

RUNREADY™



FLOWER POWER

Grower rebuilds with new Cat® CHP plant

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TOROMONT
Power Systems





IMPLEMENT A RENTAL EMERGENCY POWER PLAN IN FOUR STEPS

Preparing for an emergency outage situation may be one of the most important plans you create, as it can save time, money and maintain continuity of your operations. All it takes is a little time and practice to make sure you're covered during an electrical outage.

In the previous edition of *RunReady*, we detailed the first two steps for implementing an effective emergency response plan—determining the electrical load and knowing the ins and outs of your facility. Here are two additional steps for developing an emergency power plan:

FIND A TRUSTED SUPPLIER

Your rental generator sets are only as reliable as the supplier who backs them. In planning for temporary power, find a rental power supplier that has the equipment you need and a qualified staff to solve your problems and service the machines.

Make an appointment with the supplier to get to know the people you'll need to rely on during scheduled shutdowns and emergency power outages.

Here are some basic questions to ask a potential supplier:

- What is the power range (kW/kVA) of your generator set rental fleet?
- Can you deliver immediately? If not, how long will it take?
- What if I need a generator set in the middle of the night, or during a holiday?
- Who supplies the fuel?
- How are your rental contracts structured? How flexible are they?
- Have you ever rented generator sets to customers in my industry?
- What equipment/manpower do I need to provide?
- What technical service/support do you offer?
- How do I know the rental units are reliable?
- What happens if a generator set I rent has problems?
- Do you have cables and all the other equipment I may need?
- Can you train my staff to hook up and operate the equipment?
- How long will it take to deliver and install?
- Can I obtain pre-approved credit so I can avoid delay during an emergency outage?
- Can you supply an operator?

Supplier selection criteria should include:

Inventory

The supplier should have all necessary equipment in stock—generator sets, cables, etc.—or be willing to commit to providing it on demand. Suppliers who do

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not have the equipment available in the region must have the capability to import it in an emergency.

Service and maintenance

The supplier should be willing to deliver the rental power generator sets and, in some cases, additional equipment including power cable, transformers and more. Suppliers should also train local personnel in the equipment operation or, if necessary, provide staff for operation, service and maintenance.

Since all generators need periodic maintenance and regular fueling, service trucks will need easy access to emergency power units to check fluids and filters and make adjustments as necessary. Your supplier should work with you to anticipate and overcome placement challenges related to maintenance access, blocked passageways and size restrictions.

Your supplier should work with you to determine fueling requirements in advance based on tank capacity.

Location

At a minimum, the supplier should be strategically located to serve you. The

ideal supplier will have multiple locations from which to deliver equipment and dispatch support staff.

Experience

Longevity in business can be a good indicator of a supplier's reliability. Suppliers should be willing to discuss their track record in delivering and installing equipment under tight deadlines, as well as their experience in emergencies. Reputable suppliers will always provide references.

Terms

When renting generator sets for emergencies, it is not always possible to secure an absolute guarantee for the availability of the equipment. However, some suppliers offer contracts that provide a "right of first acceptance." In this arrangement, a party pays the supplier a retainer fee for an allocation of specified equipment. In return, the supplier agrees not to release that equipment to another entity without the first party's consent.

IDENTIFY EMERGENCY PERSONNEL AND CONDUCT A DRY RUN

Prepare a list of key contacts that will be responsible for carrying out your plan

in an emergency. Make sure your team members have easy access to the list and update it as necessary. You should also have a plan for redundancy for each of the key contacts with multiple contact numbers.

After you've chosen the appropriate emergency equipment and roles have been defined for staff members, try your plan under pressure. These exercises will help ensure that everyone fully understands what to do in an actual power outage.

Cat® Rental offers reliable power, ranging from 20 kW to 2000 kW, so you get the right power at the right time. Our rental generator sets were engineered for easy transporting and fast installation to enable you to rebuild after a disaster, power maintenance machinery or a project, keep a standby power supply or produce energy for seasonal peak loads. Designed to work alone or in redundancy, they're guaranteed to meet your greatest power need in the shortest time. 📞

For more information on how to prepare for a rental power emergency, contact our dealership.

RISING from the ASHES

Flower grower comes back from fire stronger than ever

Two years ago, one of North America's largest cut-flower growers was hit by a devastating fire that destroyed 15 acres of its greenhouse operation, as well as a dozen delivery trucks and all cooler/warehouse and office facilities.

