

# RUNREADY™

## GEARING UP FOR SAVINGS

Fargo's wastewater facility expands

### PIPELINE ON WHEELS

Cat® power backs innovative CNG storage and delivery system

### POWERFUL SOLUTIONS

Collaboration with Cat dealer enables successful delivery for offshore drilling customer

### EXPANDED CAPABILITIES

Cat dealer helps Gulf Coast shipyard grow operations

**Thompson**  
Power Systems





# Spring Ahead

Springtime is a season of renewal, symbolizing new beginnings and providing an opportunity to plant seeds for the future. Whether through innovation, improved strategies or fresh partnerships, embracing the energy of spring encourages us to look forward with optimism, viewing challenges as opportunities for growth.

The cover story in the Spring issue of **RunReady** features a wastewater treatment plant that is building toward a bigger future. As the City of Fargo and surrounding communities grow, the Fargo Regional Water Reclamation Facility is in the process of doubling its capacity to meet future demand.

Some old processes and ways of doing things will be left behind as the plant expands. As one of the city's largest users of energy, the facility features a new central power generation plant with four Cat® G3512 generator sets that effectively replace four generators that were housed in different areas of the complex and had to be manually started.

The power plant modernization provides operators and managers with more knowledge about how and when power is being used, and enables them to peak shave and save money for ratepayers.

Meanwhile in Pennsylvania, a mobile natural gas delivery service provides a source of energy to those who are not connected to a natural gas pipeline. With power supplied by a Cat G3516 generator, the natural gas is compressed at a terminal facility and then pumped into semi-trailer tanks, which are subsequently trucked to their destinations.

As you spring ahead, we hope you enjoy reading these and other customer success stories in this issue.



## DID YOU KNOW?

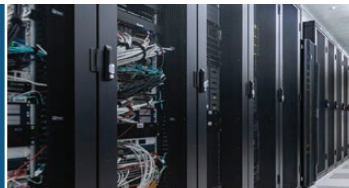
### DATA CENTER BOOM

Between technology companies, telecoms, corporate enterprises and operators such as Digital Realty and Equinix, \$465 billion was invested in data centers during 2024, according to a report in *The Economist*.

There are now as many as 11,000 data centers around the world, collectively guzzling 5 gigawatts of power (about as much as the generating capacity of the Netherlands) and occupy a land area equivalent to more than 4,500 football fields.

According to research firm Omdia, at least another 63 gigawatts (GW) of data center capacity is set to come online in the coming years. Measured by power consumption, the Americas account for just over 50% of global data center capacity, while Asia holds nearly 30%, and Europe, the Middle East, and Africa make up the remaining 20%.

Jon Lin, an executive at Equinix, notes that building a data center now takes around three years—up from just 12 to 18 months in the past.



## GERMAN UTILITY REDUCES CARBON EMISSIONS WITH CHP

Located in the Lippe district of Germany's North Rhine-Westphalia, the town of Lemgo has a rich history dating back nearly 850 years. It's the home of Technische Hochschule Ostwestfalen-Lippe, a research university that specializes in the applied sciences, focusing on mechanical engineering and industrial electronics. Lemgo is renowned for its half-timbered architecture dating back to the Renaissance, including the Hexenbürgermeisterhaus finished in 1571.

Stadtwerke Lemgo, the local municipal utility, provides electric power and district heating for the town, currently supplying approximately 160 million kilowatt-hours of heat annually.

Stadtwerke Lemgo is committed to reducing its environmental impact by supporting the goals of the 3<sup>rd</sup> Lemgoer Klimaschutzkonzept, a climate protection initiative targeting carbon emissions reductions in the town by 90% from 1990 to 2050.

Over its extended relationship with Stadtwerke Lemgo, local Cat® dealer Zeppelin Power Systems has served a major role in helping the utility meet its goals by supplying engineering, installation, and service expertise for multiple Cat natural-gas-fueled combined heat and power (CHP) systems that supply a total electrical output of 18 MW.

Zeppelin supplied Stadtwerke Lemgo's CHP units in 2021 as part of an integrated system that was named "CHP of the Year 2022" by Germany's Federal Association of Combined Heat and Power and *Energie & Management* magazine.

The solution combines a 7.5 MW CHP system powered by three Cat G3520 natural-gas generator sets, a 5.2 MW solar thermal system with vacuum tube collectors, and a heat pump that generates up to 1 MW of thermal output using water from the Bega River. With the addition of these new thermal capabilities of solar thermal and a heat pump, up to 20% of district heating produced by Stadtwerke Lemgo is generated carbon-free.

Zeppelin provides ongoing support through long-term service agreements, which include regular maintenance at scheduled intervals, as well as around-the-clock, on-demand technical assistance.

## IN THE SPOTLIGHT:

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## Gearing Up For Savings

As part of a facility expansion at the Fargo Regional Water Reclamation Facility, a new onsite power plant has been added for higher reliability and its ability to peak shave and hold down energy costs. Four Cat® G3512 natural gas generators centralize operations and provide more efficient distribution of power.

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Cat® power backs innovative CNG delivery system



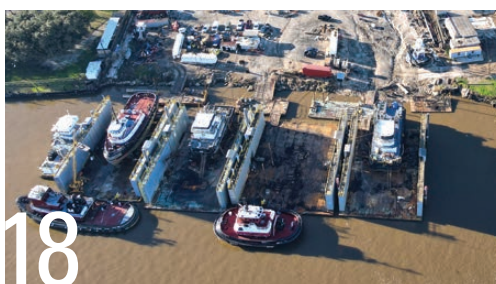
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Cat dealer helps Gulf Coast shipyard grow operations



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# GEARING UP FOR SAVINGS

## Fargo's wastewater facility expands

As Fargo grows, so do the surrounding communities of North Dakota's largest city. From 2010 to 2020, the city's population grew by more than 10 percent, and recent estimates suggest it has continued to grow at a similar pace.

Communities in the surrounding region, including neighboring West Fargo and Moorhead (across the border in Minnesota), have also registered significant population increases. The population of West Fargo grew by 40 percent from 2010 to 2020, while Moorhead grew by 15 percent during the same period. People who are moving to the area for job opportunities are also drawn by the area's quality of life.

Fargo is home to North Dakota State University (NDSU), which is a key driver of the local economy. NDSU has seen significant expansion in both student enrollment and research activity, contributing to the area's reputation as a hub for education and innovation.

