ATTACHMENT 1

AGENZIA INDUSTRIE DIFESA

STABILIMENTO CHIMICO FARMACEUTICO MILITARE

TECHNICAL SHEETS

FOR THE PURCHASE OF **MAIN** HEALTH EQUIPMENT INTENDED FOR KENYA FIELD HOSPITAL

INTRODUCTION

This repertoire collects a selection of technical sheets aimed at preliminary orientation in the purchase of medical material for the Kenya Field Hospital.

These sheets represent an indicative and generic summary of the essential characteristics of the medical devices and equipment of greatest economic relevance.

It is essential to underline that the information contained in these sheets is subject to updates and modifications. Therefore, they do not constitute a definitive document for the purchase, but a support tool for the initial planning phase.

The detailed technical specifications and the definitive quantities of the materials to be acquired will be defined at a later stage, following a specific mandate and on the basis of the precise needs and requests of the end users operating in the Kenya Field Hospital

BIOCHEMISTRY ANALYZER

Description

A biochemistry analyzer is a medical device used to analyze biological samples (such as blood, urine, or serum) and measure the concentration of various chemical substances. It allows to:

- Perform biochemistry tests determining the presence and quantity of various parameters, such as glucose, cholesterol, enzymes, and proteins.
- Provide fast and accurate result thanks to the automation of the analysis process, reducing the time needed to obtain results.
- Support the diagnosis and monitoring of diseases. the analysis results help doctors diagnose diseases, monitor the effectiveness of treatments, and evaluate organ function.

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- Electrical input: +5 VDC, 1 W max
- Electronic switch resistance: 2 to 5 Ω
- Capacity: 3 E-Plate 16 devices or 3 CIM-Plate devices
- Maximum range: 48 wells
- Output test signal: 22 mV rms ±(2% +5 mVrms) at 10, 25 and 50 kHz
- Impedance measurement accuracy: ±(1% + 1.5 Ω)
- Impedance measurement repeatability: 0.8%
- Impedance dynamic range: 10 to 5 kΩ

DENTAL X-RAY EQUIPMENT

Description

Dental X-ray equipment is an instrument used in hospitals and dentistry to obtain detailed images of the teeth, jawbones and surrounding structures. Its main features include:

- X-ray generator: produces low-dose radiation to minimize patient exposure.
- X-ray tube: emits X-rays towards the area of interest.
- Sensor or X-ray film: captures the image of X-rays that have passed through the tissues.
- Image acquisition and display system: allows the X-ray image to be displayed on a monitor.

These devices are essential for the diagnosis of caries, infections, periodontal disease, bone abnormalities and for planning dental treatments.

Main features

- Dental X-ray equipment with intra-oral scanner.
- Constant potential high frequency generator
- 0.4 mm focal spot providing sharp and detailed images
- Automatic modulation of exposure parameters
- Power selection
- Fingerprints with an accuracy of 20 μm, a depth of field of 18 mm

BIOSAFETY CABINET

Description

Containment device to protect the operator, the environment and the product from potentially hazardous biological agents. This cabinet creates a controlled airflow that prevents the escape of aerosols and contaminated particles during the handling of biological material. Biosafety cabinets are classified into three classes (I, II and III) based on the level of protection offered.

Main features

- Vertical laminar airflow to protect the product and an incoming airflow to protect the operator. The contaminated air is filtered through HEPA filters before being expelled into the environment or recirculated inside the cabinet.
- HEPA filters.
- Made of stainless steel or other corrosion-resistant materials that are easy to clean.
- Front opening with safety glass window.
- UV lamp for sterilization.
- Alarm system to report any malfunctions

LABORATORY REFRIGERATOR

Description

Refrigerated cabinet for hospital use, intended for the storage of temperature-sensitive products, such as: drugs, blood, blood derivatives, biological samples.

Main features

Refrigerated cabinet designed to maintain a stable and controlled internal temperature, generally between +2°C and +8°C for drugs and between +2°C and +6°C for blood.