With black smoke from the ruins visible for miles, news of the fire at Rosa Flora Growers Ltd. spread quickly in the small town of Dunnville, Ontario,

and throughout the Niagara region of Canada. The greenhouse operation had become a leading employer in the area after Dutch immigrants Otto and Corine Bulk started the business in 1978.

With no time to rest after the disaster, Rosa Flora scrambled to keep up with customer demand, especially for snapdragons. About half of the growing operation located across the street was spared from the fire, which enabled

North America's largest gerbera farm to keep growing daisies. With favorable weather, greenhouses were rapidly reconstructed. Within a month, the grower also purchased an ongoing snapdragon operation in nearby Welland to supplement the rebuilding effort.

Due to the fire and a corresponding decrease in the supply of snapdragons, prices for the favored product increased

CUSTOMER PROFILE

Rosa Flora Growers Ltd.

Location: Dunnville, Ontario

Application: Combined heat and power

Cat® Equipment: G3516 gensets (2), G3516H gensets (2) G3520C gensets (2)

ROSA FLORA
LIMITED
Pride in Every Petal

significantly. Weak areas within the business were identified, and new routines were established to streamline operations.

Nine months after the fire, Rosa Flora bounced back stronger than ever. Today, employment now stands at 180 to 200 depending on the season—an increase from pre-fire levels. Rosa Flora occupies 35 acres, with 1.5 million square feet of greenhouse space.

“Immediately after the fire, we received a lot of support from our employees, from the community, from suppliers, and from our customers,” says Ralph DeBoer, a co-owner and operations manager. “It was overwhelming to see that everybody wanted to see Rosa Flora get through this unfortunate event and rebuild and continue to stay in operation.”

CHP plant rebuilt

One of the greenhouse operation’s suppliers is Cat® dealer Toromont Power

Systems, which provided generator sets and technical support for a combined heat and power (CHP) plant that started operating in 1992.

Before the fire struck, four Cat generator sets—two G3516s and two G3520Cs—powered by natural gas were utilized primarily during the heating season that runs from mid-August to mid-April to produce heat and electricity for the growing operation.

“A big part of our operating costs is energy,” DeBoer says. “That is our largest input cost other than labor. And when we look at our energy cost, it’s primarily electricity for grow lights to keep the crop growing and heat to warm the greenhouses.

“We require the grow lights to be on typically from September to March because of the short day length,” he adds. “So with this crop of snapdragons we start lighting at 1:00 a.m., and on a dull day we will utilize the generators until 9:00 p.m. for both this crop and

other crops here at Rosa Flora. So typically we run the generators 20 hours per day.”

The G3520C generator sets were rendered inoperable by the fire, but the older G3516s that were located across the street and not damaged continued to operate and supply 1.6 MW of power to the grower’s operation through a district heating system.

Soon after the fire, Rosa Flora engaged Toromont Power Systems to examine its future plans with CHP.

“At that point, Toromont offered their services with respect to getting us replacement gensets, while assuring us that the combined heat and power facility could be rebuilt and back in service as soon as possible,” DeBoer said.

As part of the rebuilding process, two new G3520C generators were paired with two G3516Hs in a brand new power room.

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“We had recently gone through the commissioning process, so we had less of a learning curve to overcome because of our previous experience with installation and commissioning of the new CHP plant,” DeBoer says. “And some of the electro infrastructure was still in place, so from a connection perspective that went very well.”

The new 8 MW CHP facility is connected to the district heating system, and provides space heating and domestic hot water to Rosa Flora’s greenhouse production area, two neighboring greenhouse operations, and several commercial and residential buildings.

The facility consists of four natural gas-fired, reciprocating engine generator sets, heat recovery equipment (including aftercooler heat exchange, aftercooler radiation and exhaust condenser), controls and switchgear. The CHP plant is located within the existing building structure, and connected to the electrical distribution system at the Dunnville transformer station.

Electricity generated by the Cat G3520Cs can be exported to the main utility grid. That helps the grower offset the cost of more expensive power that would normally be purchased from Hydro Ontario, DeBoer says.

