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modular critical care hybrid

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PICK & PLUG SOLUTION

VENTILATION. MONITORING. DEFIBRILLATION.

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A MODULAR CRITICAL CARE CONCEPT

VENTILATION. MONITORING. DEFIBRILLATION.

A modular critical care all-in-one solution

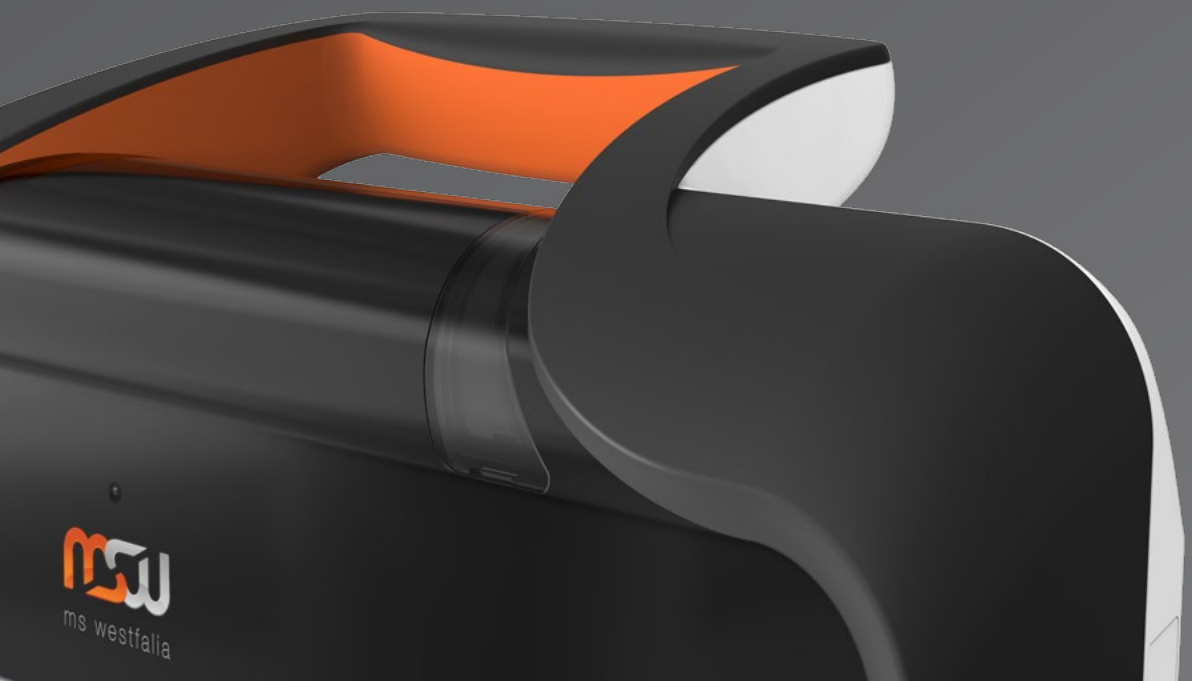
- Most intensive care functions as plug-in modules based on the patient's needs
- One configurable intensive care station for all pre-clinical and clinical applications
- Flat, space saving wall mounting or mobile backpack and on-stretcher-frame

Central control system (Docking Station) for most emergency functions

- One-level user interface for all critical care functions
- Uninterrupted patient data transmission to the CIS
- Video conferencing from the emergency scene with hospital physicians
- Centralized data analysis and decision support for diagnosis and therapy

Attendance to patient

- Continuous attendance to patients throughout all pre-clinical and clinical phases
- One solution for all patient groups: adults, children and neonates
- No time loss and no danger when switching over from one device to another
- No unnecessary disconnecting of patient from the device
- No unwanted therapy inconsistency when switching between devices
- High-end functionality and mobility in one unit
- One universal unit substituting a whole range of medical devices



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APPLICATION AREAS OF THE SYSTEM

ALL PHASES OF CRITICAL CARE

- EMS
- ER ward
- Inter / innerclinical transportation
- Surgery
- Recovery room
- ICU, CCU

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Modular critical care hybrid

Critical care situation today:

A variety of standalone units with pre-configured functions: for example, monitoring and patient vital signs monitoring, ventilation and defibrillation.

These products currently present on the market have very high development and manufacturing costs which results in high prices for the users, hospitals, health insurances and patients.

MSW solution:

A unique modular solution (building block concept), with a centrally controlled docking station and with plug-and-play modules each having the functions of a single critical-care device. Economical, efficient, comprehensive and completely networked - whatever, whenever, wherever.

