A Cat® Dealer Publication for Power Professionals WINTER 2025

RUNREADY™

GUARDIANS at the GATE

Cat® gensets safeguard data center

WASTE TO WATTS

Electric cooperative generates power from landfill gas

CAT® ENERGY CONTROL SYSTEMS

A simple, scalable solution for better grid reliability

NEW G3520 FAST RESPONSE GENSET

High-capacity unit delivers diesel-like performance

Cleveland Brothers CAT®

FROM THE EDITOR

Power with Purpose

In today's rapidly evolving energy and digital landscapes, reliability, resilience, and environmental responsibility are no longer optional—they're mission-critical. In this issue, you'll find two compelling examples of how organizations are meeting these demands head-on.

From a Montana landfill to a hyperscale data center in Ashburn, Virginia, the innovations featured here illustrate how customers, Cat® dealers, and Cat power solutions continue to shape a smarter, cleaner, and more resilient future.

In Kalispell, Montana, Flathead Electric Cooperative demonstrates how innovation rooted in community values can transform a regulatory obligation into a renewable asset. By capturing methane from the Flathead County landfill and converting it into electricity, the co-op not only reduces greenhouse gas emissions, but delivers clean, reliable power to local homes—turning yesterday's waste into tomorrow's energy. The project underscores how rural utilities are leading the way in sustainability, while strengthening local energy independence.

On the opposite end of the power spectrum, CloudHQ operates at the epicenter of the digital world: northern Virginia's Data Center Alley. Here, the stakes are measured not in megawatts—but in access to critical information, such as financial transactions, health records, and the vast data flows that define modern life. With more than 100 Cat® C175 diesel generator sets safeguarding its LC4 data center alone, CloudHQ ensures uninterrupted connectivity in a world that simply can't afford downtime. These gensets serve as the ultimate failsafe, protecting the infrastructure that keeps global commerce, communication, and artificial intelligence running.

Together, these stories reveal a common thread: whether powering rural communities or safeguarding the digital backbone of the global economy, dependable power generation isn't just about electricity—it's about trust.

DID YOU KNOW?

NOT ENOUGH TRANSFORMERS TO REPLACE AGING UNITS

- Power transformers are a crucial component in electrical substations that play a fundamental role in the generation, transmission, and distribution of electrical energy. They regulate voltage as power travels across the wires, increasing voltage for more efficient long-distance transmission, and decreasing it for medium-distance travel and again for delivery to buildings.
- The National Renewable Energy Laboratory estimates that the U.S. has about 60 to 80 million high-voltage distribution transformers in service. More than half of them are over 33 years old – approaching or exceeding their expected lifespans.
- Replacing them has become costly and time-consuming, with utilities reporting that transformers cost four to six times what they cost before 2022, in addition to the multiyear wait times. To meet rising electricity demand, the country will need many more of them – perhaps twice as many as already exist.

PROGRESS RAIL DELIVERS TWO BATTERY ELECTRIC LOCOMOTIVES

In December 2025, Australian mining company Fortescue took delivery of two mainline Battery Electric Locomotives (BELs) from Progress Rail, a Caterpillar company.

The battery-electric Electro-Motive Diesel (EMD) Joule locomotives were manufactured in Brazil and delivered to the Pilbara region in Western Australia. Their deployment is part of Fortescue's broader effort to reduce emissions across its heavy rail operations. The company stated that the locomotives are intended to operate from the outset with zero tailpipe emissions as they deliver iron ore to port.

