



THE GENERATOR
COMPANY

2025 CASE STUDY

Client:

A large NHS Trust Facility in Yorkshire

**Comprehensive upgrade to outdated
standby HV and LV generators and
associated power infrastructure**



THE
Generator
COMPANY

A DIVISION OF TGC INTERNATIONAL LTD



Case Study:

Comprehensive Power Infrastructure Upgrade

For one of the UK's foremost healthcare institutions

Project Overview

Client: A renowned healthcare trust in the UK

Scope: Upgrade of HV and mini generators and entire standby power infrastructure

Lead Contractor: The Generator Company (TGC) overseeing the entire project

Engine Manufacturer: MTU 'A Rolls-Royce Solution'

Power Rental: Our in-house rental division provided essential temporary generators and equipment to ensure continuous & seamless power during the installation process – a critical element of the project

Project Brief

A leading, large footprint healthcare trust required a comprehensive upgrade of its HV and LV generators and all associated infrastructure. **The Generator Company** (TGC) expertly managed the wide-ranging project, replacing outdated systems with cutting-edge, state-of-the-art generators and associated support infrastructure. The total oversight of the project included the management and timelines of various sub-contractors and third-party suppliers.

This included advanced fueling, cooling, and attenuation systems, along with modern switchgear and essential infrastructure, ensuring a state-of-the-art backup power system. Designed specifically for a critical care environment, the new system ensures the hospital's operations remain uninterrupted, providing a reliable and efficient power solution.

Our in-house rental division, (Powerhire), played a vital role by supplying temporary generators and supporting infrastructure, including resistive load bank for scheduled testing, ensuring uninterrupted power throughout the hospital estate during the upgrade.



A complete rip out and infrastructure rebuild – while still maintaining critical power support 24x7

With 4x1250kVA containerised rental generators, bulk tanks, transformers, cabling, and distribution, as well as full 24-hour support, we maintained critical services without disruption. This seamless transition between old and new systems minimized downtime in this critical healthcare environment and highlighted the flexibility of having our own in-house hire capabilities.

Some Key Challenges

- Maintaining continuous seamless power during the removal of old generators and installation of new systems in a critical care environment.
- Managing complex building works, including structural changes to accommodate new equipment and overseeing multiple contractors and timelines.
- Removing and installing heavy equipment within a very limited confined space working environment - necessitated detailed planning and associated contractor timelines.
- Minimizing noise disruption while ensuring optimal generator performance and power reliability.

Technical Highlights

HV & LV MTU 4th Generation Diesel Generator Sets

- **HV Generators:** Supply/Install Three 2500kVA/2000kW Prime Power (PRP) Rated Diesel Generators (MTU 20V 4000 G34F) complete with state-of-the-art Control Panels, Local HV Link Boxes, Fueling and Noise attenuation systems.
- **LV Generator:** Supply/Install One 520kVA/416kW, Prime Power (PRP) Rated Diesel Generator (MTU Series) complete with set mounted Local Generator Control Panel, and set mounted Local Generator Circuit Breaker, Fueling and Noise attenuation.
- **Electrical Connections – Switchboards and Control Panels:** The project included electrical installations with new HV power cabling connecting the Generator Switchboards to the Main Intake Switchboards.

New Master Control Panels were installed, featuring **COMAP IntelliMAINS mains synchronization control** and **COMAP MAINSPro G99 protection relays**, enabling soft load transfer on mains return and generator testing. These panels also incorporated **COMAP IntelliVISION 18-inch colour displays**, providing real-time status updates on the HV Generators,

Generator HV Switchboard, Main Intake Switchboards, and LV Generator systems.

