



**INTEGRATED POWER SYSTEMS
FOR HEALTH CARE FACILITIES**





“We trust the quality of Cat[®] products and the ongoing support we receive. It was logical for us to select them to provide the right products for this important power need.”

– Stephen Fenn, director of facilities management department

The American Hospital Dubai is a general medical and surgical hospital providing high-quality health care to the people in Dubai, the United Arab Emirates (UAE) and the surrounding Gulf states. The Caterpillar team designed a true integrated system and provided turnkey support.

CUSTOMER

American Hospital Dubai

LOCATION

Dubai, UAE

CUSTOMER BUSINESS ISSUE

Reliable emergency standby power for a hospital

SOLUTION

- Two Cat C175-16 generator sets
- One Cat 300 Series uninterruptible power supply (UPS)

CAT DEALER

Mohamed Abdulrahman Al-Bahar

IT'S OUR JOB TO PROTECT YOURS.

Your health care facility protects the health and safety of your community. The phrase “mission critical” says it all. Let the Caterpillar team help you find a total power solution that delivers the 100 percent uptime health care facilities require. That includes backup power to ensure that care is never interrupted for even a second.

We serve hundreds of health care facilities across the globe but, like fingerprints, no two are the same. From compliance and regulations to powering sophisticated equipment, your unique challenges and every critical item on your checklist drive the design of your power system.

Once we assess your specific situation, we will develop a fully integrated power system – including automatic transfer switch (ATS), uninterruptible power supply (UPS) and switchgear – designed to operate and work seamlessly together. And we will tailor each component to develop a fully optimized system, including attachments and performance options to meet your specific application. That's why the world's finest hospitals, critical care facilities and surgical centers rely on Cat power systems.

WHY WE'VE BECOME THE LIFELINE FOR HEALTH CARE FACILITIES.

When it comes to health care facilities, losing power could have unthinkable consequences. Lives are on the line, and every second counts. Below are a few of the health care facilities that turned to us to serve as the backbone of their business.



NCH HEALTHCARE SYSTEM – NAPLES, FLORIDA, USA

Made up of two hospitals and several specialty centers offering advanced heart, cancer, obstetric, newborn and pediatric care, NCH's 630 physicians see patients more than three million times a year. The NCH Healthcare System is one of the most progressive health care providers in the country.

On October 11, 2010, the staff at the downtown Naples hospital found themselves facing an emergency of their own. A fire knocked out power to the entire one-million-square-foot (93,000-square-meter) facility. Instantly, the hospital's three Cat 3512C 1500 kW diesel generator sets began running. Except for normal, scheduled maintenance, the generator sets delivered reliable power continuously for the next 35 days.

According to Walter Tester, director of facilities/construction management for the hospital, "Based on my experience as a hospital facility manager for over 25 years, there is no other generator that is as dependable as a Cat generator."

