 2 Extra HEPA filter.
c) Printer paper rolls.
d) Bidder shall provide an itemized price for all the available consumables for the client selection.

F- INDICATIVE DIMENSIONS:

(1)- Sterilizer, 450 L: 1950(H)x1150(W)x1300(D) mm or similar (±100mm).
(2)- Sterilizer Loading/Unloading Cart: 900(H)x500(W)x800(D) mm(±tolerance).

G- HIS AND IT INTEGRATION (IF APPLICABLE):

(1)- HL7 protocol compatible.
(2)- Shall have at minimum one RJ 45 connection port. Bidder shall list all the available types and quantities of connection ports.
(3)- Bidder shall provide configuration information for RS232 connections and Ethernet connections.
(4)- Bidder shall provide details on the pin configuration for serial ports.
(5)- Data port adapters/serial interfaces required to convert any proprietary data port to an RS232 connection.
(6)- Bidder shall supply any additional hardware requirements to enable full integration and operation. (i.e. servers, licenses, dongles) with coordination with the HIS/ITvendor, without any additional cost to the client.
(7)- Bidder shall provide interface specifications which show the communication protocol, format of data and the connectivity method to get this data together with thedetails of the connectivity port.
(8)- The equipment shall be able to connect and interface with the instrument tracking and quality control system provided by end-user/client. Bidder shall coordinate with the instrument tracking vendor and provide all required accessories/SW packages without any additional cost to the client.

2- WARRANTY:

(1)- Full system warranty (hardware and software) at least 2 years from the date of installation (the warranty shall include the spare parts, labor, travel, preventive and corrective maintenances, software support and updates, response time within 48 hours)**.**

(2)- Submit a yearly maintenance agreement proposal (full warranty including spare parts and labor cost) to be submitted**.**

3- REFERENCE:

(1)- Reference list of the installation base of system in the Lebanese market (To be submitted by supplier).

(2)- Training certificates of engineers who are eligible to perform service/application procedures (To be submitted by Supplier).

4- GENERAL TRAINING:

A- The bidder shall provide:

(1)- Procedures adopted by the tenderer for maintenance in detail.

(2)- Disposables needed for the functioning of the equipment during the training.

(3)- On-site application training for the staff (duration up to 2 weeks) (To be submitted by Supplier)**.**

B- The bidder shall provide the proper training completely at his cost including accommodation, to assure the proper functionality of the equipment (a letter should be submitted) to the following:

(1)- 1 doctor training at the manufacturer's facilities outside Lebanon

(2)- 1 biomedical engineer (maintenance training) at the manufacturer's facilities outside Lebanon.

(3)- 4 technicians and 4 biomedical technicians, training in Lebanon.

MINISTRY OFNATIONAL DEFENSE ARMY MILITARY HEALTHCARE MEDICAL SUPPLY CORPS	TECHNICAL SPECIFICATIONS FOR SUCTION MACHINE جهاز شفط كهربائي للسوائل	SPECIFICATION №: AHC26EQU-SINT-003-1

1- TECHNICAL SPECIFICATIONS

A- SUCTION MACHINE UNIT:

(1)- Electrically powered medical suction unit for aspiration of airway secretions and body fluids.
(2)- Suitable for homecare, clinic, emergency room or similar medical use according to offered model class.
(3)- The unit shall be grid / mains operated only; internal rechargeable battery is not required in this tender version.
(4)- The device shall be suitable for caregiver, nurse or trained operator use.
(5)- The device shall be supplied as a complete, fully functional system ready for use.
(6)- Oil-free and maintenance-free piston / diaphragm / equivalent medical suction pump preferred.
(7)- Compact transportable design with integrated handle or trolley/castors according to model configuration.
(8)- Medical-grade enclosure, stable, durable and easy to clean.
(9)- Clearly readable control panel and front operating controls.
(10)- Current production or currently supported manufacturer model.
(11)- New equipment only; refurbished units are not accepted unless formally approved by the administration.
(12)- Bidder shall state exact brand, model, part number and configuration offered.