### CUSTOMER PROFILE

#### **CITY OF FARGO REGIONAL WATER RECLAMATION FACILITY**

**Location:** Fargo, North Dakota

**Application:** Peak shaving,  
standby

**Cat® Equipment:** G3512 gas  
gensets (4)



Photo courtesy of APEX Engineering



The expansion of businesses in various sectors—including health care, finance, and agriculture—has bolstered the region’s economy. In response, the city has made significant investments in infrastructure to support its steadily growing population.

### **Growth spurs facility expansion**

Based on current growth throughout the Red River Valley, a consulting firm hired by the city determined that an expanded regionalized treatment facility large enough to accept wastewater from surrounding communities could benefit the area.

In 2020, Fargo embarked on a \$151 million modernization and expansion in north Fargo that also serves West Fargo and Horace.

Starting in 1934 when the city had about 30,000 residents, Fargo completed a major wastewater facility expansion project about every 30 years as the population doubled; expansions were done in 1960 and 1991. Compared to previous expansions, the current ongoing project is a major endeavor, according to Jim Hausauer, Water Reclamation Utility Director for the City of Fargo.

The current plant expansion effectively doubles its peak treatment capacity to 50 million gallons per day (mgd), says Jeffrey Hoff, control system manager for the City of Fargo Regional Water Reclamation Facility. Currently, the plant treats a daily average of approximately 21 mgd.

“In addition to Fargo proper, we’re taking in the wastewater for all of the businesses and infrastructure as far away as eight miles north of us to 22 miles south,” Hoff says. “And to the west, we will take all of West Fargo, which is outside the city limits. So when we started this project, we had to increase our capacity because we’re serving so much new territory, which includes 15 sewer agreements with various municipal sewer districts and subdivisions outside the city.”

The expanded system enables the facility to far exceed clean water standards. Compared to the existing treatment plant on the east side of the facility, the improvement achieved by using the new state-of-the-art treatment system will result in a 85 to 90 percent reduction in ammonia-nitrogen levels and 80 percent in phosphorus.

As runoff from the agricultural industry contributes to higher nutrient levels in the Red River, Hausauer says the reduction in those rates from installation of the new system will ultimately benefit downstream users of river water.

“The new portion is an anaerobic biological system that’s all in one train,” Hoff says. “It’s an excellent system that really makes some nice, clean water.”

Additionally, approximately two million gallons of reverse osmosis treated water is pumped separately to a soybean processing plant and an ethanol plant on a daily basis. The remaining treated wastewater is pumped into the nearby Red River.



### **New onsite power plant**

As part of the plant expansion, a new onsite power plant has been added for higher reliability and the ability to implement peak shaving and hold down energy costs.

The Central Generation Station (CGS) is a 3,480-square-foot building at the northwest corner of the wastewater treatment plant that houses four Cat® G3512 natural gas generators, each

*Continued on page 6*

rated at 1 MW. Inside the CGS, the paralleling switchgear acts like a traffic cop, directing the flow of utility and generator-produced power to the rest of the plant.

And if the Water Reclamation Facility loses utility power due to a storm or other reasons, all the generators come online and run the plant in island mode.

“We’re located at the end of a line in a residential section, so we’ve had a lot of issues,” Hoff says. “While utility power reliability has improved, having these Cat generators will help us through these blips that we sometimes experience.”

The Fargo Regional Water Reclamation Facility is one of the largest energy users in the area. Wastewater treatment facilities typically require significant amounts of energy due to the extensive processes involved, such as pumping, aeration, and chemical treatment.

During times when facility power usage is highest and the utility electric rate is most expensive, the paralleling switchgear can call any number of generators online to peak shave and generate electricity with low-cost distributed energy.

Peak shaving, also called load shedding, is a cost-saving technique used by businesses to reduce electricity expenses by minimizing peak electricity demand, thereby reducing demand charges.

By the time all facets of the expanded plant come online this summer, the facility will require about 3.5 MW of continuous power to run the entire operation on a daily basis. And it’s during those high usage times when peak saving will come into play.

“We’re not at full expansion yet, so our plant load hasn’t reached the minimum threshold for bringing the generators

online to peak shave,” Hoff says. “However, we’re under contract with our utility to do it, so we’re already realizing savings because we’re under contract. But this power plant was designed for peak shaving, which should save us a bunch of money on our energy bill in the future.”

In addition to peak shaving, the City of Fargo saves on its electric bill by consolidating what was once multiple electrical services into a single service. One large utility feeder means fewer fees, penalties, and extra charges; and the simplified billing and elimination of metering and multiple generators around the property mean fewer headaches for plant operators and city personnel.

Prior to establishing a centralized power plant, the facility had four Cat generators of varying sizes that were dedicated to different areas of the operation.

“We had generators for every building, and we would have to walk around at inconvenient times and start all the generators. We had to go around at 2 o’clock in the morning and fire up all the generators and bring them online.”

Matt Sytsma, a customer account manager for Cat dealer Butler Machinery Co., formerly served as a technician servicing the wastewater facility for 16 years.

“It was always a little confusing when there were new people who were involved in plant operations, not to mention having to bring the generators up one-by-one if there was an outage,” Sytsma says. “With this new centralized power plant, everything’s in one building, so it’s easier to access and maintain.

“The four G3512 units in this new power plant are identical. Facility staff can have one set of parts on hand







**“We need to have continuous power, and these Cat generators will come up in three seconds, and that’s basically what we need to keep things running smoothly.”**

**JEFFREY HOFF**, Control System Manager  
City of Fargo Regional Water Reclamation Facility

for ease of use, whereas in the past they had four separate generators of different ages and sizes.”

Adds Hoff: “It just made sense to the engineers to have one central power station instead of multiple generators all over the place that powered this facility. If we have a power outage, it doesn’t take very long before things start going bad very quickly. So we need to have continuous power, and these Cat generators will come up in three seconds, and that’s basically what we need to keep things running smoothly.”

#### **Greater control**

Plant operators can use the Supervisory Control and Data Acquisition (SCADA) system to set on-peak hours and load shed setpoints monitored by the switchgear.

As upgrades to the Water Reclamation Facility will result in more equipment in the coming years, higher capability will also be added to the SCADA system to prioritize pumps and equipment and the order in which they come back online during a power outage. Because it requires more energy to start a pump than it does to keep it running once it’s up to speed, turning components back on a few at a time rather than all at once will alleviate the initial load on the generators and switchgear, extending their lifecycles.

