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continuous power availability

Protecting Patients at Musgrove Hospital

SWISS MADE

Case Study

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Customer

Musgrove Park Hospital in Taunton is the home of Somerset Neonatal Intensive Care Unit (SNICU), a specialised ward for the treatment of premature and sick new-born babies within Somerset. SNICU is situated in the maternity building of the hospital and divided into two different areas: intensive and special care. There are 18 cots in total.

For further information regarding Musgrove Park Hospital's neonatal unit visit

https://www.tsft.nhs.uk/wards-and-departments/departments-services/paediatrics-(children)/somerset-neonatal-intensive-care-unit/

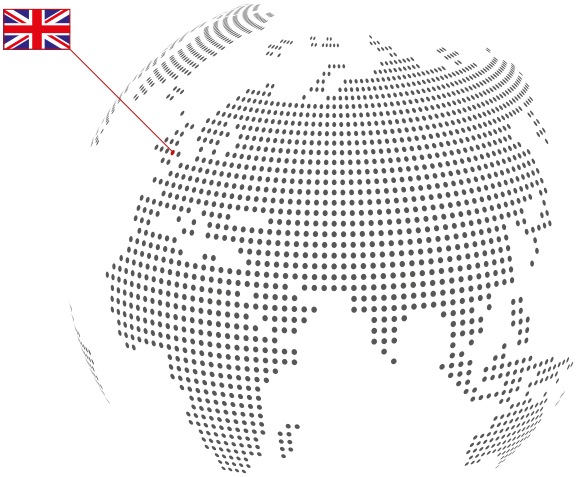
Location
Taunton, United Kingdom

Segment
Health / Hospital

Challenge
Ensuring 200kW N+1 critical power protection with 60 minutes autonomy and guaranteed ease of access for maintenance within the limited space of a 20-foot shipping container.

Power protection solution
9 x 25kW CumulusPower modules (200kW N+1) with 60 minutes autonomy.

Results
An overall compact design, providing redundancy and scalability for future demand.
The high availability of Centiel's true modular UPS, CumulusPower, maximized protection for patients at the baby unit while providing Power savings and low cost of ownership due to high efficiencies.



The Contractor

Knight Electrical Ltd is a specialist contractor in power systems integration, undertaking generator controls and all forms of installation and site modification works.

Founded in 1992, based in the heart of Somerset Knight Electrical have a team of dedicated engineers offering a wealth of experience in all aspects of design, manufacturing, and installation. Available across the UK to offer hands-on advice when required.

The company has contracts with various hospitals, manufacturing facilities, schools and government organisations for the design, installation, and maintenance of electrical systems

For further information regarding Knight Electrical visit www.knightelectrical.co.uk

The Project

In 2018, Knight Electrical was contracted to design and build a UPS plant room to protect all the power for Musgrove Park Hospital's SNICU unit which looks after babies requiring continuous monitoring of their breathing or heart rate, additional oxygen and tube feeding. The specialist unit also offers short term intensive care and recovery and convalescence from surgery. The hospital required a space-saving and cost-effective solution to protect the critical power to this important ward which offered the highest levels of power availability and a 60-minute run time in the event of a power failure. In addition, the UPS needed to protect the power to the Maternity Theatre as well as future birthing pools.

The Design

Knight Electricals' design took advantage of a piece of neglected land near the SNICU unit. However, instead of incurring the significant cost of a new building, **Knight Electrical came up with the innovative idea to adapt and convert a 20-foot shipping container into a secure UPS plant room.** This bespoke solution was designed specifically to meet the requirements of the hospital and to overcome the challenges presented to the team.

Andrew Winiarczyk Knight Electrical Contracts and Engineering Director confirms: "We have been designing plant rooms for over 20 years, so are used to providing bespoke solutions for our clients, however, this is the first time that we have used this particular technique. Space was limited and this presented us with a real challenge, the shipping container proved the ideal solution as the entire plant room could fit into one 20-foot container.

"We modified the shipping container with insulation, boarded it and set it onto sturdy concrete foundations, slightly raised to remove the risk of flooding. We also looked at a glass reinforced plastic (GRP) building as an alternative but concerns over fire risk and moisture quickly ruled this out. The area around the unit was gravelled and fenced off and the result was a secure unit ready to house the UPS system to protect the hospital's SNICU unit's power."

The Challenges

Stuart Cockburn, sales manager, CENTIEL UK Ltd explains:

> The main challenge with the installation was the compact size of the shipping container. The UPS weighs only about half a tonne but the amount of batteries needed to support the Hospital's requirement of a 60-minute run time was significant and weighed around nine tonnes, so took up a fair proportion of the space available.

We created a bespoke design for the battery racks optimising the configuration for ease of access and maintenance of both the UPS and batteries. We maximised use of the floor to ceiling space to create a workable area, ensuring there was enough room to allow for the rest of the equipment including DC isolation, bypass panel, UPS distribution panel and building management service (BMS) which all needed to be accessed readily for maintenance. The shipping container also needed to have room for air conditioning units plus emergency lighting.

Centiel's solution

CENTIEL won the tender to supply 1 x CumulusPower Modular UPS 200kW N+1 with 60 minutes autonomy built into 250kW frame. CENTIEL supplied its pioneering 4th Generation Modular UPS system: CumulusPower with 9 x 25kW Intelligent Modules which allows space for the hospital to add an additional 25kW module in the future if/ when the load demand increases.

CumulusPower is a three-phase, modular UPS which offers 99.9999999% ("9 nines") system availability achieved through fully independent and self-isolating intelligent UPS modules - each with individual rectifiers, inverters, static bypass, CPU and communications logic and display. The unique Intelligent Module Technology (IMT), with a fault-tolerant parallel Distributed Active Redundant Architecture (DARA), removes single points of failure to offer industry leading availability. In the unlikely event of a module failure, it can be quickly and safely be "hot-swapped" without transferring the load to bypass and raw mains.

In addition, **CumulusPower has been designed to offer the highest levels of resilience and complete peace of mind.** It can be maintained without the need to bypass to mains power which means there is no risk of interruptions to the Neonatal Intensive Care Unit. It has also been designed to reduce the total cost of ownership through low losses. The high double conversion efficiency of >97.1% at the module level means it is currently the best solution available to protect infrastructure as its configuration also reduces downtime risk, avoiding costly errors as well as increasing energy efficiency.

Cockburn concludes: "The installation was completed in June 2019 and it will now protect the power for the patients at the important baby unit at Musgrove Park Hospital for many years to come."

CENTIEL supports the UPS with a comprehensive maintenance contract which guarantees a response within four hours, 24 hours a day, 365 days a year. Two preventative maintenance visits a year, 24-hour telephone support, free labour, travelling to site are included for full peace of mind.

For further regarding Centiel visit:

www.centiel.com

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