Mission Critical
GLOBAL POWER GENERATION

DATA CENTER • WATER INDUSTRY • HEALTHCARE
Contents

4 A Global Legacy of Dependability
5 Backed by a Vast Network of Professionals
6 The Security of a Single-source Power System
7 Expertise That Powers Industry
8 Market-driven Innovations
10 Europe / Middle East / Africa
14 Asia
18 North America
22 Latin America
A Global Legacy of Dependability

“Thanks to Cummins, we have 100 percent confidence that we can maintain normal functionality in the event of a mains power failure.” – Mike Wilson, technical manager
Netcare St Augustine’s Hospital, Durban, South Africa

Around the globe, Cummins Power Generation provides critical protection in market segments that demand nothing less than a consistent, reliable power source. From water and wastewater treatment plants in the Middle East to children’s hospitals in the Americas, Cummins’ vast distribution network has the expertise to match the right power system to each segment’s unique power requirements.

Comprised of high-performance generator sets, automatic transfer switches, paralleling switchgear and sophisticated digital controls technology, our fully integrated power systems represent the most sought after emergency power options available today. It’s the reason data centers choose Cummins to achieve “five nines” reliability, and water and wastewater treatment plants rely on us to power the pumps that keep the water flowing.

And, through Cummins’ sophisticated paralleling capabilities, we can deploy power systems for a variety of applications, whether it’s for peak shaving with the local utility, co-generation or prime power operation.

Cummins never shies away from challenging conditions or mission-critical applications of the highest importance. We stand confidently behind our power systems and their ability to deliver power wherever it is needed. Throughout our company’s history, we have exceeded our customers’ expectations by being the first to introduce industry-specific innovations.
With a global network of more than 600 distributors across 190 countries, Cummins Power Generation is always nearby and ready to deliver everything from complete system design and commissioning to maintenance and project management. The reach of our best-in-class global distribution network is unparalleled in the power industry. No matter where your critical facilities are located, Cummins’ distribution personnel are among the most knowledgeable power systems experts in the world.

Power industry requirements and regulations are subject to regional nuances, and your local Cummins representative is trained and equipped to handle every situation, no matter how complex. You can be assured that everything from electrical codes to contractor relationships will be thoroughly addressed. Global consistency means no surprises, whether your next power system deployment is in British Columbia or Bangladesh.

To ensure our customers receive the same exceptional service and support regardless of their location, Cummins requires comprehensive training and accreditation for sales and support personnel, application engineers and field technicians. And, because our distributors are staffed with knowledgeable power industry veterans, you can be sure your power system requirements are in the most capable hands.
Cummins Power Generation is the only manufacturer in the power industry that designs and produces all the major components in its complete power systems. While other players in the industry rely on integrated components acquired from third parties, Cummins is a single-source supplier for its pre-integrated systems. We design and produce diesel and gas engines, high-performance alternators, digital master controls, power transfer.switchgear, turbochargers, and the industry’s leading emissions-reduction technologies (both in-engine and aftertreatment).

Our vertically integrated manufacturing approach encompasses not only the critical components responsible for reliable power generation, but also the accessories required to create a full-featured power system. Modular noise attenuation systems, robust transfer switches, paralleling switchgear, networking and remote monitoring capabilities comprise the power industry’s most comprehensive systems — with all components pre-integrated and tested to perform as expected in a variety of scenarios.

As always, our expertise in engines, power generation and critical system components is backed by our distinguished global distribution network. This rare combination of product and support services makes Cummins the power industry’s only single-source provider of equipment, warranty, maintenance and aftermarket support.
As the world’s only power equipment company that manufactures its own power generation, switchgear and digital controls products, Cummins Power Generation is renowned for its power expertise in every mission-critical application.

**Water and Wastewater Treatment**

Regardless of geographic location, water and wastewater treatment plants keep water supplies flowing, safe for consumption and readily available for industry. The engineers responsible for keeping these plants operational trust the experienced professionals at Cummins Power Generation to seamlessly integrate power systems.

**Data Center**

Today’s data centers and colocation networks are held to the very highest uptime standards. Designing power systems that achieve five nines reliability (99.999 percent uptime) requires expert attention to system architecture and unfaltering system redundancy. Cummins’ power system engineers are the industry’s most experienced data center practitioners and are supported by a global distribution network that’s trained to provide world-class service whenever and wherever you need it most.