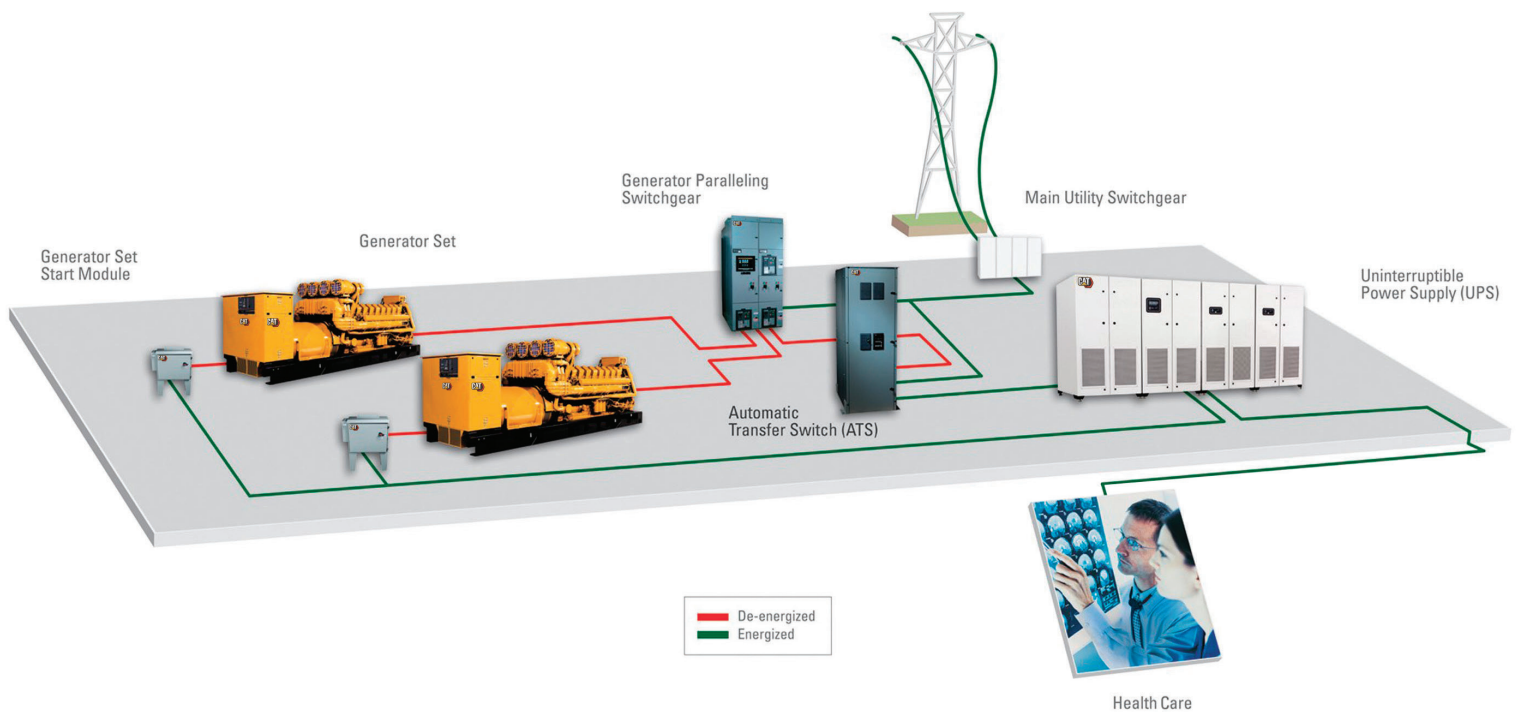


BELLA VISTA HOSPITAL – MAYAGÜEZ, PUERTO RICO

For more than 60 years, this medical institution has grown from a small facility to a renowned, modern hospital for the citizens of Puerto Rico. Focused on delivering the highest quality medical care and specialty treatment in the region, Bella Vista Hospital has continued to expand its patient care facilities to deliver quality, efficient operation to better serve its community.

To protect against blips in the power supply to the hospital, Bella Vista worked with local Cat dealer RIMCO to design a backup power system, including three Cat generator sets, totaling 3 MW, along with a Customer Support Agreement for long-term maintenance. According to Jesus Nieves Rosario, executive director for the hospital, "We chose Cat generator sets for their service and the parts capacity that our local dealer can provide. It was a clear choice to go with the Cat brand due to the local dealer network."

INTEGRATED SOLUTIONS WITH YOU IN MIND.



When it comes to designing a customized power solution for your health care facility, having strong support throughout the configuration, installation and operation is crucial. With Caterpillar, you will be working with a single-source provider with a broad range of solutions readily available – delivering the products that you need to power your operation and the necessary support to keep your facility up and running.

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.

From diesel- and gas-powered generator sets to UPS, ATS, and switchgear, Caterpillar has everything you need to maintain clean, uninterrupted power for your business operations. All Cat products are designed to work together, with all elements relating to the generator set production, control, and monitoring functions integrated into a single-source package.

You'll also have the benefit of a single source for parts and service. Your local Cat dealer is always available to provide the support you need, from system design to long-term maintenance.

To us, delivering an integrated solution means providing the custom power system that your project demands from one provider. For you, installing an integrated solution means you get the answers you need from one convenient partner, saving you time and work so you can keep focused on the job ahead.

DIESEL AND GAS GENERATOR SETS

To keep patients safe and healthy, you need to be sure your power source is never compromised. We are a leader in the manufacture of diesel and gas generator sets and mission critical applications with more than 450,000 kW installed in data centers and hospitals in a single year.

We are also a leader in developing cleaner and more efficient generator sets to meet increasingly stringent global emission standards. Our focus on optimized engine performance to achieve lower emission levels has resulted in more cost-effective solutions for you.

Whether you install a Cat diesel or gas generator set for continuous or standby use, your health care facility will be protected with consistently reliable performance. Our engineering programs demand some of the most stringent testing requirements in the industry, which means that the products are manufactured to run for thousands of hours without overhaul.

Health care facilities reduce operating costs by implementing a combined heat and power (CHP) system using clean pipeline natural gas as a fuel source. Cat gas generator sets can simultaneously provide electricity for electrical loads and convert waste heat into a server cooling source via absorption chillers. The result is a power system with energy efficiency up to 90 percent, reduced energy costs, and Energy Efficiency Points toward Leadership in Energy and Environmental Design (LEED) Certification.