“As a fresh cut flower grower here in Ontario, one of the drivers for investing in CHP is that power prices from the grid have continued to rise,” DeBoer says. “In Ontario and many other jurisdictions

over the last number of years we’ve seen the price of power increase, so to offset the cost we self-generate. CHP offers the attraction of not only making the electricity in a very clean and cost-effective way, but fully utilizing the heat that comes off the back end of the generators.”

One of the added benefits for Rosa Flora is that in the event of a grid power failure, the CHP plant is able to meet the grower’s base load requirements as a standby power source.

Renewable energy pioneer

Throughout its 36-year history, the company has expanded the use of alternative and renewable energy sources, while introducing other technologies and energy efficiency initiatives. Expanding its power generation capability using gas-fueled generators is central to its approach.

Five greenhouses share a common district heating network, as well as utilizing stored heat for hot water. Rosa Flora utilizes a variety of renewable energy sources to offset the cost of energy, which amounts to about 40 percent of its total operating costs. They include:

- Biomass boilers use chips ground from recyclable wood to heat hot water, which provides 15,000 kW of heat, which is circulated throughout the greenhouses.



“As Rosa Flora grows, we will continue to depend on the extraordinary reliability of the Cat engines, as well as the dealer support network, to help us meet our power needs.”

RALPH DEBOER
Co-owner and
Operations Manager
Rosa Flora Growers Ltd.

- In late 2006, Rosa Flora installed and commissioned a German-engineered wind turbine that is able to produce 615 kW of electricity.

The grower also makes extensive use of double-pane acrylic glass in its greenhouses, which provides better energy efficiency than less expensive coverings and saves \$1 million per year



Toromont rep Bruce Baxter (L) and Ralph DeBoer



by retaining heat. It also utilizes high-pressure sodium lighting.

“Rosa Flora has always been a company that’s tried to be innovative in terms of growing cut flowers as well as utilizing the energy,” DeBoer says. “Combined heat and power has always been attractive to us as a greenhouse grower because natural gas is a clean fossil fuel, and with combined heat and power we are able to utilize the electricity for growing cut flowers as well as utilizing the heat.

Rosa Flora gains more than 40 percent electro efficiency from its CHP plant, and up to 50 percent thermal efficiency, which adds up to an overall efficiency rate above 90 percent.

Reliable power and service

Rosa Flora continues to partner with Caterpillar and Toromont in its combined heat and power greenhouse application mainly because of the reliability of the equipment, DeBoer says.

“Back in 1992 when we first invested in CHP we found units that ran well for 20 years, and now it’s been 20-plus years,” he says. “We’re still running that equipment after 80,000 hours plus, and our more recent investments have also been running very well. So the reliability has been very good.”

When it comes to maintaining the generator sets, Rosa Flora has enough experience that it can perform most of the day-to-day routine maintenance, while Toromont technicians handle inspections and provide technical expertise and repairs when needed.

“Toromont has been very responsive in terms of being here when we need them,” DeBoer says. “Because of their developed network of maintenance teams throughout the province of Ontario, and specifically in southern Ontario, the response time has been excellent. When we need a technician here, they are here very quickly.”

DeBoer says as the business continues to expand, CHP will continue to be part of any future expansion.

“As Rosa Flora grows, we will continue to depend on the extraordinary reliability of the Cat engines, as well as the dealer support network, to help us meet our power needs.”



ROSA FLORA GROWERS LTD.

Based in the heart of the Niagara region in Ontario, Canada, Rosa Flora Growers Ltd. was established in 1978 by Dutch immigrants Otto and Corine Bulk.

While the business has since passed from one generation to the next—with Arielle DeBoer, Ralph DeBoer and Joshua Bulk now serving as owners—Rosa Flora remains committed to the business practices that have made it the largest greenhouse cut flower operation in Canada today.

Rosa Flora has well-trained experts who specialize in each crop. This allows the grower to thoroughly review each variety prior to introducing it to the market, thereby ensuring that it introduces only the best varieties. Because it controls the product from planting to delivery, Rosa Flora is able to manage the entire process and minimize the time from cutting to shipping.

The grower offers a wide selection of fresh cut flowers and potted plants to

wholesale customers throughout southern Ontario, Quebec and the U.S. About 80 percent of Rosa Flora’s sales are exported to the Northeast and Midwestern regions of the U.S., with the balance sold within Canada.