**Healthcare**

Hospitals and healthcare providers require the most reliable emergency standby power to perform life-sustaining treatments and maintain the wellness of patients. Whether for an environmentally friendly children’s hospital in Australia, or for the largest private hospital in Qatar, Cummins’ complete power systems are the preferred choice for the world’s leading healthcare organizations.
Cummins Power Generation is renowned as the power industry’s leader in bringing technological innovations to market. With in-house expertise in combustion, air handling, fuel systems, digital controls technology and exhaust aftertreatment, we balance customer demands and environmental considerations without ever compromising performance.

**Low-emissions Generator Sets**

Cummins leads the way on aftertreatment technologies and in-engine innovations that reduce toxic emissions in generator sets. For example, in the U.S., where the Environmental Protection Agency dictates ever-tightening emissions regulations, we were the first to bring a full range of low-emissions generator sets to market. Customers who seek the best available technology, most dependable standby power and the smallest environmental footprint need only look to Cummins for a power system that meets all of these criteria.

**Data Center-specific Power Ratings**

Cummins has developed a new diesel generator set power output ratings category for data center applications to ensure total reliability and dependability for operators. We call it Data Center Continuous (DCC), and it refers to the maximum power that the generator is capable of delivering for unlimited hours in a data center application. This greatly simplifies the engineering design process and makes it easier for customers to achieve industry certifications.
Wherever You Are, You Can Depend on Cummins

For nearly a century, Cummins Power Generation has provided power products that support the needs of commerce, industry and communities. At Cummins, we believe our people is still our greatest asset. Behind every power system is an expert sales, application or technical professional who is trained and eager to provide the personal assistance our customers have come to depend on.

By taking complete ownership of the entire power system, we’re also able to improve customer support activities and simplify the installation and commissioning processes. This means you have a single supplier with which to conduct business — one with the skill and knowledge base to provide application support for every power system requirement throughout the product’s life cycle.

With our vast network of global service and support personnel, we can assure that you have access to these resources in your locality. We take great pride in making these personal connections, and we’re confident you’ll depend on us as much as you rely on your power system.
EUROPE
MIDDLE EAST
AFRICA

The Middle East, Europe and Africa are dynamic regions that represent a unique combination of Old World traditions and New World innovations. With its aging infrastructure, Europe is undertaking a modernization process of critical systems that support everyday life. The Middle East and Africa both contain a mix of modern cities with state-of-the-art amenities and rural lifestyles that don’t necessarily have the benefit of reliable, consistent power grid access. Meanwhile, new healthcare facilities that promise enhanced wellness are being constructed; and data centers are springing up to provide uninterrupted connectivity to every corner of the globe. Wherever critical protection is a necessity, Cummins Power Generation delivers the emergency power that keeps facilities running and a high quality of life sustained.
Edith Cavell Healthcare Campus
Peterborough, Cambridgeshire

Situation Analysis

The new Edith Cavell Hospital Campus sits on the site of the previous Edith Cavell Hospital and is comprised of two new complexes: the Peterborough City Hospital and its predecessor’s replacement, the Cavelle Centre. Opening in 2010, the new facilities were funded by a significant investment of the Peterborough and Stamford Hospitals trust. The hospital includes 612 inpatient beds, an emergency care center, a multi-disciplinary training center, and specialized units for high-tech diagnostics, women and children, rehabilitation and renal dialysis.

The Cavelle Centre is a 102-bed mental health hospital that offers adult acute psychiatric intensive care and contains a unit dedicated to treating learning disabilities. The building features modern architecture and a fine arts-themed décor to aid in the rehabilitation process, complete with a centralized dining area, fitness and recreational facilities, staff quarters and garden areas. During the project’s planning phase, administrators of the campus had a fixed requirement for the campus’ standby power system — it must assume the critical load of the entire premises within 15 seconds.

Cummins’ power system assumes power as soon as a blackout occurs, taking on the critical load throughout the campus within the 15-second requirement.

Solution

To meet the specific needs of the project, Cummins UK worked closely with the campus stakeholders and contractors to develop a new standby power system that ensures their ability to provide essential care, even if there are interruptions to mains power. Cummins’ technical team supplied three generators capable of taking 100 percent of the campus’ 11 kV load without stalling. The power system features Cummins’ AmpSentry protection that enables the first generator set online to energize the 11 kV premise ring while the other units synchronize to it, keeping within the 15-second requirement.

