



Encorp Brings J.P. Morgan Chase Stand-by Power Generator Project On Board, On Time



The Challenge: Clean, Reliable Power On Time

J.P. Morgan Chase, a global financial-services leader, selected Encorp, Inc., to provide \$1.3 million of products and services to ensure the bank's Investment Services data center in Dallas, Texas, always operates on clean, reliable power. Through this 20,000-square-foot data center, J.P.Morgan Investment Services handles an array of critical financial services throughout the world.

While the facility will become J.P. Morgan Investment Services' primary data center within two years, Encorp's challenge was to bring the stand-by power generator project on board, on time.

The Project

J.P. Morgan Chase pre-purchased four 1500KW SDMO diesel generators to operate in parallel on a common bus. Two separate UPS systems, each consisting of two 375kVA UPS modules, also operate in parallel on a common bus, with the ability to expand to four modules per system. Each UPS system feeds nine redundant 125kVA static switch power-distribution units. The building housing the data center operates off two separate utility input switchboards provided by Encorp. System distribution switchgear, which Encorp provided, also were required.

Encorp's switchgear parallels four 1500KW SDMO diesel gensets that provide stand-by power to the facility. In addition, Encorp provided entelligent® Virtual Maintenance Monitor™ (VMM) software, which allows facility operators to remotely monitor, control and troubleshoot the gensets.

Action to Meet the Need

The following outlines each phase of the system and actions Encorp took to meet requirements of the customers and engineers (CCRD Engineers, Dallas, Texas).

Phase One: UPS System Equipment

Wet-cell battery strings. At the time the first phase of the project was being completed, wet-cell battery strings had lead times of 28 weeks. Through some creative project scheduling, Data Support Associates, a manufacturer sales representative in Brookfield, Conn., and MGE, a UPS manufacturer headquartered in Costa Mesa, Calif., acquired—for immediate delivery—four strings of wet-cell batteries for the data center project. Immediate delivery meant DSA needed to find a storage facility that had the proper environment to house the batteries. In addition, to maintain the batteries' warranties, DSA needed to ensure the batteries would be fully charged prior to installation.

UPS units. No delivery issues surrounded the UPS units themselves because MGE operated a third manufacturing shift to keep up with current market demand.



Encorp Paralleling Switchgear

Switchgear. Initial issues with switchgear delivery did loom on the horizon. After several meetings with one switchgear manufacturer, project team members held discussions with Cutler Hammer, who had not worked with MGE recently and was interested in opening up channels with MGE.

The outcome. Encorp and DSA bundled all switchgear requirements under one manufacturer, and the forged Cutler Hammer/MGE relationship produced very competitive pricing. The J.P. Morgan Chase standard factory witness test also was waived to ensure the delivery schedule was met.

Phase Two: Input and Diesel Paralleling Switchgear

KAIC rating. The projects lead engineering firm, CCRD, calculated the initial system requirements of greater than 100KAIC--the short-circuit rating of the switchgear. However, because this is not a "standard rating," the higher KAIC rating meant longer lead times. With the assistance of Encorp engineering and the available functionality of the Encorp system, CCRD was able to engineer a lower-rated KAIC rating that would meet the needs of the data center project.

The outcome. Reactors were installed in the neutrals of each diesel generator to limit their fault-carrying ability. In addition, Encorp designed a bus tie-circuit breaker in the diesel paralleling gear. By controlling this breaker during any overlap transfer, Encorp limited the fault-carrying ability. By using more of a standard rating, Encorp was able to meet all shipping date requirements. In addition, the lower KAIC rating not only made delivery times achievable, but it also lowered the overall purchase price of the system.

Phase Three: Diesel Generators

Deregulation, Tougher Standards Change Scope. During the third phase of the project, new generators had lead times of 18–20 weeks. To meet customer lead times, Encorp initially presented a generator package that included two refurbished and one new 1750KW diesel generators, with the customer eventually opting for a fourth generator.

However, Texas is on the verge of utility deregulation. After J.P. Morgan Chase further evaluated Encorp's system capabilities--mainly the ability to export power back into the utility grid--the company elected to have Encorp set up a system that allows such an option. In addition, the Environmental Protection Agency is close to adopting stricter emission requirements in Texas. Although the diesel generators first proposed would have met present emission requirements for standby operation, they would not have met standards necessary for an export application. To help meet the new standard, DSA proposed using SDMO engine generators. After the engineers and J.P. Morgan Chase qualified the engine generators for this project, SDMO guaranteed their delivery dates.

The Outcome. By proposing this change, the lead engineer was able to redefine the generator sizing from four 1750KW diesel generators to four 1500KW diesel generators. This in turn gave J.P. Morgan Chase a price reduction for the system.

Three Key Factors in a Successful Project

Encorp was awarded the data center project based on three key factors: cost, delivery and overall system capabilities.

One of the biggest hurdles to overcome was equipment lead times, particularly with some of the larger items, such as large wetcell battery strings (used for the UPS systems), diesel generators and switchgear. The long lead times were due to the tremendous number of large critical systems being constructed at the time to support the Internet. In addition, constraints of manufacturers' personnel, which included the actual manufacturing process and the ability to perform system design and system programming also influenced lead times.

Due to the multi-component design of Encorp products, limited sub-vendors are involved to build an end-product. This gives Encorp an extremely competitive edge with lead times.

Also, Encorp controls offer a variety of control capabilities, including:

- Remote monitoring and remote control capabilities
- Import/export power control capabilities
- Digitally based state-of-the-art paralleling control system
- Ease of information access via internally based network
- Level of support given during the planning and installation of switchgear.

Encorp Products

The empower-GPC, or "gold box," combines traditional control modules, protective relays and network communications capabilities into a single, microprocessor-based device.

Encorp paralleling switchgear provides control, communication and grid interconnection capabilities for on-site electrical generators located at commercial and industrial facilities.

The **VMM** provides site-specific generator metering, monitoring and control that offers detailed information, including energy demand metering, harmonics, alarm logging and engine and generator information.