

RUNREADY™

SAVING GRACE

MANUFACTURER SAVES \$1.2
MILLION PER YEAR WITH CHP

VOLUNTEER ENERGY

Cat® generators serve dual purpose
for electric cooperative

SAFE HARBOR

Assisted living provider relies on Cat power



Island Mode

An ever-present supply of electric energy is something that most of us take for granted—until the power cuts off.

On a sweltering afternoon this summer I came to that realization when I arrived home expecting to feel the welcome chill from air conditioning, only to be met by dead clocks and dead air. It turns out the local utility was paring tree branches and cut off the power to my block.

Simple tasks that require electricity came to an abrupt halt. To make matters worse, my cell phone ran out of power even as utility trucks moved down the alley and blocked my vehicle from exiting the premises. Talk about being on an island.

The point is, sudden loss of power can set off a downward spiral.

That's why Florida—a state with more than 633 nursing homes and skilled nursing facilities—passed a measure mandating standby power at all assisted living facilities to ensure climate-controlled conditions in the event of an extended outage caused by a hurricane or another outside event. Since the measure went into effect last year, Cat® dealer Ring Power has installed standby power at 44 senior living facilities throughout Florida.

This issue also highlights the use of Cat generator sets by a Tennessee electric utility cooperative, which uses the energy to reduce the cost of peak energy charges at four separate office locations in its territory, while also providing standby power to maintain critical customer support operations in the event of a grid outage.

We also feature a breakdown of the key considerations to evaluate whether cogeneration makes sense for your business.

In this pandemic year, having a constant supply is more important than ever.



John Rondy, Editor
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DID YOU KNOW?

20,000 MW and counting...

Since 2005, there are more than 8,000 Cat® G3500 generator sets in CHP applications that exceed 20,000 combined megawatts. A megawatt is equal to 1,000 kilowatts of electricity used continuously for one hour. It is equivalent to the amount of electricity used by about 330 homes in one hour.



STRING of PEARLS

The Islas de las Perlas, also known as the Pearl Islands, lie about 30 miles (48 kilometers) from the Pacific coast in the Gulf of Panama. The scenic archipelago of 200-plus small islands is known for its wildlife sanctuaries, white-sand beaches, coral reefs, and opportunities for scuba divers and whale watchers.

Not far from the modern Panama Canal, the Pearl Islands used to be an important provisioning site for the Spanish conquistadores and their ships.

Being relatively remote, tourism operations, small businesses and residences in the islands rely on 16.2 megawatts of power generated by 20 Cat® Diesel and Gas Generator sets such as the G3512H. But the islands' needs are growing.

Island Power, S.A. (IPSA) selected IASA PANAMÁ, the local Cat dealer, to deliver 28 Cat diesel generator sets supplying a total of 11 MW of prime power throughout the Pearl Islands and other remote sites off the grid.

The new Cat gensets were installed and commissioned by IASA in stages starting in late June and lasting through July.

"The Pearl Islands are known worldwide for their natural beauty and biological diversity, so it is essential for us to use reliable power solutions that provide the energy we need in an extremely fuel-efficient package," said Oscar de Leon, general manager for Island Power. "IASA has delivered through high-performing systems that will help us preserve the delicate ecosystems of the islands for generations to come."



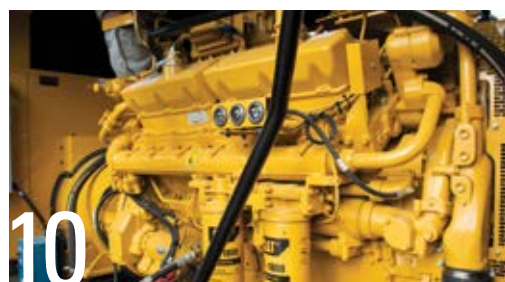


IN THE SPOTLIGHT:

13 Backup Plan

Given that storms can result in power outages from the grid, HarborChase is prepared in case of emergency at its assisted living communities throughout Florida. A Cat C9 and a smaller C7.1 (150 kW) standby generator power life safety equipment, the Internet, and most importantly—keep the residences cool at Wildwood Assisted Living and Memory Care.