- High-precision thermostat, visual and acoustic alarm system in the event of temperature variations.
- Forced ventilation to ensure temperature uniformity.
- Walls with high thermal insulation to minimize heat loss.
- Automatic defrosting: prevents ice formation and ensures correct operation.
- Key locking system to prevent unauthorized access.
- Monitoring: continuous temperature recording, with the possibility of downloading data for traceability.
- Dimensions: Capacity Lt 1,100 - cm 145x70x205
- Adjustable shelves, drawers, internal lighting.

AUTOCLAVE 100L

Description

Autoclave to ensure effective sterilization of instruments and reusable materials. In particular, it is used for:

- Sterilization of surgical instruments
- Sterilization of laboratory material
- Sterilization of tissues and liquids
- Sterilization of linen and medical devices

Main features

Membrane autoclave for use with drinking water with a temperature range of 50 to 134°C featuring LED display for real-time data.

- Maximum operating pressure: 10 bar
- Operating temperature: 50~134°C
- Pre-charge pressure: 2.17 bar
- Capacity: 100 L
- Memory storage system
- Safety: electric interlock device
- Over-temperature protection
- Over-pressure protection
- Safety valve
- Automatic fault detection

DENTAL AUTOCLAVE

Description

Device used to sterilize dental instruments and materials using high-pressure, high-temperature water vapor. This process effectively eliminates bacteria, viruses, fungi and spores, ensuring patient safety and preventing the spread of infection. Specifically, it is a pressurized device used to sterilize dental equipment and supplies by subjecting them to high-pressure saturated steam at 121 °C or 134 °C for a specific amount of time, depending on the size of the load and contents.

Main features

- Sterilization chamber size: 18 liters.
- Sterilization cycles: The autoclave offers different cycles to sterilize various materials, such as unpackaged instruments, packaged instruments and handpieces.
- Drying systems: Integrated drying system to ensure that the instruments are completely dry after sterilization.
- Safety devices: Pressure release valves and door interlocks.
- Controls and displays: Controls allow you to set sterilization parameters and monitor the process.
- Traceability: to record sterilization cycles and ensure compliance with regulations.

PATIENT STRETCHER

Description

Patient stretcher is an essential device for the safe and comfortable transport of patients. Its main features include:

- Robust and stable structure: to support the weight of the patient.
- Wheels: to facilitate movement within the hospital structure.
- Comfortable support surface: to ensure the comfort of the patient during transport.
- Side rails: to prevent accidental falls.
- Possibility of adjustment: in some models, to adapt to the different needs of patients.

Main features

Patient stretcher with wheels. Made entirely of non-metallic plastic materials. The frame of the stretcher is made of PVC. The mattress is made of polyurethane foam and covered with a polyurethane-coated polyester fabric, water-repellent and fire-retardant. Foldable side rails.

- Dimensions: 2000 mm x 700 mm x 1010 mm
- Weight: 38 kg
- Height to floor: 769 mm
- Usable width at shoulders: 60.5 cm
- Working load (SWL): 150 kg
- Suitable for patients with a maximum height of 190 cm
- Structure: PVC
- Floor: PP
- Mattress padding: Open cell polyurethane foam
- Mattress covering: 50% polyester - 50% polyurethane
- Wheels: Polypropylene, thermoplastic rubber and other plastic materials
- Side lock mechanism protection: Silicone

RESUSCITATION TROLLEY

Description

The resuscitation trolley is a mobile emergency unit, equipped with essential medical devices for resuscitation interventions. It contains:

- Defibrillator: to restore normal cardiac rhythm.
- Cardiac monitor: for constant monitoring of vital parameters.
- Mechanical ventilator: to support breathing.
- Emergency drugs: such as adrenaline and atropine.
- Intubation material: to ensure the patency of the airways.