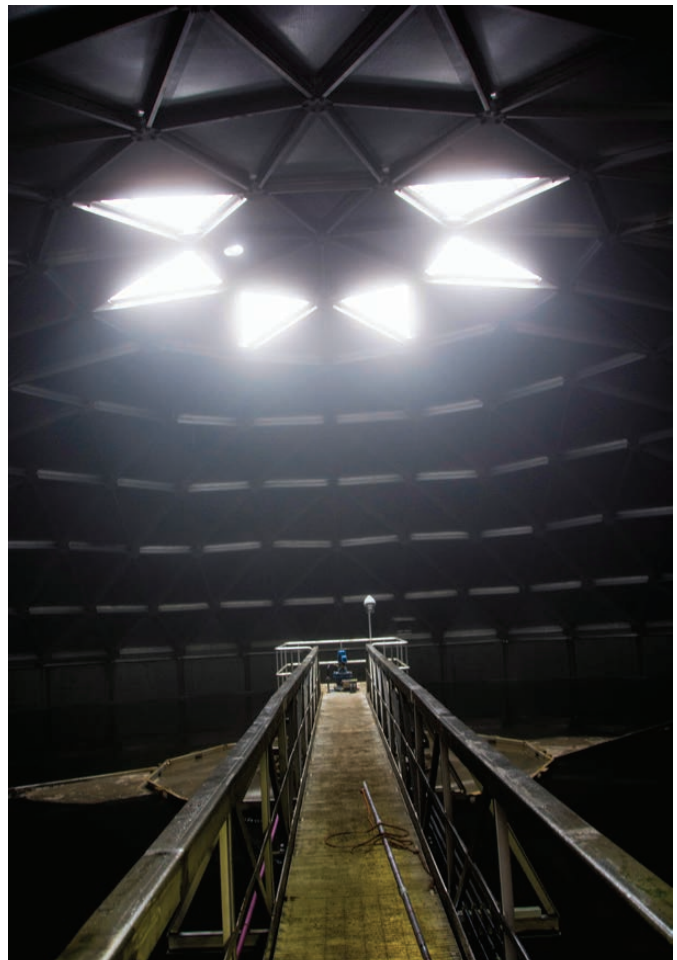
Additional power usage metering and customized power monitoring have also been built into the SCADA, giving operators and managers more information about how and when power is being used. This enables them to see how operational changes affect power usage, ultimately reducing the costs of operating the facility.

#### **Dedicated support**

All service, including regular maintenance for the Cat gensets is performed by Butler Machinery.

“When these new generators were installed, I told them we weren’t touching them because this is medium voltage equipment, and it’s best if my team doesn’t have to deal with it,” Hoff says. “None of us are qualified, and that’s something that is better handled by Butler.

“For as long as I’ve been here, we’ve pretty much only dealt with Butler for all of our power systems needs,” he adds. “Through the years, Matt and Butler have always been there for us—they’re really good to work with.” 🙌



# BRIDGING the GAP

Data centers' power needs expand as they navigate the energy transition

It's safe to say the energy landscape is changing. For data centers, some of the most significant changes have taken place during the last 24 months. Today's data-driven society, from streaming devices and smart appliances to AI processing, continues to increase demand for data centers.

As data centers experience this growth, sufficient utility power is no longer a given. Today, there's no guarantee the local electrical grid can meet these increased power needs. In fact, many utilities indicate it'll be three to five years (or longer) before they can bring the required amount of additional power online.

That puts data center customers in a tricky position. How can they continue to expand and grow if there isn't enough power and moving sites isn't an option?

The answer includes rethinking power options, and that means considering the redeployment of power generation

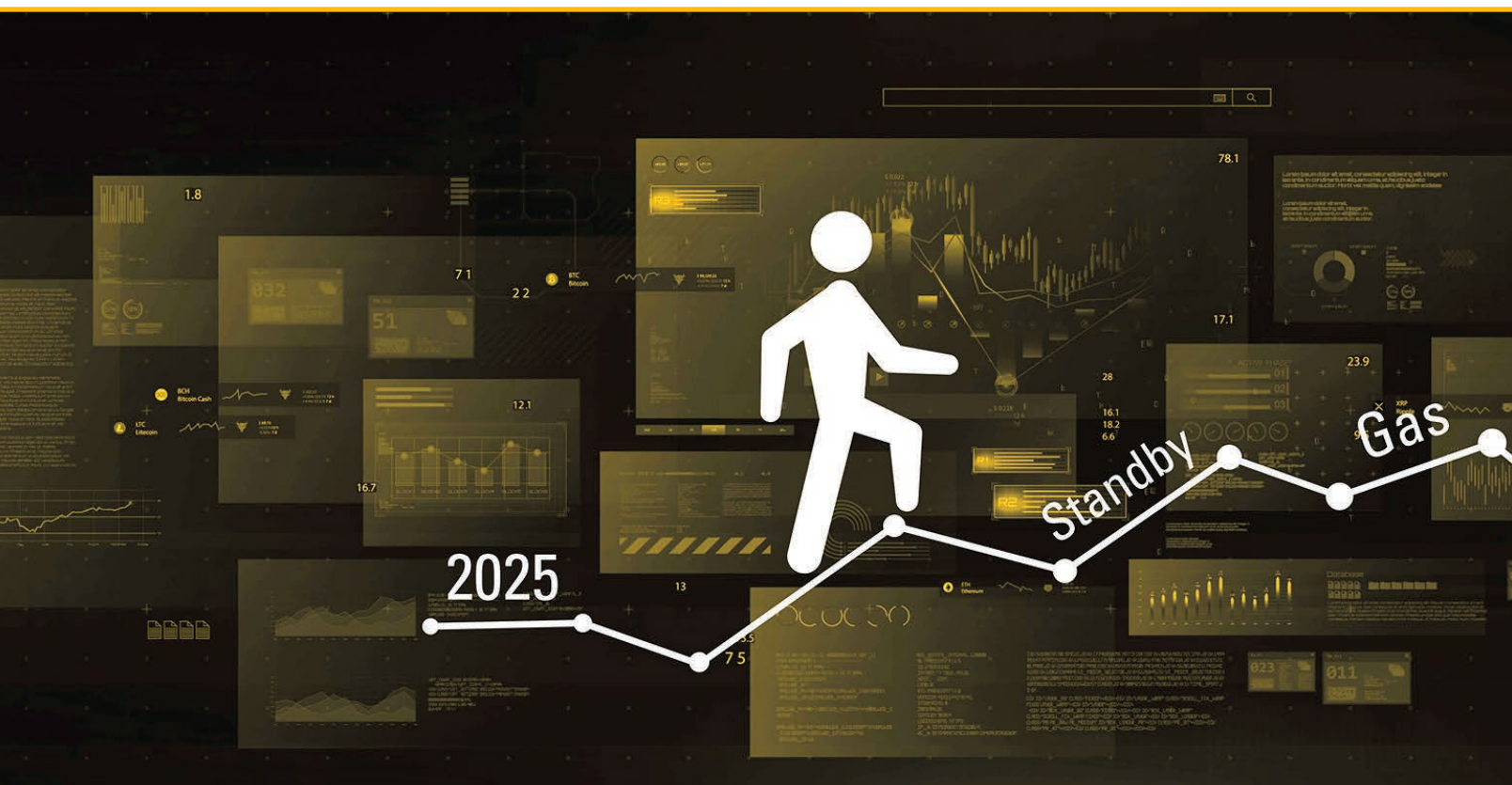
assets from mostly backup purposes to utilizing them as primary power sources. And that's a big change from the status quo.