FEATURES



4 CHP Considerations

Here's what to consider when evaluating if CHP is right for your facility

6 Saving Grace

Manufacturer saves \$1.2 million per year with CHP

9 Competitive Edge

Cat® Trade Dress updated with Modern Hex design

10 Volunteer Energy

Cat generators serve dual purpose for electric cooperative



A new Cat® podcast features a variety of interesting and helpful topics with industry experts each month, giving you an exclusive look into the power industry and beyond. To locate and subscribe to the channel, search on *Caterpillar Power Bytes*.

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MAKING THE CASE FOR CHP

By Martin Hopkins

Almost any industry can benefit from a Combined Heat and Power (CHP) Plant. Great candidates for CHP are facilities that have large thermal loads, whether it's heating, cooling, or both. Good candidates include:

Waste Water Treatment Plants – In addition to a constant electrical load, these facilities need hot water to keep their digesters at the optimal temperature.

Hospitals – Typically, hospitals will have onsite laundry, which can benefit from hot water derived from CHP. They also tend to have very large cooling needs.

Hotels – Like hospitals, hotels typically have onsite laundry, while heated swimming pools consume a lot of energy.

Processing or Manufacturing Plants – In addition to large electrical requirements, plants have many types of thermal needs. Many facilities use hot water or steam for processing. There can also be cooling or cold storage requirements, and much more.

Greenhouses – Greenhouses are unique as they use the electricity and hot water

that many CHP plants will use but they will also capture the CO₂ from the engines' exhaust to help promote plant growth.

Data Centers – With large electric loads and large cooling loads, data centers are ideal CHP candidates.

As an economic solution, a CHP plant offers financial benefits to almost any facility. A major factor in this economic benefit is the increasing spark spread in North America. The spark spread is the difference between the price of electricity and natural gas.

With record production of natural gas in North America, that cost has trended down and is holding. This means the spark spread is getting wider. And, the wider the spark spread, the better it is for a CHP plant.

When evaluating the potential for CHP at your facility, you need to consider the long-term financial benefits, the positive environmental impact and increased energy security.

FINANCIAL CONSIDERATIONS

When evaluating the financial viability, the return on investment (ROI) is a key element. When analyzing the

ROI of a CHP plant, there are a few things you need to consider:

First cost is your all-in cost to get a CHP plant on your site, such as:

- Soft costs like engineering, legal fees and permitting
- Capital cost for equipment
- Installation and site preparation costs

Displaced energy

Secondly, calculate the value of displaced energy from thermal loads. An example of displacing energy would be if you utilize hot water for the CHP plant, you would then use and pay for less natural gas in a boiler for that same hot water.

Operating Costs

You will need to factor in the cost of fuel and maintenance. When it comes to the cost of maintenance, this is something you will want to discuss with your equipment provider up front. It's advisable to enter into a long-term maintenance contract, as this can give you some cost certainty over a defined period of time.