B- PERFORMANCE REQUIREMENTS:

(1)- Vacuum performance:
  (a) Vacuum shall be not less than 450 mmHg, approximately 60 kPa.
  (b) Preferred vacuum range: approximately -80 kPa to -95 kPa or better.
  (c) Vacuum shall be continuously adjustable by regulator or equivalent control.
  (d) The unit shall include a visible vacuum gauge or digital vacuum display. Gauge units shall be in kPa, mmHg, bar or clearly equivalent units.
  (e) Low-range suction adjustment suitable for tracheostomy or sensitive use is preferred.
(2)- Flow performance:
  (a) Free air flow shall be not less than 20 L/min.
  (b) For high-flow use, 30 to 40 L/min or better is preferred.
  (c) The suction system shall provide stable suction during normal clinical use.
  (d) The suction pathway shall prevent reverse flow as per manufacturer design.
  (e) The device shall be suitable for continuous duty or declared intermittent duty with thermal protection.

(f) Continuous / non-stop operation is preferred for mains-powered models.

(3)- Operating noise shall preferably be not more than 65 dB(A) at 1 meter.

(4)- Warm-up time, if any, shall be stated by the bidder.

(5)- Motor protection against overheating or abnormal operation is required.

C- POWER SUPPLY AND ELECTRICAL REQUIREMENTS:

(1)- Input power shall be suitable for Lebanese grid supply.

(2)- Required input voltage: 220 - 240 VAC, 50 Hz, or universal 100 - 240 VAC, 50/60 Hz.

(3)- Medical-grade power cord and plug suitable for local use shall be supplied.

(4)- Fuse, thermal cut-out, over-current protection or manufacturer-equivalent safety protection is required.

(5)- The unit shall include power-on / ready indication.

(6)- Fault or abnormal-operation indication is preferred.

(7)- Electromagnetic compatibility shall be suitable for medical environment use.

D- COLLECTION SYSTEM AND PATIENT CIRCUIT:

(1)- Collection canister capacity shall be at least 1000 mL total supplied capacity.

(2)- Larger canister capacity or dual-jar system is acceptable according to clinical use.

(3)- Reusable jar, disposable liner system or manufacturer-approved equivalent is accepted.

(4)- Canister shall be graduated or otherwise permit visual fluid level monitoring.

(5)- Overflow protection is mandatory by float valve, safety set, electronic fill-level protection or equivalent.

(6)- Hydrophobic antibacterial / bacterial-viral filter or equivalent protective filter is required according to manufacturer design.

(7)- Tubing and connectors shall be medical grade and compatible with the suction inlet/outlet.

(8)- The patient tubing and canister system shall be easily assembled and disconnected for cleaning.

(9)- Reusable components shall have clear cleaning, disinfection and sterilization instructions.

(10)- Single-patient or disposable consumables shall be identified with part numbers.

(11)- The system shall prevent aspirated fluid from entering the pump under normal operating conditions.

E- ACCESSORIES AND CONSUMABLES:

(1)- Power cord suitable for local grid use.

(2)- Collection jar or liner system as per offered configuration.

(3)- Patient suction tubing and connection tubing.

(4)- Suction cannula / catheter connector according to manufacturer standard accessories.

(5)- Hydrophobic antibacterial / bacterial-viral filters.

(6)- Overflow valve, safety set or equivalent protection parts if separate from the canister.
(7)- Spare filters according to manufacturer recommendation.
(8)- Carry bag, stand or trolley shall be supplied when included in the offered configuration.
(9)- Foot switch or remote operation is optional and shall be clearly stated if offered.

2- STANDARDS

A- All medical electric and electronic equipment and others shall comply with all relevant standards IEC 601-1 (General Requirements for safety) and IEC 601-1-2 (EMC / Electromagnetic Compatibility), CE (European), FDA (USA), and Japanese standards.
B- All parts making the system proposed must individually and as a system be CE or FDA approved.
C- All relevant documentation and certificates of conformity to the standards shall be presented in the tender.

3- TRAINING

A- The tenderer shall describe, in details:
(1)- Procedures adopted by the tenderer for maintenance.
(2)- Disposables needed for the functioning of the equipment.

