



Integrated Power Systems for Data Centers



A Commitment to Data Centers

Caterpillar is committed to providing optimum value to the Data Center industry by leveraging our engineering, manufacturing, distribution, and financial expertise. We continually improve designs, products, and infrastructure to offer the highest level of reliability for Emergency Power Systems in Mission Critical applications. While we service hundreds of industries across North America, we design our products and systems around the needs of each business partner with their most critical requirements at the center of our focus.



Integrated Systems

As the world evolves into a more digital economy, the need for critical, conditioned power has increased. And one way to ensure you have the power you need is by having a fully integrated power system that was designed to operate and work together.

Pre-configured Cat components will decrease site installation time and cost, while increasing overall system reliability. Additionally, Caterpillar tailors each component to develop a fully optimized system via attachments and performance options to meet your specific application.



Integrated Solutions

1 Cat Automatic Transfer Switch (ATS)*

Caterpillar offers a broad range of ATS products, with digital microprocessor controls, to suit any application—from a single-ATS installation to a complex multi-ATS/generator switchgear system. Both open and closed transition designs are available with optional bypass/isolation and delay features in sizes from 40-to 5,000 amps.

2 Cat Switchgear

This advanced family of generator control switchgear products provides paralleling configurations from 600-volt class through 35kV to create a harmonized system solution.

Key benefits include:

- Total system control at your finger tips via a touch-screen operator interface
- Advanced switchgear graphics permit you to monitor, process, compare, display and transmit data
- Advanced remote monitoring and control capabilities allow you to manage systems anytime, anywhere
- Multiple levels of built-in fault tolerance provide unrivaled reliability

3 Cat Generator Sets*

Available in both gaseous and diesel, Cat generator sets are known for delivering consistently reliable performance in any conditions. Cat diesel engines are designed with high-strength

blocks, large bearing areas, steel-backed aluminum alloy bearing and hardened crankshafts to provide thousands of hours of backup power without overhaul. Cat gas generator sets are fuel efficient and offer many of the same durable components found in their diesel counterparts. They feature a patented electronic ignition system and detonation-sensitive timing that effectively controls emissions.

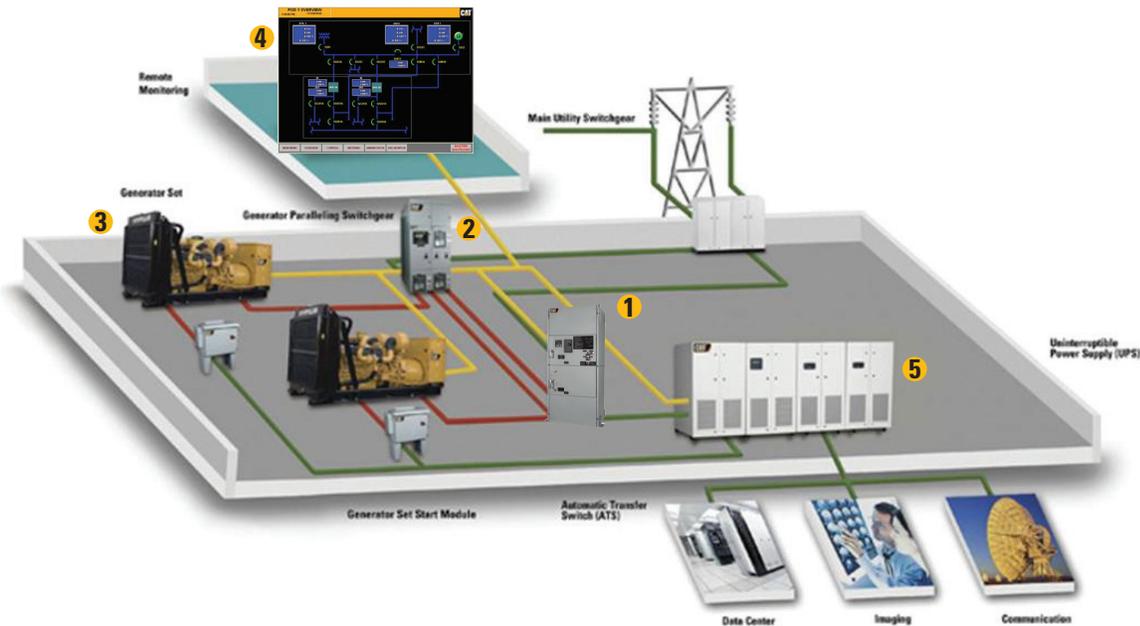
4 Remote Monitoring Solutions

Caterpillar offers a variety of solutions, including 24/7/365 coverage, which affords a cost effective method to ensure that issues with the power system are addressed when the need arises, reducing total maintenance time. Information can be provided in real-time from an operations center to a home office or to any other place where access to a phone, pager or internet connection is available. Everything from daily reports and trend analysis to automated alarm notifications can be received, allowing necessary action to be taken immediately. In addition, a remote monitoring and control system affords the ability to start and test power system equipment without being on-site.

