

Turnkey Healthcare Solutions



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About Bender

Bender UK is part of the Bender Group of companies formed in Germany in 1946. Pioneers of insulation monitoring, and innovators in healthcare technology, we have three locations across the UK and Ireland, supporting a range of customers in hospitals and critical industry sectors.

With an expert team in excess of 90 personnel, we design, manufacture, install, supply, and maintain critical care power, operating room solutions and turnkey projects for Group 1 and 2 Medical areas. We also offer engineering expertise, customised solutions, and new product development, to help customers innovate, stay compliant, and prevent failure or shutdown in critical areas.

Collaboration

We partner with leading industry experts to deliver value and expertise to end-users. We are authorised distributors of Merivaara clinical products and offer complementary equipment and services such as third-party maintenance and associated hospital equipment.

Proven, Trusted Supplier

Bender UK is a supplier of choice for the NHS, private medical groups, and leading OEMs, with many hospitals benefitting from Bender technology and supported 24/7, 365 by annual maintenance, technical support and call out services.

Demonstration centre



We have a demonstration operating theatre to experience our state-of-the-art hospital technology. It includes a Merivaara operating table, theatre lights, clinical pendants, bedhead trunking, AV system, PACS, and theatre control and alarm technology. It is connected to a replica plant room with medical IT power, battery backup and automatic changeover technology. The building is also installed with Bender residual current monitoring, power quality and Powerscout software.

Turnkey healthcare solutions

We have a total capability in Turnkey Healthcare Projects.

Our range of services and capabilities includes:

- Medical IT Systems (IPS)
- Uninterruptible Power Supplies (UPS)
- Touchscreen Theatre Control Panels (TCP)
- Merivaara Operating Lights and Tables
- Clinical Pendants
- Open OR™
- Ultra-Clean Ventilation (UCV) Canopies
- Residual Current and Power Quality Monitoring
- Design, Installation, Service and Commissioning

Overview

Interruptions to equipment can seriously disrupt the delivery of healthcare, with grave consequences for patient well-being.

Hospitals depend on electrical supplies, not only to maintain a safe environment for patients and staff, but also to provide advanced treatment using sophisticated medical equipment.

The aim of the HTM's risk-grading system is to reinforce the importance of continuity of supply for the entire site and to help to assess the level of consequence of a power failure – that is, an increase in patient risk or business risk needs to have a corresponding increase in the integrity and resilience of the electrical distribution providing that service.

Risk grades can be used by designers as a method of selecting the most cost-effective and proportionate distribution strategy for the healthcare facility based on the type of clinical services provided. This strategy may include high voltage (HV) and low voltage (LV) distribution networks depending on the size and complexity of the healthcare site – such is the scope of this HTM.

Clinical risk grades have been reclassified from A (high risk) to E (low risk) and the business risk grades from I (high risk) to IV (low risk) which provides a unique grading system that can be applied to any circumstance in healthcare.

HTM 06-01 guidance is designed to assist hospital managers and engineers when planning new facilities. It is not intended to be absolute and it encourages consultation with the clinical end-users to establish the specific risks within a particular room or ward before deciding on a specific category.

Unlike BS7671, HTM 06-01 offers further guidance on medical IT systems and UPS resilience in areas deemed appropriate to install them.

BS7671 section 710

This categorises medical rooms as either Group 0, 1 or 2 according to the type of contact between applied parts (medical electrical devices) and the patient, the threat to safety of the patient owing to a discontinuity (failure) of the electrical supply, as well as the purpose for which the location is used.

BS7671 section 710 defines Group 2 areas as the most critical in terms of patient risk from power failure. Rooms within this group demand the highest levels of electrical safety. These include areas such as operating theatres, anaesthetic rooms, recovery, amongst other critical care areas.

The specified electrical requirements for Group 2 areas include the installation of a medical IT power system (IPS) for final circuits supplying medical electrical (ME) equipment and systems intended for life support, surgical applications and for other electrical equipment in the patient area.

A further requirement is a power supply source with a changeover equal to or less than 0.5 seconds from a loss of main supply (e.g., a UPS or battery) for surgical lights, life supporting ME equipment and ME equipment containing light sources being essential for the application of the equipment such as endoscopes/monitors etc.