CAT® DIESEL GENERATORS
12 to 17,460 kW / 15 to 21,825 kVA



CAT GAS GENERATORS
66 to 6,520 kW

Advantages

- Powered by Cat engines for the reliability you demand
- Wide range of factory-designed options to meet your requirements
- Easy to specify, permit, install and test
- Low life cycle costs
- Excellent transient response and steady state performance
- Emissions compliance with most worldwide regulations
- Single source and turnkey support from the Cat dealer network

UNINTERRUPTIBLE POWER SUPPLY (UPS)

When it comes to your facility, every second counts. Surges, sags, spikes, failures – your business can't tolerate any of these. The Cat UPS with flywheel energy storage provides immediately available power to ride through disturbances and conditions power from the source. When integrated with other Cat products – including generator sets, ATS and switchgear – you can be assured of the cleanest, most reliable source of power protection.

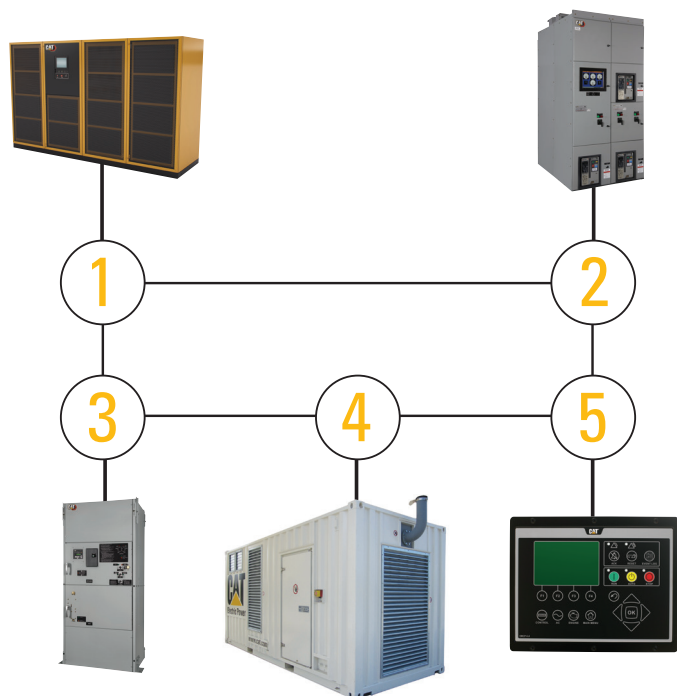


Advantages of the flywheel UPS

- Lower operating/maintenance/replacement costs
- Smallest available footprint
- Complete system capable of operating at 40°C; no need to up-size HVAC systems
- Industry leading total cost of ownership

INTEGRATED SYSTEMS

- ① UNINTERRUPTIBLE POWER SUPPLY (UPS)
- ② PARALLELING SWITCHGEAR
- ③ AUTOMATIC TRANSFER SWITCH (ATS)
- ④ CUSTOM PACKAGING SOLUTIONS
- ⑤ CONTROLS – EMCP 4



PARALLELING SWITCHGEAR

The amount of control you require varies from application to application. That's why, for simple or complex applications, Cat switchgear provides paralleling capability for multiple generator sets, with single or multiple points of utility connection.

Our switchgear also provides a single point of monitoring and control of your complete solution, including Cat ATS and Cat UPS. When you combine switchgear with Cat generator sets, you get an integrated solution that meets your unique requirements.

Advantages

- Available 208 V to 35 kV
- Intuitive and easy-to-use graphical operator interface (minimizing potential for operator errors, and integrating other elements of your Cat system such as generator sets, ATS and UPS)
- Redundant communications bus and distributed control processing ensure the utmost in reliability for health care facility applications
- Automated reporting capability, including generation of custom reports and real-time PUE
- Available in a broad array of configurations, including highly customized designs specifically developed to address specific site requirements



AUTOMATIC TRANSFER SWITCH (ATS)



To ensure you have the power you need, a fully integrated system designed to operate together is crucial. And if your first indicator – your ATS – isn't reliable, your entire system can be compromised. Caterpillar offers you a broad range of transfer solutions and 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.

Advantages

- Available in sizes from 40 to 5000 amps in 2, 3 and 4 pole configurations
- Contractor and circuit breaker-based solutions for flexible coordination
- Open, closed, and delayed transition designs available to meet your specific needs
- Bypass/Isolation type ATS (UL/IEC type)
 - ATS and bypass mechanisms rack in/out with door closed to maximize operator safety
 - Bypass operation accomplished with door closed, again maximizing operator safety
 - Load is not interrupted during bypass operation
 - Interchangeable ATS and bypass mechanisms provide the utmost in redundancy
 - Full automatic mode functionality is maintained with ATS in bypass

PACKAGING SOLUTIONS

No matter how remote your location, a custom package containing Cat electric power equipment can meet your project-specific needs in any environment. We have dedicated resources to help provide solutions for your most complex design issues. Caterpillar can provide the flexible resources to design and procure custom parts not available in our standard price list, so that you can meet and exceed your project goals.