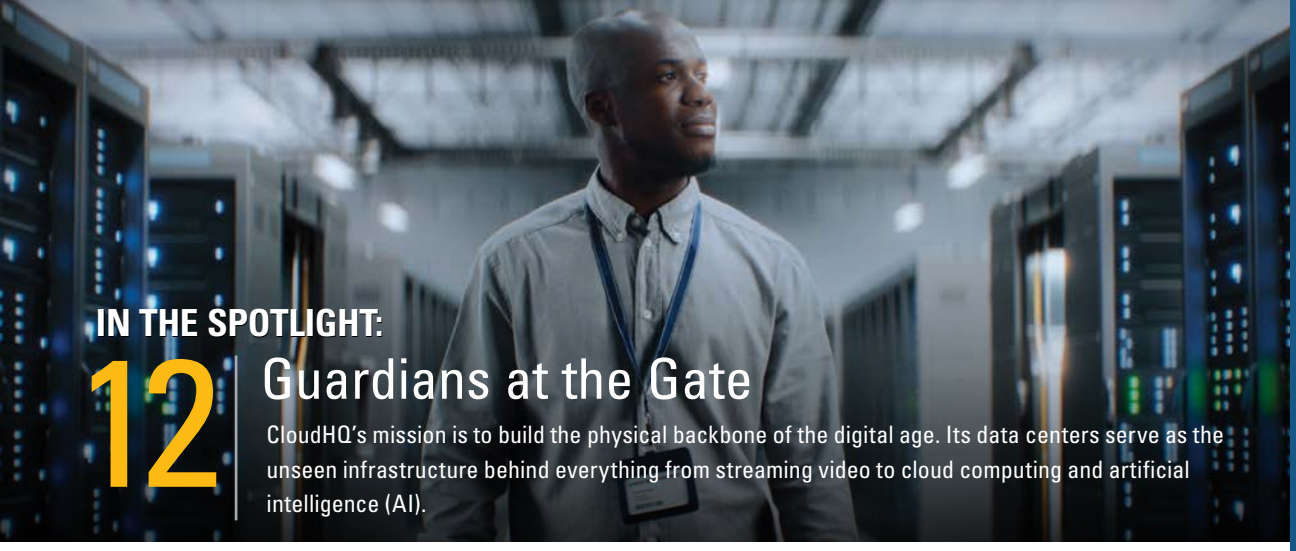
"The purchase of these new battery powered locomotives marks an important milestone in the decarbonization of Fortescue's locomotive fleet and demonstrates our commitment to achieving carbon neutrality for Scope 1 and 2 emissions by 2030, as we diversify from a pure play iron ore producer to a green renewables and resources company," said Fortesque executive director Elizabeth Gaines, who formerly served as CEO.

"The new locomotives will cut our emissions while also reducing our fuel costs and our overall operational expense through lower maintenance spend," Gaines said.

The new 8-axle locomotives have an energy capacity of 14.5 megawatt hours. They were developed in collaboration with Progress Rail as a scalable platform for decarbonizing rail transport in mining and heavy industry.

Today, Progress Rail is continuing to offer customers a range of options to help them meet their climate-related objectives. Not only are all EMD locomotives capable of running on 20% biodiesel, but they are also experimenting with 100% biodiesel capabilities.

Progress Rail delivers advanced EMD locomotives and engines, railcars, trackwork, fasteners, signaling, rail welding and Kershaw Maintenance-of-Way equipment. Also, dedicated locomotive and freight car repair services, aftermarket parts support and recycling operations. Plus, the company provides advanced rail technologies, including data acquisition and asset protection equipment.



IN THE SPOTLIGHT:

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CloudHQ's mission is to build the physical backbone of the digital age. Its data centers serve as the unseen infrastructure behind everything from streaming video to cloud computing and artificial intelligence (AI).

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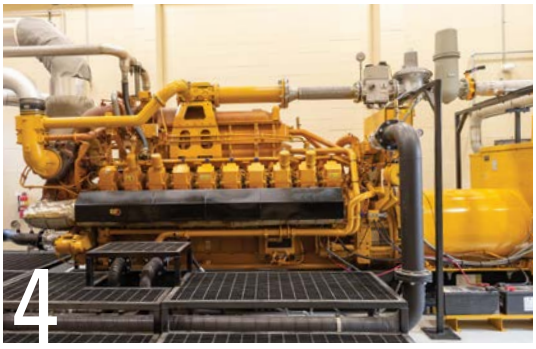

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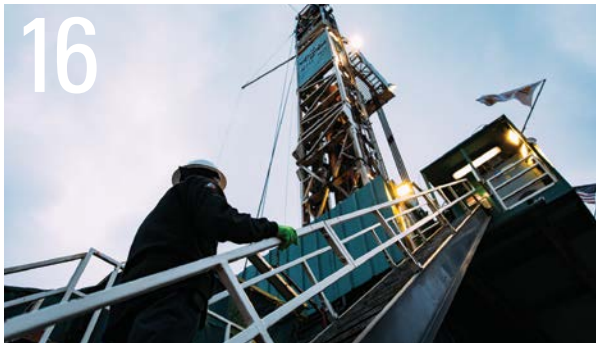

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WASTE TO WATTS

Electric cooperative generates power from landfill gas

When Flathead Electric Cooperative energized its first 82 miles of line in December 1938, bringing light and power to 117 farm homes, it sparked a legacy of community-driven innovation.

Now, nearly nine decades later, the Kalispell-based cooperative in northwest Montana is still innovating:

- It buys 2.5 megawatts of power from a biomass facility operated by a local lumber mill.
- It operates three community solar farms, from which area residents can opt to purchase renewable energy as part of their utility bills.
- As part of its renewable energy mix, Flathead Electric also transforms methane gas from the Flathead County landfill into clean, reliable electricity for thousands of Montanans.