Apart from surgical lights which have a dedicated 3-hour battery back-up supply, the other loads detailed above are required to have an alternative supply available for a 3-hour duration - when a generator supply is not present - or 60 minutes if present. This can be achieved through the installation of a UPS suitably sized to support the medical IT power system.

In terms of meeting the minimum requirement for BS7671 section 710, the installation of a medical IT system and UPS (with appropriate autonomy) in a Group 2 area can be considered a compliant solution. However, this approach is increasingly uncommon due to a drive for greater resilience encouraged by HTM 06-01 guidance.

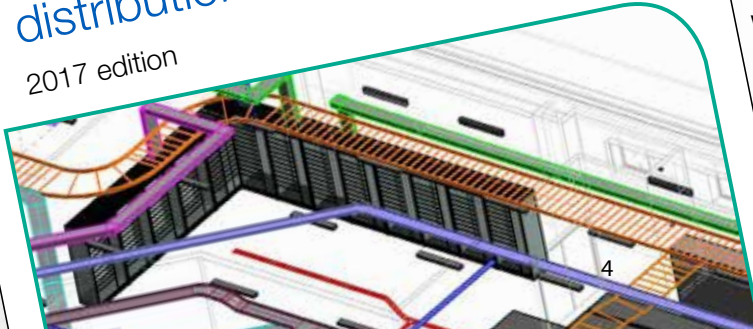
HTM 06-01

Healthcare providers have a duty of care to ensure appropriate governance arrangements are in place and managed effectively. The Health Technical Memorandum (HTM) provides best practice engineering standards and policy to enable management of this duty of care.

The current review and update of HTM 06-01 aims to ensure safer, resilient electrical systems within healthcare premises. Supporting the requirements of regulators and ensuring a safe environment for patients and staff.

Health Technical Memorandum
06-01
Electrical services supply and
distribution

2017 edition



Why Medical IT/IPS?

The Medical IT system is the backbone of a reliable power system in medical locations. A Medical IT system is the standard compliant term for an unearthed systems used within a healthcare installation.

The Medical IT system is fundamental in providing a safe power supply in Group 2 medical locations. The Medical IT system provides continuity of supply in the event of the first earth fault while reducing the risk to medical electrical devices that are connected to the patient from presenting a shock hazard should a device develop an electrical fault. This must be in conjunction with a fully compliant, robust earthing installation within the patient environment.

Without a Medical IT system, a patient undergoing invasive surgery is more vulnerable to micro-shock hazards because their natural resistance to an electrical current - the skin is compromised, and the body's natural resistance is not there to provide protection.

How a Medical IT system works

In a Medical IT system, the first earth fault does not cause the system's circuit protective devices to open. The Medical IT's transformer has no reference to earth on the secondary side of the transformer so there is no direct fault path.

A Medical IT System meets three essential demands:

- Medical electrical equipment continues to function
- When the first insulation fault occurs the power supply is not interrupted
- Fault currents are reduced to an uncritical level for patients and staff

The Medical IT system consists of the following key components:

- Isolating Transformer
- Insulation Monitoring Device (IMD)
- Earth Detection System (EDS)
- Automatic Transfer Switch (ATICS)
- Remote Alarm Panel (RAU)

In the event of an earth fault the IMD will highlight this when the threshold reaches less than 50KOhm, this is reported onto the remote alarm system, if the transformer is overloaded or the core temperature is higher than 115°C the remote alarm system will alarm.

When an insulation fault is less than 50kOhm it is presented to the IMD, this will then instruct the EDS to locate the fault. Continuous insulation monitoring ensures that any deterioration in insulation resistance is immediately detected and signalled, without interruption to the power supply.

The transformer provides safe power to the medical electrical equipment, while being monitored by the IMD.

The load of a transformer is not infinite, any overload or indicative change in temperature must be monitored. An overload of the system can be signalled, and staff informed via the alarm panel, enabling them to respond to the fault by switching off unnecessary equipment and reducing the load.

The transformer will only shut down to protect against short circuits, an overload does not lead to power failure and or threaten the continued operation of vital medical equipment.

ATICS® automatic changeover device

In hospital environments the failure of life support services due to unexpected power loss can have catastrophic consequences for patients, staff, and hospitals. The ATICS® changeover device was developed to provide increased resilient critical care power.