Damaged by fire on March 6, 2014, the rebuilt facility includes about 40 acres of greenhouse space on 300 acres of property. Flowers are stored in a 35,000 square-foot warehouse cooler attached to a 15-bay loading dock. All cut flowers are shipped in refrigerated trucks directly to the end customer, and unloaded by hand.

Rosa Flora is committed to producing flowers in an environmentally friendly and energy-efficient way, utilizing combined heat and power fueled by generators that run on natural gas. It also has its own wind turbine that produces 615 kW of electricity, a wood-heating biomass boiler, and double-pane acrylic glass windows installed in greenhouses for greater efficiency.





GREENHOUSE CHP

High-efficiency power systems reduce operating costs

Greenhouse facilities reduce operating costs by implementing a Caterpillar combined heat and power (CHP) system using clean pipeline natural gas as a fuel source. Cat® gas generator sets can provide electricity for electrical loads, heat energy for warming of the greenhouse and recycled carbon dioxide from the engine exhaust as an organic fertilizer.

Benefits from greenhouse CHP projects include:

- Energy efficiency over 90 percent
- Reduced energy costs versus separate heat and electrical generation systems
- Reduced emissions versus separate heat and electrical generation systems
- Increased revenue opportunities through the export of electricity
- Carbon dioxide crop fertilization


How it works

Any Cat natural gas-fueled engine can be configured specifically for applications involving heat recovery. The engine drives a Cat generator to produce electricity, while jacket water and/or exhaust cooling circuits are fed through heat exchangers to transfer the waste heat from the engine to a hot water holding tank. That hot water is stored and used to keep the greenhouse warm. Oxidation catalysts can be used to remove carbon monoxide, and a urea-

based Selective Catalytic Reduction system is employed to reduce NOx to just a few parts per million. The result is an exhaust gas so clean it is piped to the greenhouse plants' roots as a fertilizer, boosting farmers' yields.

Since sizing based on heat load is the key driver, the electricity produced at a greenhouse often exceeds the local demand. Many countries throughout Europe incentivize high-efficiency electric power generation via production credits, and most electricity produced is exported to the local grid. In other parts of the world, grid unreliability and pure economics are driving greenhouse agriculture toward similar solutions.

Caterpillar provides customized CHP package proposals, including the required mechanical equipment and controls to capture and transfer the engine thermal energy to a greenhouse facility. In addition, Caterpillar offers the required exhaust emissions aftertreatment, utility grade paralleling switchgear and controls to sell excess electricity generated to the local electric grid.

The total energy cost savings of such systems can more than offset the total owning and operating costs, delivering a payback in as little as two to three years, depending on local energy pricing and policies. 

Contact the power systems experts at our dealership to learn more about the benefits of CHP in a greenhouse setting.

GLOBAL CONNECTION

New Cat® energy plant part of Myanmar's efforts to modernize

After five decades of isolation, Myanmar is in the early stages of opening up and integrating itself into the global economy. The government of the country formerly known as Burma has made a concerted effort to create a more conducive business climate, improve civil liberties and raise the overall standard of living.

With abundant natural resources, the country bordered by China, India and Thailand offers ample trade opportunities.

But fundamental infrastructure problems remain. With one of the lowest electrification rates in the world, Myanmar faced a major energy crisis in 2012 as hydroelectric power resources diminished. Energy consumption per capita remains among the lowest in Asia—at little more than 100 kilowatt-hours per capita—which is less than five percent of the electrical usage in neighboring Thailand.

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With less than a quarter of Myanmar’s population of 55 million people connected to the grid, and frequent power rationing occurring in the summer months, many businesses must rely on their generators, which increases the cost of doing business.

To address the shortage of electricity, the Ministry of Electric Power chose four previously installed power plant sites for upgrades in Yangon (Rangoon), Myanmar’s largest city. To facilitate the increasing need for power, which is growing at an annual rate of 15 percent, independent power producers (IPPs) were invited to invest in the locations.

Singapore-based UPP Holdings, Ltd. was chosen as the first fully foreign-owned IPP incorporated under a new law governing foreign investment.

“With the country opening up, there is a need to fast-track development and improve the economic and social well-being of the population,” said Kooi Ong Tong, chairman and CEO of UPP Holdings. “Attracting foreign investments is a critical first step that will lead to increased employment and income levels, and the growth of a larger and more entrepreneurial private sector.”

