

RUNREADY™



HOP IT UP
Cogeneration boosts energy efficiency at Canada Malting plant

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TOROMONT
Power Systems

CAT



HYBRID MICROGRIDS

RELIABLE POWER WHEREVER YOU NEED IT

Cost-effective electric power has been a challenge for communities and industrial or commercial installations without access to a strong utility grid. They have had to rely on engine- or turbine-driven generator sets that, while highly reliable, typically produce power at a much higher cost than a large utility.

Now a better model is emerging that combines cost-effective renewable energy from wind or solar sources

with conventional diesel- or gas-fueled generation.

These installations, called hybrid microgrids, also employ energy storage to add power system stability and enable further energy cost reduction. Aided by sharp declines in the cost of wind and solar energy, as well as lower energy storage costs relative to the price of fuel, hybrid microgrids are well suited to a host of applications, including individual buildings, resorts, mine sites, remote villages, small islands and others.

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for delivering low-cost, reliable power in settings beyond the reach of larger electric utility infrastructure.

Microgrids themselves are not new, as diesel and gas generator sets have been sold for several decades to power remote applications. These systems are continuously becoming more fuel-efficient as engine combustion and generator technologies improve.

What is new is an increase in hybrid microgrid systems that include renewable energy sources. Improvements in the costs and capabilities of photovoltaic (PV) systems, energy storage and telematics, along with advances in technology and communications, now economically justify hybrid applications that previously would have required special support or incentives.

The integration of renewable technologies reduces operating expenses when compared to purely conventional generation, while also optimizing system reliability, efficiency and flexibility.

The concept has become increasingly attractive as the cost of energy from wind and solar PV generation has declined. Conversely, the cost of diesel fuel—usually the most available fuel for remote locations—has risen. In 2000, the levelized life-cycle energy cost of wind generation was similar to that of diesel, while solar energy was nowhere near being competitive.

Since then, diesel fuel prices have mostly trended upward, while wind power prices trended slightly down and solar PV prices fell dramatically. Conservative projections place the price of wind energy at US\$0.09 per kWh by 2020, and the price of solar energy only slightly higher.

This gives renewable energy a meaningful, long-term price advantage over diesel-generated power. In addition, advances in energy storage, system control, power conditioning

The most promising applications are those with total power demand from 100 kW to 20 MW.

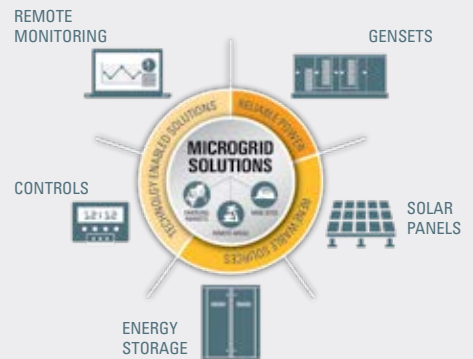
The basic concept is simple. Wind or solar energy reduces reliance on power produced from generator sets, saving fuel and, to a lesser extent, maintenance costs. The generator sets firm the renewable sources and follow the load. Sophisticated digital controls tie the system together.

Energy storage enhances system economics and helps the generator sets respond smoothly to significant fluctuations in output from the renewable resources, while maintaining consistent voltage and frequency.

Reliable, low-cost power

The hybrid microgrid concept is quickly becoming the preferred approach

POWERING SUSTAINABLE PROGRESS. EVERYWHERE. ALL THE TIME.



and connected load-side management have helped drive down the total cost of ownership of hybrid microgrid systems.

The hybrid microgrid combines the benefits of renewable and conventional power generation while offsetting the weaknesses. In return for higher capital cost, a hybrid microgrid delivers lower long-term operating cost and a lower total cost of ownership than conventional pure power generation.

In a hybrid microgrid, renewable energy capacity can account for any percentage of the total peak load. In general, the greater the contribution from renewables, the greater the potential fuel and operating cost savings.

Energy storage is a key enabler of hybrid microgrids, thanks to rapidly advancing technology. The conventional energy storage system consists of banks of deep-cycle lead-acid, nickel-metal hydride batteries, flywheels or lithium-ion. However, two other energy storage technologies—ultra-capacitors and rechargeable metal-air—are now gaining favor.

Control over a hybrid microgrid is simpler than controlling combined renewables and conventional generation

Continued on page 4

in a major utility. On a utility grid with wholesale deployment of wind or solar energy, the intermittent nature of the renewables could make the grid unstable, absent massive energy storage or spinning reserve.

