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MPOWER UPS

CASE STUDIES

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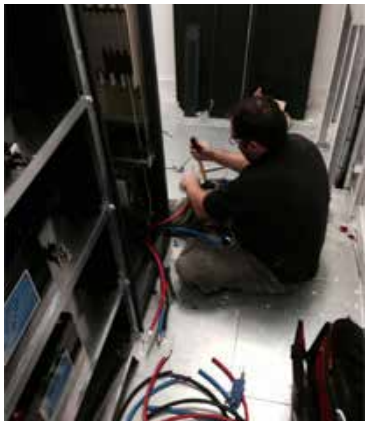
10 years of uninterruptible power

Modular UPS Installation at Sumitomo Bank, Central London



The Request

MPower UPS were asked to supply a UPS solution for an existing customer in central London. This was to be a new office fit out in an existing building, starting with a completely open plan floor to be partitioned off into a number of sections for different subsidiary companies.

This customer already had a parallel redundant 1+1 system on another floor of the same building, so they were already well aware of the advantages of having parallel redundant UPS, and this was the preferred configuration for the new build.

However there were some additional factors to be dealt with:

- Actual load requirement not known as new office build but approx. 100kVA
- Very limited floor space
- UPS to be located next to a quiet open plan office area
- Incoming power supply had limited capacity
- Lightweight raised computer room floor

The Solution

The simple solution was use our new modular UPS system, the aptly named Modulera.

The Modulera comes in three frame sizes, holding 4, 5 and 10 individual slot-in UPS modules respectively. With each module being a fully functional UPS rated at 20kVA, this provides a powerful n+1 configuration in an impressively small footprint without compromising on reliability or future serviceability. The added advantage of being able to parallel up to 4 separate frames together brings the Modulera up to a seriously impressive 800kVA total capacity.

For this installation, the largest frame size was selected, capable of holding up to 10 UPS modules in a 600 x 1100mm footprint. With 6 modules installed initially, this provides a powerful 100kVA n+1 immediately. Increasing the UPS power in the future is now a simple matter of slotting in additional UPS modules. No programming or setting up is required.

With a single battery bank consisting of 2 parallel strings of batteries housed in our easy maintenance BC60 battery cabinets, the total footprint is almost halved compared to a traditional 1+1 configuration, whilst retaining redundancy in both UPS and battery.

The equipment was to be installed on a raised computer room floor. The floor tiles were supported by standard support pillars, which in this case were not suitable for the weight of such a large battery bank. Therefore a purpose built steel frame was constructed and fitted beneath the floor tiles. This was designed to carry the full weight of the battery cabinets, without losing the clean straight lines of the floor tiles, and without additional work required to cut tiles to shape around the stand.

The Modulera incorporates the very latest IGBT and fast microprocessor technology. Very high switching frequencies make the system very quiet and very energy efficient. This makes it ideally suited to being installed close by an open office area.

As a single frame, the system uses a standard wall mounted maintenance bypass panel. This allows for simple, straightforward installation and cabling works, removing unnecessary complexity and therefore increasing reliability.

110V Charger Installation

Location
Central London

Project
To replace a failing twenty year old 110V charger with leaking Nickel Cadmium batteries.

The Problem
The Inform ICC single phase Info Charger was ideal for the job and could run with an external battery cabinet containing sealed lead acid batteries. However, technology has come on a long way over the last twenty years, and the new charger was only 1/10th the size of the original due to its transformerless design. Not a problem as a small footprint and compact sizing are highly desirable in the modern building – but as this was a replacement there was no way that all the original load cables could be connected to the new charger.

This could potentially mean a major rewiring and a lot of disruption and expense for our customer.

The Solution
Leave the old cabinet in situ and bolt the new charger on top. The original cables all stayed in place and all that was needed was an input and output cable for the Info Charger. Furthermore, the new batteries fitted neatly inside the old cabinet negating the need for an additional external battery cabinet.

The Result
Minimum site disruption, maintenance free battery and the whole project came in at under £3000.

Generator Installation, Hampshire

Following all the storms and subsequent damage of winter 2013-4 we were approached by a software development company based in rural Hampshire.

Over the course of many weeks they had suffered prolonged power cuts, and although their UPS kept their systems operational for a period of time it was not sufficient to allow staff to keep working leading to lost production time.

Following site survey and discussions with our customer it was decided to install a 20kVA cladded generator which would support their relatively low site load, but also allow them to use the kitchen appliances necessary for the smooth running of any operation.

Wiring work involved installing an automatic changeover panel so that, even if the power went off when the building was empty, the supply would go over to the generator automatically. Our groundsman dug trenches for the cabling and lay the concrete foundation to support the 900kg generator. Delivery was carefully co-ordinated by our specialist transport company, over gravel and lawn, to the back of the converted barn offices. Final commissioning and testing took place and the generator was handed over to the company.

The company now has a disaster recovery plan – in fact with regard to power supply they have done everything possible to avert disaster from happening in the first place. They have on-line UPS supporting the server and individual 2kVA UPS supporting the desk top computers meaning that if there is a power cut there is no loss of supply to this vital equipment. Then the generator starts up and work can continue as normal.

Societe General Securities Services (SGSS)

The Background

The original UPS on site, a Converex FTT160 160kVA, was approximately 13 years old and despite best efforts was becoming unreliable. We had initially been requested to attend site on a fault call in early 2012. The unit was repaired, but it was recommended that a new UPS should be installed.