If you're in a similar position, here's some advice on how to navigate the transition.

## Bridge the Gap

First things first: if you need power quickly, and your utility cannot provide it, you should be considering a "bridge-to-grid" solution. This refers to bridging the gap until the local grid can provide sufficient power. These solutions can include multiple power generation assets—including diesel and natural gas generator sets or turbines.

The beauty of a bridge-to-grid solution is that it takes only a matter of weeks to install, and can remain in place for as long as needed. That enables you to set up or expand a data





center operation, address growing power requirements, and ensure reliability in places you previously wouldn't have been able to accomplish.

### Consider Your Emissions Requirements

One concern for customers embarking on this change is the impact on emissions. Switching from standby to prime power requires you to run your power generation assets more frequently, and that can affect your site's overall greenhouse gas (GHG) output—a challenge for data centers tasked with meeting evolving sustainability goals.

To support your sustainability journey and reduce GHG emissions, you can:

- Add (or retrofit) a Clean Emissions Module (CEM) to your diesel generator sets to support Tier 4 emissions compliance, including reduced particulate matter and NOx emissions.
- Run your generator sets on biofuels, 25% hydrogen gas blends, or even 100% hydrogen in the future.<sup>1</sup>
- Install microgrid solutions where possible, maximizing your use of renewable energy sources.

### Make the Economics Work

Right now, your focus is likely capacity, but keep in mind that a power solution can be more than just a resiliency play. If you plan properly, it can benefit you economically, too.

For example, once your site is connected to the grid, what is your plan? One option is to transition your bridge-to-grid assets to a more traditional standby role and then install a distributed energy management system (DERMS) on them, which can save or even make money for your business.

With a DERMS in place, your power generation assets will be automatically dispatched when they make the most financial sense, like during peak electricity usage when grid prices are highest. This helps you avoid peak charges and reduces your overall energy costs. There's also the possibility of selling excess energy back to the grid. Either option can help you offset the initial capital cost of equipment, resulting in long-term savings.

### Create Your Long-Term Plan

Customers often ask: How can I address my immediate needs without ending up in a similar situation a few years from now? The answer: Plan 15 years out. Create a plan that considers:

**Site requirements:** Do you have space to expand? Do you have space for renewable sources?

**Growth projections:** How much will you likely expand during the next 15 years? How much power will you need?

**Emissions reporting:** What are your emissions targets? How are you planning to achieve them?

**Overall landscape:** What local requirements might you need to comply with in the future? Do you have a plan if regulations become more stringent?

It's a time-intensive process, but once complete, you'll have peace of mind knowing you thought about the 'what-ifs' and have enough power to see you through. And, you'll likely have enough power to meet your long-term goals.

Whether you're ready to make the switch from standby to prime power at your data center today, or simply weighing options for your next development or expansion, our team is here to help. We'll work with you to find the right combination of assets and asset management software that fulfills your power requirements reliably and cost-effectively.

*Contact a power systems expert at our dealership to discuss your options for expanding the power requirements for your data center operations.* 

<sup>1</sup>Biofuels reduce life cycle GHG emissions in the fuel value chain; GHG emissions at the tailpipe are essentially the same as with traditional fuels. As compared to traditional fuels, hydrogen may significantly reduce NOx and emit zero-exhaust greenhouse gas emissions at the tailpipe.





# HYDROGEN-FUELED BENEFITS

NOW AVAILABLE FOR CG260 GAS GENERATORS

Both the 12- and 16-cylinder versions of the Cat® CG260 generator set are approved to operate on gas containing up to 25 percent hydrogen. Additionally, retrofit kits are also available for updating already installed CG260 generator sets with the same hydrogen capabilities.

The CG260 provides up to 4.5 MW of electric power for continuous, prime, and load management applications.

With this latest addition, the Cat gas genset portfolio ranges from 400 kW to 4.5 MW—including hydrogen blending opportunities through factory-installed hardware and retrofit kits—for the CG132B, CG170B, CG260, and G3500H platforms.

“The movement toward lower carbon solutions for power generation is accelerating,” said Melissa Busen, senior vice president for Caterpillar Electric Power. “Caterpillar is well positioned with a large and growing lineup of technologies that integrate hydrogen-fueled systems into customer power generation strategies.”

## Hydrogen-fueled power

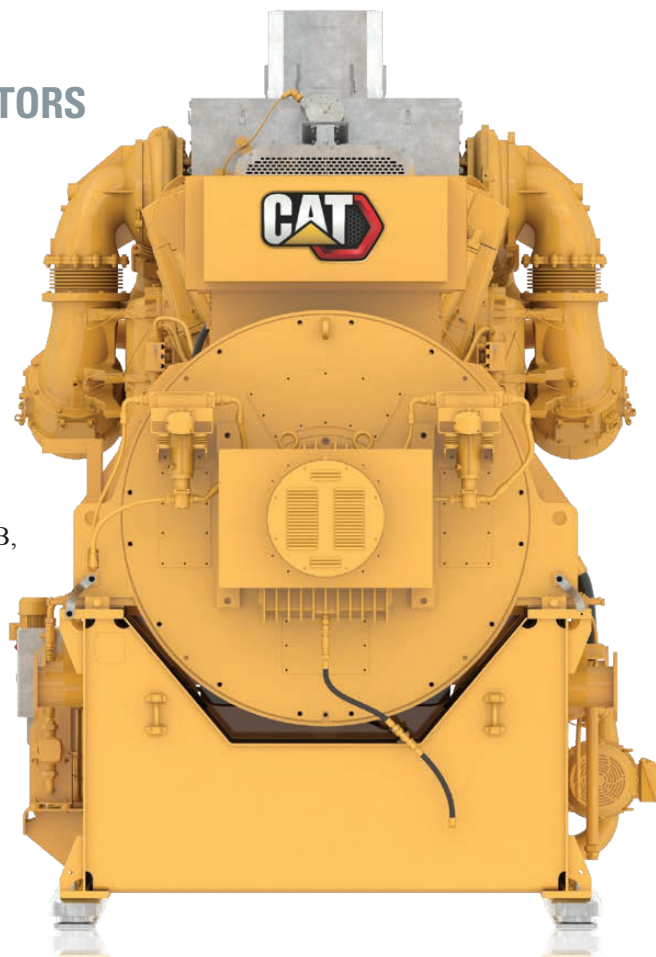
Caterpillar has extensive expertise in hydrogen-fueled power technologies that minimize impacts on maintenance costs and schedules, availability, and operations.