Additional components of Cummins’ power system include: fuel systems; fire and fuel leak detection; air inlet and discharge systems; exhaust gas silencer systems and flues; and power and communications cabling. The power system is managed through Cummins’ digital master control unit with a user-friendly, touch-screen interface that provides the end user with load management controls and advanced data monitoring.

Equipment

Three C2250 D5 generator sets at 11 kV produce a total of 2,680 kW of power for the campus. A PowerCommand® DMC 300 paralleling system, with hot PLC standby and a full building management service (BMS) interface, controls the entire operation. Cummins also provided three sets of inlet and discharge attenuation and three-day tanks and connective fuel systems.
Situation Analysis

The Ministry of Electricity & Water (MEW) is responsible for the provision of power and water to different sectors of consumers throughout Kuwait. To meet the Kingdom’s ever increasing demands for electricity and water supplies, MEW’s principle activities include electric power generation, transmission and distribution; water desalination, licensing and infrastructure.

As is the case with many Middle Eastern countries, Kuwait experiences frequent power outages when demand reaches a critical point and leads to an overload on the existing power infrastructure capacity. Difficult terrains, high ambient temperatures and the sporadic, regional nature of blackouts add to MEW’s power supply challenges.

Solution

Cummins provided 33 generator sets designed to deliver power in situations when the power source must be reestablished quickly and efficiently. The generators were trailer-mounted on mobile units to improve MEW’s ability to marshal resources as needed, regardless of geography and ambient temperature. For added reliability and ease of mobility, fuel tanks were incorporated under the mobile trailers.

Having established a strong relationship with MEW, Cummins’ local distributor, GTE, has provided the generators for the Ministry’s mobile standby generators for several consecutive years. MEW continues to rely on the proven dependability and quality of Cummins power products.

Equipment

In all, MEW deployed 33 Cummins generator sets in its mobile units: 15 C2000 D5 units, six C500 D5 units, six C400 D5 units and six C175 D5 models.
Netcare St. Augustine’s Hospital is KwaZulu-Natal’s largest private hospital and the second-largest care center in the Netcare Group, a primary care network renowned for establishing modern and sophisticated medical facilities in England and South Africa.

Situated prominently on Durban’s Berea with spectacular views of the cityscape, the 418-bed hospital boasts state-of-the-art medical equipment and technology. St. Augustine’s reputation for offering world-class healthcare stems from its wide range of medical disciplines and services, from major organ transplants to the latest diagnostics procedures.

The risk of mains power failure represented a major hazard for St. Augustine’s, particularly for dangers posed to patients in operating theatres and high-care units. The hospital had previously been reliant upon small generators for essential services only. When hospital administrators sought comprehensive emergency power protection for the entire establishment, they turned to the experts at Cummins Power Generation.

“In the event of a mains power failure, we now have 100 percent confidence that we can maintain normal functionality — thanks to our Cummins power system.” — Mike Wilson, technical manager

Cummins recommended two new diesel-powered generator sets capable of synchronizing and producing the full power load within 15 seconds after a mains power failure. In the unlikely event of generator set failure, the system is designed to provide uninterrupted power on pre-determined essential power loads (such as operating rooms or intensive care units) with its remaining generator set.

The complete operation is controlled by Cummins’ MC150 master control that can be programmed to provide pre-determined load share, load shed and sequential load demand protocols. Cummins’ reputation for an excellent national support network and superior technical services was a primary driver in the hospital’s selection of the new emergency standby power system.

Equipment

Two C1400 D5 generator sets provide a reliable source of standby power that keeps the hospital fully operational in the event of a blackout. An MC150 master control manages the operation of the entire system and is programmed to provide pre-determined load share/shed and sequential load demand protocols.
Often at the forefront of technological innovations, countries in Asia and the Pacific Rim produce goods and services that are integral to global commerce and the flow of information via the World Wide Web. Australia boasts some of the most environmentally friendly healthcare facilities, utilizing resource-efficient operational methods to simultaneously save energy costs and reduce negative impacts on the environment. South Korea is host to data centers and Internet exchange points that rely on the most advanced data management techniques to securely house information and serve as a key conduit of global communications. India boasts medical facilities that seek new treatments to epidemics that plague the region and the larger world stage. Wherever an uninterrupted, robust power supply is essential to maintaining the safety of human life or sustaining modern computing requirements, power systems by Cummins Power Generation are preferred for their unfaltering reliability.
Situation Analysis

Opening in 2011, the new Royal Children's Hospital sought to provide an environmentally conscious, state-of-the-art facility for sick children and their families. The “green” mission of the hospital administrators was reflected in their goal to not only reduce greenhouse emissions by 45 percent, but also maintain a natural outdoor environment — with ample parks and green spaces surrounding the complex — to foster the healing process.