On a microgrid, digital controls and smaller-scale energy storage enable consistent voltage and frequency with reliable kVAR control. In the event of a voltage dip, for example, the energy storage can rapidly feed energy back into the system to provide stability. Energy storage also supports the generator sets in accepting block loads without fluctuations in frequency. This capability makes it possible to deploy renewable resources in proportions far greater than a utility grid could support—up to and exceeding total system demand.

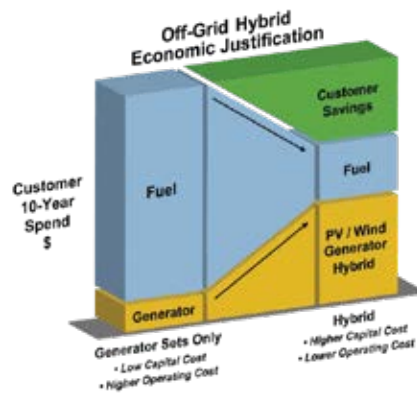
Evaluating cost

The key question is determining whether a hybrid microgrid is appropriate to a given site. Analytical tools are available that make it relatively easy to check economic feasibility. An initial high-level analysis requires little more than basic information about these several factors:

- The load profile of the community or facility to be served
- The site latitude and longitude and historic solar and wind conditions
- The cost of fuel for the primary power unit generator sets
- The cost of capital

The results of this analysis will indicate whether a deeper investigation

is warranted or whether the project should be abandoned. HOMER microgrid analysis software can be used to perform a much more rigorous analysis for making a final decision. This software simulates one year of system performance, uses site-specific solar and wind energy data, and predicts annual hours of operation and fuel use for generator sets. The resulting data can then be used to develop an operating protocol that enables financial optimization of the system.



CAT® MICROGRIDS: A single-source solution

A successful hybrid microgrid deployment depends on a fully integrated system. Cat® microgrids for rural electrification are completely integrated and standardized renewable energy systems.

Designed for reliability, repeatability, and rapid deployment, this cost-effective, single-source solution is supported and installed by the worldwide Cat dealer network. The major

components are available as factory-built, factory-tested, containerized modules that can be shipped to the site and installed with plug-and-play simplicity. This minimizes on-site construction work and shortens lead times.


One way to simplify a project is to select a partner with deep experience in power systems, specifically hybrid microgrids. This partner should demonstrate experience in installing and integrating these systems and employ locally based service technicians who can provide support ranging from basic planned maintenance to comprehensive long-term service agreements.

The ideal organization should be qualified to manage whole-project engineering, procurement and construction, while supplying all major components and ancillary equipment.

Another strong attribute is diverse financing capability with experienced, hands-on knowledge of the special needs of power projects. This can include the capability to provide financing beyond generating equipment to include the entire power infrastructure, along with offering flexible programs to suit specific needs.

Project construction financing is especially helpful, providing a bridge loan while the project is being built and not yet producing cash flow. It then converts to long-term financing when the project is substantially complete.

The low and declining cost of solar PV and wind energy opens new possibilities for clean, reliable and affordable electric power in hybrid microgrid configurations. Microgrids can be quickly and cost-effectively implemented in remote locations beyond the reach of the utility grid or where the grid is unstable.

These are opportune times to investigate the hybrid microgrid concept as an alternative to conventional power generation. 

Please contact the power systems experts at our dealership to learn more about Cat Microgrid Solutions.





POWER FEED

Foodbank relies on gas genset and Cat® dealer to maintain supply of critical backup power

One in seven Americans struggle to get enough to eat. In fact, hunger or food insecurity exists in virtually every community in the United States, according to Feeding America, a national network of food banks.

Since the Great Recession, hunger has been on the rise in America, and shows little signs of abating.

In 2014, 48.1 million Americans lived in food-insecure households, including 32.8 million adults and 15.3 million children. Fourteen percent of households (17.4 million households) were food insecure, while six percent

of households (6.9 million households) experienced very low food security. In 2013, nine percent (5.4 million) of all seniors over age 60 were food insecure.

On the Virginia Peninsula—which has 538,000 people living in the region—almost 78,000 are considered food insecure, including 20,000 children. While hunger affects people of all ages, it is particularly harmful for children, with lasting consequences that include learning difficulties and an increase in tardiness and absenteeism.

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CUSTOMER PROFILE

Virginia Peninsula FoodBank

Location: Hampton, Va.

Application: Standby power

Cat® Equipment: G3412 gas genset, 600A Automatic Transfer Switch



Established in 1986, the Virginia Peninsula Foodbank (VPF) provides 11.7 million pounds of food annually, or the equivalent of 9.8 million meals to area residents. But there is still much work that needs to be done, says Karen Joyner, CEO of the food bank based in Hampton, Va.

