

# Generator Upgrade Project for Global ICT Solutions Provider



<b>CLIENT:</b>	<b>LEADING PROVIDER OF VITAL MULTI-TECHNICAL SERVICES</b>
<b>END CLIENT:</b>	<b>WORLD-WIDE ICT SOLUTIONS &amp; MANAGED SERVICE PROVIDER</b>
<b>LOCATION:</b>	<b>DOCKLANDS EAST LONDON</b>
<b>PROJECT:</b>	<b>EXTENSION OF THE PROPERTIES EXISTING GENERATORS</b>

Our Managing Director was contacted by the end-client to ask if we would like to be involved in tendering for a power upgrade package for their new London based building; a contact generated due to a previous generator hire project carried out by The Generator Company at a different building on the same site.

We were obviously delighted to be contacted for this project and to know that our previous work for the client was valued.

Unit 12 Stirling Park,  
Laker Road, Rochester, Kent  
ME1 3QR

t 01634 668090  
e sales@tgc.uk.com  
www.tgc.uk.com



Our Managing Director and Generator Sales Director were invited to conduct a pre-tender site survey in March 2016 with the final tender being issued in March 2017.



During the final tender process, a long standing customer of ours, a leading provider of vital multi-technical services specialising in lifetime support, from design through construction to maintenance, repair and operation, with whom we have a coherent and dependable relationship, engaged us in working together allowing us to pool our different and diverse strengths and resources for this huge project.

After many weeks of meetings between ourselves, our customer and the end client, the tender was awarded in July 2017 with our customer as main contractor and The Generator Company as supply chain partner. This was a fantastic opportunity for The Generator Company to work again alongside a renowned facilities management

company on an exciting and challenging project.

### The End Client:

A worldwide ICT solutions and managed services provider based in Docklands, London and one of the key internet hubs in the world.

Established in 1989, the site became Europe's first purpose-built, neutral data centre provider. They have since grown to become one of the largest, global data centre providers, operating a network of 47 data centres in 23 strategic locations in the EMEA, the Americas and the Asia-Pacific region that cover all major commercial and financial hubs. In 2012, they built their own primary substation, at 50MVA and two 132kVA power lines directly connected to the high voltage power network for the London Docklands site powered by 100% renewable energy.

This data centre is an additional home to the London Internet Exchange, hosting a brand new peering switch platform designed for powerful low-latent connectivity. With approximately 5,000m<sup>2</sup> of colocation the site



**GENERATOR SALES | MAINTENANCE & SERVICING | CONTROL & SWITCHGEAR SALES |  
GENERATOR & LOADBANK HIRE | DISTRIBUTION & CABLE HIRE**

Unit 12 Stirling Park,  
Laker Road, Rochester, Kent  
ME1 3QR

t 01634 668090  
e sales@tgc.uk.com  
www.tgc.uk.com



provides an ideal environment for a primary as well as a disaster recovery/backup site and is designed for the data-critical corporation.

### The Project:

The project required the extension of the existing operational 4 off 2500kVA 11kV generator installation and installation of a further 3 x 11kV generators and associated switchgear. We were tasked with the design, installation, testing and commissioning of 3 x new HV generators, fuel day tanks, associated cabling, containment and generator controls that needed to interface with the existing HV distribution switchboard and earthing transformer. All systems were to be installed with allowance for flexibility and any future maintenance.

All new and replacement controls were based on the ComAp system and will utilise the existing Alan Bradley based master control system. The existing generator controls were of the 'Closed Protocol' type and needed to be changed to 'Open Protocol'. This element of the works was to be conducted once the new equipment was installed, tested and commissioned ensuring the changeover of controls was conducted in such a way in order to keep maximum generator coverage and minimise downtime.

The system would only operate during periods when the 'main electrical supply' serving the facility has failed or falls outside pre-set tolerances.

As with all our projects, one of our experienced Project Managers was chosen prior to the start of the project to work closely alongside our customer. This ensures that all necessary site surveys, drawings, risks assessments, method statements and other associated aspects of the project are managed in an appropriate and timely manner. This also included the coordination of a complex offsite extended witness test in Italy and a multi-staged delivery package incorporating numerous road closures around the site.

On approval of the programme and with time restrictions in mind, our Project Manager moved ahead with the procurement of all equipment including generators, fuel tanks, HV equipment and LV panels.