5 Cat Uninterruptible Power Supply (UPS)

Continuously conditions power and regulates voltage from the source and provides ride-through power to bring the generator set online.

*Caterpillar offers both UL and IEC approved products.

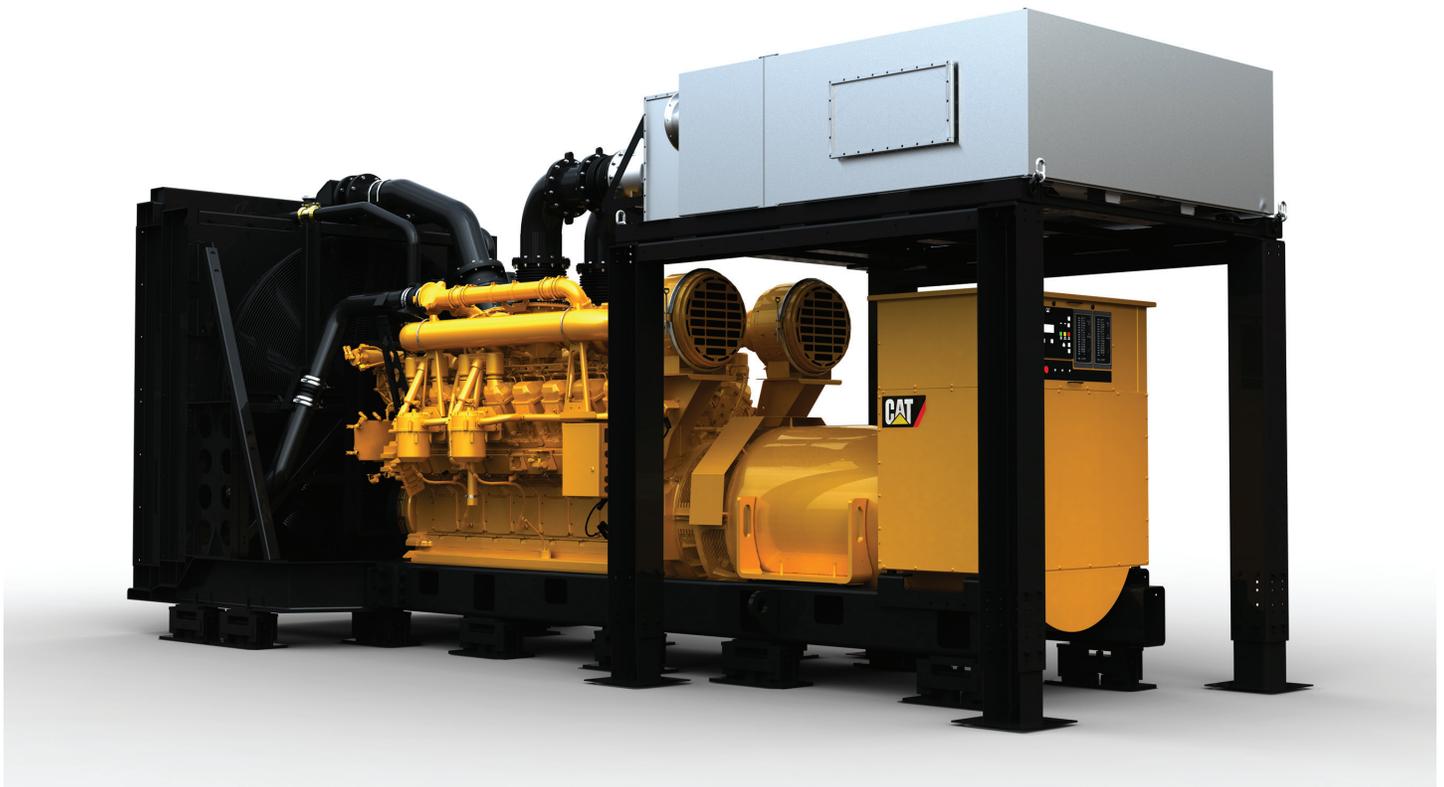


Generator Sets

Cat Engines and Generators are designed specifically to provide reliable power while remaining rugged and reliable to run in the world's harshest environments.