Flathead Electric is not just Montana's largest electric cooperative—it's also the second-largest utility in the state, serving more than 59,000 members across a sprawling 3,000-square-mile service area. Unlike investor-owned utilities, Flathead is a not-for-profit organization, accountable directly to the wide range of customers it serves, rather than to outside shareholders.

That cooperative model shows up in measurable ways. The co-op consistently scores 90 out of 100 on the American Customer Satisfaction Index, well above most utilities. It also returns millions of dollars in capital credits to its members and supports local safety programs, giving back more than $5 million through its "Roundup for Safety" initiative.

CUSTOMER PROFILE

Flathead Electric Cooperative

Location: Kalispell, Montana

Cat® Equipment: G3520C gas generator sets (2)

Cat Dealer: Western States

An environmental leader

At the same time, Flathead Electric is an environmental leader. More than 88 percent of its energy supply is carbon-free—hydropower from the Columbia River system. By adding landfill gas-to-energy to its portfolio, the cooperative diversifies its resources, while keeping sustainability front and center.

"The landfill keeps growing, and so does the methane it produces. We realized we could capture more of that gas, generate additional electricity for our members, and further reduce emissions."

JASON WILLIAMS, COO, Flathead Electric Cooperative

"Our members have always expected us to be good stewards of both their money and their environment," says Jason Williams, chief operating officer for Flathead.

The Flathead County landfill covers 275 acres and accepts nearly150,000 tons of solid waste annually. As garbage decomposes, it produces methane—a greenhouse gas 21 times more potent than carbon dioxide. Federal law requires landfills to capture that methane to prevent it from escaping into the atmosphere or groundwater.

In 2009, Flathead Electric and Flathead County turned that regulatory requirement into an opportunity. With $3.5 million in federal Clean Renewable Energy Bonds, the co-op partnered with SCS Energy to design, build and operate Montana's first landfill-gas-to-energy facility.

A vacuum system draws methane from 61 wells across the landfill. After moisture is removed, the gas is used as fuel to power two Cat® G3520C generator sets. The 20-cylinder engines burn the methane cleanly, spinning generators that feed 3.2 MW of electricity directly into Flathead Electric's distribution grid.

"Your garbage is producing your power," said Flathead County Public Works Director Dave Prunty, summing up the project's impact in plain terms.

Expanding capacity, doubling benefits

The project quickly proved itself. With operating uptime at 95 percent, the first Cat generator set ran nearly nonstop for more than 109,000 hours before requiring its first major overhaul, which was performed by Cat dealer Western States at its Pocatello, Idaho rebuild facility.

By 2022, the co-op recognized an opportunity to do even more.

"The landfill keeps growing, and so does the methane it produces," Williams said. "We realized we could capture more of that gas, generate additional electricity for our members, and further reduce emissions."

The decision to add a second G3520C generator was an easy one.

"We've had a really good, longstanding relationship with Western States, even before the gas facility came online,"

Continued on page 6

Hungry Horse Dam
Credit: Bonneville Power Administration

Flathead County Landfill

Williams says. "We have Cat backhoes that we purchased from them. And we buy parts and equipment from the Cat dealership here in Kalispell. We try to work with local vendors whenever possible, so this was an easy decision."

In 2023, Western States installed and commissioned the second Cat genset, doubling the facility's capacity to 3.2 megawatts. That's enough to power about 3,200 homes—a comparatively small, but significant addition to the co-op's local energy supply.

The expansion also improves environmental outcomes. Depending on conditions, the system captures between 60- and 90 percent of landfill methane. Instead of venting or flaring the gas, as it did before the waste-to-energy facility began operating, Flathead Electric puts it to productive use.

The project also qualifies for carbon credits under the Verified Carbon Standard (VCS640), creating potential revenue streams that can offset future costs for co-op members.

Dedicated maintenance required

System operator SCS Energy has the responsibility of maintaining the complex system of wells and pipelines that feed methane to the generators. Experienced operators constantly monitor and tune the field to optimize gas flow, sometimes adding leaching agents to improve decomposition and gas quality.

"It's basically a 24/7 production site," Williams explained. "There's quite a bit of maintenance involved, not only on the genset engines, but also on the well field itself."

SCS Energy works closely with Western States Cat to ensure the generators continue performing at a high level. Two SCS staff members handle generator maintenance, including oil changes, spark plugs and valve adjustments. But when more significant maintenance and service needs arise, they call their Cat dealer.

"Western States realizes that we operate this plant 24/7, so they shuffle their schedule to get here as quickly as possible," says Shaun Morgan, power plant manager for SCS Energy, adding that in one instance when local service was not available, a Western States technician came from as far as Missoula, which is three hours away.

While the first genset demonstrated durability by running nearly nonstop for more than a decade, with proper support, the expanded system is expected to provide decades of reliable, renewable power.