One of the many green features of the hospital is a tri-generation power plant designed to provide continuous base load power, reducing the hospital’s dependency on the grid and its electricity costs.

Solution

The tri-generation power plant, which simultaneously produces electricity, heating and cooling, features two Cummins lean-burn gas generator sets, with each generator operating around 6,000 hours a year during peak demand. The power plant also relies on Cummins diesel generators for its standby power system.

Cummins was able to fully integrate gas and diesel generator technologies through a single, integrated electrical system — for both tri-generation and standby purposes.

“Cummins’ ability to fully integrate gas and diesel generator technology was one of the key differentiators between Cummins and the competition.”

– Adam Ferrara, contact manager, Cummins Power Generation, Melbourne, Australia

Equipment

The hospital benefits from a fully integrated tri-generation and standby power system incorporating two 1,160 kWe Cummins C1160N 5C (QSK60) lean-burn gas generator sets and three 2,250 kVA c2250 D5 (QSK60) diesel generator sets. The system employs two digital master controls, one each for the gas and diesel generators.

The tri-generation system alone will REDUCE THE HOSPITAL’S CO₂ EMISSIONS by up to 20%.
International Centre for Diarrhoeal Disease Research
Dhaka, Bangladesh

Situation Analysis

The International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b) employs a staff of 1,250 multi-disciplinary specialists working to deliver lifesaving healthcare to the impoverished people in the region. As the largest medical facility in the country, the centre’s lifesaving mission is beset with many challenges: monsoons, bird flu and sweltering temperatures create a breeding ground for deadly diseases that threaten the country’s 150 million citizens. In addition, icddr,b must constantly contend with an unreliable power source from the local utility.

For three to seven hours a day, the centre must generate its own power when the utility is unable to provide it. Recently, icddr,b embarked on a modernization initiative that included an expansion of its facilities and the reinforcement of its emergency power supply.

“Every day, thousands of lives depend on the hospital’s vaccine research and lifesaving medical compounds. These medicines must be refrigerated 24/7, and even a brief loss of power would make the medicines useless.”

– Ziyad Ali, representative of the local Cummins distributor

Solution

Cummins provided mission-critical, emergency backup power for the main hospital and its research facility, both of which rely heavily on drug refrigeration equipment. Having provided an emergency power system for the previous 14 years, Cummins was entrusted to design and install a new, more powerful on-site power system.

Cummins installed a rugged, 2,250 kVA generator set to deliver reliable power, a low emissions footprint, and fast response to load changes in prime and standby power applications. The custom power system incorporates Cummins’ automatic transfer switches, which control power supplied to three separate buildings in the complex.

Equipment

To sustain its lifesaving mission, the hospital relies on a standby power system using a PowerCommand® 2,250 kVA generator set and automatic transfer switches to distribute power to three on-site complexes. The previous 14-year old Cummins 750 kVA generator is also integrated into the system in a purely standby role.
Situation Analysis

Established in 1985 as a subsidiary of the Samsung Group, Samsung SDS has grown to become the leading integrated IT service provider in South Korea and the Asia Pacific region, serving a global market through a network of offices and data centers in 11 countries. Its new software institute in Suwon functions as a state-of-the-art R&D facility for Samsung SDS’ engineering outsourcing research organization, as well as the main data center for the Samsung Group.

In addition, the software institute serves as off-site backup and support for four other Samsung SDS data centers across the globe (New Jersey, London, Beijing and Singapore). Maintaining a continuous power supply is an absolute necessity for both the research facility and critical data center operations.

Solution

Working closely with Samsung SDS stakeholders, Cummins’ team of experts installed seven 2,000 kW diesel generator sets as the backbone of its power system — the largest number of generator sets installed in a single location in Korea’s software/data industry. The system is seamlessly complemented by a PowerCommand® DMC 200 paralleling system that oversees the operation of the seven generator sets.