Single docking stations can be networked with CIS or each other, building a central matrix for patient data evaluation and supervision for all the critical care applications.

Information-sharing devices

Critical care situation today:

A large variety of critical care units, surrounding patients from all sides, are produced by different manufacturers and there is no communication between them.

This forces doctors and other applicants to read the diagnostic data from one unit and set up therapy data on another unit, according to standard medical procedures.

MSW solution:

Modules, which are attached to the Docking Station, are communicating with each other and can be controlled via a joint user interface. This makes it possible to not only collect and store data but also to provide doctors with therapy advice or even to maintain therapy data based on standard medical procedures.

One and the same critical care device for all points of care

Critical care situation today:

Depending on the level of device functionality, and thus also device size, any critical care application requires a number of devices. In the case of lung ventilation, this number is also dependent on the various types of drive: in the case of stationary use in the hospital through the central compressed-air system or during transportation through a turbine or compressed oxygen.

Hence, there are enormous costs arising per patient. Also, the permanent switching-over of the patient causes delays and therapy inconsistency, which can be critical for the patient.

MSW solution:

All high-end functions are compact and transportable. The ventilator utilizes the world's first hybrid with automatic switching-over between compressed air from a hospital central system, the built-in turbine or just oxygen. There are no more obstacles to using a stationary unit for mobile purposes and vice versa and no functional or size differences.

Instead of "one unit per application" there is now only "one unit per patient", attending to him everywhere.

Different patient groups

Critical care situation today:

The large variety of devices in critical care is also stipulated by the different patient groups: neonates, children and adults.

MSW solution:

One universal unit for all patient groups, from neonates weighing 300 g to overweight adults.

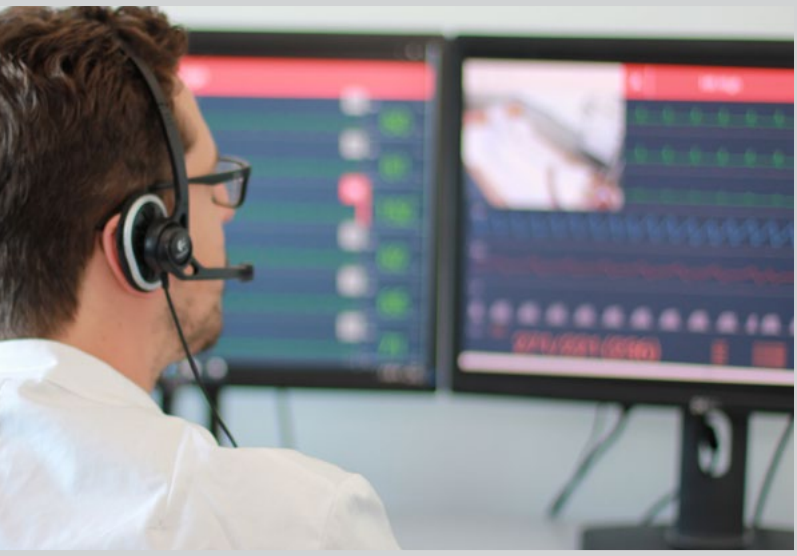
Stationary equipment-related rooms

Critical care situation today:

Big, pre-configured and stationary units require special premises. For example, ultrasound for imaging diagnostics in Radiology require the patient to be transported there from the intensive care station. The same devices are also used for outpatients, thus causing long waiting times and unnecessary intra-clinical transportation.

MSW solution:

Small, functional modules can be used wherever the patient is and whatever function is needed. Mobile, flexible and economical.



Networking

Critical care situation today:

Most of imaging devices are connected with the central PC (CIS) and can archive patient data and images. Also, the intensive care unit has a surveillance center showing and recording the vital signs of each patient, but it displays no therapy data, for example for ventilation or defibrillation.

MSW solution:

Through the integration of all data from the different modules in one CPU within the Docking Station there is no interruption of data collection or therapy inside or outside the clinic.

The use of the networking possibilities LAN, WLAN, Bluetooth, GSM, GPRS, UMTS, RFID and DVI allows the collection and distribution of diagnostic as well as of therapy data and their evaluation and thus supports decision-making or the automatic maintenance of therapy.

Communication with hospital doctors from the emergency site

Critical care situation today:

A lot of emergency services have telemetry of the patient's vital signs so that all necessary preparations can be made before the patient arrives at the clinic (for example, emergency room or CathLab).

Nevertheless, emergency doctors cannot provide full assistance to the paramedics at the emergency site from the distance.