“The recent news says the economy is recovering and unemployment is lower,” Joyner said in a published report. “Those we serve often have jobs, but they are underemployed and don’t make enough money to pay for transportation, rent, utilities and food. Others are elderly and struggle each month to pay for medicine and nutrition with just one monthly check.”

The area served by the food bank has the highest population of food-insecure residents in the state at 14.6 percent.

The recipients come from all walks of life. Typical customers of the foodbank are the working poor, while some are homeless, military veterans, or those who are just down on their luck.



“There are no complaints about the service we receive from Carter. They are on top of everything for us so that we don’t have to worry about it.”

SCOTT GRAY
Chief Operating Officer
Virginia Peninsula Foodbank



“We did a distribution at one of the elementary schools earlier this year, and my agency services director came back and she came in my office and closed the door and started crying,” said VPF chief operating officer Scott Gray. “She said a gentleman walked up, and she gave him a number in line and he’s in a suit and a tie and he told her his wife and two kids were at home. The man said he holds a masters degree and his wife has a bachelor’s degree.”

The man said he had been in the area for eight months, and couldn’t even find a job at McDonald’s, adding that he never thought he would be standing in a food distribution line to get food for his children.

Even with 26 employees and 10 part-time workers, the food bank relies heavily on volunteers.

“We couldn’t do it without volunteers,” Gray says. “We have groups come in—Wal-Mart’s here almost every week. They come in 10 to 15 people strong and they do a lot of the food sorting and packing into backpacks, packing the UST drybags. There’s no physical way we could do everything we needed to do with current staff.”

VPF also relies on donations from corporate and private donors, most of it is coming in through the grocery rescue program. Five trucks go to all the local supermarkets and pick up donated food as it nears the end of its shelf life.

“We sort through everything and try to turn it right back out the door,” Gray says. “So if it comes in today and it’s produce, it’s going back out the door tomorrow, and then hopefully tomorrow when we give it to a partner agency,



they put it in the hands of one of the recipients who are going to eat it that night.”

Power at the ready

Due to the essential community service that the foodbank provides, VPF relies on a standby Cat® G3412 gas generator set to keep the power on at all times. This is critical in an area that is prone to hurricanes and tropical storms, as well as occasional power outages caused by drivers smacking into power poles on the curving thoroughfares in nearby Hampton Roads.

“We’ve had accidents right out here on Aberdeen Road, and power is out all the way down Aberdeen and in the warehouse next door,” Gray says. “My Cat generator kicks in and we keep doing business trucking right along like nothing happened.”

Constructed in 2011, VPF’s building was built to withstand Category 3 hurricane-force winds from 111 to 129 mph. Electricity can be lost for days or weeks in the aftermath of a Category 3 hurricane. If power to the facility is lost, it’s vital that the foodbank has a source of backup power to run a 2,800 sq. ft. freezer and a 2,600 sq. ft. refrigerator. The 450 kW generator also powers all emergency lighting, as well as select computers and the life safety system (alarms, police and fire).

“We have multiple hurricane warnings and at least one hurricane per season, on average,” Gray says. “Given our location so close to the coast, in the event of an actual catastrophic event our network of other food banks would start sending trucks, food, people, everything else. So it would be vital for

us to still be able to operate as soon as we could get through to provide folks with the food they need.”

The generator set was specified by Cat dealer Carter Machinery, and includes a 600 amp Cat Automatic Transfer Switch. One of the advantages of gas standby versus diesel fuel is that gas lines are buried and not affected by storms, therefore the delivery of fuel to the generator set is virtually guaranteed.

All maintenance on the generator set is performed on a quarterly basis by technicians from Carter Machinery as part of a Customer Service Agreement.


“We haven’t had one lick of trouble with it, and as long as we’re here performing our critical task, we’ll continue to let Carter do the maintenance,” Gray says. “On a piece of equipment, you want to maintain it and take care of it the right way, so we listen to what the tech reps tell us. When Dennis from Carter says we need to replace these batteries or replace a belt, we trust their recommendations and tell them to go ahead and do it.”

“The bottom line is, anytime we’ve dropped load from the utility, the generator has come on right away and operated flawlessly,” he continues. “There are no complaints about the service we receive from Carter. They are on top of everything for us so that we don’t have to worry about it.”

The generator set was purchased with a five-year extended warranty, which essentially covers everything and guarantees replacement of parts. As far as Gray is concerned, it’s money well spent.

“As a nonprofit, we really need to watch what we’re spending our money on,” Gray says. “So in this situation that’s money well spent, because I’m not going to have a major repair bill coming through the door that could possibly take away from us purchasing food or other things that we need to accomplish our mission.