Caterpillar is a leader in the manufacture of diesel generator sets and mission critical applications with more than 450,000 kW installed in data centers and hospitals in a single year. Caterpillar offers a range of high speed product from 14 kW to 3000kW. Caterpillar engineering programs demand some of the most stringent testing requirements in the industry prior to introducing new products in the market place.

Caterpillar is also a leader in developing cleaner and more efficient gensets to meet the increasingly stringent emission requirements established by the EPA. Caterpillar has focused on optimized engine performance plus a tailored aftertreatment system to achieve lower emission levels resulting in a more cost-effective solution for our customers. Our systems are completely integrated from the Engine, Generator Set, Uninterruptible Power Supply, Switchgear, and Automatic Transfer Switch, which provides a seamless solution for all your power needs.



Paralleling Switchgear

Cat Switchgear in combination with Cat Generator Sets, provides an integrated solution for Mission Critical applications. For simple or complex applications, Cat Switchgear provides paralleling capability for multiple generator sets, with single or multiple points of utility connection. Cat Switchgear also provides single point of monitoring and control of your complete solution including Cat ATS and Cat UPS.

Features and Benefits

- Available up to 35kV class
- Automated reporting to meet your facility requirements
- Integrates not only generator output, control, and monitoring in one, but also ATS and UPS for a simple-to-operate system interface
- Complies with market standards:
 - UL 891 Switchboards
 - UL 1558 Metal enclosed switchgear
 - NFPA 70, 99, 110

EMCP 3.S

The EMCP 3.S is a high-speed, industrial hardened, paralleling controller. The EMCP 3.S provides system control which eliminates the need for traditional synchronizers, power factor controllers, load share modules, protective relays and cross-current compensation devices.

Features and Benefits

- True distributed processing
- Standard Moving Master Technology
 - Each controller has built-in Master Control capability
- Optional redundant Ethernet control network
- Optional redundant HMI Touchscreen
- Four levels of fault tolerance to ensure the utmost in reliability for mission critical applications



Automatic Transfer Switch

Caterpillar offers a broad range of transfer solutions and Automatic Transfer Switch (ATS) products designed for Mission Critical applications. These transfer schemes can be arranged to suit any application from simple to highly complex multiple ATS/ generator set switchgear systems.

Features and Benefits:

- Available in sizes ranging from 40 to 5,000 amps
- Circuit Breaker based solutions
 - Carries TRUE UL 1008 30 cycle rating
- Contactor based solutions
 - Electrically operated, mechanically held
 - Double throw, mechanically interlocked contactor mechanism
- Open / Closed / Delayed transition designs
- Bypass / Isolation
 - Identical/interchangeable ATS and Bypass contactors
 - Dual ATS functionality
 - ATS and Bypass are both controlled by the ATC controller
 - Draw-out for both ATS and Bypass
 - Available with fully automatic transfer capability while in bypass mode
 - ATS is ALWAYS activated even in the Bypass position
- Medium Voltage Solutions
- UL 1008, IEC, and CSA listed
- Meets all applicable seismic requirements of the International Building Code 2006 and the California Building Code 2007 standards
- NFPA 70, 99, 101 and 110

Safety

- Isolated voltage compartments
- Rack-out with door closed
- Rack-in fail-safe interlocks (mechanical-electrical)
- Bypass function performed with door closed



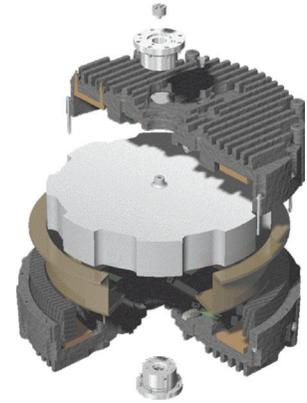
Uninterruptible Power Supply (UPS)

The Cat UPS with flywheel energy storage delivers reliable power protection. The Cat UPS provides immediately available power to ride through disturbances and conditions power from the source. When integrated with other Cat products – which include Generator Sets, Automatic Transfer Switch (ATS) and Switchgear – you can be assured of the cleanest, most reliable source of power protection.

Benefits:

- Lower maintenance/replacement costs
- Space savings of up to 75%
Small footprint with no added floor space required for HVAC, temperature control or ventilation equipment
- 98% total flywheel system efficiency

The Cat UPS with flywheel energy storage offers numerous advantages over traditional battery based UPS systems, providing lower operating costs over the life of the unit. The Cat system offers less than half the life cycle cost of any battery-based unit.