Main features

- Polymer structure with 5 light grey drawers (10 cm / 10 cm / 10 cm / 10 cm / 20 cm drawer height).
- The panels and the work surface promote a high level of disinfection and avoid the accumulation of bacteria.
- High resistance to disinfectants and cleaning.
- Removable modules simplify the sterilization and replenishment process.
- Ergonomic push handle.
- Bumpers protect all 4 corners of the trolley.
- 360° swivel casters, two of which have brakes.
- Hazardous waste bin holder.
- Single glove holder.
- Waste bin.
- Bottle holder.
- Top shelf.
- 3 accessory bars.
- Dimensions: 104 cm x 58 cm x 84 cm.
- Drawer dimensions: 10/10/10/10/20 cm.
- 4 x 10 cm antibacterial polymer trays: 10 x 40 x 60 cm.
- 1 x 20cm antibacterial polymer tray: 20 x 40 x 60cm.

DEFIBRILLATOR

Description

The defibrillator is an essential (life-saving) medical device in emergency situations, used to restore normal cardiac rhythm in the event of cardiac arrest or ventricular fibrillation. Its operation is based on the delivery of a controlled electric shock to the patient's heart, in order to interrupt the abnormal electrical activity and allow the heart to start beating regularly again.

Main features

Defibrillator equipped with a monitor for both hospital use and out-of-hospital emergencies, following BLS and ALS protocols.

- IPX4 classification
- TFT LCD display: 5.7" or 7" color screen, to display up to 12 ECG channels simultaneously.
- Internal memory: 4 GB flash disk.
- ECG module: control up to 12 leads with standard 5-lead patient cable or optional 10-lead patient cable.
- SpO2 and pacemaker: oxygen saturation monitoring and non-invasive pacemaker for cardiac support.
- NIBP: blood pressure measurements

ULTRASOUND MACHINE

Description

Multidisciplinary/internist ultrasound based on a PC-based digital platform.

Main features

- Operating modes: 8-Mode, Color, Color Doppler (CFM), Power Doppler (PD) also bidirectional, Pulsed Doppler (PW), automatic HPRF Doppler.
- 21" LCD monitor, high resolution, equipped with an articulated, articulated and directional arm;
- Console/operating panel, adjustable in height and orientable independently from the machine body, with a 10" color touch screen.
- Alphanumeric keyboard for maximum flexibility of use.
- Three active, universal ports, for any type of probe;
- Real-time zoom, even on frozen images.
- Linear or complex measurements and calculations on frozen and/or archived images with the possibility of automatic calculations in real time.
- Large storage capacity for patient data, images.
- Database backup and transfer functions.
- Advanced algorithm-based features for measurements, calculations and analysis dedicated to vessels
- Possibility to manage access to patient data through a password-protected permission system.

- Solid state hard disk (integrated in the system) (SSD} ≥ 256 GB, supported by traditional high capacity HDD.
- Ethernet network socket, wireless transmission and possibility of exporting reports, images, videos and data to CD/DVD and USB/external hard disk.
- Availability of USB sockets for interfacing peripherals, as well as video and audio outputs for connection to external devices.
- Battery-powered scanning module.
- Operating panel horizontally adjustable by 110°, vertically liftable by 18 cm, adjustable inclination from 0° to 45°.
- Quick navigation via touch screen.
- All four wheels of the trolley are equipped with pedal brakes
- Ultrasound probes supplied:
- Convex probe for abdominal examinations with frequency range from 2 to 5 MHz, with multi-frequency and wide-angle technology band.
- Linear probe, for superficial, small parts and vascular examinations, with a frequency range from 5 to 15 MHz approximately and a field of view ≥ 40 mm.
- Linear probe, vascular, with a frequency range of approximately 9 MHz dedicated to CHT.

ELECTROCARDIOGRAFH (ECG)

Description

The electrocardiograph (ECG) is a diagnostic tool that records the electrical activity of the heart through electrodes applied to the patient's skin. This non-invasive test produces a trace, the electrocardiogram, which allows doctors to evaluate the heart rhythm, the presence of arrhythmias, any damage to the heart muscle and other abnormalities.