“Being in a nonprofit business, the decisions have to be made with the long-term financial picture in mind,” he adds. “Not necessarily do you

always go with the least expensive piece of equipment, but you go with the best quality for the best price. I was in the Navy, so I knew about Caterpillar—I mean everybody knows about Cat equipment. It’s the best.” 



DG SERIES

Caterpillar introduces new line of small gensets for commercial and municipal applications



The recent launch of the Cat® DG Series gas generator sets for small commercial and municipal applications expands Caterpillar's power lineup in North America.

Ranging in size from 30 to 150 ekW and featuring an updated package design, DG Series gas generator sets operate on natural gas or LP vapor, and are available with optional sound-attenuated enclosures to efficiently dampen on-site noise and withstand exposure to the elements.

"While we've had Olympian gensets available in that range for some time, it's a new size range for the Cat brand," says Alex Graf, regional sales manager for IPSD Power Generation. "This represents an opportunity to move into the market with a Cat branded product, and create commonality between generators and control systems."

North America is still primarily a standby market, and customers are looking for cost effective, value-added solutions, Graf says.

"The DG Series delivers the quality they expect from Caterpillar, and the localized support of our dealer network with readily available parts and timely service," he says.

DG Series gas generator sets feature the Cat EMCP 4.2 generator set controller, offering expanded engine and generator protection and monitoring. Flexibility is also increased with the addition of a Modbus RTU communication port, remote annunciator modules and expansion I/O modules that enable the EMCP 4 system to be configured to meet site-specific design requirements.

Potential end users of the DG series generators are diverse, ranging from grocery stores to banks and pumping stations.


"It's an insurance policy for those customers that want to make sure that whatever they are trying to backup is secure," Graf says. "Whether it's a small health clinic that has medicine in a refrigerator, or a bank that wants to make sure their security system is secure. Our customers are typically the ones that protect themselves against the risk of emergency power failure.

"When things go wrong, our customers want to make sure they have a brand and dealer network that stands behind them and keeps their power up and running," he adds."

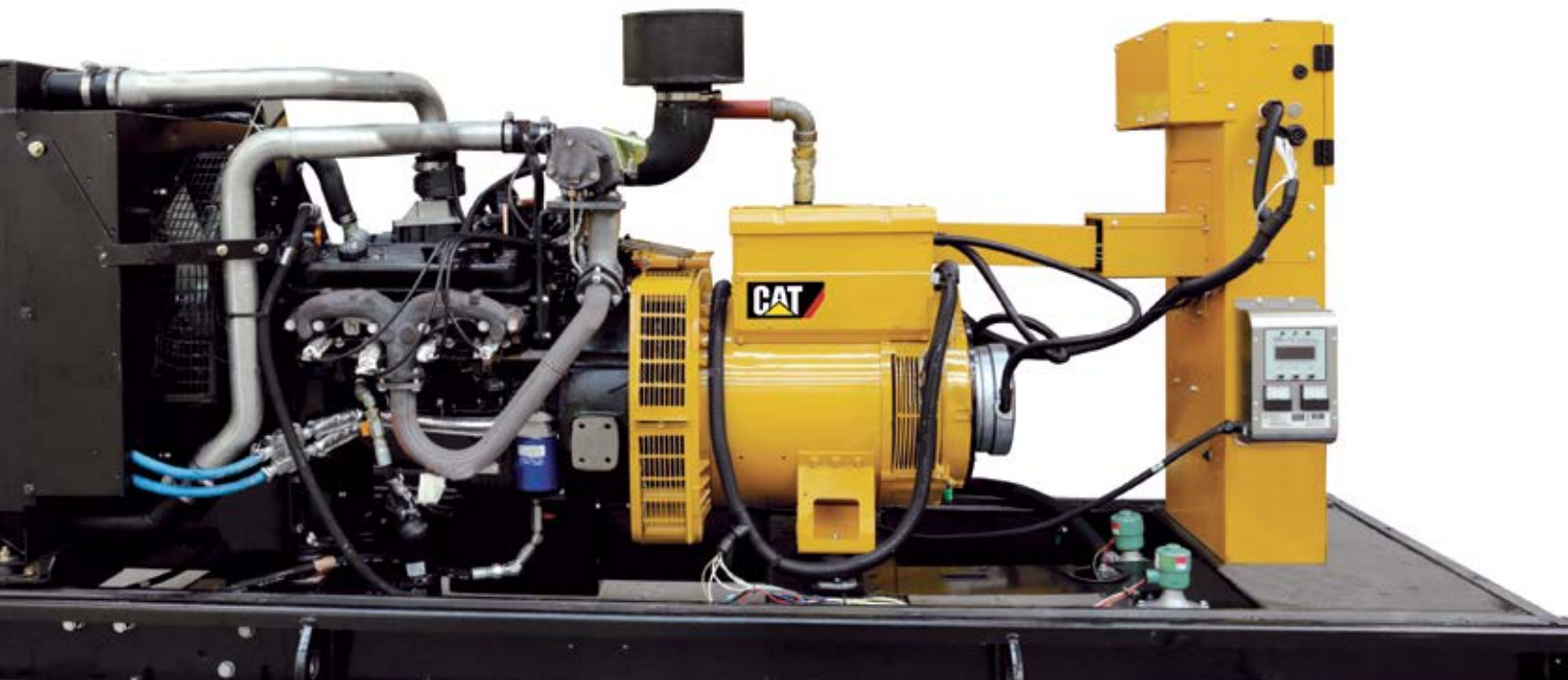
The DG series effectively replaces the Olympian line of generator sets, which will no longer be sold, but will continue to be supported by the Cat dealer network.