B- The tenderer shall provide and specify, in detail, the training component included in his offer, which shall cover: The detailed schedule of the necessary training sessions and educational workshops targeted for relevant staff on the safe and competent handling of major equipment and systems, and the associated cost.

MINISTRY OF NATIONAL DEFENSE ARMY MILITARY HEALTHCARE MEDICAL SUPPLY CORPS	TECHNICAL SPECIFICATIONS FOR ULTRAWIDE FIELD RETINAL IMAGING جهاز تصوير الشبكية فائق إتساع المجال	SPECIFICATION № AHC26EQU-OPHT-006-1 VALIDITY:2030

1- TECHNICAL SPECIFICATIONS:

A- GENERAL :

Ultra wide field imaging is an ophthalmic imaging technique that captures a very wide, high resolution image of the retina and peripheral retina.

B- GENERAL REQUIREMENT & CONDITIONS (TO BE PROVIDED BY THE SUPPLIER/MANUFACTURER)

(1)- Model number.
(2)- Date first introduced to the market.
(3)- Country of Origin.
(4)- Country of assembly.

C- IMAGING UNIT:

(1)- Table/stand: wheelchair accessible**.**
(2)- Electronic lift : >910 mm × >610 mm × 710 - 920 mm or better.
(3)- Workstation/computer: Intel® Core i5. Windows 11 or better, 8 GB RAM or better.
(4)- Acquisition and review software: Laptop or Desktop (minimum windows 11).
(5)- Monitor: 22” Full HD MVA LCD with LED Backlight (touch screen**).**
(6)- Printer/export function: compatible with Lan network printer and export via USB or Network**.**

D- GENERAL REQUIREMENT & CONDITIONS (TO BE PROVIDED BY THE SUPPLIER/MANUFACTURER):

(1)- Manufacturer (experience with proven experience in ophthalmic diagnostic equipment, manufacturer authorization, trained service engineers, and local/regional/international references-supply a list of references in the local market)**.**

E- IMAGING MODES AVAILABILITY:

(1)- True color (with Red, Green and Blue channel separation).
(2)- Fluorescein Angiography.
(3)- Autofluorescence-Green.
(4)- Autofluorescence-Blue.
(5)- Infrared reflectance.
(6)- External eye image (ocular surface).
(7)- Stereo.

F- FIELD OF VIEW (MEASURED FROM THE CENTER OF THE EYE):

(1)- Widefield (one image): 130˚ or better**.**
(2)- Ultra-widefield (two images): 190˚ - 200˚ or better**.**

(3)- Montage (up to six images): up to 250˚ - 260˚ or better.
(4)- Minimum pupil diameter: ≤2.6 mm or better for non-mydriatic imaging.
(5)- High resolution FA: ≥8 µm or better resolution for fluorescein angiography.
(6)- Compensation for ametropia: (-24 D to +20 D) continuous adjustment. Or better.

G- LIGHT SOURCES:

(1)- Red LED 620–750 nm or equivalent**.**
(2)- Green 520–570 nm or equivalent**.**
(3)- Blue 450–490 nm or equivalent**.**
(4)- IR diode 820–870 nm or equivalent**.**
(5)- Precision focus & gaze point: (YES/NO)**.**

H- AUTOMATIC OPERATIONS:

(1)- Auto-focus.
(2)- Auto montage.
(3)- Auto-laterality.
(4)- Auto-gain.

I- ACQUSITION SPEED:

(1)- ≥10 frames per second live IR preview or better**.**
(2)- Image capture: 0.2 sec or better**.**

J- SOFTWARE UPDATE:

To be supplied FOC for the period of use of the device**.**

K- INTERFACES:

(1)- DICOM 3.0 connectivity**.**
(2)- HL7 EMR integration**.**
(3)- PDF export & printout capability**.**

2- CERTIFICATES:

A- Manufacturer's Declaration of conformity for the offered ultra-wide field fundus imaging device.
B- Valid market clearance, market authorization or registration from one GHTF founding member, such as CE certificate under MDR 2017/745, US FDA clearance, Health Canada license, TGA inclusion or PMDA approval, as applicable**.**
C- Valid ISO 13485 certificate covering the relevant manufacturing site and scope.
D- Evidence of conformity to IEC 60601-1 and IEC 60601-1-2, supported by certificates or test reports.
E- Evidence of conformity to ISO 10940 or equivalent applicable standard for fundus cameras, where applicable to the offered technology.
F- Evidence of conformity to applicable software, risk management, usability and labeling standards, where applicable.
G- Factory calibration certificate, inspection report and/or factory acceptance test report for the offered device.

