STARKSTROM

Uninterruptible Power Supplies (UPS)

The Power Security behind the Socket

Excellence & Innovation in Medical Engineering

British Company

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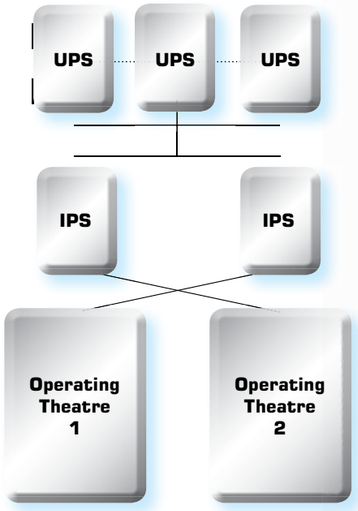
The Power Security behind the Socket

Uninterruptible Power Supplies (UPS) are a critical part of a hospital's power supply infrastructure. When coupled with IPS and back-up generators, they provide the operating room and other critical care areas with continuity of power in the event of a variety of supply failure scenarios. HD 60364-7-710 and HTM06-01 states that in the event of loss of power, all the medical locations where isolated power is installed (i.e. a Group 2 and clinical risk Category 5 location) require power to be resumed (for life supporting equipment) within a maximum of 0.5 seconds. It further states, "Certain microprocessor controlled equipment may require a no-break power supply". Typical autonomies are between 15 – 60 minutes depending on the clinical area.

Typical example of a resilient and redundant parallel (N+1) UPS design with interleaved final circuits



Starkstrom has extensive experience of providing hospitals and medical facilities with high quality, bespoke UPS systems that work alongside our IPS systems. With our expertise and understanding of what is needed to comply with the ever evolving standards, we can design and supply you with a fully integrated package with a UPS feeding an IPS. The remote alarms for these systems can also be integrated as a single remote alarm, displayed on Operating Room Control Panels, integrated with the BMS, sent over the hospital network and via email. It is Starkstrom's ability to coordinate the design and integration of all these systems and their alarms that makes us truly unique in this field.

- **Many of the UPS systems we supply are on the Energy Technology list**
- **Depending on the UPS unit chosen, there may also be Carbon Trust Interest free loans available and you may be able to claim your UPS scrappage allowance.**

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B500 & B500 EVO

The B500 is available as 6KVA or 10kVA and the B500 EVO is available from 10kVA to 20kVA. Both series are extremely low maintenance and have been designed as a true 'easy parallel' UPS solution.

The main features of the B500 include:

- On-Line Double Conversion Topology
- High Efficiency Mode Function up to 98%
- Wide Input Voltage Window
- Selectable Output Voltage
- Frequency Converter Feature
- EPO Connection
- Smart-slot
- Internal Manual Bypass

The 10kVA, 15kVA and 20kVA B500 EVO can be configured (onsite) as a three phase or single phase selectable input.

B8000 FXS (ECO range)

The B8000 series is a transformerless UPS with IGBT input and output technology. The combination of Isolated Gate Bipolar Transistors (IGBT) and Digital Processing (DSP) enables the ECO B8000 series to have an almost negligible effect on the mains supply, reflecting less than 3% harmonic distortion. When running in normal On-Line mode, the B8000 ECO offers an AC/AC efficiency of 95% increasing to 98% in DC to AC mode. Achieving a high DC to AC efficiency means that, under mains fail conditions, the batteries and your network run for longer. Should 'green mode' be selected, AC to AC efficiency increases to approximately 98%.

B9000 FXS (ECO range)

We believe the B9000 ECO is the most efficient transformer based uninterruptible power supply available on the UPS market. The efficiency of the B9000 is over 95% in full online double conversion mode and up to 98% in ECO mode. Considerably higher than a conventional UPS and providing substantial efficiency and cost savings for the user.

The B9000 ECO incorporates an IGBT rectifier reflecting less than 3% harmonic distortion back to the mains and, as a consequence, has no detrimental effect on other equipment sharing the same supply. A further benefit of IGBT technology is that any auxiliary generator can be downsized by as much as 50%.

B9600 FXS (ECO range)

Like the B9000, the B9600 includes an isolation transformer, IGBT rectifier and IGBT inverter. The combination of these three crucial technical components makes the B9600 ECO UPS the only machine of its type able to reach 800kVA (single module) with an efficiency of 95% and a reflected THD of <3%. Like its siblings, the B9600 ECO can be configured in parallel, reaching a total power of 4.8 MVA. This is achieved with no detriment to the input power factor or reflected harmonics. When in a parallel configuration, all phases are individually monitored so that the load is shared equally and efficiently.