Since 2022, Caterpillar has offered demonstrator G3516 gas gensets capable of operating on 100 percent hydrogen. Recommended for locations with an abundant hydrogen supply, they are available with a maximum rating of 1000 kW for 50 Hz or 60 Hz continuous applications.

Caterpillar previously announced a collaboration with Microsoft and Ballard Power Systems to demonstrate the viability of using large-format hydrogen fuel cells for supplying reliable backup power to data centers. The project simulated a 48-hour backup power event at Microsoft’s data center in Cheyenne, Wyoming, using two Cat Power Grid Stabilization (PGS) 1260 battery energy storage systems and a 1.5 MW hydrogen fuel cell. Backed by the National Renewable Energy Laboratory (NREL), the demonstration is supported and partially funded by the U.S. Department of Energy (DOE) under the H2@Scale initiative.

Additionally, Caterpillar is collaborating with District Energy St. Paul to demonstrate a 2 MW combined heat and power (CHP) system fueled by various combinations of hydrogen and natural gas. The project is supported and partially funded by the DOE, and is backed by the NREL.

*To learn more about the use of hydrogen blends, contact the power systems experts at our dealership.*





# NEW G3500K SERIES GAS GENSETS

## QUICK-RESPONSE, HIGH-EFFICIENCY POWER

The new Cat® G3500K series of gas generator sets provides reliable, quick-response, high-efficiency power.

The gas gensets can operate in demanding environments and are designed for a multitude of applications, including prime and continuous power. The first product in the series, the G3520K HR, is available now, and will be followed by the launch of four additional models later this year.

Rated at 2.5 MW of continuous power and available in 50 or 60 Hz packages, the G3520K HR (High Response) starts quicker, accepts higher loads and ramps up to 100% load capacity faster than previous models. The G3520K HR can start, take on full load, and sync to the grid in 4.5 minutes, compared to six minutes for the previous generation G3500H series. By attaining full power faster, it reduces the risk of unexpected downtime and creates immediate capacity when requested by the utility.

Benefits include:

- Full power output across all node configurations.
- Total engine efficiency of up to 89%, making it ideal and cost effective for combined heat and power (CHP) applications.
- Significant fuel savings through industry-leading electrical efficiency and improved thermal efficiency.

### Responsiveness & Fuel Flexibility

The new Cat G3500K series features improved reliability in a wider range of operating environments. The series is built for reliable power performance at high altitudes and in higher ambient temperatures, representing marked improvement over the previous generation.

The new series can run on natural gas and propane, while future releases will be capable of operating on biogas, coal mine methane and blends of up to 25% hydrogen, expanding the range of fuel options.

### Asset Monitoring and Further Savings

The K series comes with readily available asset monitoring capabilities that provide insights with predictive analytics to identify and prevent failures, ultimately avoiding costly downtime.

Customers can realize more economic benefits by leveraging the Cat Active Management Platform (Cat AMP), which is Caterpillar's Distributed Energy Resource Management System (DERMS) offering. Cat AMP technology can manage both existing and new assets, and it can help optimize energy usage by working with the utility to lower energy costs and participate in energy market programs.

### Flexible Energy Management

The new Cat G3500K series comes standard with enhanced controls and diagnostics. Caterpillar is the only OEM offering fully in-house control solutions, avoiding the need for a third-party integrator. All K Series models come standard with the Cat Energy Control System (ECS) for energy management that meets new global grid code and regulatory requirements.

*For more information about the new G3500K series, contact our dealership. *





# PIPELINE ON WHEELS

Cat® power backs innovative CNG delivery system



Based in Harrisburg, Pa., Compass Natural Gas Partners LP is an industry leader in the distribution of compressed natural gas (CNG). Deliveries are made via a fleet of semi-trailer trucks to customers not located on a pipeline across the Mid-Atlantic region.

Compass Natural Gas was born out of a desire to supply clean, safe natural gas to customers across North America, underscored by rapid implementation and uninterrupted energy delivery.

“When we started in Pennsylvania over 10 years ago as a large gas producer, only 51 percent of Pennsylvanians had access to a pipeline,” says Dave Fenicle, executive vice president for engineering and operations.

“Basically, half the population didn’t have access to a gas pipeline. And what we’re able to do is take the pipeline to them. It’s for industrial users, and other large users of natural gas. The beautiful thing is, we’re a pipeline on wheels.”

Compass Natural Gas serves numerous customer types such as oil & gas producers, gas utilities, government facilities, greenhouses, food processors, manufacturers, aggregate producers, and vehicle fleets.

“A lot of our customers have a source of backup heat, but they rely on us probably 99 percent of the time as their main support for heating,”

Fenicle says.” We have a couple of institutions between 2,000 and 5,000 people that rely on us. We also serve many companies that could lose products if they lost their primary source of energy.”

## How the process works

Virtual pipeline companies like Compass use specially-designed equipment to compress, transport, decompress, and deliver gas to their customers. Compass Natural Gas technologies have evolved as the industry standard for best practices of CNG delivery and site solutions.