Purpose-designed for medical applications, ATICS® is an integrated automatic power changeover solution incorporating permanent self-testing. It is independently certified by TÜV SÜD to Safety Integrity Level (SIL) Level 2 and BS EN 61508 Parts 1-3, which states where automatic transfer systems are used, they should be assessed for their safety integrity level.

The ATICS® can be incorporated into a Bender medical IT system without taking up extra space. The device allows individual medical IT systems to be supplied from two diverse sources and removes the single point of failure. In the event of primary supply power loss, the ATICS® switches over in 0.5 seconds to the secondary supply, maintaining power to the critical medical sockets.

Eliminate single points of failure

Where parallel N+1 UPS systems are combined with single supply medical IT systems, there remains a single point of failure on the common output of the UPS. The failure of this output cable would result in the loss of all connected IPS circuits.

Uninterruptible Power Supply (UPS)

A secondary power supply is critical to ensuring that patient safety is maintained in the event of a power failure.

Most hospitals and medical facilities have back-up generators on site, but in medical locations such as Group 2, Category 4&5 – further resilience is required.

These areas require a UPS unit (Uninterruptible Power Supply) to provide critical cover with an immediate changeover to an alternative power source when required.

We offer a range of Bender Medical UPS's from 5kVA up to 800kVA.

What is a UPS?

A UPS provides an emergency power supply to specified loads in the event of mains power failure. UPS differs from an auxiliary or emergency power system or standby generator because it provides near-instantaneous protection from input power interruptions, immediately restoring the power with energy stored in batteries.

The level of protection depends on specific requirements; Bender UK offers battery systems to maintain power over periods from 5 minutes to 3 hours.

Regulations

Guidance on the use of UPS for medical locations is provided by:

- British Standards BS7671:2018
- Guidance Note 7
- HTM 06-01 2017
- ETCI ET101:2008

UPS battery systems for medical locations

The regulations BS7671:2018 and guidance states for Group 2 or clinical risk category A&B (HTM06_01:2017) medical locations, in the event of a failure to the line conductors a tertiary power supply should be able to provide an autonomous supply for 3 hours.

Within the regulations, a run time of 3 hours can be reduced to 1 hour if a primary power supply has a changeover time of 15 secs and can maintain support of 24 hours.

The guidance document HTM 06-01 2017, states that the battery system must be compliant to BS EN60896 parts 21 & 22, ensuring a 10 years' design life and constructed from a hard flame retardant plastic with thread insert connections.

UPS configuration

There are many ways to configure a UPS system, to ensure the highest level of resilience and protection is achieved. Bender UK can advise clients on the optimum format and configuration to meet their requirements and conform to regulations and industry standards.

The most resilient supply configuration is an N+N (Dual Supply philosophy), this allows for medical IT systems to incorporate the ATICS® and allows for diverse supply routes to all medical IT systems within the building. Each UPS is sized to supply the full load, but in normal operation is only working at 50% load, at 50% load the UPS achieves higher efficiency values. An N+N supply philosophy is prescribed in HTM06_01:2017.

Another configuration is two UPS systems in a parallel configuration; this is referred to as an N+1 system, other formats of N+1 parallel redundant solutions are possible 2N+1 (half the size of the UPS inverter but put three together), both solutions are prescribed in the HTM guidance.

Bender UK would recommend the use of ATICS®, medical IT systems, with a N+N UPS system to ensure the medical location benefits from the highest possible level of resilience.

UPS frame sizes

6 - 20 kVA UPS Single Phase In/ Out

- Large power size selection
- Unity power factor (up to 40kVA)
- Available in multiple configurations. 1:1, 3:3, 3:1
- Small footprint - zero impact source - flexibility 30 – 800kVA UPS Three Phase In/Out
- Complete 30kVA -800kVA
- 30kVA & 40kVA unity power factor
- Small footprint - high efficiency up 96.5% - low running costs

Bender UK also offers systems that provide protection for non-medical locations, such as communications rooms or servers.

Modular UPS

With the ever-changing needs for power protection, it is impossible to predict the future requirements, so Bender UK has developed a comprehensive range of modular UPS solutions that ensure the full level of power protection you need today, and the flexibility to increase the protection without having to re-design or substantially change the infrastructure.