**GENERATOR SALES | MAINTENANCE & SERVICING | CONTROL & SWITCHGEAR SALES |  
GENERATOR & LOADBANK HIRE | DISTRIBUTION & CABLE HIRE**

Unit 12 Stirling Park,  
Laker Road, Rochester, Kent  
ME1 3QR

t 01634 668090  
e sales@tgc.uk.com  
www.tgc.uk.com



On completion of the generator build in Italy, the factory witness test took place at the manufacturer's warehouse in Milan and was attended by our Projects Director along with the customers' Chief Electrical Engineer and two consultants on behalf of the end client.

The key areas of the factory test included:

- Inspection of the generator sets for general workmanship and observations
- Generator set parameter checks – testing of fundamental generator settings including voltage and frequency
- Oil temperature and pressure, coolant temperature at a maximum of 15 minute intervals
- Generator performance load testing of individual generator engines. Testing was undertaken using the factory resistive and reactive load banks @ 0.8 pf up to 110% loading.
- Generator performance load testing of generator system. Testing was undertaken using factory reactive load banks @ 0.8 pf up to 50% loading of each DG set for 1 hour.

The witness test concluded successfully and all parties returned back to the UK assured and happy.

Prior to the start of the project, due to its duration and in line with HSE regulations, porta cabins and welfare facilities were set up on site for all workers with Heras fencing erected around the construction site to allow for the scaffold tower to be safely installed.

The generator installation was split across two rooms within the building with the existing generators based on the ground floor and the new generators directly above on the first floor. All the equipment was craned into the first floor room via an external outlet at the side of the building, which required removal of wall panels and external façade louvres prior to any installation.

Works began on level one with the erection of the temporary scaffold tower in readiness for the removal of the internal wall panels and external façade louvres. Once this was completed and road closure permits were obtained to close off the surrounding roads to the building and the multi-staged delivery of equipment commenced with the double skinned fuel tanks followed by the attenuators and generators.

Using a 150 tonne crane, the attenuators were craned into the building and air skated into position followed by the generators on the opposite side of the room.

Testing of the new generators flagged up an unforeseen concern where the vibration emanating from the generators appeared excessive. Before the team could proceed, a design review meeting was held between the customer, end-client and the consultant to

**GENERATOR SALES | MAINTENANCE & SERVICING | CONTROL & SWITCHGEAR SALES |  
GENERATOR & LOADBANK HIRE | DISTRIBUTION & CABLE HIRE**

Unit 12 Stirling Park,  
Laker Road, Rochester, Kent  
ME1 3QR

t 01634 668090  
e sales@tgc.uk.com  
www.tgc.uk.com



discuss a solution. This discussion resulted in the additional installation of new AV springs and damper pots.

On approval of revised method statements and risk assessments our engineers had to make some adjustments to the equipment before the new AV springs and damper pots could be fitted, this included: isolating and disconnecting the batteries and chargers, disconnecting and make safe fuel pipework and radiator coolant connections, drain down, disconnect and make safe sump/lube oil pipework, disconnect HV/LV connections where necessary, disconnect and remove vertical exhaust pipes, and move HV link box and control panel unistrut frames forward to allow them to lift the generators.

All generators were then lifted and temporary blocks placed underneath to allow for the drilling of the generator base frame to fit the new AVM and damper pots. Once in position, our engineers reinstated the electrical cables, fuel/lube oil pipework, fitted new coolant pipework, filled radiators and reinstalled exhaust downpipes and lagging. Whilst this caused a small delay it wasn't detriment to the project.

With use of our own loadbanks, the generators were re-tested to allow us to conduct a vibration test in the presence of the client. To the delight of all involved, the test proved successful.

On that good news, final works and commissioning were carried out to complete the project including air testing of fuel lines, switching the existing 4 generators over to the new control panel system, the construction of a fire wall between the fuel tanks and generator room on the first floor, the rebuilding of internal walls and re-fit of external façade louvres.

A successful final client witness test was carried out to demonstrate all 7 generators were syncing together and that generator banks A & B started up and operated together to support the building in the event of a mains failure.

On final sign off and completion of all satisfactory testing and client training, The Generator Company handed the building back to the client clean, tidy and in full working order.



**GENERATOR SALES | MAINTENANCE & SERVICING | CONTROL & SWITCHGEAR SALES |  
GENERATOR & LOADBANK HIRE | DISTRIBUTION & CABLE HIRE**

Unit 12 Stirling Park,  
Laker Road, Rochester, Kent  
ME1 3QR

t 01634 668090  
e sales@tgc.uk.com  
www.tgc.uk.com