The compact digital control system comprises 40 percent fewer components than other paralleling systems, and allows users to control generator set functions and monitor current operating status of the generator, engine and power load. This field-proven control system offers maximum flexibility for use in low or medium voltage isolated bus (not utility paralleled) and infinite bus (utility paralleled) applications.

Equipment

The Samsung SDS Software Institute employs a fully integrated standby power system comprising seven C2000 D6 generator sets, each individually controlled by Cummins DMC paralleling systems. Two PowerCommand® DMC 200 paralleling systems oversee the operation of the seven generators.
NORTH AMERICA

Canada and the United States possess some of the most modern infrastructures in the developed world — encompassing highly populated metropolises, rural counties with relatively few citizens, and everything in between. Inhabitants of North America benefit from access to modern water treatment and distribution facilities, persistent utility power (even in remote regions), and modern cities and townships equipped with every amenity, including the very best healthcare. But, disruptions in utility power are inevitable, and authorities must be prepared for prolonged outages that could potentially threaten human safety and existing infrastructures. Wherever the need for maintaining normal, utility-powered operations is in demand, Cummins Power Generation is called upon to deploy emergency power systems that deliver robust performance until utility power can be restored.
Alberta Children’s Hospital
Calgary, Alberta, Canada

Situation Analysis

Like many children’s hospitals, the Alberta Children’s Hospital was designed and decorated with a sense of playfulness and levity to foster an environment of healing and assist in children’s recoveries. Architects of the Alberta Children’s Hospital even asked its young patients for ideas during the initial phases of the project to ensure they captured a restorative spirit in the design. And, it was exactly this spirit that informed the entire project.

The 133-bed, 750,000-square-foot hospital boasts state-of-the-art medical facilities in a façade that mimics a stack of colorful building blocks. To support the 3.5 MW electrical requirements of the facility, the hospital’s construction team chose Cummins Power Generation to design and install a power system that would ensure patient safety in the event of a utility power failure.

Solution

Once Cummins was chosen, their dedicated technical team participated in budget control and design decisions, and worked in tandem with the hospital’s construction team to see the project through to its completion.

Cummins’ power system was comprised of three 2 MW standby generator sets housed in a building 400 meters away (1,312 feet) from the main hospital. This minimized noise and vibration within the hospital, allowed ground-level access to the generators in an emergency, and simplified the design of the generator cooling system.

Cummins worked with the electrical contractor to design a system based on high-voltage (4,160-volt) supply lines to the hospital, rather than the Canadian standard of 600 volts. Increasing the voltage of the power system enabled the hospital to deliver the same amount of power with smaller conductors, resulting in significant savings on conductor costs.

“Cummins’ involvement throughout the whole process is a big reason why the project was so successful.” – Gerry Stebnicki, electrical design team leader

Equipment

Three 2 MW generator sets were isolated in a remote power building with a high-voltage distribution system connected to the hospital. A PowerCommand® DMC paralleling system seamlessly integrated each generator set; two touch-screen panels enabled user controls from either the generator building or the hospital’s control room.
Situation Analysis

When a large regional water treatment plant not far from the shores of Lake Michigan wanted to ensure that water continue flowing to more than 200,000 residents even if the utility failed, it tapped the power system experts at Cummins Power Generation to help prevent service interruptions.

The plant also sought to benefit from a power system that would allow it to generate its own lower-cost power and save money on its electrical bills during the summer utility’s peak demand periods — when lawn watering also pushes water demand to as much as 80 million gallons per day.

When designing the new power system, Cummins also had to consider the plant’s need to incorporate two separate utility feeds from different substations for additional reliability.

Solution

The standby power system Cummins designed for the water treatment plant included two PowerCommand® 2.7 MW diesel generator sets (for a total of 5.4 MW capacity). There are two circumstances in which the generators need to produce power for the plant. One is when both utility feeds fail due to a widespread power outage, and the other is when the utility asks the plant to remove all or part of its load from the grid during days of peak demand, a practice commonly known as peak shaving.

In the case of a utility outage, the generators are programmed to start after a 10-minute delay to allow for various valves to close before pumps are restarted. During that time, water storage tanks throughout the distribution system prevent any noticeable decrease in water flow to consumers.

Since installed, the new standby power system not only kept the water flowing to the plant’s customers during an outage, but has also helped reduce its electric bills and the cost of water.