Main features

Electrocardiograph equipped with a multiple data management system, provides accurate interpretation and reliable measurements of the ECG trace. ECG acquisition module with independent and individually replaceable leads.

- Internal Lithium Ion battery
- Autonomy of approximately 8.5 hours
- Manual mode continuous recording up to 5 hours
- Auto recording mode up to 500 reports
- Possibility of external printing via USB port
- Possible memory extension with USB flash disk and micro SD card
- High resolution 5" touch screen color display
- Sampling up to 120 seconds
- Memory 500 recordings, stored data transferable to PC (use specific software)
- Simultaneous acquisition of 12 traces
- Cables, electrode set, thermal paper

ELECTROCAUTERY

Description

An electrocautery is a medical device that uses high-frequency electric current to cut and coagulate tissue.
 Cutting: the electric current rapidly heats a thin electrode, allowing tissue to be cut with precision.
 Coagulation: the current, at different intensities, can cauterize blood vessels, minimizing bleeding during surgery.

Main features
High-frequency electrosurgical unit that can be used to perform monopolar and bipolar surgery at the same time.
 Two output channels for monopolar cutting
 Two independent calibrations and channels for monopolar coagulations
 Intensified cutting currents for eschar-free incisions
 Cutting current with coagulating properties for dissection with controlled bleeding
 Low capacitive coupling in endoscopic procedures using Slow BLEND current
 SPEEDY coagulation and DEEP coagulation
 SPRAY coagulation
 Bipolar cutting with selectable bleeding control
 Slow BLEND cutting currents
 Automatic start and stop of coagulation can be activated separately
 Continuous monitoring of the radiofrequency leakage current
 Automatically compensated mains voltage variations

HOT AIR OVEN

Description

The hot air oven, also known as a climatic chamber for sterilization, is a device used in hospitals for the sterilization of instruments and materials that cannot be subjected to steam sterilization, such as: glassware, delicate surgical instruments, powders and oils. The operation of the hot air oven is based on the use of dry air at a high temperature, which is maintained for a certain period of time to eliminate the microorganisms present on the materials. The temperatures typically used vary between 160 ° C and 180 ° C, with exposure times ranging from 30 minutes to 1 hour.

Main features

Hot air oven with internal structure in 304 stainless steel while, externally, the structure is in painted sheet metal. Designed for the heat treatment of various materials, it is able to reach a maximum temperature of 300 ° C. Equipped with forced air convection function, constant non-adjustable, able to ensure uniform heat distribution throughout the process. Internally it includes 2 stainless steel shelves and can be opened via a door.

- External dimensions: L. 460 x D. 680 x h. 640 mm
- Internal chamber dimensions: L. 240 x D. 280 x h. 340 mm
- Net weight: 36 kg
- Constant ventilation, not adjustable (horizontal air circulation)
- 2 internal stainless steel shelves
- Volume: 20 L
- Temperature: +10°C to +300°C
- Maximum temperature: +300°C
- Rated power supply voltage: 230 V
- Number of phases: 1
- Rated frequency: 50 Hz
- Inner casing material: 304 stainless steel
- Outer casing material: painted sheet metal
- Maximum heating time (without load): 34
- Temperature uniformity: 2°C
- Control panel in the lower part of the oven
- Fan motor on the rear side
- Insulation: rock wool (totally asbestos-free)
- Door opening on the right
- Stainless steel door interior
- OTP (Over Temperature Protection)
- Microprocessor Temperature Controller

GAS CYLINDERS

Description

Medical gas cylinders are pressure vessels used to store and transport gases for medical applications. They are made of steel or aluminum alloy, depending on their size and the type of gas they contain. The cylinders are equipped with safety valves to control the flow of gas.

Main features

Medical gas cylinders are available in different sizes, depending on the needs of use. The most common sizes are 5, 10, 14, 40 and 50 liter cylinders. The larger cylinders are used for the supply of medical gases in hospital departments, while the smaller cylinders are used for transportation and home use.