## CUSTOMER PROFILE

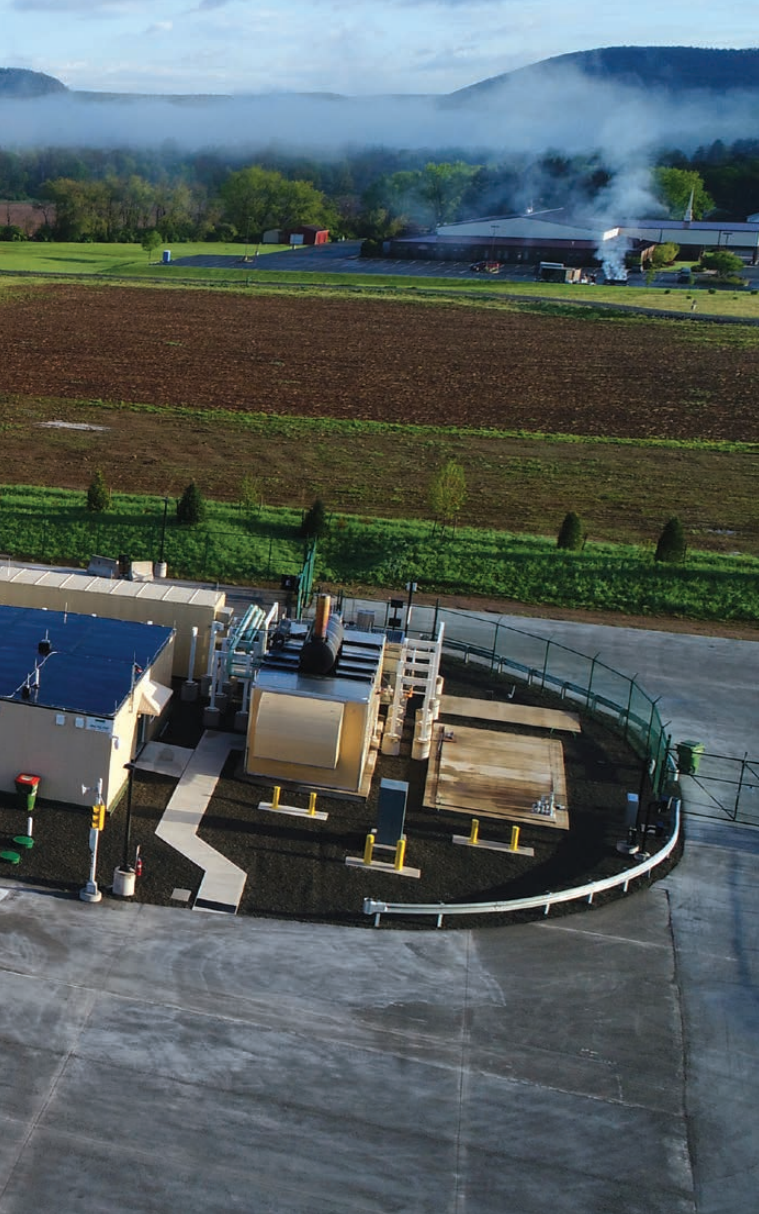
### COMPASS NATURAL GAS PARTNERS

**Location:** Montoursville, Pa.

**Application:** Prime power for gas compression

**Cat® Equipment:** G3516 gas genset





At the Quaker Terminal in Montoursville, Pa., and with strategic gas supply partners in the Greater Pittsburgh region and the Midwest, Compass provides end-to-end CNG solutions. This includes gas sourcing, compression via stationary or mobile compressors, gas transportation, decompression via specialized mobile pressure reduction units, and remote 24/7 monitoring.

At the Quaker Terminal, Compass fills trailers that are purpose-built to hold high pressure gas in carbon fiber tanks that are stronger than steel, but lighter. These trailers deliver CNG to customer sites.

Compass Natural Gas technologies have evolved as the industry standard for best practices of compressed natural gas delivery. CNG has removed the need for an inherent pipeline to a facility. Innovation has now eliminated the need for permanent construction that is common with other CNG distribution companies, which can take up to two years to permit and construct.

Compass requires no above or below-ground storage tanks—the trailers are not only the means of delivery but also the storage units. Most end user sites have two or more trailers. They flow gas until reaching a predetermined pressure level, and then the system automatically closes the valves on the empty tanks and begins flowing gas from the full tank in the trailer sitting next to it.



*Continued on page 14*





**“We don’t have the luxury of having long outages. And when we looked at sizing, we built the facility around our compressors. Our power production unit had to meet our requirements, and the G3516 generator proved to be a perfect fit.”**

**DAVE FENICLE**, Executive Vice President  
Compass Natural Gas Partners LP

Customer systems are unmanned and completely automated. A Compass truck arrives shortly after a tank is emptied, replacing it with a full trailer as the process seamlessly starts again.

### **Distributed generation advantage**

At the Quaker Terminal, Compass has a direct connection to an interstate natural gas pipeline. The gas is compressed onsite before it’s pumped into the semitrailers. The gas compressors are powered by a Cat® G3516 generator set that’s fueled by natural gas.

Compressing the gas is an energy-intensive process, and there are advantages to using onsite power as opposed to grid power, Fenicle says.

“Our Cat generator is very important to our operations,” he says. “We take natural gas that we buy off the pipeline and run it through our compressors at an average rate of approximately four million cubic feet (mcf) per day. That process requires a lot of energy, and our costs from the grid would be extremely high if we didn’t have the generator powering the compressors.

“If we were to lose grid power when we’re compressing the gas, we still have total power production here thanks to the generator,” Fenicle says. “So, we can maintain our critical infrastructure without relying on outside power sources. We built the system around the Cat G3516 because we realized that we wanted to be independent and able to supply our customers without any interruptions.”

When Compass worked with an engineering firm to design the Quaker Terminal, reliability, serviceability, and performance were identified as key factors in keeping the system running.

“When we were looking at power production units, we realized that Caterpillar was the company we wanted to work with,” Fenicle said. “And our Cat dealer, Cleveland Brothers, with their service and their footprint in our area, was exactly what we wanted. They have the ability to service and support us correctly and keep our G3516 unit running. Because we’re a critical service company, we must supply this critical commodity to our customers on a regular basis.

“We don’t have the luxury of having long outages. And when we looked at sizing, we built the facility around our compressors. Our power production unit had to meet our requirements, and the G3516 generator proved to be a perfect fit.”

### **Timely support**

The Quaker Terminal was built with room for growth, and can potentially double in size. That will require more compressors and another generator set to power them, Fenicle says.

“We can grow this facility as industry needs increase. I suspect at some point we will be increasing the facility




size. And when we do, we will definitely be looking at what we need to do, and that would be to talk with Caterpillar and Cleveland Brothers as to whether we need another G3516, or another power unit and what would make the most sense for us.”

Not unlike the timely service it provides to customers who depend on CNG to produce heat or power, Compass knows it can count on the support it receives from its Cat dealer.

“And if something goes down here, I’m the first person that knows if it’s during off hours,” says Craig Konkle, assistant vice president of operation and safety. “At that point, I reach

out to Cleveland Brothers and say, ‘This is what’s happening. Can you give me some guidance?’ They’ve been very good at providing us with some quick troubleshooting.