"They're a very important customer," says Jeff Wallace, a parts and service support representative for Western States. "When they need our help, we strive to get them back up and running very quickly. Minimizing their downtime is important to us because it means dollars to them."

Landfill gas is highly corrosive, containing carbon dioxide (CO_2) and siloxanes, a white powder deposit that accumulates in the combustion and exhaust stages of the gensets and must be periodically removed.

"The byproduct of landfill gas builds up on the bottom of the valves, and also inside the turbo housings and on the exhaust side," Morgan says. "These generators are operating around the clock in a harsh environment, and we have to stay on top of the maintenance, and there are times when outside help from Western States is essential.

"A good thing about our Cat dealer is that they're local," Morgan continues. "Western States has a branch location here in Kalispell, and another one in Spokane. They're not overseas, so parts are readily available. The bottom line

is, we have a lot of good support from Western States and Caterpillar."

A model for the future

The project wouldn't have been possible without collaboration. Flathead Electric brought oversight, financing and technical expertise. Flathead County provided access to the site and waste stream. SCS Energy contributed design and operational know-how, while Western States supplied the durable Cat generator sets that anchor the project.

Flathead Electric's landfill gas-to-energy project is part of a larger culture of stewardship, demonstrating a commitment to keeping electricity affordable while investing in long-term sustainability and environmental responsibility.

While landfill gas generation is not the least expensive option in Flathead Electric's energy portfolio, it's one of the most valuable in terms of innovation, reliability, and community benefit, Williams says.

"We have a fantastic relationship with the county," Williams says. "We own and maintain the well field that collects the gas, and we're responsible for the environmental component, ensuring that the landfill remains in compliance. This is an example of the type of relationships that we try to cultivate, resulting in a win-win for the communities we serve."

While the landfill project is a modest enterprise for the county, it offsets disposal costs and provides renewable energy that is recognized by the state of Montana, Williams adds.

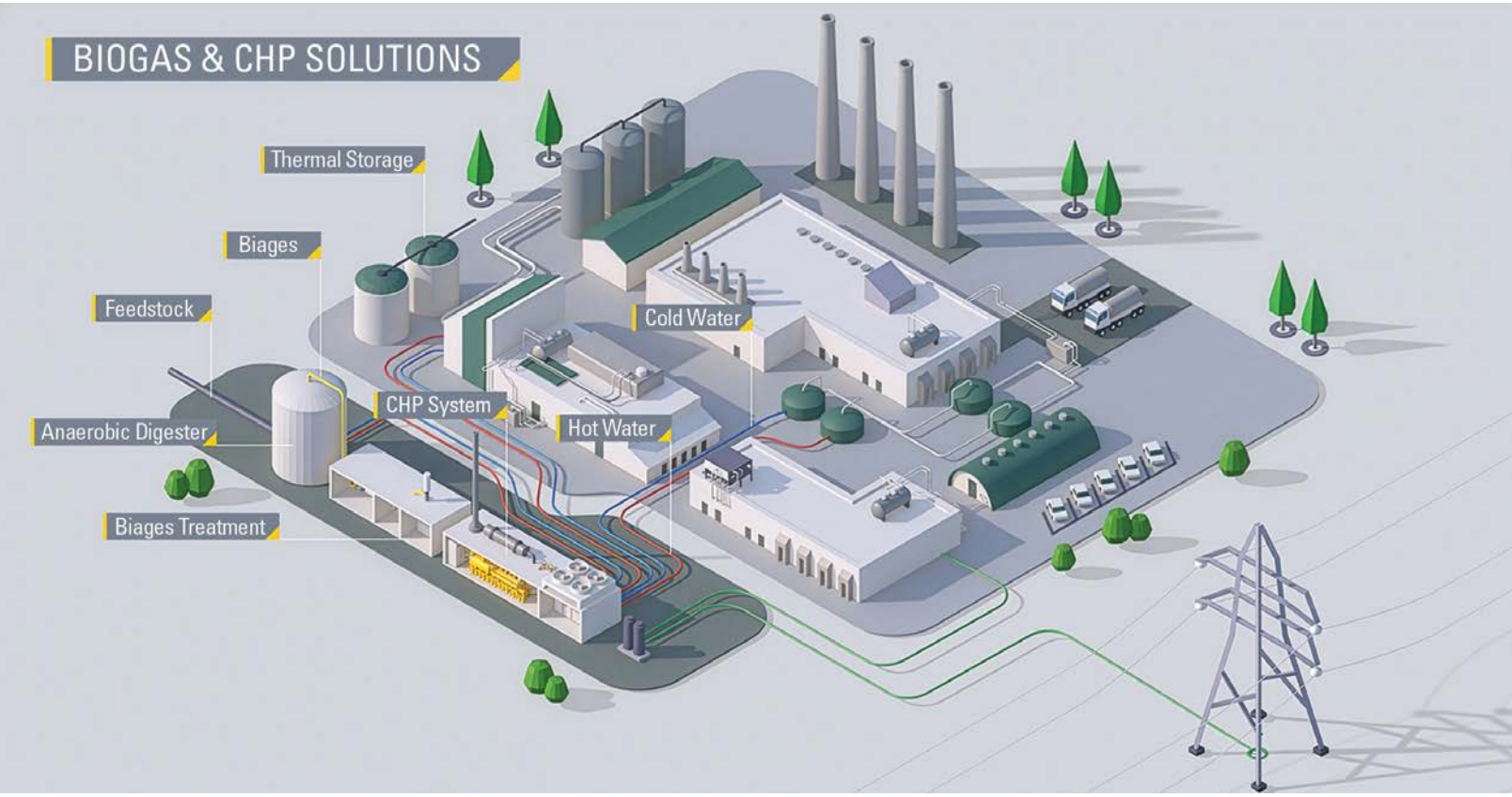
"Another way to look at it is, how much would we be paying for energy if we were buying it on the market, versus how much we're paying to generate it ourselves?" Williams continues. "The cost is very comparable. And from an environmental standpoint, it's a better use of the methane to produce electric power for our members rather than just flaring it."