H- Any other applicable certificates or test reports supporting conformity with the claimed standards**.**

3- WARRANTY:

A- Full system warranty (hardware and software) at least 2 years from the date of installation (the warranty shall include the spare parts, labor, travel, preventive and corrective maintenances, software support and updates, response time within 48 hours)**.**

B- Submit a yearly maintenance agreement proposal (full warranty including spare parts and labor cost) to be Submitted**.**

4- REFERENCE:

A- Reference list of the installation base of system in the Lebanese market (To be submitted by Supplier).

B- Training certificates of engineers who are eligible to perform service/application procedures (To be submitted by supplier).

5- DOCUMENTATION :

(1)- User, technical and maintenance manuals to be supplied in English language along with machine diagrams. Datasheet, brochures, catalogues and any document that provides detailed specifications of each item.

(2)- Service and operation manuals (original and copy) to be provided

(3)- Advanced maintenance tasks documentation

(4)- Certificate of calibration and inspection**.**

(5)- List of important spare parts, accessories and consumables with their part numbers and costing**.**

(6)- Assured availability of spare parts for 10 years post acceptance testing and commissioning date**.**

(7)- List of equipment and procedures required for local calibration and routine maintenance.

(8)- Installation and commissioning manual, including site readiness requirements**.**

(9)- Preventive maintenance schedule and troubleshooting guidance**.**

(10)- Cleaning and disinfection instructions for patient-contacting components**.**

(11)- Calibration, inspection and quality control procedures**.**

(12)- Software version information, Software updates procedure, where applicable**.**

(13)- Safety warnings, precautions, contraindications, limitations of use and disposal instructions**.**

(14)- Documentation shall correspond to the exact offered model and configuration and be consistent with the submitted regulatory documentation, declaration of conformity, labeling, ifu and technical specifications.

(15)- Documentation shall be provided in English, and in Arabic or French where required by the end user or applicable national.

(16)- QC and software kits / tools.

(17)- Factory Acceptance Testing Report.

6- GENERAL TRAINING:

A- The bidder shall provide:

(1)- Procedures adopted by the tenderer for maintenance in detail.

(2)- Disposables needed for the functioning of the equipment during the training.

(3)- On-site application training for the staff (duration up to 2 weeks) (To be submitted by supplier).

B- The bidder shall provide the proper training completely at his cost including accommodation, to assure the proper functionality of the equipment (a letter should be submitted) to the following:

(1)- 1 doctor training at the manufacturer's facilities outside Lebanon

(2)- 1 biomedical engineer (maintenance training) at the manufacturer's facilities outside Lebanon.

(3)- 4 technicians and 4 biomedical technicians, training in Lebanon.

MINISTRY OF NATIONAL DEFENSE ARMY MILITARY HEALTHCARE MEDICAL SUPPLY CORPS	TECHNICAL SPECIFICATIONS FOR VISUAL FIELD IMAGING جهاز فحص مجال الرؤية	SPECIFICATION № AHC26EQU-OPHT-005-1 VALIDITY:2030

1- TECHNICAL SPECIFICATIONS:

A- GENERAL :

Visual field imaging is a diagnostic procedure that measures and records the area of vision a person can see,including both central and peripheral vision.

B- GENERAL REQUIREMENT & CONDITIONS (TO BE PROVIDED BY THE SUPPLIER/MANUFACTURER)

(1)- Model number.
(2)- Date first introduced to the market.
(3)- Country of Origin.
(4)- Country of assembly.