Modular UPS units allow you to scale and grow protection as the demand on your requirement grows:

- Simply scalable
- Flexible, bespoke with multiple configurations
- Highly efficient
- Space saving
- Less downtime

Engineered solutions – Glass-fibre Reinforced Polyester (GRP) Enclosures

When space is at a premium within hospitals and healthcare facilities, engineered solutions can be utilised for medical electrical power systems in the form of GRP enclosures. GRPs provide a suitable storage solution for critical care power when hospital areas are at capacity.



For efficient supply of services

Medical pendants create an efficient patient environment by delivering safe, ergonomic and streamlined access to medical equipment and gases, improving space, accessibility and reducing hazards within the patient area. Bender UK offers a range of flexible, modular Class 2 B pendant solutions. Premium quality pendants improve the working environment, minimise hazards to hospital staff and reduce the risk of harm for patients.

Solido pendants for operating theatres

Merivaara offer a variety of horizontal and vertical pendants, designed specifically to facilitate clinical procedures in the operating room.

Solido electrical pendants provide a safe supply of medical gases, data and electrical sockets for medical electrical equipment required for surgical procedures. The pendants provide maximum reliability with a braking system to ensure anti-collision and maximum stability within operating theatres.

Solido pendants for critical care areas

Solido pendants are durable and easy to install ensuring minimum maintenance and limited disruption for intensive care teams.

All pendants are customisable for intensive care environments and available in a variety of configurations. Medical pendants provide a centralised supply of equipment for treatment in critical care areas and are easy to manoeuvre to aid nursing practices.

Features

- Wall and ceiling mount solutions
- Fixed or adjustable height
- Class 2B medical device according to Medical Device Directive 93/42 ECC
- Various electrical sockets, gas and data outlets available
- Available in tandem, monitor, lights or patient lift configurations
- Rotation of arms can be limited (upper arm 1° and lower arm 30°) to prevent collision
- Manufactured with extruded aluminium and epoxy powder coating for improved hygiene
- LED direct, indirect or night lighting as optional

Benefits

- User-friendly and easy to manoeuvre
- Customisable configurations
- Maximum stability and adjustability
- Reduces OR and ICU trip hazards
- Improves critical workspace design
- Enhances delivery of patient care
- Screw-less design – increased infection control

BENDER
COMTRAXX®



COMTRAXX CP9 intuitive theatre control

In operating theatres fast detection of critical operating conditions is vital to prevent shutdown and prevent risk of harm to patients.

The alarm indicator and operator panels of the COMTRAXX CP9 range provide an optimum overview of connected systems. It delivers alerts quickly in the event of a fault occurring and ensures convenient control of the operating theatre.

Available in a variety of colours and display sizes; 7", 15.6" and 24", CP9 can be customised to meet the needs of end users and is suitable in newly configurable systems or existing installations.

The CP9 provides monitoring, operation and display of:

- Medical IT & UPS & Battery Back Up Power Systems
- Medical Gas & AGSS Alarm Status
- Ventilation, Ultra Clean Ventilation & Building Management Systems
- Fire Alarm Systems
- OR General & Surgical Lighting Control
- In Use Sign Control

Advancing surgical procedures

CP9 technology is approved for use in UK and European hospitals and has advanced surgical practices in leading private and NHS trusts. In addition to operating theatres, it can be used in other areas such as ICU/HDU/CCU where medical electrical equipment is connected to a patient.

Benefits

- **Intuitive interaction** Straightforward to use
- **Slim design** Fits into theatre walls
- **Control** All functions are easy to control
- **Hygienic** Simple to clean and disinfect
- **Maintenance** Remote access eliminates shut-down
- **Compliant** Adheres to HTM 03-01
- **Integration** Connects to all monitoring systems
- **Futureproof** Straightforward software updates
- **Standardised** Simplifies installation & training

Picture Archiving & Communications System (PACS Console)

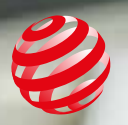
The PACS Console is modular and customisable for any theatre configuration. This wall-mount solution is suitable for operating rooms where high resolution imaging is required. It provides an ultra-HD image display and links to an operating light camera. The PACS can also be utilised to view medical files and X-rays.

The toughened screen is made with an anti-reflective and anti-fingerprint coating. The screen is IP65 rated and dustproof to increase infection control in the surgical area.