Advantages

- Accountability for entire package and system integration
- Complete set of documentation from single provider
- Reduction of inventory carrying costs and labor resources
- Global Cat parts and service network
- Worldwide warranty

CONTROLS – EMCP 4

The EMCP 4 controllers feature the reliability and durability you have come to expect from your Cat equipment. EMCP 4 is a scalable control platform designed to ensure reliable generator set operation, providing extensive information about power output and engine operation. These systems can be further customized to meet your needs through programming and expansion modules.

Advantages

- Intuitive navigation and configuration
- Advanced telemetry capabilities for remote communications to ensure safety for operators
- Complete engine and generator monitoring, protection and control
- Generator protective relays, including over/under voltage, over/under frequency, over current and reverse power
- Communication options over Modbus and ethernet
- Expansion modules, including local annunciators, remote annunciators, input/output and generator temperature monitoring



YOUR CAT DEALER IS HERE WITH THE ANSWER.

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

Combined, Cat dealers have over 140,000 employees and more than 75 percent are engaged in product support to help customers attain maximum value and reliability from their Cat products.

You can count on technical assistance being just a phone call away 7 days a week, 24 hours a day. Cat dealers are committed to having someone at your facility within two hours of a reported problem. On average, there is a service location within a 35-kilometer (20-mile) radius of every one of our customers' facilities. Cat service, along with unparalleled parts availability, helps us ensure the long-term reliability of your Cat power system.

ADVANCED ELECTRICAL SERVICES

Along with proper configuration and installation of your power system, Cat dealers are also equipped to coordinate your necessary long-term electrical system maintenance, testing, retrofit, and engineering service needs such as infrared thermography, circuit breaker testing, and arc flash studies. You can depend on us to be your partner for all electrical power servicing needs before, during, and after the installation of your electrical system components.

Cat dealers are in full compliance with global and local regulations to minimize the risk of personal injury or product damage. Proper testing and maintenance from your Cat dealer can minimize your exposure to major financial risks, legal risks and regulatory violations caused by unexpected downtime.

ELECTRIC POWER RENTAL FLEET

From planned events to unplanned power outages, having a temporary power plan in place is crucial to ensuring you have power when you need it. Dealers carry a large equipment inventory (including generator sets, temperature control, chillers, load banks, ancillary equipment) and all dealers work together – 1,600 locations strong. That means your dealer is never "rented out." Make one call and your equipment is on the way no matter how many, how soon, or for how long. Your dealer does the legwork, backed by the worldwide strength of Caterpillar, to get your equipment delivered, installed, fueled up, and ready to run.

Our electric power rental fleets offer experienced technicians and engineers to help support your health care facility in managing emergency contingency plans.

PEACE OF MIND. EVERY SINGLE DAY.

Your power system simply cannot fail. To ensure that you are able to maintain your system simply and affordably, we offer Extended Service Coverage, Customer Support Agreements and unparalleled parts availability.

EXTENDED SERVICE COVERAGE

Your Extended Service Coverage offers transferable coverage beyond the standard warranty period, for all Cat branded electric power equipment. Extended Service Coverage protects against unexpected repair bills and a hedge against rising parts and labor costs by providing 100 percent parts and labor reimbursement for covered components, less any applicable deductible. The broad range of coverage options, which can be customized to suit your individual needs, combined with simple pricing terms provides confidence and peace of mind toward your power system's performance.

CUSTOMER SUPPORT AGREEMENT

Your Customer Support Agreement is an individualized arrangement between you and your Cat dealer that helps you maintain your products while lowering your cost per unit of production, regardless of the size or age of your product. Agreements are tailored to fit your business needs and can range from simple preventive maintenance kits to sophisticated total cost performance guarantees. No matter which option you choose, you can be assured that your Cat dealer will provide you with the careful planning and ongoing attention that will help you succeed.

PARTS AVAILABILITY

Your Cat dealer is equipped with a parts inventory and access to the global Cat parts network to fulfill 98 percent of parts orders within 24 hours from the time of order. We know that having the right parts on hand is crucial to keep your power system running, so we also provide 24/7 access to information at parts.cat.com. Here, you will find videos, reference material and specs on Cat original, Classic™ and remanufactured parts, as well as information on repair and maintenance parts for your Cat electric power products, all manufactured to original equipment specifications and recommended by Caterpillar.



RELIABLE POWER FOR ESSENTIAL LIFE SUPPORT I'M BRUCE ENDERS. I RUN CAT DIESEL GENERATOR SETS.

Bruce Enders
Central Plant Engineer
Edward Hospital, Illinois

“Patients on life support can’t afford a power outage. With our Cat generator sets on duty we’ve never had a major power outage. And since we’re under strict local noise ordinances, we power up our two Cat 3516 diesel generator sets with a dual silencer system. Our neighbors can’t even hear them running. With all this and Patten Cat for service and support, we can concentrate on saving lives.”

LET'S DO THE WORK.™

Learn more at cat.com/Edward1

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