Flathead Electric's landfill-gas-to-energy plant is now one of the most efficient in SCS's fleet. It demonstrates how rural utilities can lead in sustainability, even when operating in a relatively arid region with challenging conditions.

For the members who own the co-op, the project represents the best of both worlds: clean energy and cost-effective service. For the broader community, it shows how partnerships can turn environmental liabilities into positive long-term assets.

"Our mission is to enhance the quality of life in our communities," Williams says. "By capturing methane and turning it into power, we're doing just that—protecting the environment, lowering costs, and keeping the lights on for a large number of our neighbors."

Portions of this story were derived from a published account by the National Rural Electric Cooperative Association.



WASTE NOT

Unlocking biogas benefits

As more facility managers turn to biogas, demand isn't just growing—it's thriving. Capital investment jumped 40% between 2023 and 2024, according to the American Biogas Council, and close to 2,500 U.S. facilities are now capturing and using biogas. Nearly half are at wastewater treatment plants, and close to a quarter at landfills.

What should you keep in mind when considering a biogas project for your site? Marty Hopkins is a development market manager for Cat® dealer Peterson Cat who has spent 25-plus years in the power generation business, with the last 15 focused almost exclusively on biogas applications. From Hopkins' perspective, here are some important considerations to keep in mind:

Why are biogas projects becoming more popular? What are the biggest advantages? Three benefits really stand out:

1. **Reliability.** Solar panels require the sun, and wind turbines require the wind. But landfills and wastewater treatment plants produce biogas 24/7, regardless of weather or other external factors. It's a continuous source of renewable energy you can apply to your operation's baseload.
2. **Cost Savings.** By capturing and utilizing biogas, you can reduce your reliance on the grid, lower long-term energy costs, and even generate revenue—for example, selling surplus energy back to the market. You're turning what was once wasted into a valuable resource.
3. **Environmental Impact.** Using biogas as your energy source can help reduce a site's total greenhouse gas emissions.

For wastewater plants, heat is a natural byproduct of using an engine to convert biogas to electricity. You can pump the heat back into the digester to save even more on energy costs.

What are the biggest challenges with biogas projects?
The condition of the gas itself. Biogas is full of contaminants like sulfur and siloxanes. Without treatment, they can eat away at the metals in an engine—which over time leads to performance issues, downtime and added costs. You either need to clean the gas upfront or plan for added engine maintenance along the way.

Location also plays a role in that decision. To comply with certain emissions regulations, you may need to consider aftertreatment. But for the system to work properly, you'll need to clean the biogas.

For locations where emissions regulations are less stringent, you may not need as much treatment. But Hopkins still recommends doing some cleaning to remove moisture, sulfur and siloxanes—it'll save you headaches down the road. It's also smart to talk with your engine provider about what their product can tolerate. Cat gensets for biogas applications are designed to handle significantly higher levels of fuel contamination.

Are there any other hurdles to consider?
You're dealing with unique fuels, complicated systems and sophisticated controls. That's especially true in wastewater applications, where we're often adding in cogeneration capabilities—producing electricity and heat—or natural gas blending.

Working with experienced people is very important. You never want to be the guinea pig on someone's first project. Choose suppliers and service providers who have a proven, documented track record with biogas applications. They know what can go wrong and can help you avoid mistakes that cost time and money.