MSW solution:

Due to the two built-in SIM cards (GSM, GPRS), video camera, microphone and loudspeakers in the Docking Station, it is now possible for the first time not only to transmit the data to the hospital, but also to arrange a video conference, where one doctor can see, communicate with and support several paramedic teams.

Critical care and equipment operation in the ambulance

Critical care situation today:

The handling of different units placed on different walls in the ambulance during driving is not only difficult but is also a possible danger to the paramedics.

MSW solution:

All rescue functions in one Docking Station reduce the necessary moving-about within the ambulance to a minimum and make possible a one-man operation.

Only one user interface for different critical care devices

Critical care situation today:

Very complicated operation of totally different multi-level user interfaces makes the intuitive and coherent operation in an emergency very difficult, especially for nurses and paramedics.

Permanent training efforts hardly reduce the number of operation mistakes in different application areas and by various user groups.

MSW solution:

A unique one-level and specially pre-configured user interface for different users throughout the critical care phases: from EMS to ICU for all patient groups. Quick-Start with patient- or pathology-related pre-sets for emergency or ICU-routine with 3-Step Start and guidelines-based decision support makes workflow much easier in any phase of critical care and for all user groups.

DOCKING STATION

PRODUCT FEATURES

- Plug & Play modules (building block concept)
- 15.6” full HD screen with rugged capacitive multi-touch
- Modules 180° rotatable to optimize patient connection
- One-level user interface for all functions in Quick-Start emergency mode or ICU-routine 3-Steps Start operation
- Central control through Docking Station of all CC functional modules and decision-support algorithms
- Comprehensive communication interfaces for continuous pre-clinical and clinical live vital data transfer: LAN, WLAN, Bluetooth, GSM, GPRS, UMTS, RFID, GPS and DVI
- Multimedia functions for vital data transfer for tele- and video-conferencing from the emergency site
- Power management for up to 4 hours field operation with 2 exchangeable batteries (1 with quick release)

VENTILATION MODULE

PRODUCT FEATURES

- Hybrid drive: turbine, compressed air or HPO/LPO oxygen
- Emergency Quick Start with patient type, PBW and lung-pathology based pre-sets
- 3-Steps Start for routine hospital application
- For all patient groups: adults (Tidal volume up to 3000 mL), children and neonates (Tidal volume from 2 ml, frequency up to 200 BPM)
- Fast access to all modes of ventilation: invasive and NIV ventilation, pre-oxygenation, controlled (P and V) and assisted, spontaneous breathing, servo modes, neonatal mode, HPO / LPO
- Lung mechanics (resistance, compliance dyn. / stat.), RSBI, NIF, C20 / Cdyn, maneuvers, P0.1, intrinsic PEEP.
- Automatic cuff pressure tracing to the breathing pattern
- Automatic tube compensation (ATC)
- Integrated auxiliary pressure port to estimate the transpulmonary pressure with an esophageal balloon catheter
- Intelligent drug nebulizer (automatic activation in the first 75% of inspiration)
- Pressure and Flow Trigger (distal and proximal), trigger response time < 30 ms
- Interchangeable O_2 cells: galvanic (for transportation) and paramagnetic (stationary) with automatic detection;
- Patient triggered O_2 inhalation
- Weaning Support
- Time-based and volumetric sidestream and mainstream CO_2 and multi-gas measurement, sidestream O_2
- Wide range of different flow sensors

MONITORING MODULE

PRODUCT FEATURES

- Monitoring of all common vital signs
  - 2 x temperature
  - 4 x invasive blood pressure
  - Non-invasive blood pressure
  - SpO_2 Masimo Rainbow
- 3/5, 4/6, and 12-lead ECG
- Thermo printer for up to 6 channels simultaneously
- ECG interpretation software
- Automatic arrhythmia detection and analysis
- ST segment analysis
- Compatible with Central Station
- Suitable for adults, children and neonates
- Sidestream capnography

DEFIBRILLATION MODULE

PRODUCT FEATURES

- Defibrillation Mode: Manual, AED (starting body weight 25kg), semi-automatic (acoustic and optical), auto-synchronized
- QRS markers
- VT / VF detection
- Recharge time less than 5 seconds
- Defibrillation with automatic recognition of paddles, pads and spoon electrodes
- Pads and paddles for children and neonates with energy limited to 100 Joules
- Impulse: biphasic from 5 to max. 200 Joules
- Cardioversion: auto-synchronized, synchronized
- Pacemaker functions: Fix, Demand and Override

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