"Cat dealers are excited to promote a product with the Cat brand on it," Graf says.

Caterpillar currently offers seven three-phase models of DG Series gas generator sets ranging from 30 to 150 ekW, and five single-phase models ranging from 30 to 100 ekW.

DG Series gas generator sets can be specified with the web-based Cat Electric Power SpecSizer tool. Available online at specsizer.cat.com, SpecSizer evaluates factors such as site conditions, load characteristics, and required performance to assist you in specifying a properly sized generator set to best meet your power needs. 

For more information on the new line of DG Series generator sets, contact our dealership.





GAME CHANGER

Power plant kept hospital afloat during 2008 flood

They said Cedar Rapids would never flood. They talked about 1993, and 1966 and 1851, years when the Cedar River swelled and hissed but mostly stayed within its banks. They thought they were safe. They were wrong.

– New York Times
(June 13, 2008)

Cedar Rapids, Iowa was one of the hardest hit areas during the floods of 2008. The Cedar River crested at 31.12 ft. (19 feet above flood stage) at 10:15 a.m. on June 13, 2008.

About 1,300 blocks or 10 square miles—including most of the downtown area—were inundated, with more than 5,000 homes being affected. Mays Island (which included the Cedar Rapids city hall, the Linn County courthouse, the county jail, and the federal courthouse) was flooded up to the second floor level.

Tremendous disruption to the city’s

utilities occurred. Electricity was cut off to the flooded parts of the city by the power company, Alliant Energy, as was natural gas. Telephone and Internet service was also disrupted.

Mercy Medical Center, about 10 blocks from the Cedar River, lost utility power on the morning of June 12 along with the rest of downtown Cedar Rapids. Water began backing up into the hospital. As floodwaters continued to rise, staff members and volunteers worked quickly to create a perimeter of sandbags both inside and outside the hospital’s glass-walled entrance through

CUSTOMER PROFILE

Mercy Medical Center

Location: Cedar Rapids, Iowa

Application: Standby power

Cat® Equipment: 3412B diesel gensets (2), 3516C diesel genset



the Lundy Pavilion. As a precautionary measure, patients were evacuated to other hospitals and care facilities.

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Previous actions by Mercy's board of directors were critical in mitigating the impact of the flood and enabling the hospital to reopen in 16 days.

"Several years earlier, the board had made the decision to move our power plant out of the basement to a location on higher ground on the north side of the hospital," Mercy president and CEO Tim Charles told *The Cedar Rapids Gazette*.

Charles said the decision turned out to be a game changer for the hospital. Had the power hub remained in the basement, it could have resulted in a much different outcome for Mercy.

Dealer offers timely support

Both during and after the flood, the hospital ran on generator power on numerous occasions, recalls Mercy facility specialist John LeClaire, who will retire at the end of the year.

"Alliant Energy asked us to go on generator power at certain times because of their loads, so we did," LeClaire says. "The Cat® generators were very critical during that period to keep power to our facility, and Altorfer Power Systems was very instrumental in providing service to us during that time.

"When we were running for a number of hours like that—the first

time we ran for four to six hours, and then roughly the same time period the next day—Altorfer was quite busy with everything going on in town," LeClaire says. "I put a call into them and asked if they could come here and look things over and make sure we were okay, and they were here right away."