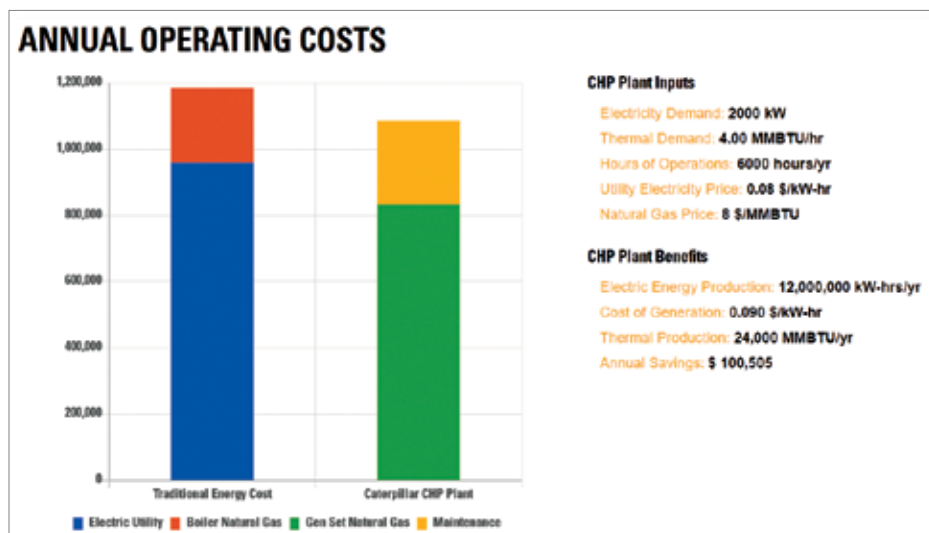
Local, state or federal incentives

The plant may qualify for incentives that can also have a positive impact on the ROI. In areas with high utility rates, we see simple paybacks on a CHP installation in the three- to five-year range.

ENVIRONMENTAL BENEFITS

A CHP Plant at a facility can have a positive impact on lowering a site's greenhouse gas (GHG) emissions profile.

Most facilities obtain their power from large, centralized power plants. These types of plants are less efficient than a properly designed, onsite CHP plant. A primary reason is that an onsite CHP plant will use less fuel to produce the same amount of electricity.



Additionally, the displacement of energy from the thermal contribution of the CHP plant increases the plant's efficiency.

Another factor causing inefficiency is the line losses in delivering the electricity from the central power plant to the end user. This occurs in both the distribution and transmission lines. And, there are also losses in stepping down voltages through transformers. Typical transmission losses are on the order of five to seven percent and can be even higher.

Compared to other commercially available technologies, a reciprocating engine plant is going to have the most positive greenhouse gas impact. This is due to the high electrical and mechanical efficiency characteristics

of the internal combustion engine compared to turbines and micro turbines.

ENERGY RESILIENCY


In recent years, natural disasters have become a major threat to the reliable flow of electricity. Hurricanes and superstorms pummel the East Coast, while wildfires and earthquakes can knock out grid power on the West Coast.

Critical facilities and first responders must continue to operate through these types of disasters, and businesses cannot afford to be without power for days on end.

Another factor in favor of CHP is the increased reliance on renewable power and how it can impact energy

availability. While renewable power is a great resource, it has does have some drawbacks.

In the case of wind and solar, it should be considered as energy and not system capacity—it is interruptible. When the wind stops blowing and the sun isn't shining there isn't any electricity is being produced.

This drawback can be overcome with a properly designed CHP system (even combined with a microgrid) which can run in island mode. And doing so will keep the lights on. 



Martin Hopkins is a biogas, natural gas and cogeneration sales representative with Peterson Power Systems.



SAVING GRACE

MANUFACTURER SAVES \$1.2 MILLION PER YEAR WITH CHP

With roots that date back to its founding in 1854 in Peru, W.R. Grace & Co. has a long history operating a multitude of diverse businesses that include shipping, retail stores, restaurants, and manufacturing chemicals, to name just a few.

With 4,000 employees worldwide and operations in 30 countries, Grace is a global specialty chemicals company noted for technological leadership.

About 20 miles away from its world headquarters in Columbia, Md., the company's Curtis Bay manufacturing facility is located on 260 acres on an industrialized peninsula in south Baltimore. The plant is staffed by 550 employees and includes about 450 union labor positions.

At one million square feet, Curtis Bay is part Grace's Catalyst Technologies

business unit, representing the largest of the company's 22 manufacturing plants, with six production facilities that manufacture hundreds of products within four general product lines.

Before Grace acquired the facility in 1943, manufacturing at this location began in 1910 making sulfuric acid, then fabricating munitions during World War I; and silica gel throughout World War II as a dehydrating agent to protect shipments from the damaging effects of air and moisture.

Today, all of Grace's business units are represented at the Curtis Bay plant, including Material Technologies, Specialty Catalysts, Refining Technologies and Advanced Refining Technologies, as well as Grace's joint venture with Chevron, ART Hydroprocessing. The products that originate from the plant include

catalysts and chemical additives, silica-based engineering materials, packaging products and technologies, and chromatography media and columns. These products are used to make anything from pharmaceuticals to toothpaste, gasoline, and bottles and cans.