“Currently, the main hurdle affecting investments is the lack of power supply,” Tong continues. “There is an urgent need to address the shortage of electricity supply in the country. For UPP Holdings, we hope to play a small part in Myanmar’s economic development through this and future projects.”

Turnkey project

During the implementation phase, UPP turned to the Cat® dealer in Myanmar, Myan Shwe Pyi Tractor Limited (MSP Cat).

For the Ywama/Yangon facility, UPP Power (Myanmar) Ltd. installed a 50 MW gas-fired power plant that features 13 Cat CG260-16 generator sets. MSP Cat provided installation and civil construction services, including transformers, cable, electrical substation, fuel train, lighting and fire prevention equipment.

“It was clear to us that MSP Cat and Caterpillar would be able to deliver the ideal solutions for our needs.”

KEVIN KHOO
Managing Director
UPP Holdings, Ltd.



In awarding the project, the government stipulated that the power plant become operational within an especially short timeframe due to the growing economy.

“Given the fact that a high-quality and high-performance power plant had to be constructed within a very short period, it was clear to us that MSP Cat and Caterpillar would be able to deliver the ideal solutions for our needs,” said Kevin Khoo, managing director of UPP. “That is why we chose Cat products for the 50 MW power plant in Ywama.”

In order to meet the demanding schedule, the gas generator sets and additional electrical and mechanical components were ordered in mid-2012.

However, since this was the first of four IPP projects in Myanmar, it took some time for UPP to obtain special approval for importation of the plant from the Myanmar Investment Commission prior to signing the Power Purchase Agreement (PPA).

Because of time constraints to complete the construction of the plant before the upcoming peak summer season, MSP Cat decided to ship the 13 generator sets from Caterpillar Energy Solutions in Mannheim, Germany to Singapore to be ready for shipment to Yangon as soon

CUSTOMER PROFILE

UPP Holdings, Ltd.

Location: Yangon, Myanmar

Application: Independent Power Producer

Cat® Equipment: 13 Cat CG260-16 gas generator sets



as the import license was approved. Shipping of containers for the additional power plant components was put on hold until clearance for import was obtained.

“Due to this delay, logistics plans for staggered shipments were disrupted with the result of having to ship all goods at one time,” recalled Heinz Ludi, the CEO of MSP Cat. “Some 200 containers arrived practically at the same time and a ‘container tsunami’ of all sorts formed at the construction site.”

To accommodate the power requirements, UPP ordered a turnkey

system, including design, engineering, procurement and construction services (EPC). Caterpillar was responsible for the overall project management and MSP Cat performed the local portion of EPC for the project. A new building was constructed to house the generator sets.

Cat dealer support

The \$46.5 million project was completed on time and started operating in February 2014. The 50 MW plant is already supporting the national power grid, helping to prevent daily power outages.

When viewed in the larger context of Myanmar’s vast power needs, 50 MW of power is not all that significant. But measured in terms of the volume of electricity available throughout the country in 2012, the power plant in Yangon represented four percent of the country’s entire power supply.

Since the successful commissioning, MSP Cat has been running the plant

to fulfill a 30-year operating and maintenance agreement with UPP.

“We are very satisfied with the cooperation we have received from MSP Cat,” said Khoo, “and we hope that this is just the beginning of more projects to come.”

The Myanmar government is planning construction of additional power plants in the near future in order to expand the country’s continuously rising demand for electricity. The possibility of installing an additional gas generator power plant to increase electrical energy capacity is being evaluated.

“We aim to deliver a reliable source of power supply that is efficient and cost-effective to the government,” Tong said. “For us, this power plant is not just an investment in Myanmar. We see it as an opportunity to participate in the economic and social development of the country, and to build relationships with the community.”

MYANMAR SNAPSHOT
Southeast Asian country has abundant, untapped resources

Myanmar is a largely rural, densely-forested country. The 261,227 square-mile country formerly known as Burma is the world’s largest exporter of teak and a principal source of jade, pearls, rubies and sapphires.



Rubies are the biggest earner; 90 percent of the world’s rubies come from the country, whose red stones are prized for their purity and hue. Thailand buys the majority of the country’s gems. Myanmar’s “Valley of Rubies,” the mountainous Mogok area, 120 miles north of Mandalay, is noted for its rare pigeon’s blood rubies and blue sapphires.