Municipal Water Plant

Michigan, USA

“We’re using the generators as an uninterruptable power source so that if we have a power outage or curtailment, we can run these two generators and supply enough power to keep the water flowing.”

— Plant’s maintenance supervisor

Equipment

Two 2.7 MW diesel generator sets serve as the backbone of the plant’s standby power system. A paralleling system enables a smooth transition from utility power to generator power for a brief period, during which the transfer equipment parallels the generators with the utility; a gradual ramp-up of the load to the generators reduces stress on components and avoids a break in power flow.
**Digital Realty Data Center**

**Chicago, Illinois USA**

**Situation Analysis**

In 1912, when the now historic landmark at 350 E. Cermak Road was built to support a large printing operation, no one would have imagined that in 100 years it would be home to one of the world's largest data centers. The icon of an industrial age is now a data and communications stronghold, supporting modern technologies like cloud computing, driving the exchange of global information and serving as a cornerstone in digital economy.

Its transformation into a digital fortress began in 1999, when it was converted into a telecommunications hub, and finished in 2011 when Digital Realty modified much of the space for colocation data center usage. Many of its data center tenants are financial firms who are drawn by the confluence of peering and connectivity providers on the premise. Today, it's one of the world's largest carrier hotels (for communications) as well as the nerve center for Chicago commodities markets.

**Solution**

To support its intensive data and communications purposes, data center designers sought to establish a degree of redundancy equal to the facility's considerable architectural backbone. Digital Realty chose Cummins Power Generation to provide the emergency standby power system for its data center customers.

On each floor of the building that housed the data center tenants, Cummins supplied six 2 MW generators configured on a radial bus system to provide 10 MW of backup power per floor. The system featured an additional generator reserved for each floor to provide N+1 redundant capacity, a high reliability standard expected in the data center industry.

Using medium voltage paralleling switchgear and DMC 300 digital master controls, this architecture allowed Digital Realty to configure the generators on a single bus system — delivering 1,350 kW of power per data suite.

“In the world we live in, we can’t have one piece of equipment that can take anything down. On-board generator controls eliminated that single point of failure.”

— Chuck Grosbier, operations manager for Digital Realty

**Equipment**

Twelve 2 MW DQKAB generator sets with on-board paralleling controls, one per data center suite and one redundant generator on each floor, comprised the power system. Two medium voltage paralleling systems with PowerCommand® DMC 300 enabled power systems to configure on a single bus per floor.
LATIN AMERICA

Latin America is home to some of the most modern, progressive countries and cities on the planet. In many areas a renaissance is taking place, transforming previously underdeveloped regions into thriving and sophisticated metropolises where residents enjoy the highest standards of living. Here, data centers and healthcare facilities require state-of-the-art power system reliability to support the region’s critical Internet content portals and public wellness. Amidst the progress, Latin America still has regions where the modernization of its infrastructure is ongoing. In these locations, critical healthcare and commerce facilities must deploy power systems that not only offer standby power, but also serve as the primary power source when needed. Wherever power grid challenges must be addressed, robust power systems by Cummins Power Generation deliver the reliable power that maintains the quality of life to which the region’s inhabitants have grown accustomed.
**Universo Online Data Center**  
*Sao Paulo, Brazil*

**Situation Analysis**

Universo Online (UOL) is Brazil’s main Internet content portal and the country’s primary online service provider. Since launching in 1996, UOL has captured majority market share throughout Brazil, acting as the service provider for seven out of 10 of the nation’s Internet users. Its portal displays an average of 4.4 billion pages every month, with a home page that receives roughly 50 million unique monthly visitors.

A pioneer in the Brazilian Internet industry, UOL has 2.5 million paying subscribers, delivering the largest collection of Portuguese-based content in the world with more than 1,000 news, information, entertainment and services channels. To sustain its high availability levels, leadership position and well-established reputation for reliability, UOL opened a new data center in Sao Paulo. The intent of the new facility was to process and store all the information and transactions carried out by UOL’s end users.

**Solution**

The infrastructure of UOL’s new data center was designed to meet the data industry’s best practices for safety, availability, density and connectivity. The state-of-the-art data center adheres to the region’s “green” computing requirements to ensure the least possible energy consumption and waste emissions.

Cummins’ dedicated technical team worked closely with UOL’s engineers to design, install and commission a system comprised of four generator sets, each producing 3,125 kVA in standby/emergency and 2,920 kVA for prime power applications. The power system was designed to operate in emergency outages and reduce energy costs by operating during the utility’s peak energy consumption periods.