As the second-longest continually operating chemical company in the U.S., Grace's Curtis Bay plant has been continuously modernized and expanded over its 110-year history. It is also home to a technical center for process innovation.

Grace's Curtis Bay operations have received numerous distinctions, including Responsible Care® Energy Efficiency Awards in 2009 and 2010 from the American Chemistry Council for reductions in water, energy and natural gas usage. Grace has implemented a highly efficient environmental management system that is geared toward waste reduction at the source and strict control of emissions.

The Curtis Bay plant operates 24/7. To meet its power demand, the Curtis Bay plant uses both electricity and natural gas supplied by Baltimore Gas & Electric (BG&E). The plant has a 14.7 MW peak demand—but has an average load of 12 MW—and uses approximately 94,430,830 kWh/year. Curtis Bay uses natural gas to directly supply process load and also supply boilers used for steam and hot water throughout the facility.

Aging infrastructure is an ongoing challenge at Curtis Bay, as old utility feeds and transformers occasionally go down, says project manager Richard Martin.

"We try to maintain them as best we can. It's a big facility and we have



a crew dedicated to making sure that things are maintained and respond to any shutdowns,” Martin says. “Loss of power is a big issue on this site—it shuts down basically all of our production, and if we’re not producing product, we’re not making money.”

CHP takes the heat off

In late 2016, Grace began the planning process to install a combined heat and power (CHP) project, subcontracting both the design and construction of the CHP plant. Ultimately, the plant was commissioned in November 2019, and includes two Cat® 3520H generator sets supplied by Cat dealer Carter Power Systems that are located in a fit-for-purpose building. Each engine is equipped with an oxidation catalyst and a selective catalytic reduction (SCR) system to meet stringent environmental criteria. The gensets are behind the meter and power generated onsite is not sold back to the grid.

“We consume an average of about 12 megawatts of power with redundant distribution from what we call our horseshoe,” Martin says. “It’s our main feeding

facility where the power from the utility enters the site. So, we were looking to offset some of that power and reduce our operating costs by utilizing cogeneration with the Cat gensets.”

Combined, the two generator sets produce about 5 MW of electric power, offsetting about 40 percent of the plant’s annual power consumption.

The heat recovery system was designed to receive 450 gpm of city water at temperatures varying from 47°F in the winter to 70°F in the summer, and deliver hot water at about 130°F to the plant instead of heating it with steam. The water flows through two heat exchangers in series, with the first exchanger pulling heat from the first-stage aftercooler; and the second exchanger pulling heat from the jacket water, lube oil cooler, second-stage intercooler and exhaust heat. The hot water is stored in 10,000-gallon insulated tank and is used in a process stream.

“We recognize the advantage of recovering the heat that we can use in a wash media in our manufacturing process,” Martin says. “We previously heated the water

using the on-site steam boilers, but now we can use the hot water generated from our CHP system to offset much of that load.

Manufacturing operations can be perfect candidates for CHP systems, says Jack McKenna, an energy solutions account executive with Carter Power Systems.

“In some non-manufacturing applications, the thermal profiles do not allow for complete utilization of the available heat produced by the CHP system,” McKenna says. “When it comes to manufacturing, and in this

Continued on page 8

CUSTOMER PROFILE

W.R. Grace & Co.

Location: Baltimore, Md.

Application: Cogeneration (CHP)

Cat® Equipment: G3520H gas generator sets (2)

GRACE
Talent | Technology | Trust™



project specifically, the system uses all the heat we can generate. Because the process involves heating relatively cool city water, we were able to use the heat from the often not used, the low temperature after-cooler circuit, increasing the overall efficiency of the CHP system and the energy cost savings to W.R. Grace.”

As a bonus, Grace was able to avoid the cost of installing radiators, McKenna said.

\$1.2 million annual savings

The installation has resulted in a multitude of benefits to Curtis Bay plant.