The intuitive design incorporates unique cooling technology to ensure the panel remains at an optimal temperature. It is silent in operation and turbulence-free due to the absence of fans.

Available in a variety of sizes from 21" to 55" in either landscape or portrait, with a choice of two colours, with a rugged foldable keyboard or touchscreen control option.





red dot award winner

Q-Flow LED operating lights

In theatres effective operating lights are a vital tool in aiding surgical procedures. The award-winning LED Q-Flow™ light (supplied and installed by Bender) is efficient and user friendly. It is designed to optimize laminar air flow, increase infection control, eliminate shadows, and operate with an intuitive control system. Q-Flow™ delivers class-leading R9 colour rendering.

The choice of lighting often depends on the personal experience of surgeons and clinical teams, which is why Bender UK offers customer trials of the Q-Flow™ within operating theatres before making a commitment to purchase.

The operating light delivers an effective column of light that illuminates the surgical area for procedures including deep cavities.

Dynamic Obstacle Compensation (DOC™) adapts automatically to the shadows in the light field and adjusts the intensity of remaining beams to compensated in order to maintain the ideal illumination of the surgical site.

The Q-Flow™ light is always in focus (750mm-1750mm from site) and offers the widest light field diameter range on the market. The light delivers a 98 Ra for colour rendering, 98 R9 for distinguishing red (vascular tissues) and 98 R13 for clarity of skin colour variations.