“And if I need a technician onsite, we receive a very quick response,” Konkle adds. “We’re a critical component for our customers to keep their operations going. We don’t have the liberty to be down for days—it’s more like hours.

“They provide a very quick response. That’s one of the reasons we like the partnership with Cleveland Brothers because we can count on them. They’re always just one phone call away.” 

## CNG: A safer, cleaner option

Compressed natural gas (CNG) is natural gas that is dried to remove residual moisture and compressed to approximately 3,600 psi. It can be used as an alternative to any type of traditional fuel including diesel, fuel oil, propane, and gasoline. Compressing the gas expands the storage volume, and also avoids negative environmental impacts from pooling that is common in propane or diesel leaks.

Instead, compressed natural gas dissipates into the air should a leak occur, making it safer than other, more traditional energy options. In addition, CNG releases little to no emissions during the refueling process, reducing health risk. Natural gas does not contain any poisons. It is nontoxic, meaning it is not harmful to humans if absorbed through the skin or lungs.

When diesel, propane and gasoline leak, they pool on the ground, contaminating soil and potentially groundwater and surface water contamination, as well as posing a potential fire risk. As the cleanest burning fossil fuel available, CNG is lighter than air, so if leaked, it quickly dissipates, leaving the environment unharmed and fire risk averted.

Use of compressed natural gas also reduces carbon dioxide and carbon monoxide emissions, and nitrogen and sulfur oxides when compared to traditional fuel sources. Particulates and volatile organic compounds (VOCs) are also significantly reduced with CNG.

**No surprises to the bottom line:** CNG remains one of the least expensive and price-stable fuel sources on the market. Because of this stability, Compass Natural Gas can provide a fixed price for an agreed-upon period of time. For some customers, this equates to one year; for others it means five years of stability to their energy budgets.

Taking advantage of CNG eliminates common hurdles with selective catalytic reduction technology and diesel exhaust fluid (DEF) for fleet fueling. A clean burning fuel, CNG eliminates the need for costly DEF.



**Decreased engine maintenance:** Compressed natural gas is free of lead and does not cause acidic corrosion of engine metals. The clean burning fuel also does not dilute or contaminate crankcase oil, resulting in extended oil change intervals and longer spark plug life.

CNG also avoids vapor lock due to its gaseous state—versus other types of fuel which require conversion from liquid to gas before starting the engine.

“The oil & gas industry has really turned more to utilizing natural gas instead of fuel oil to power their production,” says Dave Fenicle, executive vice president for engineering and operations at Compass Natural Gas Partners.

“Because many producers are trying to be more green, they’re focusing on using natural gas as a source of cleaner burning energy. So it’s becoming a lot more of an industry-reliable thing that we’re providing to them. Everybody wants a clean environment, and natural gas burns super clean.”



# POWERFUL SOLUTIONS

Collaboration with Cat® dealer enables successful delivery for offshore drilling customer



For more than 45 years, Lamprell has served as a leading provider of contracting services to the international energy sector. Employing more than 5,000 people throughout its facilities in the Middle East, Lamprell has provided engineering, procurement, construction and installation (EPCI), rig construction, rig refurbishment and other services for hundreds of onshore and offshore projects.

In 2017, Lamprell signed a joint venture agreement with Saudi Aramco, national shipping carrier Bahri, and Hyundai Heavy Industries to establish and operate a maritime yard in the Kingdom of Saudi Arabia.

Officially branded as International Maritime Industries (IMI), the yard provides a broad range of services to the oil and gas and maritime industries, with its primary focus on the construction and maintenance, repair and overhaul of offshore rigs, commercial vessels and offshore service vessels.

In 2020, Lamprell was selected by IMI to design, fabricate and deliver two jackup drilling units based on the LeTourneau Super 116E self-elevating mobile offshore drilling unit (MODU). They feature high-specification offshore drilling technology, as well as accommodations for up to 120 workers.

To meet the demanding project timelines, Lamprell sought a trusted supplier that could overcome these obstacles to

provide power solutions as scheduled, while offering the superior performance, reliability, and ongoing support the rigs will require for years to come.

The launch of the project coincided with the start of the COVID-19 pandemic, which presented extensive logistical challenges, including the design and delivery of primary and emergency power systems essential for rig operation.

## Successful collaboration

Lamprell selected Mohamed Abdulrahman Al-Bahar, the local Cat® dealer, to supply a customized, integrated power solution, including five Cat 3516C generator sets supplying the 7.6 MW of primary power required for operations, as well as a single Cat 3512C generator set providing 1.3 MW of emergency power. Additionally, Al-Bahar provided design, installation, and commissioning services for the power solution.

## CUSTOMER PROFILE

### LAMPRELL

**Location:** Hamriyah, United Arab Emirates

**Application:** Offshore Drilling

**Cat® Equipment:** Cat® 3516C Generator Set (5), 3512C Generator Set

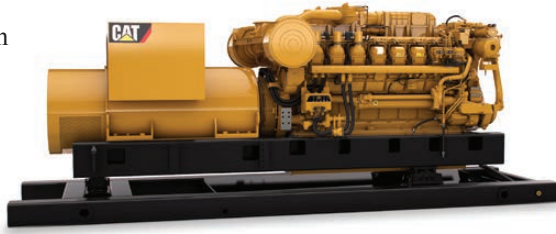
Al-Bahar executed a ready-to-deliver plan with a customer-first focus that provided the power solutions ahead of schedule to Lamprell's yard in Hamriyah, United Arab Emirates. As a result, the load-out and float-off of both rigs were completed as originally planned during 2022.

The project was the latest in a 15-year collaboration between Lamprell, Al-Bahar and Caterpillar—which has included 12 jackup rigs, one land rig and more than 30 rig repower projects.

“As one of the authorized Caterpillar dealers in the region, Mohamed Abdulrahman Al-Bahar is proud to be a trusted and valued provider to Lamprell in their rig building programs,” noted Mohamed El Kaddour, vice president of the energy and transportation division for Al-Bahar. “This mutually beneficial relationship has been nurtured ever since Lamprell built its first rig in 2008, and we hope it will extend into the future.”

#### **The right choice for offshore applications**

Leveraging decades of experience supporting customers in the offshore industry, Caterpillar and Cat dealers provide comprehensive solutions that optimize productivity and reliability while supporting customers' environmental responsibility initiatives.




Caterpillar provides power solutions specifically designed for proven performance, low emissions, high durability, and low owning and operating costs in offshore drilling and production

operations. Applications include main power, essential services power, and emergency power for on-board drilling and production rigs and vessels.