Since the CHP system began operating, utilization of the boilers to heat the water has dropped significantly, Martin says. Thermal offset of about 10 percent of its annual natural gas consumption, including boiler efficiency loss, has been realized. The overall efficiency of the CHP system is about 75 percent.

Other tangible benefits include:

- An estimated annual energy savings of \$1.2 million
- Increased reliability of its electrical supply
- Expected annual greenhouse gas reduction (GHG) of 14,415 tons CO₂e

Financial incentives helped make the project feasible. Grace received



Curtis Bay plant

“The CHP system is a key tool for our plant to remain competitive, reduce our GHG emissions and improve our long-term sustainability goals.”

RICHARD MARTIN, Project Manager, W.R. Grace & Co.



a Maryland Energy Administration CHP Incentive Grant of \$500,000, and potential BGE CHP Incentive Grants of approximately \$4 million based on genset utilization. Total payback on the project is expected to be realized in less than five years from its inception, Martin says.

“The CHP system is a key tool for our plant to remain competitive, reduce our

GHG emissions and improve our long-term sustainability goals,” Martin says.

By early June, each generating unit had logged between 3,200 and 3,300 hours. Anytime the generators stop running, an onsite inspection is required before facilities staff execute a manual restart.

“Right now, we’re running pretty steady,” Martin says. “Our operations staff is trained on how to restart them, and they’ll run for days at a time. They’ve been running well for the last three months.”

All scheduled maintenance—including fluid sampling—is handled through a service contract with Carter Power Systems, which is located 15 minutes from the Curtis Bay facility.

“Nobody likes to see these units down, and if they’re not running I get phone calls,” Martin says. “The folks at Carter are responsive, and I’ve been happy with them. Their main technician is a great guy. He really knows these Cat generators and he’s very helpful to us. So, we’re glad that we’re in partnership with him and the Carter Cat team.”



DRESS FOR SUCCESS

NEW TRADE DRESS CONVEYS PREMIUM LOOK AND FEEL

New Cat® machines have a modern, updated look thanks to a branding redesign the company unveiled last fall.

Caterpillar's new trade dress marks the latest of many changes the nearly 100-year-old company has made to the way it brands its machines. The updated design, dubbed Cat Modern Hex, replaces the Power Edge trade dress, which placed the CAT logo on a black background with a diagonal red bar.

Modern Hex still prominently features the iconic Cat logo, but places it atop a 3D, red hexagon, surrounding a grille pattern. The company chose to make the hexagon red as a nod its first logo when the red, wavy Caterpillar logo was found on the company's first crawler tractors, painted gray and introduced in 1925.

Gone is the simple contrast between the white Cat word mark and the yellow, blade-like triangle. Both the word mark and the triangle have been dressed in drop shadows, adding a depth to the overall logo that it didn't have before.


"The new look and feel of the Cat Modern Hex reflects Caterpillar's commitment to offering the best, most up-to-date electric power solutions for our customers as they continue to adapt to a changing energy market," says Bart Meyers, general manager for large electric power solutions.

The Cat word mark meanwhile has gone from white to nearly silver, giving it a shiny, steel-like quality. This steel treatment has also been given to the machine model number, which now sits separate from the Cat logo, and even has its own smaller hexagon/grille.

The new Modern Hex trade dress was designed in-house by Cat's Industrial Design Group, led by product identity manager Ed Stembridge.

"Our goal was to create something with a premium look and feel," Stembridge says. "When you combine the Modern Hex design with our distinctive Cat product designs, it visually reminds customers they are buying and using the best products on the market."

The new trade dress branding will be placed on all new machines, including heavy equipment, generator sets and engines. It will also be used on Cat parts packaging, and various licensed products such as toys and scale models.

The new branding became effective across the entire product line earlier this year. 



COOPERATIVE STRATEGY

ELECTRIC CO-OP HOLDS DOWN ENERGY COSTS WITH CAT® POWER

With more than 10,000 miles of power lines strung from the borders of Georgia to Kentucky, Volunteer Energy Cooperative (VEC) is one of the largest rural electric cooperatives in the nation, serving more than 119,000 members in all or part of 17 Tennessee counties.