The power plant was built on higher ground in 2000, and has two Cat 3512B diesel generators that each provide 1,500 kW to power critical systems at the 445-bed hospital. In 2010, Mercy added a Cat 3516C genset that provides 2 MW of power. One of the 3512s is designated as standby power for emergency use when grid power is lost. The second 3512 genset has been retrofitted to meet RICE NESHAP standards so it can be utilized for non-emergency purposes. The 3516C is the workhorse of the group, and is utilized on those occasions when power to certain parts of the hospital is shut down for maintenance on the system.

Consistent maintenance

The generator maintenance and testing practices instituted by LeClaire were instrumental in the ability of Mercy's power plant to operate when

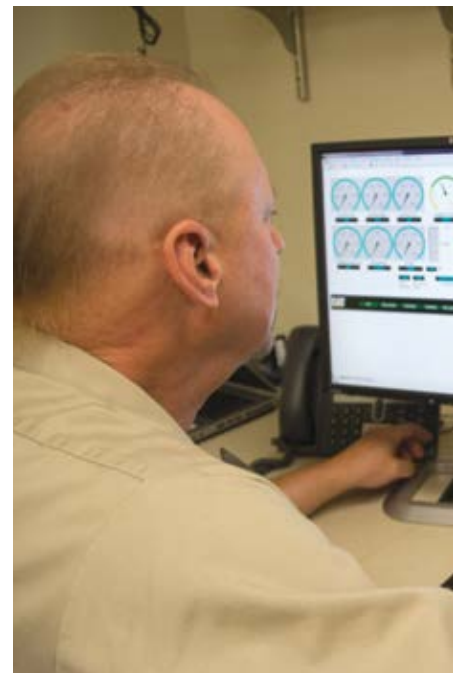


John LeClaire

it was needed, says Scott Formanek, a product support manager for Altorfer Power Systems.

On the first week of the month, LeClaire does a thorough visual walk-through inspection of the three generator sets, logging temperatures and making sure that everything is in good working order. During the second week, he conducts a full load test, transferring the electrical load for the emergency systems in the hospital and running them on generator power for an hour.

The full load test is conducted from separate control room utilizing EMCP software. EMCP 4.2 offers fully featured power metering, protective



“The Cat® generators were very critical during that period to keep power to our facility, and Altorfer Power Systems was very instrumental in providing service to us during that time.”

JOHN LECLAIRE
Facility Specialist
Mercy Medical Center

relaying and engine and generator control and monitoring. Switches are transferred and the generator operations are monitored via the Mercy EMCP system. Meanwhile, a member of the plant operations staff is in the power room, monitoring air intake and exhaust louvers on the gensets along with other critical factors.

“Mercy is installing another Cat generator at a separate site, and the software will be able to pull that generator in as well because the site will be on our hospital network,” LeClaire says. “So if they call or if they have an outage, we can pull it

up and we can monitor that generator from here if we need to.”

Another inspection is conducted on the third week in the month. On the fourth week, all the generators start and run for about five minutes.

Technicians from Altorfer handle all maintenance, performing semi-annual inspections, testing batteries, along with changing oil and coolant and taking fluid samples. Valve adjustments and calibrating fuel injectors are also part of the service provided by Altorfer, which is based on the generator sets operating at less than 250 hours per year.

“If the batteries are at a stage where they need to be changed on a unit, that’s automatically in the scope of things and they take care of it,” LeClaire says. “It gives me peace of mind knowing that they have our service schedule set up in their computer so that I don’t have to worry about when I need to get them out here,” he adds.

“They will call me and ask if it’s a good time to come out,” LeClaire says. “I’ll check my schedule and the hospital schedule and make sure there’s nothing big going on or whatever and tell them ‘okay, come on out.’ So I don’t have to worry about it—they take care of it.

“I just think Altorfer has a great bunch of guys,” he adds. “They have a lot of knowledge, and if a need arises, they can be here in five minutes. I don’t know why we’d go anywhere else.”



MERCY MEDICAL CENTER

Founded in 1900 by the Sisters of Mercy, Mercy Medical Center is a fully-accredited 445 licensed-bed regional hospital based in Cedar Rapids, Iowa.

Mercy has the most advanced private patient suites in the eastern Iowa Corridor, as well as an established network of primary and urgent care clinics located throughout Cedar Rapids and surrounding communities.

Today it offers a wide range of patient-centered services, including world-class cancer care at the Hall-Perrine Cancer Center.

More than 2,100 employees carry on the Mercy tradition, combining cutting-edge technology with compassionate patient care to deliver The Mercy Touch.



TAPPING INTO SAVINGS

Cogeneration increases energy efficiency at malting plant

As a global company that benchmarks environmental practices, GrainCorp tracks energy and water use at 17 malting plants across the world.

At its Canada Malting facility in Thunder Bay, Ontario facility, energy represents about two thirds of the plant's production costs.