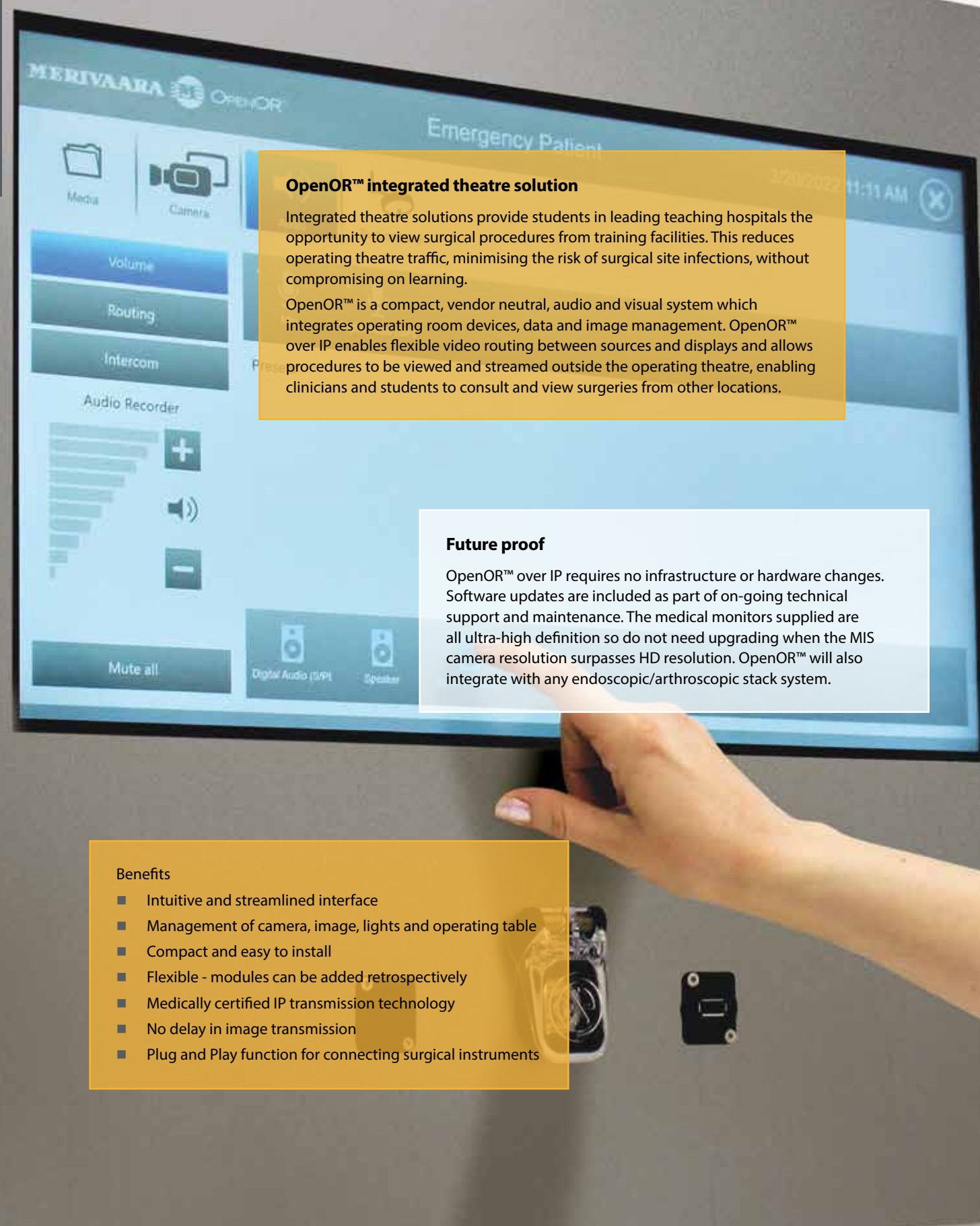


MERIVAARA
EXCLUSIVELY DISTRIBUTED BY



Benefits

- Green ambilite reduces stress and fatigue
- Optimal control with Intuitive Sterile Surgeon Control (Intueri™)
- Dynamic Obstacle Compensation (DOC™) eliminates shadows
- Seamless control of light and camera through a single interface
- Lightweight and easy to manoeuvre light heads and arms
- Designed, tested and optimised for the ultra-clean ventilated environment
- 60,000 hours



OpenOR™ integrated theatre solution

Integrated theatre solutions provide students in leading teaching hospitals the opportunity to view surgical procedures from training facilities. This reduces operating theatre traffic, minimising the risk of surgical site infections, without compromising on learning.

OpenOR™ is a compact, vendor neutral, audio and visual system which integrates operating room devices, data and image management. OpenOR™ over IP enables flexible video routing between sources and displays and allows procedures to be viewed and streamed outside the operating theatre, enabling clinicians and students to consult and view surgeries from other locations.

Future proof

OpenOR™ over IP requires no infrastructure or hardware changes. Software updates are included as part of on-going technical support and maintenance. The medical monitors supplied are all ultra-high definition so do not need upgrading when the MIS camera resolution surpasses HD resolution. OpenOR™ will also integrate with any endoscopic/arthroscopic stack system.

Benefits

- Intuitive and streamlined interface
- Management of camera, image, lights and operating table
- Compact and easy to install
- Flexible - modules can be added retrospectively
- Medically certified IP transmission technology
- No delay in image transmission
- Plug and Play function for connecting surgical instruments



Smarter Practico

The Smarter Practico is a versatile operating table perfect for use in elective, day procedures where patient demographics change constantly. The table height varies from 540 mm and extends to 1,143 mm making it one of the lowest height operating tables on the market. A lower table height is practical for senior patients and enhances the surgeon's ability to work comfortably. With a 400 kg lifting capacity the table is extremely adaptable with height adjustability, tilt angle, Trendelenburg angle, and angles for both the back and leg sections.



Grand Promerix

The Grand Promerix is a heavy-duty, electro-hydraulic operating table for demanding surgeries. This sturdy, versatile table is among the most technically advanced in the industry. With a lifting capacity of 490 kg Promerix has a modular table top and wide range of accessories for all patient sizes and procedures. Intended for major surgeries and includes a range of options for specialised procedures, including divided leg sections, gynaecologic sections, a shoulder arthroscopy section and a variety of head rests. It is also suitable for robotic surgery and imaging. Merivaara operating tables are available for clinical trials or hands on training/ demonstration at Bender UK's operating theatre showroom in Ulverston, Cumbria.



Bender UK is a major supplier of healthcare maintenance. We employ a team of highly trained Bender and third-party equipment engineers, geographically located throughout the UK and Ireland to deliver rapid response call out, maintenance and repair services.

Why Service?

In accordance with standard BS7671:2018 it is regulatory requirement that periodic testing and inspection of Medical IT Power incorporating IPS, and UPS equipment is carried out at specified intervals. Electrical services HTM 06-01 provides guidance on maintenance needs for electrical systems and recommends the service intervals: IPS = 12 monthly UPS = 6 monthly. This ensures equipment is reliable and operating efficiently, reducing the risk failure, protecting staff and patients from potential harm.