Founded in 1935 as the Meigs County Power Association, VEC was the first electric cooperative in the

nation to take advantage of the funding offered through the Rural Electric Administration to build power lines in underserved areas.

In 1939, just seven years after the Tennessee Electric Power Company refused to provide electric service to Meigs County, the rural cooperative entered into a contract with the Tennessee Valley Authority (TVA) to purchase the power company's distribution properties in McMinn, Bradley, Meigs, Polk, Roane,

Rhea, Cumberland, Putnam and Fentress Counties for \$276,700. Recognizing it would soon be serving an area far larger than Meigs County, the corporation changed its name to Volunteer Electric Cooperative.

Today, VEC serves its members through nine customer service centers in Benton, Cleveland, Georgetown, Decatur, Spring City, Crossville, Monterey, Jamestown, and Byrdstown. The nine offices are administered

G3412 genset



through the Cleveland, Decatur, Crossville, and Jamestown service areas.

VEC is currently growing at an annual rate of two percent, and anticipates that it will add 2,000 to 2,500 new homes this year along with some industrial expansions that will require more power from the system, says VEC president Rody Blevins.

Through its marketing and economic development arm, VEC works with counties in its service area to help recruit industry and commercial business while promoting tourism.

“Being an electric co-op, we’re owned by the membership, so everything we do is geared toward what’s better for our members—whether that’s improving system operations or cultivating economic development throughout our territory,” Blevins says.

Keeping rates low

Volunteer Energy’s primary mission is to keep energy rates as low as possible while providing reliable electrical service. VEC has had only two rate increases in 15 years, and has the lowest customer charge of any electric cooperative in the state of Tennessee.

As a distribution utility, VEC buys all of its energy from the Tennessee Valley Authority. As part of its contract with TVA, the cost of power is determined primarily by three main components:



“We wanted a generator to back up this facility because we are controlling our entire power system from this location and we can’t afford for that to be down for an extended period.”

RODY BLEVINS, President, VEC

- TVA’s fuel cost, which varies depending on market conditions
- The second big piece is the total kilowatt hour energy VEC buys in a month.
- The third component is a one-hour peak demand charge. Depending on what VEC’s highest one-hour peak usage is for a given month, the co-op is billed a demand charge by the TVA based on its one-hour peak usage.

Based on its contract with the Tennessee Valley Authority, VEC cannot contract with outside sources for power. However, the cooperative is allowed to self-generate power as long as it is used to power its own facilities and is not distributed across network power lines to its members.

Once it began tracking wholesale energy rates and analyzing its TVA rates in greater detail, VEC realized it could save energy costs by generating a small amount of its own power. Based on that analysis, two years ago VEC installed

a Cat® G3412 gas generator set behind its Decatur headquarters. The genset runs an average of four to six hours per month, resulting in savings of anywhere from \$5,000 to \$6,000 per month.

VEC’s engineering department continuously monitors the system peak and knows when the peak hours will occur. The peak hours vary by season—in the summer it’s predominantly weekdays between 5 to 6 p.m. when people get home from work and turn their air conditioners on. During the winter, it’s usually from 7 to 8 a.m. when people are getting ready for work. These are the times when VEC runs the Cat genset to partially offset the peak demand charge. The gensets are operated via remote through its SCADA system.

“We can generate a small amount of power to directly replace the energy that we use in our offices and at a maintenance facility,” Blevins says.

Continued on page 12

CUSTOMER PROFILE

Volunteer Energy Cooperative

Location: Decatur, Tenn.

Application: Peak shaving, standby power

Cat® Equipment: G3412 (2) and G3512 (2) generator sets



“When we started looking harder at things, we realized there was some potential demand savings that we could realize.”

Another deciding factor was VEC’s Vision 2020 plan, which involves updating the cooperative’s technology platform. This includes anything from phone systems to IT services, substation equipment, control panels, and deployment of fiber optic cable.