Myanmar also has highly fertile soil and important offshore oil and gas deposits. Other industries include agricultural goods—especially rice, which covers about 60% of the country’s total cultivated land area—and textiles, wood products, construction materials, metals, oil and natural gas.

Myanmar’s wealth of Buddhist temples has boosted the increasingly important tourism industry, which is seen as a likely sector for future foreign investment.



BEHIND the METER

Energy services company provides all-in-one power solution

Running a business carries enough risk without worrying about power interruptions. The fact is, power quality and reliability is a vital consideration in protecting the bottom line.

An Iowa-based company relieves the burden associated with power reliability by providing turnkey energy infrastructure projects behind the customer's utility meter.

Industrial Energy Applications, Inc. (IEA) builds energy and infrastructure assets at the customer's site. The Cedar Rapids-based firm also owns, operates and maintains the installations.

IEA currently operates a combined 67.5 megawatts in the field, with 50 generating units located at 19 customer locations throughout Iowa, and two in South Dakota. All but two of those units are made by Caterpillar, and all but one are diesel generator sets.

"I don't think there are many other companies in the country that do what we do," says IEA president Randy Portz. "There are companies that will certainly do energy infrastructure projects, but there aren't many that will continue to own, operate, maintain, and manage those assets for customers the way we do."

IEA can customize a SCADA system to monitor and track as many functions as necessary at customer locations from its network operations center in



Cedar Rapids. It can also set up remote access for a plant manager or foreman so that system information is instantly accessible from anywhere.

IEA's customers include a major defense communications and avionics manufacturer, several data centers, grocery stores and various manufacturing facilities.

"One of our large customers not only has their manufacturing and administrative functions here, but they also run their e-business out of the Cedar Rapids location, and if their lights go

out, they're losing money quickly," says Steve Kent, director of operations for IEA. "Power from UPS units is only designed to last for so long, and their IT infrastructure is at risk if we don't get the lights back on.

"And so reliability, to us, is really business protection insurance—it's business continuity insurance," Kent says. "During the ice storm of 2007, we ran that facility continuously for 120 hours."

IEA operates and maintains 10 Cat® 3516 diesel generator sets at the facility,



CUSTOMER PROFILE

Industrial Energy Applications, Inc.

Location: Cedar Rapids, Iowa

Application: Standby Power

Cat® Equipment: 50 diesel generator sets at multiple customer locations



complete with automatic multi-utility paralleling switchgear. To safeguard from the potential loss of grid power, the generator sets can be activated in advance of a coming storm—a practice known as “storm running.”

Interruptible power support

Another main advantage for customers that utilize IEA’s turnkey approach is having the ability to supply their own power during periods of peak utility demand. In the process known as curtailment or voluntary interruption,

customers agree to reduce their base load demand from the utility—Alliant Energy in eastern Iowa—in exchange for financial consideration from the utility.

In Iowa, Alliant compensates customers that agree to participate in the interruptible program by paying them \$62.13 per kilowatt per year of interruptible capacity. When IEA customers are instructed to reduce the power they take from the grid, IEA’s Cat gensets are called on to keep their facility running at normal load. A 1 MW unit will net a customer participating in

the interruptible program approximately \$62,000 in savings a year. By contrast, failure to reduce the amount of grid power used during periods of power interruption can result in substantial financial penalties.

“This equipment runs on a fairly regular basis in support of that program, and in the unlikely event the standby power fails, IEA is on the hook to pay those penalties for our customers,” Kent says. “If our assets don’t perform when

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they're called upon to perform, there are substantial downside risks.

"And if the failure of that equipment also means our customer's lights went out, we have to address that as an entirely separate issue, because most of our customers are fairly intolerant of that," he adds. "We designed these generating systems to minimize the chances of that occurring."

Meticulous approach

In order to maintain absolute reliability of its fleet of Cat generator sets and ancillary equipment, IEA institutes a rigorous set of procedures to ensure the standby power systems at each customer location stay in run-ready condition.

IEA utilizes a computerized maintenance management system that generates and tracks individual work orders, and a full-time maintenance manager who develops and manages preventive and corrective maintenance programs.

"We're a very process-driven company," Kent says. "We have formal, corrective and preventive maintenance programs in place—and they go beyond the Cat factory recommendations for maintenance to include switchgear, transfer switches and other auxiliary equipment not supplied by Caterpillar."