The most common medical gases include:

- Oxygen (O2): used for respiratory therapy and in anesthesia.
- Nitrous oxide (N2O): used as an analgesic and anaesthetic.
- Carbon dioxide (CO2): used in laparoscopy and for cell culture.
- Air: used for ventilation and to power medical instruments.
- Helium (He): used in breathing mixtures and for diagnostics.
- Nitrogen (N2): used for cryopreservation and as a transport gas

It is important to point out that current legislation considers oxygen a drug in all respects. Therefore, both the gas itself and the container in which it is stored (cylinder) must obtain Marketing Authorization (AIC) before they can be marketed and used in the medical field. This authorization, issued by the Italian Medicines Agency (AIFA), guarantees that the product complies with the quality, safety and efficacy requirements set by the legislation.

OPERATING THEATRE LAMP

Description

The operating room lamp (scialytic lamp) is a medical device that provides high-quality lighting during surgical procedures. This lamp is designed to provide intense, uniform and shadow-free illumination of the operating field.

Main features

- Light intensity: adjustable between 40,000 and 140,000 lux.
- Color temperature: between 3,500 and 6,500 Kelvin.
- Uniform lighting and no shadows.
- Heat control: infrared filter and cooling fan.
- Easy to clean and disinfect.
- Materials resistant to disinfectants and sterilization procedures.
- Movement: mounted on articulated arms.
- LED technology or halogen lamps.

RECOVERY BED

Description

The recovery bed is essential for monitoring and assisting patients in the post-operative phase, ensuring safety and comfort.

Main features

- Allows you to change the inclination and height.
- 3 functions: backrest, leg rest and height adjustment
- Equipped with wheels to facilitate transport within the hospital.
- Side rails to prevent falls and supports for monitoring and therapy devices.
- External length: 2160 mm
- External width: 950 mm
- Mattress platform: 1925x830 mm

INTENSIVE CARE HOSPITAL BED

Description

An intensive care bed is a device for providing support and care to critically ill patients in intensive care.

Main features

- It allows you to adjust the height, the inclination of the headboard and footboard, and the position of the legs.
- The bed base is divided into independent articulated sections that can be adjusted separately.
- Mattress made with anti-decubitus materials
- Height-adjustable side rails.
- Integrated weighing system: additional module.
- Provision for supports for equipment and devices for controlling vital support functions such as mechanical ventilators, multi-parameter monitors, infusion pumps and suction systems.
- Wheels with locking system.
- Resistant materials, easy to clean and disinfect.

ANESTHESIA MACHINE

Description

Anesthesia machine is an essential medical device in the operating room. It delivers a controlled mixture of anesthetic gases and oxygen to the patient, keeping them unconscious and insensitive to pain during surgery. It also constantly monitors the patient's vital signs, such as heart rate, blood pressure and oxygen saturation, ensuring their safety throughout the procedure.

Main Features

- Advanced Anesthesia System.
- Display: 18.5-inch touchscreen with 360-degree rotation
- Flowmeter: Electronic flowmeter with knobs
- Vaporizers: Precision electronic vaporizers
- Status screen: Dedicated system status screen
- Breathing circuit: Integrated
- High-Flow Nasal Cannula (HFNC)
- Automatic Controlled Anesthesia (ACA)

HOSPITAL STANDARD MODULES

Description

Hospital modules are modular structures, typically containers or shelters, designed to be used as hospital spaces. These modules are designed to be easily transportable, installable and connectable to each other, forming complete and functional hospital structures.
These hospital modules offer a flexible and rapid solution for the creation of hospital structures in different situations, ensuring high standards of quality and safety.

Main features

- Specific module designed for the set-up as an operating room, complete with provisions for the necessary technical systems.
- Standard ISO 1C or special dimensions, with an external height of 3000 mm and a width of 2450 mm.
- Modular structure, designed for transport and installation in different locations.
- Certified materials and compliant with hospital use regulations and health and hygiene regulations.
- Access: two doors on the short sides, to facilitate connection with other modules and to separate the "sterile" and "dirty" circuits.
- Internal spaces designed to accommodate standard hospital equipment and furnishings.
- Preparation of systems: electrical system, heating and air conditioning system, possibility of integrating specific systems for hospital use such as medical gases and suction systems.