**Equipment**

Four C2500 D6 60 Hz generator sets, each producing 3,125 kVA in standby/emergency, for a combined 12.5 mVA capacity; each generator set can also produce 2,920 kVA for prime power applications. Cummins’ PowerCommand® control module is built into each generator set.
Situation Analysis

Opening its doors in the summer of 2013, the Nuevo Instituto Nacional de Salud del Niño in Lima is set to provide world-class medical treatment to children with a full range of medical afflictions — from minor injuries to life-threatening illnesses. The facility is host to 265 beds, 47 outpatient and procedure rooms, and a high-tech surgical center with 10 operating rooms. The 24-hour facility also features a 56-bed intensive care burn unit, a burn ICU, three operating rooms, and a trauma rehabilitation unit for patients whose burns necessitate high-skilled medical attention.

As one of the region’s most advanced children’s hospitals, the Nuevo Instituto Nacional de Salud del Niño puts Peru at the forefront of children’s healthcare in South America. A part of the MINSA network of hospitals, the new facility was constructed by Consorcio Hospitalario S.A., a consortium of two construction companies, ICCGSA and INCOT S.A.C. With so much at stake, construction engineers sought the most reliable emergency backup power system from a provider that could guide them through every step of the process.

Solution

To assist the construction team with the power system selection process, Cummins Power Generation invited Consorcio Hospitalario S.A. to their factory in Minnesota, USA, to attend a technical conference on generator sets, transfer switches, and installation and soundproofing recommendations.

Upon being awarded the contract, the application engineering team at Distributor Cummins Peru put together a comprehensive design for the power system, encompassing everything from detailed power system topology diagrams and dimensions of the generator room to fuel system specifications and commissioning plans.

Throughout the project, Cummins Peru provided the highest level of service, meeting every deadline pertaining to equipment delivery, installation and soundproofing.

Equipment

The power system is comprised of two enclosed 900 kW standby generator sets (model 900DFHC); two distribution switchgear panels with 4 x 2,000 amp motorized breakers; and one generator set paralleling switchgear panel with 2 x 2,000 amp breakers. Cummins provided contracting services for generator set installation and soundproofing of the electrical room (maximum 50 dB within 12 meters).
Situation Analysis

Claro Chile is a subsidiary of Mexico’s América Móvil and the third-largest mobile telephone operator (with 6.5 million customers) in Chile. Headquartered in Santiago, the entity recently merged with Telmex Chile to form a company that offers triple-play services (telephone, television and Internet).

Claro Chile has successfully positioned itself as the primary service provider for large corporations in the region. With the backing of América Móvil — its parent company and the largest telecommunications provider in Latin America — Claro Chile recently invested $110 million in a new state-of-the-art, 27,000 square-meter facility near Santiago.

Featuring the very latest in data center infrastructure technology, the Claro Data Center adheres to modern rules for safety, redundancy, power and security, especially considering that Chile is in a zone of high seismic activity.

Solution

To maintain the highest possible levels of security and reliability, the project followed the most stringent international engineering and construction standards — including the Uptime Institute’s Tier III standards for data centers, which requires 99.98 percent system availability.

“With generators that meet all governmental requirements for maximum integrity, the data center will be able to operate freely under environmental regulations.”

Equipment

Cummins’ Chile engineers worked alongside the project’s engineering team, contributing their experience and expertise in backup power systems. The equipment comprising the backup power system was installed in a 5,000-meter room and designed to the highest security and redundancy standards for withstanding climatic conditions and electric energy variations and provides advanced seismic protection.

The data center’s backup power system consists of four C2000D5 units, a PowerCommand® DMC 300 paralleling system and related medium-voltage switchgear.
Fail-safe performance, localized support

Cummins Power Generation designs, specifies, manufactures, tests and packages its complete power systems to ensure fail-safe performance. As the manufacturer of all key components in our power systems, Cummins is able to exert the highest degree of design and performance control of any provider in the power industry.

With more than 600 branch locations in 190 countries, an accredited Cummins distributor is your first line of support for everything from applications assistance and commissioning to troubleshooting and aftermarket services. You’ll have one point of contact for the entire power system, saving time on critical installations and greatly simplifying support throughout the product’s life cycle.