Fueling, Exhaust, and Cooling Implementation

A key aspect of the project was integrating bespoke advanced fueling, exhaust, and cooling systems:

- **Fuelling Systems:** Two 10-hour capacity fuel day tanks were installed for the HV generators, along with one for the LV generator. The tanks featured **fuel polishing systems** to maintain fuel quality, and stainless-steel double-walled piping to ensure safe and reliable fuel distribution. A fire wire system, along with a fuel dump pump and control panel, was installed to ensure enhanced fire safety & efficient fuel management, crucial for operating in this high-risk environment.
- **Exhaust Systems:** A new comprehensive exhaust silencing system was installed, including catalytic converters and extended twin wall insulated stainless steel flue systems that reached roof level. The exhaust flue system was a complex bespoke structure, designed to cause minimal interference with other hospital plant and exiting at roof level required precise, fine detail planning. This reduced emissions and ensured safe dispersal, crucial in a healthcare environment.
- **Cooling Systems:** Roof-mounted **air blast coolers** were implemented to manage the heat generated by the high-capacity generators, ensuring efficient performance and long-term reliability. This required the design and installation of extensive intricate stainless-steel coolant pipework between the remote air blast coolers and generator plantroom, based on twin circuits (HT and LT).

Attenuation Challenge

One of the project's key challenges was ensuring **noise attenuation**. The hospital environment required the generator and exhaust systems to be **extremely quiet** to avoid disturbing patients and staff. TGC installed specialized **air inlet and discharge attenuators** that reduced noise levels to **70dBA at a 1-meter distance**. This solution maintained regulatory compliance while allowing necessary airflow for cooling and combustion. Heat in the generator plant room is managed by Fixed Blade Weather Louvres and Ventilation Cooling fans.

Project Management

TGC coordinated all aspects of the project, designing efficient phased work schedules and full-time on-site management – including.

- Subcontractor management – including all civil works alterations
- Health and safety compliance, including asbestos removal

- Delivery, offloading/positioning, install and commissioning of the TGC Generator sets and related equipment.
- Installation of the new fuel, exhaust, cooling, and noise attenuation systems
- Testing and commissioning of the new infrastructure to ensure full functionality

Testing and Commissioning

- **Black Building Testing:** Simulated blackouts validated the new backup systems' performance during emergency conditions.
- **Load Bank Testing:** Assessed the system's reliability under various load conditions, ensuring that the new generators could meet real-world demands.

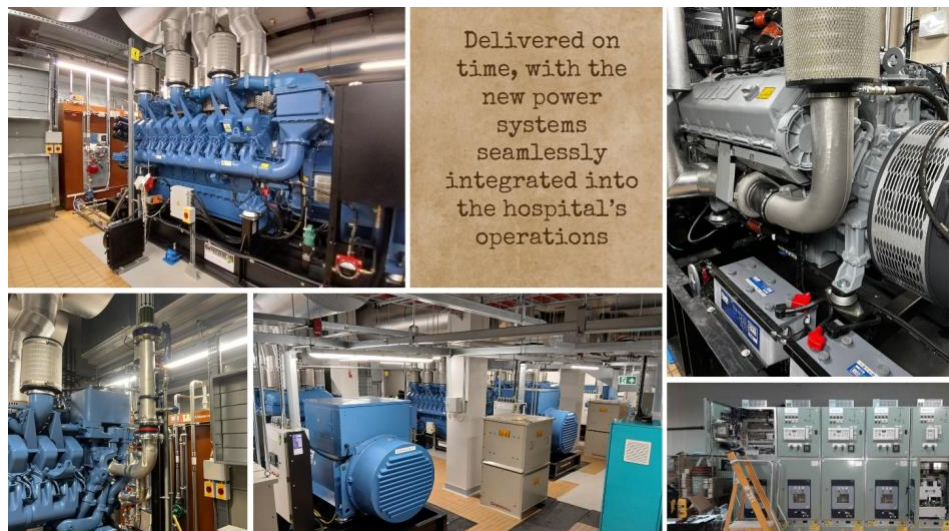
Outcome

The project was delivered on time, with the new power systems seamlessly integrated into the hospital's operations. Our in-house rental division and logistics expertise were critical in maintaining operational continuity, providing flexibility for this complex task. Advanced attenuation, infrastructure upgrades, and civil works improvements ensured compliance, efficiency, and enhanced system management capabilities. The hospital's management praised the smooth transition and minimal disruption to daily operations, recognizing our role in delivering a first-class solution with negligible impact on critical care services.