What's one thing often overlooked?
How critical it is to have local support. A biogas project requires significant upfront investment. To achieve the best return on that investment, your power plant must be up and running as much as possible. Without reliable access to parts and experienced technicians, what happens when there's a maintenance issue or failure? Problems that should take a day to fix could take a week or more. At that point, you're losing valuable resources and potential revenue.

"Working with experienced people is very important. You never want to be the guinea pig on someone's first project. Choose suppliers and service providers who have a proven, documented track record with biogas applications. They know what can go wrong and can help you avoid mistakes that cost time and money."

MARTY HOPKINS
Peterson Cat

Before choosing an equipment solution, be sure to ask any provider you're considering the following questions:

- How long have you been serving my area?
- Do you provide local service availability?
- How many service technicians do you have?
- Where are those technicians located?

Are you considering a biogas project for your site? If you have questions about the process and equipment, contact the power systems experts at our dealership to learn more.

TIPS FOR GETTING STARTED

1. **KNOW YOUR GAS.** Bring in a professional to measure how much biogas you're producing and test its quality. Establishing this baseline information can tell you if your project is feasible and how much biogas cleanup is required.
2. **UNDERSTAND YOUR REGULATORY CLIMATE.** What are the local air and safety requirements? What permits do you need? You can perform this due diligence in house, or you can hire a consulting engineer to handle it—just don't put it off. These issues can knock a project off track if you're not prepared.
3. **RUN THE NUMBERS.** Figure out how much electricity you can generate with biogas and how much money that could save you over time. Then you can weigh the long-term financial benefits compared to the upfront costs.
4. **CHOOSE YOUR SUPPLIERS WISELY.** Experience is everything. From selecting equipment to installing the power plant to ongoing operation and maintenance, work with experienced people you can trust. That's the best way to reduce risk and increase your likelihood of success.

CAT® ENERGY CONTROL SYSTEMS

A simple, scalable solution for better grid reliability

Choosing the right control system is a must. That's why Caterpillar created a suite of controls—Cat® Energy Control Systems (ECS).

The ECS portfolio is designed to meet most major grid requirements. Simple, scalable architecture provides better functionality and serviceability. The controls make it possible to interact with the grid and supplement the available power as needed—from running complex data centers to simply shedding load off the utility when circumstances require.

Cat ECS asset and site-level controllers are integrated seamlessly, so total site solutions can be scaled to meet specific needs.

The flip side of this is working with multiple suppliers, where you're patching together your power assets and controls. A single source, like Cat Electric Power, that's accountable for building the asset as well as the controls, is a very powerful solution that can help deliver lower costs and higher reliability.

ECS building blocks

Part of what makes ECS easier and more efficient is its modular design. Think of it like building blocks—an energy solution made up of different components that can scale up or down with your needs. This improved flexibility helps you adjust to future changes and new technologies. What building blocks will be most important for adapting to your future energy changes? These considerations can help identify the right solution for your assets and sites.

- **MODULAR COMPONENTS:** Employing modular components facilitates the easy addition or replacement of parts to accommodate growth or upgrades.
- **DATA MANAGEMENT:** Scalable systems can handle large volumes of data generated by energy systems, including data from renewable sources and distributed energy assets.
- **FLEXIBILITY AND SCALABILITY:** Wherever utilities are on their energy journey, and whatever the future brings, Cat ECS provides the flexibility, scalability and connectivity to support your operations. The product line includes:
  - > **ECS 100:** A powerful, simple standby control system
  - > **ECS 200:** For genset paralleling, cogeneration systems, plant control and grid code
  - > **ECS 300:** For utility breaker control and complex site level assets
  - > **ECS 400:** For full microgrid supervisory control, customizable to any complex site or utility scheme

Cat Electric Power solutions engineers can design systems from the inside out—so no matter what power assets you're utilizing, they integrate seamlessly into a control system. Engineers help customize the sequence of operations and how the assets come online, so the solution is precisely aligned with your operation. When technology changes, Cat experts help with retrofits and modernization.

To learn more about scalable ECS options, and how they work with your existing assets, contact our dealership.

LET US HELP YOU
Finance Your Data Center

Reliability and efficiency are mainstays of your operation—that's part of the reason you buy Cat® equipment. You know you can count on us and your Cat equipment, so why not let Cat Financial complete the picture with flexible financing options? As long as Cat generator sets are a major part of the overall financing, many of your installation and project costs can be incorporated into the financing package.

Rely on Cat equipment to protect your valuable data.Trust Cat Financial to provide first-class financing options.