Why Bender?

Authorised – we are the only supplier with authorisation to maintain Bender systems in the UK and Ireland.

Spares – we carry spares, reducing down time, return to site costs and penalties.

Experts – we employ 18th edition qualified electricians to work our systems.

Compliant – our maintenance services are compliant with regulatory standards.

Reliable – we keep our promise, arrive on time, and inform you when your service is due.

Coordination – dedicated service personnel handle all PPM schedules, call outs and remedial actions and contract renewals.

Technical support – Bender and third-party engineers are available via phone 24 hours a day, 365 days of the year.

Collaboration – we are authorised to supply and coordinate the delivery of maintenance of third-party UPS and clinical equipment.

What to expect – we provide the highest level of service and technical support available in the marketplace. From preventative maintenance to call out and repairs, you can expect a professional service, delivered in on time, with associated downtime and disruption kept to a minimum.

Preventative maintenance and service of:

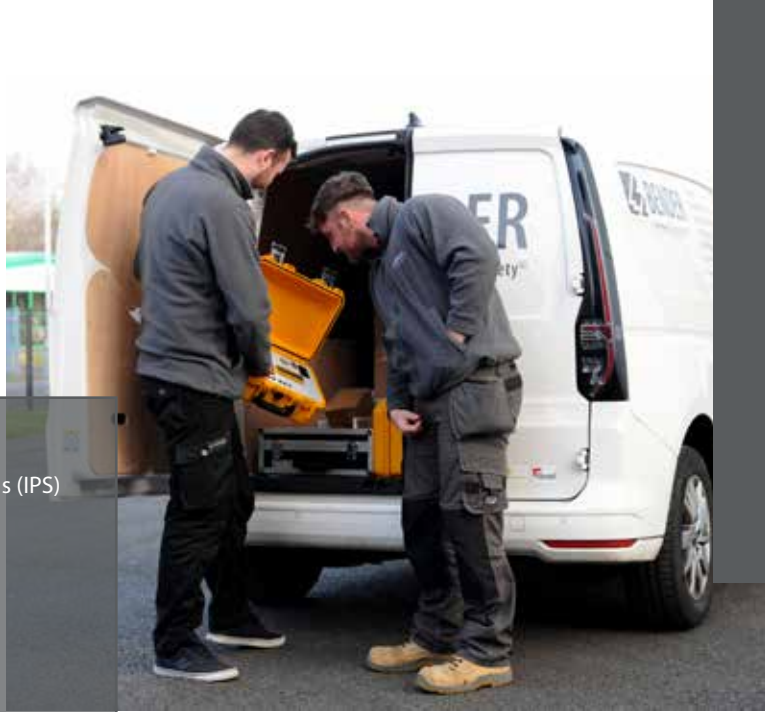
- Bender and Third-Party Medical IT Power Systems (IPS)
- Theatre Control Panels (TCP & CP9)
- Uninterruptible Power Supplies (UPS)
- Clinical Pendants
- Merivaara Surgical Lights & Tables
- Merivaara Open OR™
- Turnkey Operating Theatre

Choice of agreement options:

- Including parts and/or labour
- Daytime, evening and weekend service available
- 24/7 telephone support call out
- Rapid response (4-6 hours)
- Verification only
- Multi-site packages

Training solutions:

- Medical IT and UPS end-user
- First response



Residual Current Monitoring (RCM)

Hospitals have both critical and non-critical circuits supporting wards and departments. Critical circuits serving patient connected equipment are generally supplied from a fully monitored Medical IT system (IPS) in line with HTM standards.

Non-critical circuits play a vital role in the safe running of medical departments. These circuits support power sockets for non-patient connected equipment such as general ward areas, computers, and systems like lighting, ventilation etc. Despite this, they are usually not monitored or tested, meaning systems are not protected from faults.

The lack of protection can be highly disruptive and lead to increased costs, maintenance time and lost revenues associated with clinical downtime. When testing is not carried out at all, the duty holder is unable to demonstrate that due diligence has been taken should they be challenged over an electrical safety issue.

Bender RCMS provides real-time visibility of potential developing issues within connected electrical circuits before faults become critical to system operability.