Conclusion

This project showcases **TGC's** expertise in managing complex generator upgrades in intricate critical environments. TGC has a long history of proven expertise within the Hospital/Healthcare sector. From temporary power support to the integration of sophisticated fuelling, exhaust, cooling, switchgear and noise attenuation systems, we ensured a reliable and uninterrupted power supply for one of the UK's major hospitals.




Sophisticated fuelling, strict attenuation requirements & complex exhaust systems together with contemporary switchgear, monitoring & control systems



Call to Action:

Looking for expert support in power infrastructure? Contact **TGC** today to discuss how we can deliver reliable and efficient solutions tailored to your needs.

Contact:

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Note: A summary Image gallery is shown below 'Before/After' – or contact marketing@tgc.uk.com for access to a comprehensive online gallery showing the lifecycle storyboard of the finished project.





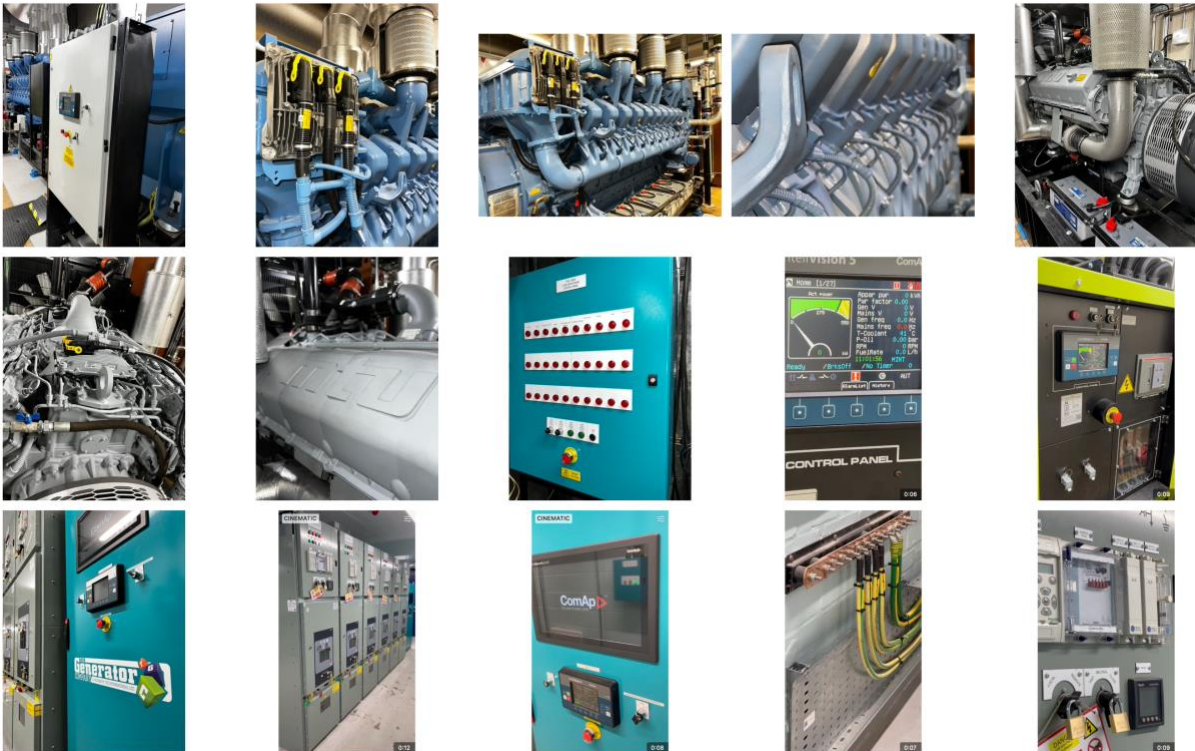
Photo Gallery:

Contact us for viewing access to a comprehensive online project image library highlighting various stages of the project.

Exhaust & Attenuation



Engines, Generators & Control Systems



Fueling Systems



Cooling Systems