Cat power solutions are backed by the worldwide network of Cat dealers ready to support offshore operations with technical expertise, service, parts and warranties.

“In addition to developing world-class products for the oil and gas industry, Caterpillar provides technology solutions to help customers work more safely and efficiently through unmatched support in the field from its global dealer network,” added Deepak Tummalapalli, a Cat territory manager.

“We are proud of collaborating with Al-Bahar to successfully deliver this project to Lamprell ahead of schedule, demonstrating how we are the ideal choice for oil and gas customers seeking clean, reliable and profitable power solutions.” 

**“In addition to developing world-class products for the oil and gas industry, Caterpillar provides technology solutions to help customers work more safely and efficiently through unmatched support in the field from its global dealer network.”**

**DEEPAK TUMMALAPALLI,**  
Cat Territory Manager





# EXPANDED CAPABILITIES

**Cat® dealer helps Gulf Coast shipyard grow operations**

Located in Port Neches, Texas, Sterling Shipyard provides a full range of marine repair services for inland and offshore equipment, including hull repair and piping, repowering, electrical repair, conversions, rigging, de-rigging, panel fabrication, sandblasting, and painting.

The facility counts several prominent marine towing companies as customers, such as Bay-Houston Towing and Suderman & Young Towing Company. The shipyard recently expanded operations, tripling shoreline access and increasing the number of dry docks from three to six.

This expansion makes Sterling Shipyard one of the largest of its kind on the Texas Gulf Coast. By doubling its dry dock facilities, the shipyard is equipped to construct and repair much larger vessels than it could handle in past years.

## CUSTOMER PROFILE

### STERLING SHIPYARD

**Location:** Port Neches, Texas

**Industry:** Inland Waterway

**Cat® Equipment:** Repower with Cat® 3516E





“Our success depends on our team,” said Brad Taylor, chief operating officer at Sterling Shipyard. “We started with around 20 employees and have grown to 140 today. Those original employees are still with us, and every single team member is committed to producing excellent work. We couldn’t do what we do without them.”

Located in Houston, Texas, Mustang Cat has collaborated with Sterling Shipyard for many years, providing Cat® equipment and aftermarket support for the shipyard’s repower and new construction projects. Working side by side with Sterling Shipyard’s teams, Mustang Cat supports successful installations and verifies engine performance in dockside tests, as well as during sea trials.

“Mustang Cat has been a big part of our success, initially working with us on repair work and small deck barges to now doing major overhauls and new construction projects with us,” Taylor said. “Their application support has been essential to growing our business, enabling us to work with many of the country’s major marine operators.”

#### **Tier 0 to Tier 4 repower**

As one of the oldest and most progressive towing companies on the Texas Gulf Coast, Suderman & Young Towing Company, selected Sterling Shipyard to repower one of its fleet boats dedicated to important ship assistance work. To align with the customer’s corporate sustainability goals, Sterling Shipyard worked with Mustang Cat to achieve an extremely challenging goal—convert the vessel from Tier 0 to Tier 4.

Such a repower project is very complex and labor intensive, as significant changes are required to add the equipment needed for a Tier 4 engine.

Mustang Cat and Sterling Shipyard collaborated with the naval architect and towing company on the project to install Cat® 3516E engines to meet the repower project’s requirements.

Sterling Shipyard and the Cat dealer’s commitment to complete the complex repower enabled the towing company to modernize its fleet and avoid the significant cost of building a new vessel.

“Mustang Cat provided a lot of data during this effort to confirm that vessel performance was maintained while providing the space needed for engine operation,” Taylor said.

#### **New Z drive escort tugs for LNG needs**

In addition to performing demanding repowers, Sterling Shipyard and Mustang Cat also teamed up on the new construction of two Z-drive escort tugs to support the marine towing company’s significant liquefied natural gas (LNG) export facilities.

The purpose-built, 98.5-foot vessels were equipped with Cat 3516E engines to provide the power and performance needed to complement the Z-drive maneuverability. Using the Tier 4 engines enabled the tug service company to comply



**“Dedicated support combined with the reliability and performance of the Cat® engines we’ve selected enables us to be competitive and advance our industry reputation.”**

**BRAD TAYLOR, COO, Sterling Shipyard**



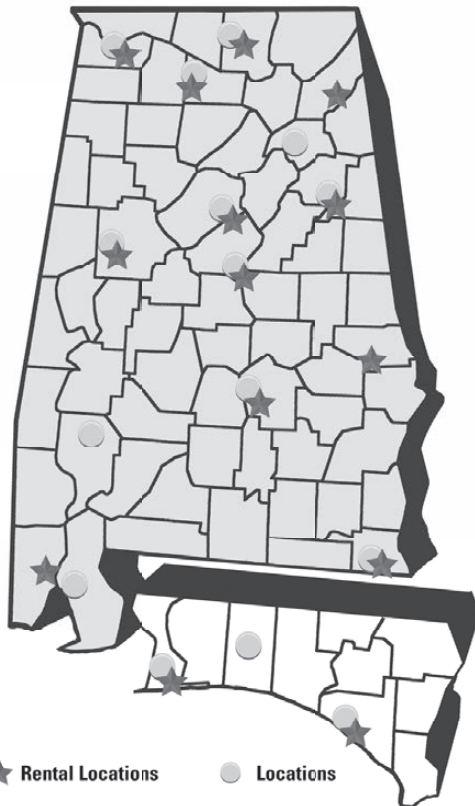
with EPA emission standards and receive ABS low-emission vessel notation. Such a classification provides many benefits, including lower emissions and environmental, social, and governance (ESG) metric improvements to support maritime decarbonization.

“With every challenging project that has come our way, we’ve been able to count on Mustang Cat for valuable support,” Taylor said. “That dedicated support combined with the reliability and performance of the Cat engines we’ve selected enable us to be competitive and advance our industry reputation.” 📺



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## LOWER YOUR ENERGY COSTS WITH CAT® AMP

Cat AMP is Distributed Energy Resource Management (DERM) software installed with power generation assets to monitor energy market conditions. It accurately predicts opportunities to lower energy costs for sites with natural gas gensets, renewable power generation, energy storage, or microgrids. When power consumption is high and energy costs soar, Cat AMP can automatically dispatch onsite assets (also known as Distributed Energy Resources, or DERs) so your facility is not entirely running on grid power.

### Who can benefit from CAT AMP?

Investor-owned utilities, municipal utilities, and large energy consumers such as commercial and industrial businesses can benefit from leveraging Cat AMP.

To learn more about the benefits of Cat AMP, contact the power systems experts at our dealership.