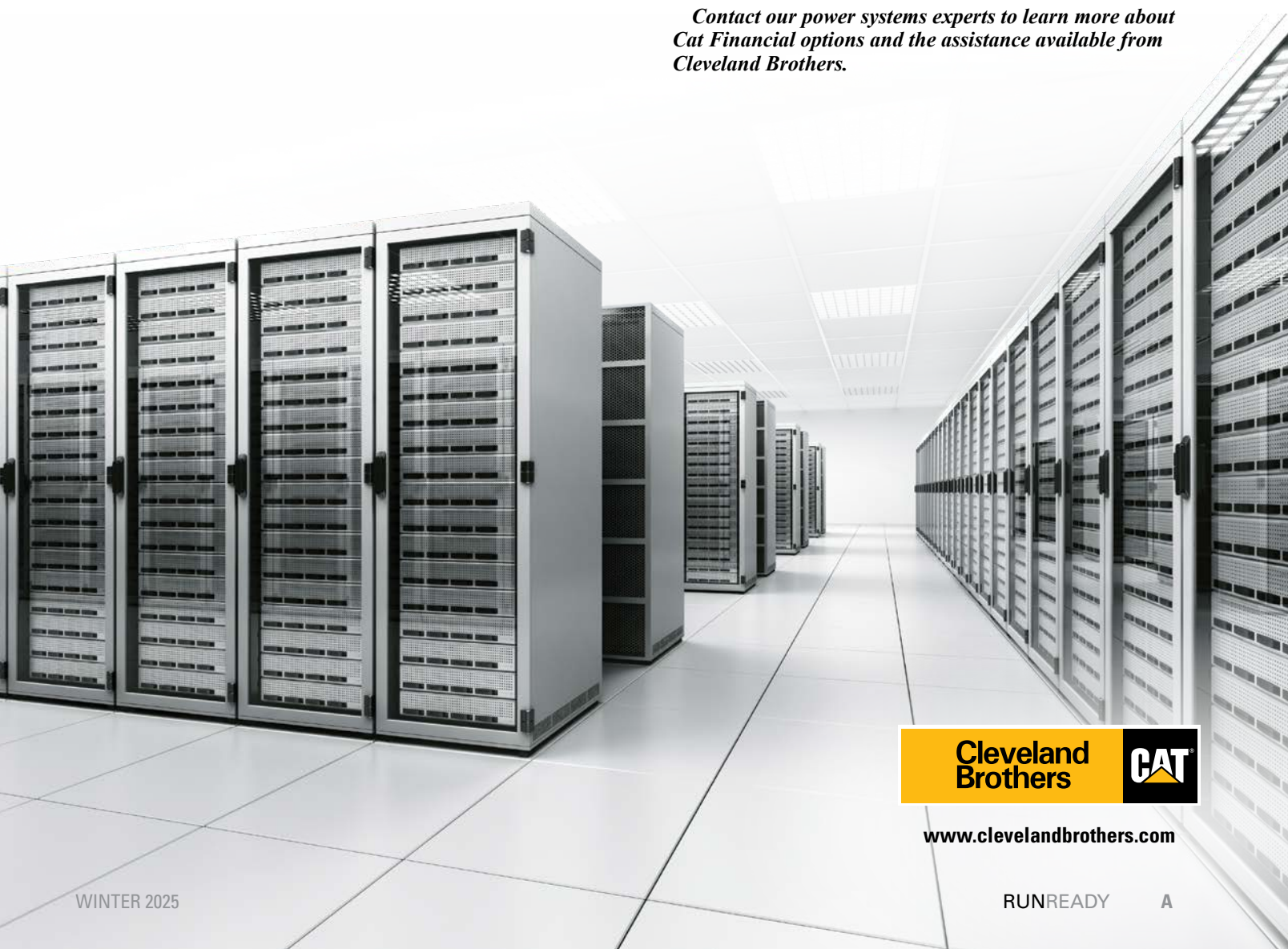
Annual Line of Credit

Cat Financial offers complete project financing and a line of credit that you can renew each year. As your business grows, you enjoy the peace of mind that comes from knowing Cat Financial will be there to support your expansion.

Data Center Financing Guidelines

- Construction plus Term Financing for projects that include Cat generator sets
- Financing for overall equipment needs, including Cat generator sets, UPS, ATS, switchgear, control panels, power distribution units and computer room air conditioning
- Competitive floating or fixed-rate loan structures
- Lines of credit for ongoing equipment purchases during expansion/construction
- Standard loan terms of up to 10 years plus construction/installation period
- Additional capital available to enable more rapid expansion

Contact our power systems experts to learn more about Cat Financial options and the assistance available from Cleveland Brothers.