Generator Set Start Module

By working with existing UPS power sources, the Cat Generator Set Start Module (GSSM) substantially increases the reliability of battery power as:

- Voltage is not a true indication of cranking current
- Environmental exposure reduces battery life
- Battery maintenance is often neglected
- Batteries offer inadequate remote monitoring capabilities

By providing redundant starting power directly from the UPS output, the GSSM ensures continuous uninterrupted power to critical loads, no matter what type or duration of your power loss. With a Cat Generator Set Start Module, you'll have increased confidence in your back-up power's ability to start time after time.



Containerized Data Center Solutions

Whether a pre-fabricated or custom specified design, Caterpillar can assist you with all of your power needs. Containerization results in a modular, conveniently transported power system package. The modular design allows for rapid installation and commissioning on site and features a smaller footprint than that afforded by more traditional power generating systems.

Pre-configured Data Center Solutions

Containerized power solutions include pre-configured continuous power systems. Pre-configured containerized Data Center modules are available with the following generator set standby ratings: 1 / 1.5 / 2.5 / 3 MW. The packaged generator sets may also be used in combination with a containerized Cat Flywheel UPS with the following standard ratings available: 300 / 600 / 900 / 1200 kVA

3 MW Data Center Module

The 3 MW Data Center Module is a sound attenuated, containerized power module, featuring the C175-16 generator set. The containerized solution is double stacked in dual ISO containers and includes a wide range of rugged features and flexible system attachments. The Data Center module is sound attenuated, achieving a noise pressure of 85 dB(A) at 1 meter.

In addition to the standard configurations described, Caterpillar can provide the Engineering Design Assistance to create a solution for your specific project requirements.



Service You Can Count On

Cat dealers are committed to cost effective, quality controlled and fast turnaround service. Their service facilities represent a huge investment in plant, tooling, diagnostic and testing equipment, as well as people.

Cat dealers have over 51,000 employees. More than 75% of these employees are engaged in product support to help customers derive the maximum value and reliability out of their Cat products. As rapid technological changes take place, the dealers commit nearly \$60 million annually to train and develop their employees with the majority focused on product support.

To ensure superior after sales support the North American Cat dealers collective installed service capability at North American Caterpillar dealers includes: 7,500 service bays, 5,000 service trucks and 22,000 service technicians, 7,500 of those field based.

Additionally, technical assistance is only a phone call away 7 days a week, 24 hours a day. Cat dealers have also committed to having someone onsite at your facility within 2 hours of a problem. On average there is a service location within a 20 mile radius of every one of the customer's facilities. The Cat service capability along with the unparalleled parts availability system is the cornerstone for ensuring the long term reliability of the Cat Power System for our Mission Critical customers.



Parts Availability

Parts availability is a key element of ensuring any Data Center's reliability targets. Caterpillar's goal is to have 98% stock parts availability within 24-hours from the time of order and a 90+% availability off-the-shelf for all parts from the dealer main store and/or branch locations.

A typical Cat dealer provides 90% parts availability over the counter and +98% within 48 hours. Cat dealers access not only the Caterpillar global parts network but also have access to other Cat dealers parts inventory as needed. Caterpillar is presently shipping 99.8% of customer orders the same day.

To ensure the long term reliability of our products, Caterpillar's policy is to continue stocking parts for 20 years after a product is discontinued.

The combined capabilities of Caterpillar and its dealer organization are unmatched in the industry with the sole purpose of supporting world class reliability targets. Today, over 10,500 Cat Logistics employees support 24 hour parts availability needs to Cat customers.

Without question Caterpillar has the most extensive parts distribution network available to service your needs, at any time, anywhere.



Electric Power Rental Fleet

With over 7000 rental units representing 3000 MW of power, Caterpillar has the largest rental fleet in North America. There are 400 rental locations throughout North America offering the experienced technicians and engineers to support Data Center facilities in managing Emergency Contingency plans. In addition to the fundamental business of providing standby power, Cat dealers offer temperature control equipment that has proven to be a critical part of the emergency contingency plan for other Cat Data Center customers.

Caterpillar offers a single rental contact that can put your Data Center operators directly in contact with the local Cat Rental Store location to get you the right power immediately.



Cat Financing Options

Just as every power situation is not the same, at Caterpillar, we understand that not every financial situation is the same. That's why we've built our reputation on providing highly customized financing packages based on our clients' business needs.

You can be sure you'll get the best possible financing packages - covering everything from power products to engineering soft costs to extended warranties and maintenance programs.





A Data Center's Trusted Source for Power

Your Cat dealer is prepared to answer any questions you may have about Cat Power Systems, as well as customer support, parts or service capability anywhere in the world.

To find your nearest dealer go to: www.cat-electricpower.com.

www.cat.com

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