“And part of that was installing generators at our offices to back up our office operations during times when we have major storms,” Blevins says. “We picked the corporate office first because we built a new 24/7 dispatch control center here back in 2010/2011, and we wanted a generator to back up this facility because we are controlling our entire power system from this location and we can’t afford for that to be down for an extended period.”

In addition to providing peak shaving and providing standby power during grid outages, the genset comes in handy to provide energy when VEC performs facility maintenance work.

Based on the favorable outcome with the genset at the Decatur headquarters, this year VEC installed and commissioned additional G3512 Cat gensets at its branch office locations in Crossville and Jamestown, as well as the recent installation of another G3412 in Benton.

“At our other offices, we want them up and running for local operations needs, and they are also communication centers for our fiber,” Blevins says. “We talk to all of our substations one way or another through our fiber, and we also do all of our meter reading over the power lines back across our fiber system. We also do all of our network traffic across our fiber system. So those

offices are critical that we keep those communications going.”

Cat quality, dealer support

When VEC was evaluating the selection of its first generator set, it took proposals and looked at different brands.


“One of our priorities was to make sure we had a high-quality unit, so we needed something we felt was more utility/industrial grade—a unit that started and loaded fast,” says Matthew Teague, vice president of engineering for VEC. “So, part of the reason why we went with Caterpillar is because we figured it was a higher quality unit.

“In our business, when we need it, we need it to run right away,” Teague says. “The quality of the unit and how it’s designed to run along with the extended maintenance cycles—all of those things were important factors for us. We’ve been happy with the G3412 now that we’ve had it running for two years—it has done well for us. We’ve been impressed with the way it handles large transient loads.”

The other deciding factor was VEC knew it could count on support from its Cat dealer, Stowers Machinery, which provides ongoing maintenance and periodic testing of the gensets.

“We’ve known Stowers for many years, and we have partnered with them on different things over the years, and we are very familiar with the local Stowers people, too,” Blevins says. “They’ve always done a good job for us, and we’ve been able to count on them. When we need things done, they’ve been able to follow through on their commitments to us.”

VEC may not be done adding more gensets, as it’s waiting for an upgrade by a gas supplier before installing another Cat genset at its Cleveland office, Blevins says. The agency is also working with Stowers to help educate other electric cooperatives about implementing self-generation.

“This has been a good deal for us,” Blevins says, “and we want to show our peers that it could be a good move for them, too.” 

G3512 genset





SAFE HARBOR

ASSISTED LIVING PROVIDER RELIES ON CAT® POWER

In 2017, 11 residents of a Hollywood, Florida nursing home died following a power outage caused by Hurricane Irma. The hurricane knocked out the facility's air-conditioning system for three days, creating sweltering conditions.

In response, Florida Gov. Rick Scott mandated that all nursing homes in the state have standby generators and fuel that can help keep buildings cool for at least 96 hours following a power outage.

Once the governor's mandate became law in 2018, Cat® dealer Ring Power partnered with its considerable base of general and electrical contractors and engineers to provide design engineering, as well as full construction and installation of Cat generator sets at 44 senior living facilities throughout Florida.

In most cases, genset installation was performed on multiple facilities at

the same time, said Brian Martinez, a territory manager for new engine sales at Ring Power. All facilities not only had to meet deadlines, but be in compliance with local codes and be approved by the America Health Care Association.

HarborChase

Ring Power installed Cat gensets at 16 separate assisted living facilities in Florida for Harbor Retirement Associates (HRA), which offers high-end residential living and programming for elderly residents. The Vero Beach, Florida-based operator has 34 communities across the country branded as HarborChase, including 18 locations in Florida.

HarborChase senior living communities offer engaging activities, independent living, assisted living or memory care services. The communities are designed around improving quality of life through generous amenities,

exquisite dining, engaging events, and an unprecedented level of attention.

First opened in 2018, HarborChase of Wildwood Assisted Living and

Continued on page 14

CUSTOMER PROFILE

Harbor Retirement Associates

Location: Wildwood & Lady Lake, Fla.