PATIENT MONITOR

Description

- A medical device used in hospital settings to monitor and display a patient's vital signs. Patient monitors are essential tools for the continuous monitoring of patients in intensive care, during surgery, and in other hospital settings where close monitoring of vital signs is necessary.

Main Features

- ECG Monitoring: Displays the electrical activity of the heart, allowing detection of arrhythmias and other heart problems.
- Blood Pressure Measurement: Measures systolic, diastolic, and mean blood pressure.
- Oxygen Saturation (SpO2): Measures the percentage of hemoglobin saturated with oxygen in the blood.
- Respiratory Rate: Monitors the patient's breathing rate.
- Body Temperature: Measures the patient's temperature.
- Capnography: Measures the concentration of carbon dioxide in exhaled air.
- Intracranial Pressure Monitoring: Measures the pressure inside the skull.
- Cardiac output monitoring: measures the amount of blood pumped by the heart per minute.

COMPLETE DENTAL CHAIR

Description

The dental chair is a medical device used in hospitals and dentistry, designed to ensure patient comfort and safety during dental procedures. Its main features include:

- Adjustability: allows the patient to be positioned in different positions, both horizontal and vertical, to facilitate the dentist's access to the oral cavity.
- Integrated instrumentation: it is equipped with lighting, suction, irrigation and power systems for rotating instruments.
- Comfort and support: it has ergonomic padding and an adjustable headrest to ensure patient comfort during long procedures.
- Sterilization and hygiene: o materials and surfaces are designed to be easily disinfected and sterilized, preventing the spread of infections.

Main Features

Electric dental chair

- Dentist instrument tray: 5 instruments
- Assistant instrument tray: 4
- Tray position 1 Dentist: Triple function handpiece
- Optional additional tray position 1: Handpiece adapter, standing for multifunctional handpiece
- Tray position 2 Dentist: LUX turbine unit
- Tray position 3 Dentist: INTRA LUX KL 703 LED motor with torque control
- Optional additional dentist element: Tray holder for dual-standard tray
- Instrument lighting: LED instrument lighting
- Assistant element: Rotatable and height-adjustable assistant element
- Tray position assistant 1: Triple function handpiece
- Tray position assistant 2: Spray ejector
- Tray position assistant 3: Saliva ejector
- Height-adjustable arm system
- Spittoon
- Water disposal: Suction system with external wet
- Foot control
- Headrest: double-jointed headrest with rotating knob
- Operating light
- Vertical operating light

AUTOMATED X-RAY FILM DEVELOPING MACHINE

Description

An automated X-ray film developing machine that chemically develops X-ray film. These machines have been widely used in hospitals and dentistry. The development process involves immersing the film in a series of chemical solutions that react with silver halide crystals exposed to X-rays, producing a visible image.

Main Features

- Transport System: A system of rollers and guides automatically transports the film through the different developing tanks.
- Developing Tanks: The machine contains separate tanks for developing, fixing, washing and drying the film.
- Temperature Control: The temperature of the chemical solutions is kept constant to ensure uniform development.
- Recirculation System: The chemical solutions are recirculated and filtered to maintain their quality.
- Drying System: A ventilation or heating system dries the film after washing.

DIGITAL X-RAY SYSTEM

Description

Digital X-ray System is a high-frequency combined digital X-ray medical diagnostic equipment, which is used in X-ray department, orthopedics, emergency room, operating room, intensive care, etc. It can scan body parts such as head, limbs, chest, spine, stomach, etc.