C- TEST SPECIFICATIONS:

(1)- Visual field test range:monocular: ≥60° or better ,binocuclar: ≥140° or better**.**
(2)- Stimulus duration Fixed at 200 ms ± 10 ms or better**.**
(3)- 500 ms for esterman testing**.**
(4)- Visual field testing distance: between 20 cm and 30 cm**.**
(5)- Background illumination: 30.0 apostilbs ± 2 asb**.**
(6)- Stimulus size: (to be specified by the supplier)**.**
(7)- Stimulus color: (To be specified by the supplier)**.**

D- THRESHOLD TEST LIBRARY:

(1)- 24-2, 30/2, 10-48 or similar**.**
(2)- more testing library (to be specifiec by the supplier): for example: Esterman, Macula, etc.

E- THRESHOLD TEST STRATEGIES:

SITA/ZATA or equivalent test thresholds with their corresponding deviations (Example FAST, etc.)

F- FIXATION CONTROL:

(1)- Should be available.
(2)- Target fixation.
(3)- Eye Monitoring.

G- SUPRATHRESHOLD TEST LIBRARY:

(1)- C40, C76, C80.
(2)- C64, C-Armaly.

H- SUPRATHRESHOLD TEST MODES:

(1)- Peripheral test patterns.
(2)- Age corrected.

(3)- Threshold related, Single intensity.

I- SPECIALTY TEST LIBRARY:

(1)- Social security disability, monocular, binocular.
(2)- Esterman monocular, binocular, superior 36, 64.
(3)- Kinetic testing: Goldmann III, IV stimuli with customizable speeds 2–5°/sec.
(4)- Custom kinetic testing.
(5)- Custom static testing.

J- AUTOMATIC OPERATIONS:

Auto-focus

K- MONITOR:

(1)- Touch screen.
(2)- Size: Minimum 16 inch or better.

L- SOFTWARE UPDATE:

to be supplied FOC for the period of use of the device.

M- INTERFACES:

(1)- DICOM 3.0 connectivity.
(2)- HL7 EMR integration**.**
(3)- PDF export & printout capability.

N- CERTIFICATES:

(1)- Manufacturer's Declaration of Conformity for the offered visual field analyser**.**
(2)- Valid market clearance, market authorization or registration from one GHTF founding member, such as CE certificate under MDR 2017/745, US FDA clearance, Health Canada licence, TGA inclusion or PMDA approval, as applicable**.**
(3)- Valid ISO 13485 certificate covering the relevant manufacturing site and scope
(4)- Evidence of conformity to IEC 60601-1 and IEC 60601-1-2, supported by certificates or test reports
(5)- Evidence of conformity to ISO 12866 or equivalent applicable standard for perimeters/visual field analysers, where applicable.
(6)- Evidence of conformity to applicable software, risk management, usability and labelling standards, where applicable.
(7)- Factory calibration certificate, inspection report and/or factory acceptance test report for the offered device.
(8)- Any other applicable certificates or test reports supporting conformity with the claimed standards

2- WARRANTY:

A- Full system warranty (hardware and software) 1 year from the date of installation (to be submitted by supplier) in addition to complimentary years labor. (i.e: 1 year full warranty, 1 year extra labor foc)

B- The full warranty includes parts, labor, travel, preventive and corrective maintenance, software support, and 24 hours onsite response time.

C- Submit a yearly maintenance agreement proposal (full warranty including spare parts and labor cost) (to be submitted by supplier)**.**

3- REFERENCE:

A- Reference list of the installation base of system in the Lebanese market (to be submitted by supplier).

B- Training certificates of engineers who are eligible to perform service/application procedures (to be submitted by supplier).

4- GENERAL TRAINING:

A- The bidder shall provide:

(1)- Procedures adopted by the tenderer for maintenance in detail.

(2)- Disposables needed for the functioning of the equipment during the training.

B- The bidder shall provide the proper training completely at his cost including accommodation, to assure the proper functionality of the equipment (a letter should be submitted) to the following:

(1)- 1 doctor training at the manufacturer's facilities outside Lebanon

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