Infrastructure visibility and test without disconnect

With Bender RCM, IMD, and Powerscout® technology it is possible to reduce the cost of periodic inspection and testing as detailed in BS7671:2018 Part 6. It enables continuous monitoring and reporting, which satisfies the regulations and negates the need to switch off for the five-year periodic inspection and test.

As well as giving early warning of faults, RCM ensures cost-saving benefits associated with periodic insulation resistance testing of TNS circuits. Continuous monitoring offers a cost-effective, disruption-free alternative to the disconnection test which, in conjunction with an effective management strategy, fully satisfies the requirements of BS7671.

Once installed, RCM ensures that systems will never have to be disconnected in the future for testing. Additionally, due to the unique type A and B sensitivity of Bender's monitoring CTs, developing insulation faults are identified at a pre-critical stage enabling remedial action to be taken before unexpected power loss or risk of fire.

Combined Medical IT with RCM solution

RCM can be installed on TNS circuits in Bender Medical IT systems as a convenient, space-saving, fully monitored electrical distribution solution, and can be retrofitted to existing distribution boards.

Benefits

- 24-7 visibility of the electrical infrastructure
- Increased lifespan of ageing infrastructure
- Reduced disruption and downtime
- Advanced warning of developing insulation faults
- Condition reports for the electrical infrastructure
- Reduced risk of fire or electrical shock
- Reduced break-fix times

Electrical infrastructure and equipment

Bender power quality (PEMs), when incorporated into medical IT systems, provides additional benefits to estates teams and energy managers by monitoring and providing information on electrical values including voltage, current, frequency and energy use. PEMs can also be connected to hospital building management systems to enable remote monitoring.

Energy management and monitoring

Bender power quality can be used to monitor power distribution systems across healthcare estates, where interference is an increasingly frequent occurrence. PEMs continuously monitor harmonic content and the electrical supply providing warnings of any developing issues in order to ensure safe and secure operation of a hospital's electrical installation.

Risks such as overload or changes in energy consumption can be monitored, assessed and dealt with accordingly.



Powerscout®

Powerscout® is a web and widget-based software for data management, analytics and effective visualisation. Powerscout® integrates data from Bender RCM, PEM, IPS, UPS, IMDs and third-party devices to help detect malfunctions at an early stage. It is ideal for healthcare facilities to report on the status and condition of site electrical infrastructure, enabling pro-active maintenance and preventing unplanned downtime.

Powerscout® continually collects measurements and generates user specific reports on residual currents and insulation resistances, and can form the basis for measuring without switch off.

Powerscout® provides seamless integration with Bender power quality to provide granular information on energy consumption. Analytical reports and tools help customers to save energy and make data driven investment decisions to move towards net zero targets. It also helps to keep harmonics and other power quality parameters in check for compliance.

■ **VALUE**

Our products are competitively priced - delivering value for money and reduced life cycle costs.

■ **QUALITY**

As an OEM we are confident in the quality of our products and offer industry leading warranties. Approvals include UL, Lloyds, TUV, Germanischer Lloyd, cULus, Network Rail and Def Stan.

■ **CUSTOMER SERVICE**

We value and respect our customers and strive to deliver a first class experience every time.

■ **TECHNICAL SUPPORT**

Our nationwide network of factory trained engineers delivers unrivalled technical support 24 hours a day.

■ **PRODUCT RANGE**

We produce a range of high quality engineered solutions for diverse market sectors.

■ **DELIVERY**

We keep our promises and deliver on time.

■ **INNOVATION**

Since inventing the insulation monitor we now hold multiple patents and continue to be recognised as a world leader in electrical safety products.

■ **FINANCIAL STABILITY**

High risk projects demand low risk suppliers – Bender's solid financial position reduces risk.

■ **INTERNATIONAL**

A family company with a global presence, Bender has offices throughout the world.

■ **COMPETENCE**

We actively participate in the development of international standards.

■ **OUR PEOPLE**

Friendly, dedicated and knowledgeable - our enthusiastic team are always willing to help.

■ **PHILOSOPHY**

We sell products that don't come back to people that do!



@benderukltd



@Bender_UK



Bender UK Ltd



Bender GmbH & Co. KG



BENDER UK

The Old Tannery, Low Mill Business Park, Ulverston, Cumbria, LA12 9EE

Tel: 44(0) 1229 480123 Tel ROI: +353 1 5060611