

# The Generator Company Back-up Generator System Upgrade at UK's Largest London Hospital



**The Generator Company have been working with one of the UK's largest London hospitals for almost 20 years, providing them with bespoke highly engineered back-up generator systems and products, generator system servicing and maintenance as well as any generator system advice or emergency generator power, as and when required.**

Founded in 1733, this London hospital is one of the UK's largest hospitals, sharing its main hospital site with the University of London which trains NHS staff and carries out advanced medical research.

The hospital has around 1,000 beds and most general tertiary care such as accident and emergency, maternity services and care for older people and children.

## **Client**

London Hospital

## **Project Specifications**

Installation of an additional generator set within an already installed system we designed and built in 2009. Control System software upgrade to entire generator system.

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**As a major acute hospital, it also offers specialist care for the more complex injuries and illnesses, including trauma, neurology, cardiac care, renal transplantation, cancer care and stroke. It is the home to one of four major trauma centers and one of eight hyper-acute stroke units for London. The Hospital also provides care for patients from a larger catchment area in the South East of England, for specialties such as complex pelvic trauma.**



Other services treat patients from all over the country, such as family HIV care and bone marrow transplantation for non-cancer diseases. The trust also provides a nationwide endoscopy training service.

The continued increase in demand for the broad spectrum of the Hospital's services gives rise to the ever increasing need for expansion. And, with a Hospital and teaching center of this magnitude the site's back-up generator power solution must grow with it to ensure there is suitable back-up power to keep the Hospital and its critical facilities running in the event of a mains power outage.

Over the last 20 years The Generator Company have significantly upgraded and maintained the Hospital's back-up generator systems. In 2009 with a new build being constructed on site for the University side we were asked to design, manufacture and install a new bespoke back-up generator system and a new Master Control Panel [MCP]. The Hospital required us to design the system with the capacity to include another back-up generator at a later date, as and when the site's requirement for additional back-up power required it.

This phase of the back-up generator system included the installation of 3 x 1000kVA prime rated generator sets each with a set mounted control panel to facilitate set to set parallel operation and synchronization to work in conjunction with the new MCP and the site's LV switch board and Building Management System [BMS]. We also designed the MCP to interface with 5 separate substations and with the functionality for automatic load shedding; the ability to adjust which back-up generator set[s] are required to run in direct relation to the exact power required to site.

Our team of engineers carried out the installation within a new plant room that had been modified specifically to accommodate the new back-up generator system. Space was extremely tight and access for all 3 generators, day tanks and associated equipment had to be manoeuvred very carefully through one of the plant rooms discharge attenuator apertures and carefully skated into position.

Phase I of the project was extremely successful and following the commissioning of the new system The Generator Company Engineers are still regular visitors to site with the ongoing maintenance and servicing contract.

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**In 2015 as building work at the Hospital continued it was decided that the 4th generator was to be installed and incorporated into the existing back-up generator system we had completed as phase I of the project in 2009/10. During phase I we had already created an empty bay for the new unit and all the connections were also pre-installed in the plant room awaiting the inclusion of the additional generator. Once we erected the framework within the plant room to locate the generator, the discharge attenuator aperture was removed.**



Our Engineers could then skate the new 1000kVA prime rated generator into the final location together with the day tank, exhaust silencers and additional fuel pipework. All the necessary pipework and connections were carried out to complete the physical installation. However, due to the advanced technology of the control system software all the existing set mounted control panels and MCP required upgrading to synchronise with the new generator installation software. The original installation ran on PowerCommand™ [PC] 3.1 and with the installation of the new set the entire back-up generator system required an upgrade to PC 3.3.

This upgrade and re-programming of the system software and control panels had to be intricately planned, project managed and executed. Both the installation of the 4th 100kVA generator set to the entire back-up power system and the software upgrade all took place on a live building. This ensured the Hospital had no down time and therefore no disruption to the building infrastructure and daily procedures, it's staff and the patients' health and welfare.

The upgrade to the PowerCommand™ Control 3.3 ensures the entire system was brought up to date and running the most modern version of the software guarantees the systems integrity in performance. The PC3.3 microprocessor-based generator set monitoring, metering and control system provides the client with the most modern operator interface to the generator system, digital voltage regulation, digital governing and generator set[s] protective functionality. It guarantees the on-going effectiveness of the synchronisation between generators, MCP, the LV switchgear and the client's mains power substations as well as ensuring optimum efficiency for; remote start, generator up to speed, parallel operation and load shedding.

The Generator Company left site with an extremely satisfied client following dedicated client training. All relevant documentation and operating manuals for the new equipment was left with the client as well as the report on the successful commissioning of both the individual new 1000kVA generator set and the back-up generator system in its entirety.

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