Main features

- Suitable for examinations on adult and pediatric patients
- Motorized movement
- Equipped with rechargeable battery
- Operation both on battery and with connection to mains power
- High frequency generator with power of at least 25 kW
- Minimum voltage range 40-120 kV
- Possibility of adjusting and displaying the exposure parameters (kV and mAs) and with program storage
- DAP dose measurement system integrated into the device
- Rotating anode X-ray tube with collimation system
- Operator console with 14'' touch screen monitor
- Time for displaying the image at full resolution less than 18 sec
- Equipped with image processing functions
- Storage capacity: memory capacity: ≥4 GB, hard disk capacity: ≥500 GB
- Possibility of archiving and exporting images, in the most common formats on DVD and/or CD ROM and/or on USB devices;

OPERATING TABLE

Description

The operating table is a medical device designed to support the patient during surgical interventions. Its main features include:

- Adjustable surface: to position the patient in different positions depending on the type of intervention.
- Sterile and easy-to-clean materials: to ensure hygiene during the operation.
- Stability and robustness: to support the weight of the patient and ensure safety during the operation.
- Accessories: to secure the patient and position surgical instruments.

Main features

Electric operating table with two sections with fold-down side armrests. Adjustable head in inclination and decline angle for cervical treatments and working width of 55 cm. Table with motor that controls the height. Movement system with two wheels placed at one end.

- Height adjustment: /+ 45/85 cm
- Weight: 125 kg
- Adjustable head: from +30º to 45º
- Folding lateral wrist rests
- Double safety system
- One motor (6000N)
- Power supply: AC100 – 120V, 50/60Hz AC220 – 240V, 50/60Hz
- Humidity resistance: IPx0
- Power cable: 3 m, white
- Additional safety system that can be activated from the perimeter (15 s.) for all motors
- Head with two pistons.
- Handrest handle.
- Fully integrated perimeter, accessible from each side of the table
- Movement system with 2 wheels located at one end of the table.

VENTILATORS

Description

A ventilator is a medical device designed to provide respiratory support to patients who are unable to breathe on their own or who require additional respiratory assistance.
They deliver a controlled mixture of gases (air and oxygen) to the lungs, regulating the volume, pressure and rate of ventilation.
The main functions include:

- Oxygen supply: delivers a controlled mixture of air and oxygen to the patient's lungs.
- Ventilation support: helps regulate the rate and volume of breathing, ensuring adequate oxygenation of the blood and elimination of carbon dioxide.
- Monitoring of respiratory parameters: constantly monitors the patient's vital parameters, such as airway pressure, tidal volume and respiratory rate.

Key Features (valid for all price ranges)

- Ventilation Modes:
    - Controlled Ventilation (VCV)
    - Assisted Ventilation (ACV)
    - Pressure Support Ventilation (PSV)
    - Non-Invasive Ventilation (NIV)
- Monitoring:
    - Airway Pressure
    - Tidal Volume
    - Respiratory Rate
    - Oxygen Concentration (FiO2)
- Alarms:
    - High/Low Airway Pressure
    - High/Low Tidal Volume
    - Apnea
    - Circuit Disconnection
- Power Supply:
    - Mains
    - Internal Battery (for transport and emergency)

<u>High-end fixed ventilators</u>

Ventilators of this type are usually fixed in the wards and are connected to centralized medical gas supply systems.

- Advanced ventilation modes (e.g., airway pressure release ventilation - APRV).

- Advanced monitoring (e.g., capnography, esophageal pressure measurement).
- Intuitive user interface and touch screen.
- Integrated humidification and heating system.
- Typically used in intensive care.

Portable ventilators with oxygen cylinder

Ventilators of this type may also be used in the home environment.

- Compact and lightweight design for transport.
- Long-lasting battery power supply.
- Essential ventilation modes (VCV, ACV, PSV).
- Inclusion of portable oxygen cylinder.
- They are suitable for intra-hospital or extra-hospital transport.

Basic fixed or portable ventilators

These ventilators offer adequate performance for less critical situations or for intra-hospital transport.

- Basic ventilation mode.
- Essential monitoring.
- Variable dimensions depending on the model (fixed or portable).
- Some portable models can be used with external oxygen cylinders.