Application: Standby emergency power

Cat® Equipment: C7.1, C9 and C13 diesel gensets





Memory Care community is located in the heart of Wildwood, Fla., outside of Orlando. The 92,000 square-foot property includes 92 rooms, with 66 designed for assisted living and 26 for memory care. The main three-story building is built in the shape of an 'X', and the residents' rooms are located in the corridors of that configuration.

The utility grid that serves the HarborChase of Wildwood community is subject to periodic outages due to storms that roll through the area. Power can be lost due to lightning strikes or high winds that down power lines.

Given that storms can result in power outages from the grid, HarborChase is prepared in case of emergency. HRA has installed a Cat C9 (250 kW) and a smaller C7.1 (150 kW) genset behind the main building.

In the event of a power outage, which can last anywhere from 10 minutes to an hour or more, automatic transfer switches activate the Cat gensets and immediately transfer the facility's electrical load, says Alvin Smith, Senior Director of Maintenance for

HarborChase. The two gensets provide 75 percent of the facility's electrical load.

"If we lose power coming from the city and an outage takes place, the emergency power kicks in," Smith says. "It covers our lighting, and powers all of our life safety equipment from alarms

to our elevators and also the Internet. It also provides power to all of our A/C in our general common areas to keep the building cool so the temperature doesn't rise."

"We have main hallways that loop around in that 'X' configuration of our main building, and those corridors



HarborChase of Villages Crossing



block load in one step and meet National Fire Protection Association (NFPA) 110 loading requirements.

“We’ll run at full load every Monday for an hour, and while it’s running we make sure the building temperature is maintained,” Smith says. “We monitor it to ensure that we’re getting enough load, and that it transfers properly and then cools down adequately.”

The Cat C9 and C7.1 are housed in sound-attenuated factory enclosures.

“They run pretty smooth,” Smith says. “When the generators come on, they aren’t loud. The residents don’t complain about the noise at all. And the transfer of power from the grid to the generators is pretty clean.”

Ring Power technicians conduct regular maintenance of the generator sets through a Customer Value Agreement with HarborChase, which includes treating the diesel fuel to keep it free of impurities that could affect engine performance.

With 13 locations from Tallahassee to Pompano, Ring Power is strategically located across northern and central Florida as a full-service source for electric power generation systems.

“The guys from Ring Power are on top of it,” Smith says. “I just call them if there’s any sort of issue, and they come to our location without hesitation. If they can’t get here that day, it’s next morning because they know how urgent it is.”

“We have a good relationship with them—they’re like our go-to guys—it’s them and us,” Smith adds. “We know that as long as they’re behind us, we’ve got the power.”

“We have a good relationship with Ring Power—they’re like our go-to guys—it’s them and us,” Smith adds. “We know that as long as they’re behind us, we’ve got the power.”

ALVIN SMITH, Senior Director of Maintenance, HarborChase



are air conditioned,” Smith says. “The air conditioners in individual residents’ rooms aren’t powered by the generators, but they still get cool, conditioned air from the fresh air units in their rooms.

“We’ve had a few incidents where the utility power is off for about an hour, and once the emergency power kicks on, you don’t realize that utility power is out,” Smith continues. “The lights flicker and then it transfers that power and it runs quite well. It doesn’t really affect anything and our computers still run. All of our life safety systems are still powered, and you really wouldn’t know that we’re without grid power when you walk into the building.”

When HarborChase opened its Wildwood location, the Cat C7.1 genset was installed first, followed by the C9 in September 2018. Ten miles away at another HRA senior living facility, HarborChase of Villages Crossing is

backed by a Cat C13 (400 kW) generator set. Diesel fuel for the generators is stored in integrated tanks directly beneath the units.

Turnkey solution

The decision to equip the two HarborChase facilities with the Cat gensets was made by a consulting engineer, who coordinated with Ring Power to install and commission the units.

“Ring Power did the installation and commissioning, and they’ve been pretty much hands on since then,” Smith says.

Smith and another facilities staff member conduct periodic checks of the gensets that include a walkaround inspection, and also checking the fuel and coolant levels.

The gensets are programmed to start automatically every Monday morning to ensure the standby power is ready to run. The Cat gensets accept 100 percent

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