"We compete directly with malt producers around the world, and keeping our energy costs competitive is critical for our site," explains Jim Desaulniers, plant manager for Canada Malting in Thunder Bay. "When all of these places were built, water and electricity cost next to nothing—energy was very cheap."

The Thunder Bay grain elevator was built in 1923, with the first malt house built in 1946 and two more added in 1957.

"But the landscape has changed now," Desaulniers continues. "The electrical and energy costs for our site are about 65 percent of manufacturing costs. So before where it wouldn't even have a line item on our cost statement, now at 65 percent it stands out. That's why we measure ourselves against who's the best in our corporation, and then we set those benchmarks as our targets."

With the cost of power steadily on the increase in Ontario, plant officials started working on a plan five years ago to reduce the cost of energy. In that time, Thunder Bay has reduced its use of water and natural gas, and

reduced electrical consumption by 35 percent, placing it in the top quartile of GrainCorp facilities.

Big savings realized

Those energy savings are expected to multiply exponentially in the coming years with the addition of onsite cogeneration powered by a Cat® G3516H gas generator set.

"Now the CHP (combined heat and power) unit allows us to have power at a very low cost and also enables us to utilize the waste heat," Desaulniers says. "The waste heat has been a very pleasant surprise for us because we weren't exactly sure how much usable heat we were going to get and how we would blend it into our process. But we are exceeding all of our expectations right now for the amount of heat that we're recovering in the plant."

Since beginning operation in late April, the plant has already become largely self sufficient, supplying all power during off-peak hours and about 65 percent of power during peak periods, says plant energy manager Clark Johnson.

"With the electrical output from our generator, we're going to become pretty much self-sufficient for providing energy to the plant," Johnson says. "We're generating 75 to 80 percent of our own power now, and we're anticipating being closer to 90 percent once we get everything squared away.



Efficiency of the genset is increased by funneling radiant heat from the generator and switchgear to the kilns, which is used to dry barley during the malting process.

"Being the oldest malt house, the A-House was always the most inefficient based on the amount of gas per ton required to heat it, and is now the best because it's the direct recipient of our heating coils," Desaulniers says. "We're just getting those numbers in, and it looks like it's going to be a very good thing for us."



Canada Malting grain elevator at the Port of Thunder Bay

The Thunder Bay malting plant is realizing about 83 percent theoretical efficiency from the cogen plant, and is expected to reach 90 percent once additional tweaks are made to the system, Johnson adds.

“Our early results indicate that we’re getting a far greater reduction in gas consumption than we were anticipating—our kilns are using roughly half the gas that they were before we started up,” he says.

Another major gain has been realized through CHP by using recovered waste

heat to warm water that is used to steep barley in the malting process. The plant utilizes cold water that comes from Lake Superior. The cogen plant enables efficient warming of the water for use in the malting process.

While heating the lake water formerly required a lot of natural gas using the facility’s hydronic heaters, utilizing heat from the generator means the natural gas-powered heaters are no longer required.

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CUSTOMER PROFILE

Canada Malting

Location: Thunder Bay, Ontario

Application: Cogeneration

Cat® Equipment: G3416H gas genset



Canada Malting
A GrainCorp business

“All of that energy that was needed to heat with gas is now being heated by the waste heat from the engine, so it’s actually at no cost to us,” Johnson says. “So it translates into a tremendous gain.”

G3516H a proven performer

After conducting extensive research, Johnson and Desaulniers settled on the Cat G3516H as the generator set of choice.

“It’s a 16-cylinder generator. And each cylinder has more power than a V8 truck engine, so it’s a significant piece of equipment, and it’s proven in the field,” Johnson says.

The turnkey project started construction in late September of 2015, with startup taking place seven months later. Canada Malting received a 40 percent rebate on the cost of the plant from the regional utility, Thunder Bay Hydro.

Once Desaulniers received final approval from Canada energy regulators, he knew he wanted to go with his local Cat dealer, Toromont Power Systems.

“We wanted a Cat engine because of the service, the reliability and the lower operating costs,” he says. “We entertained some European supplier



options, but due to the local service and Toromont’s reputation, we knew who we wanted to end up with.”

Adds Johnson: “What we liked about Toromont Cat is that there is a local branch here in Thunder Bay. And there’s another G3516H at the local regional hospital that started up just a few months before us, so we’re

comfortable with the fact that we have a Cat dealer here in town for service and the dependability of a highly reputable North American equipment supplier in Caterpillar.”

With a lean management staff, the Thunder Bay malting plant relied on the engineering expertise of Toromont Power Systems to design the plant,



“We wanted a Cat engine because of the service, the reliability and the lower operating costs.”