IEA outsources its maintenance work to Cat dealers, including Altorfer Power Systems. With multiple locations and technicians throughout Iowa and western Illinois, Altorfer has the necessary resources and technical expertise to assist IEA.

"Altorfer is our business partner, if you will," Kent says. "They are responsible for internally tracking parts, assigning resources, as well as making recommendations for system improvements. They perform oil analysis, coolant analysis, and all of the preventative maintenance work, as well as the majority of corrective maintenance work."

A major accounts manager at Altorfer Power Systems dispatches the necessary manpower and technical resources that IEA needs in the field on a timely basis.

"We are able to leverage our relationship with Altorfer to ensure routine maintenance and priority maintenance work is done in a prompt fashion," Kent says. "And with their help, we get it done right the first time and minimize downtime."

Providing technical expertise is another area where Altorfer delivers.

"We have a number of multi-utility, multi-engine paralleling systems, several of which are fairly complex," Kent adds. "And finding technicians capable of troubleshooting and diagnosing electrical issues in those switchgear systems can be very difficult and time consuming. Those are the times when we lean heavily on Altorfer. When we need support with switchgear issues, it's much harder to find folks who are qualified and adept at that type of work, and we know we can count on them to handle it."

As part of its rigorous approach to maintaining absolute reliability, IEA conducts surveillance testing at customer installations every 30 days. This involves starting up the systems and transferring customer loads, and carrying the loads for a minimum of 30 minutes.

"This is a means for us to test our ability to remotely dispatch engines, and it also tells us that everything is working the way it's supposed to, that it will start up, carry load, and transfer back to a stable utility source on its own," Kent says. "Because it's impractical to PM the entire control system, the only way to ensure readiness and identify any deficiencies is through routine testing."

During these tests, an onsite Altorfer technician takes readings from the instrumentation, and conducts an in-service inspection of the engines to make sure there are no leaks or drips, and that everything is mechanically sound.

As part of its meticulous approach, IEA tracks and scores itself on all operating facets of the customer's power system, right down to determining if fuel is transferring from a main tank to the day tank. Those findings are reported to the customer.



Network operations center



Onsite monitoring

Across its customer base, system reliability averages between 98 to 99 percent.

"And when you think about equipment that in many cases is 20-plus years old that was never designed to be single-failure proof, that's impressive," Portz says.

Part of IEA's service involves managing fuel inventories for its customers. That can be as simple as replacing diesel fuel that has been consumed, or treating it with biocides and other fuel-preserving additives.

"If that fuel sits in the tank much more than about a year, you need to start being concerned about it," Kent says. "You can start having problems with biologic growth, and at any time you can have water in your tanks."

To head off fuel issues, Altorfer has portable fuel polishing rigs and performs the service for IEA's customers when and where it's needed.



“By the time you pay for fuel polishing, it is still substantially cheaper to clean it up and keep it than to pay disposal fees to get rid of it—much cheaper,” Kent adds.

Built to last

Cat equipment is clearly the generator set of choice for IEA. Portz says it has everything to do with product reliability and dealer support.

“The Cat equipment is robust—it’s not stuff that you go out and run for a few hours and something breaks,” Portz says. “We don’t have many issues with the basic engine/generator blocks of equipment. We have Cat equipment that’s 30 years old, but the generators that we have with the most run hours on them have in the neighborhood of 3,000 hours.

“It just goes to show how robust the Cat power generation assets are,” he continues. “If they receive good maintenance and good operating

practices, they can last a long, long time—far beyond their design life.”

When Portz joined IEA 16 years ago, the company had three technicians who were spread thin trying to service the company’s far-flung assets throughout Iowa. He made the move to outsource maintenance to Altorfer, which has proved to be a wise decision.

Portz says IEA plans allow it to replicate its business model nationally. Tapping into the resources of the Cat dealer network will be a key piece of the company’s growth strategy.

“We can leverage the Cat dealer network to effectively operate and maintain customer installations at a high level anywhere in the U.S. without having to have our people at those locations,” he says. “We’ve learned how to work with our local Cat dealer, and based on the protocols we’ve established, that is readily transferrable to other Cat dealers.”



“We are able to leverage our relationship with Altorfer to ensure routine maintenance and priority maintenance work is done in a prompt fashion.”

STEVE KENT
 Director of Operations
 Industrial Energy Applications, Inc.

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