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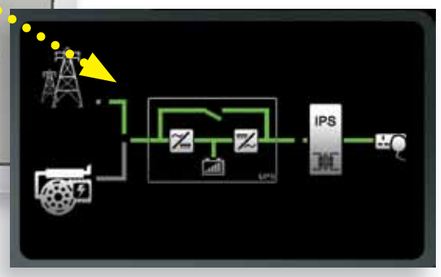
Batteries

All batteries for UPS units proposed by Starkstrom are Valve Regulated Lead Acid (VRLA) batteries with a 10 year design life, compliant to BS60896-21/22 standards (supersedes BS6290-4) as required for medical installations.



Starkstrom's focussed approach of putting the users needs at the centre of our designs has led to the development of our Clinical Graphical User Interface.

For facilities engineers, the full range of electrical UPS characteristics and performance data is available remotely, without entering the sterile area.

For clinicians and surgical teams, clear intuitive information on the status of the critical power supply is required, but without having to have a full working knowledge of many electrical engineering principles and terms.

The eTCP (electronic Theatre Control Panel) provides a graphical hospital system power overview that is relevant to a specific clinical area. The real-time animated display shows the power "flowing" and healthy, alarm or warning status depicted in standard traffic light colours.

24 VDC Battery Backup for Operating Room Lights

Under general power failure scenarios, the continuity of light in the surgical field is the most important factor for patient safety. Without it, the surgical team cannot continue operating or even work towards successful "patient closure".

A 24V DC battery backup system forms part of the emergency supply to modern operating lights. Under current HTM standards, a separate 3-hour autonomy system is required for each and every operating room.

Starkstrom can provide you with whatever rating (in watts) of battery backup systems you might require, whichever operating lights you are installing. Our battery backup systems are fitted with a range of alarms and a remote test facility (usually connected to the Theatre Control Panel) and an under-voltage disconnect relay to prevent non-recoverable discharge of the batteries.

External Maintenance Bypass Arrangements

It is a requirement under current standards that an electrical maintenance bypass switch is needed.

The purpose of the external maintenance bypass is to allow a fully redundant electrical power path around the UPS system to the connected mission critical load. This external bypass allows complete isolation of the UPS module from the electrical power source for scheduled maintenance or emergency repair without interruption to the critical load. For example, external maintenance bypass arrangements can be simple changeovers, no-break multi-switch, electrical/mechanical or full trapped safety key interlocking switch arrangements.

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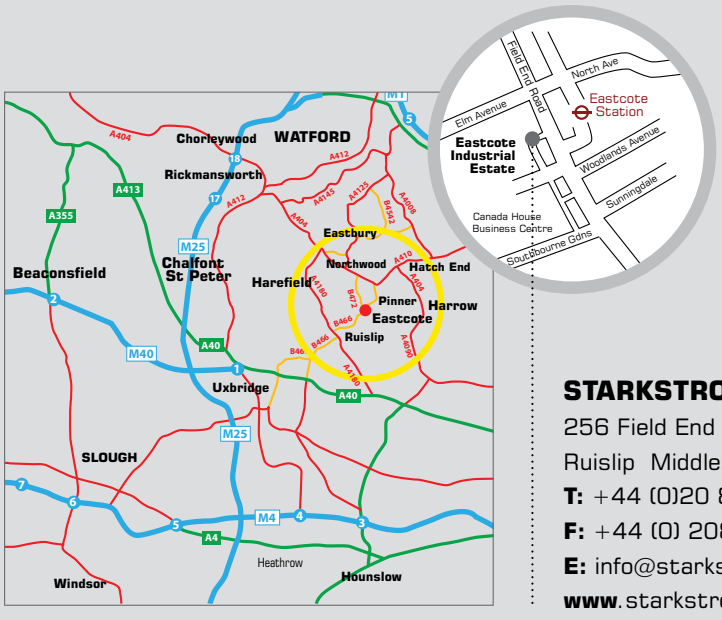
Complete Solutions for Critical Care & Operating Rooms

Starkstrom is a specialist medical company that can provide you with cutting-edge, fully integrated operating theatre and critical care equipment. Because we are an established British company, we have the expertise to design, manufacture and supply a technologically advanced, reliable and standards required today. Our aim is to remove the complexity and areas of uncertainty in these environments and provide you with a fully working and integrated solution.

- Clinical Lighting / Cameras and Battery Backups
- Media Solutions / Audio Visual Systems / Cameras and Monitors
- Clinical Medical Gas Pendants / Beams
- Operating Tables
- Interdepartmental Patient Transfer Units
- Operating Room Control Panels (Touchscreen / Membrane / Stainless Steel)
- MRI Chamber Supply and Design
- CT,RF and X-ray Shielding Supply and Design
- PACS Viewing Stations
- Isolated Power Supplies (IPS)
- Uninterruptible Power Supplies (UPS)
- Ultra Clean Ventilation Canopies / Laminar Flow
- Equipotential MEIGaN Compliant Earth Reference Bars / Equipotential Earth Sockets / Clean Earth Blue Sockets
- Illuminated Warning Signs
- Medical Consumables
- Time of Day / Elapsed Time Clock Systems
- Maintenance and Support



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