Logistically there were several major issues, not least the fact that the original UPS had been craned into the building as it was too large and heavy to go in the goods lift. This UPS could therefore not be removed from the comms room once decommisioned, which meant that space for a new UPS and batteries was very limited. The floor of the comms room consisted of wire mesh panels, making positioning difficult. In addition, the customer was keen to save costs and re-use the existing batteries which had been recently replaced.

Our Solution

We installed an Inform PDSP 100kVA which has capacity to provide the essential cover for the customer, but with a much smaller footprint so that it would fit into the space available. The fact that the PDSP is transformerless also meant that it was light enough, and small enough, to go in the goods lift making positioning much easier.

Energy Efficient

Below is a table comparing the old and new UPS systems. As can be seen the efficiency at full load is improved and there is a dramatic improvement in the input power factor. Heat loss in the new system is decreased by 2.4kw per hour giving an average saving per day of £7 and annual saving of £2686 on electricity bills. This is further compounded as there will be a saving on the consumption from the air conditioning as it will have less heat to remove.

	Old System MGE Comet S33 20kVA	New System Inform Pyramid DSP 33030 30kVA
Efficiency at full load	92%	94%
Efficiency at site load	90%	94%
Power factor	>0.82	>0.99
Heat loss	6kW	3.6kW
Dimensions	1500 x 900 x 1800 mm (lwd)	730 x 1630 x 670 mm
Weight	1700kg	285kg

Total project costs were £8625

The payback period is just over 3 years, not taking into account savings due to the improved power factor or the fact that less energy would be used by the air conditioner.

Cube Support Services

The Background

Cube Support Services are responsible for several sites in the Rotherham and Leeds areas which, amongst other services, house call centres for many multi-national companies. The availability of uninterrupted power is absolutely critical to the operation of the site. MPower UPS first became involved with the site when we won the maintenance contract to look after the range of GE SitePro UPS they had there.

The Problem

As well as planned maintenance visits remedial work was carried out involving the replacement of batteries, fans and capacitors. However, it became apparent that the UPS systems were running on full capacity and further increases in load would not be possible. It was decided to review the power protection at three different sites so that continuity of power was maintained for present and predicted future usage.

Our solution

The 60kVA GE SitePros were replaced with 100kVA Inform PDSP UPS which immediately gave more capacity. To further protect the critical load the new systems were installed as 1+1, meaning that the load was shared 50:50 between the two UPS, however should there be a problem with one UPS, or when it was put into bypass for maintenance purposes then the whole load was still protected as it could be transferred onto one UPS with no transfer time lag.

Environmental Impact

This installation was never to be about energy saving, but it was very much about minimising waste. MPower UPS worked closely with Cube to ensure that, wherever possible, the current UPS, batteries and battery cabinets were reused. For example, in order to parallel an obsolete UPS which was still functioning in normal parameters a static transfer switch was used which enables two different types of UPS to be used in parallel. This allowed the original batteries and battery cabinets to also be re-used thus saving a considerable amount of money, and removing the need for disposal of hazardous waste. Because the power protection review encompassed three different sites we were able to utilise redundant, but still operational UPS from one site at others – again saving on costs and unnecessary production of waste.

Had we not re-used some of the old kit and had we not utilised static switches to parallel different makes of UPS then the project costs would have been at least double and there would have been several tons of lead acid batteries, UPS and battery cabinets which would have needed to be disposed.

CASE STUDIES

ViewSAT

From their purpose built facilities in Surrey, ViewSat is one of the leading providers of global broadcast and transmission services for television and radio channels. Downtime for any reason would be both costly and damaging to clients.

In order to eliminate any vulnerability from power failures, a complete power protection system was designed and built on site, incorporating standby generator, a high reliability UPS system and purpose built switchgear.

For this purpose, MPower UPS provided a flexible UPS solution, designed to be expandable as the business grows and the demand for power increases.

Installed in a specially constructed building, the first of a series of Inform UPS was commissioned this year along with purpose built switchgear to allow additional UPS units to be added when required without interruption to the supply or any additional infrastructure changes.

This has provided a long term power supply solution with reduced initial outlay.

Prestigious London Hotel

MPower UPS was approached to provide replacement UPS systems a Prestigious London Hotel. Two separate systems were required, however as the existing batteries were relatively new, they were to be integrated with the replacment UPS. This was to be carried out in a short timeframe. Furthermore, due to local traffic restrictions at the time, deliveries and works had to be coordinated to avoid disruption to the hotel and road closures during the day.

A site survey was carried out to fully investigate the different output power and battery requirements for the two systems.

As an independant supplier, the solution was to install units from two different manufacturers, allowing a match to the existing battery banks.

MPower successfuly supplied, delivered and installed an Inform UPS and a Riello UPS, and our trained engineers attended site overnight to minimise disruption. Both systems were duly commissioned and placed on line.

Almeda Head Office, Bristol

MPower UPS provided a new installation at Almeda's head office in Bristol, integrated with a new maintenance bypass panel and automatic transfer switchgear to allow connection of an external generator in the event of there being a prolonged outage.

A straightforward electrical installation, however access to the building required the equipment to be lifted up a narrow external stone stairway.

Our specialist and experienced transport company were tasked with this project, and in no time the UPS, battery and switchgear were safely installed – with no damage to the stairway, or building infrastructure.

The UPS system was duly commissioned and is now monitored 24 hours a day by our GSM remote monitoring system.