CLARK JOHNSON
Plant Energy Manager
Canada Malting

which is positioned immediately west of the shipping port.

“They struck us as knowledgeable folks,” Johnson says. “And they have a good partnership with a local contracting firm to help get the plant built. They made us feel comfortable, and they have a history of building these projects around North America.”

Adds Desaulniers: “It has been a pleasure to work with Toromont. They made the process very seamless and not painful at all for me. They took the burden off of us, and it was a terrific project.”

The Cat designed control panel brings all aspects of the project—both thermal and electrical—together seamlessly. The control interface provides a user-friendly operation, and the reporting allows Canada Malting to see their savings on a daily basis.

Factory support was also built into the control panel design, providing Cat design engineers the ability to assist future troubleshooting activities without traveling to the site.

A key component of the project involved the high voltage electrical inter-connection with existing transformer sub-stations, so project work would not interfere with day-

to-day malting operations. Working closely with Thunder Bay Hydro, Toromont engineers ensured the commissioning process went according to schedule.

Reliable performance

In order to meet performance incentives, the generator set needs to run virtually 24/7.

“Uptime is everything to us, and not just for cost savings, alone,” Johnson says. “We had the Ontario Minister of Energy here in June, and he reiterated that these are the types of projects that he wants to support. However, we must document our performance.”


Every 15 minutes data is collected for kilowatts generated and the amount of natural gas consumed.

“That performance is audited once a year for the next 10 years, and if the generator is not up and running, we’re not generating electricity,” Johnson says. “We have to meet 80 percent of what we said we will produce, so we can’t afford to have it down if we want to achieve our incentives.”

The generator set has operated flawlessly since several startup issues were ironed out at the outset. All maintenance is performed by Toromont technicians as part of a long-term Customer Support Agreement.

“When you have a new installation, it’s unknown to the plant, the operators and the management team, and at some point you have to take ownership and run it yourself,” Johnson says. “The most comforting thing for me is knowing that whenever we have a problem, Toromont is only a phone call away and their technicians are right here in the city.”

Technical support is available 24/7 to help Canada Malting keep the cogen plant up and running, or to assist with technical issues.

“We have learned to rely on them less, but we have a full service agreement with them—which provides us with an added level of comfort,” Johnson says. “So it’s a real win-win for both Toromont and Canada Malting.” 

CANADA MALTING

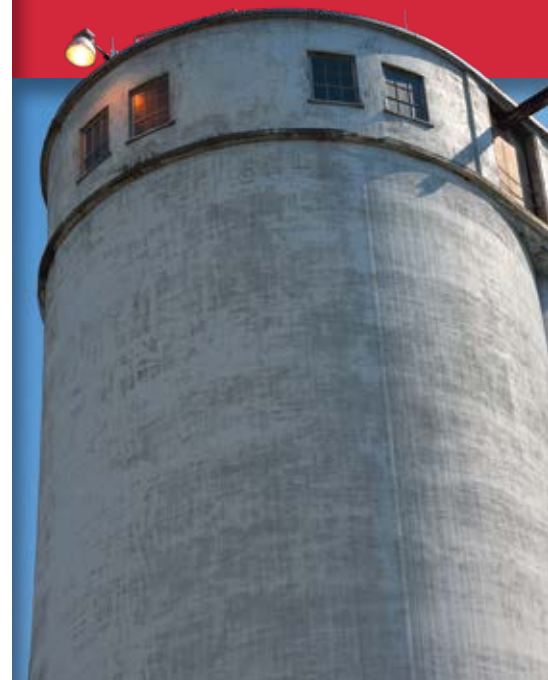
As the largest malt company in Canada, Canada Malting produces 400,000 metric tons (992 million pounds) of malt for the brewing, distilling and food markets worldwide.

Its customers range from the largest multinational organizations to the smallest craft brewers—as well as food processors—located primarily in North America.

Its process ensures a stable supply of high-quality malt, year in and year out. A pelletized grain byproduct derived from the malting process is provided to the cattle industry as fodder for cattle feed.

Located on the western shore of Lake Superior in a major Canadian grain port, the Thunder Bay plant has a capacity of 125,000 metric tons and is well situated to pull malting barley from the Eastern Canadian prairies. It ships malt via rail and truck to eastern North America, and can load malt directly onto vessels from its malt storage elevator.

Across the enterprise, Canada Malting sets goals to reduce the use of energy and natural resources while measuring performance against these goals. Through a process of continuous improvement, the company seeks to implement processes and practices that reduce its demand on natural resources, while minimizing the environmental footprint across its operations.



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