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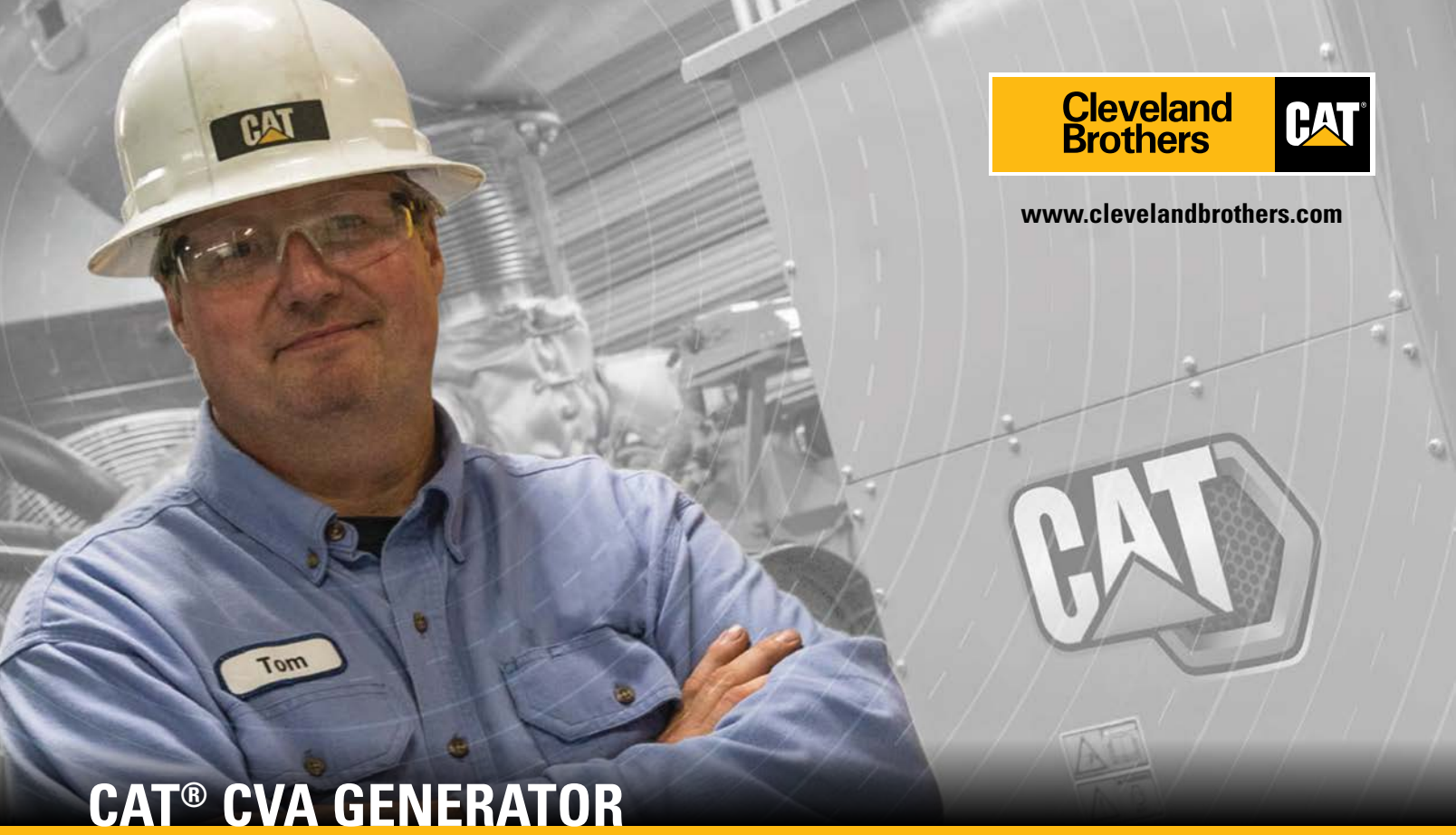

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CAT® CVA GENERATOR SERVICE CONTRACT

Industry studies show that nearly 90% of the time, generator failures could have been prevented—and that's money out of your pocket.

Protect your generator set investment and peace of mind with a service contract designed to ensure your power equipment performs. With a Cat® Customer Value Agreement (CVA), you get a tailored generator service agreement between you and our dealership for a hassle-free ownership experience.

You benefit from individualized solutions for your power system, such as parts, services, and digital enablers. Our CVAs range from convenient planned maintenance to total cost performance guarantees.

CVA customers develop a relationship with their Cat dealer to optimize their generators and operations. Partner with a team that keeps your costs down and your power up with customized options. Modify your CVA service contract at any time.

Coverage without interruption-Extended Service Coverage

- Protect your investment with coverage for parts and labor expense on covered components.
- Avoid unexpected repair costs caused by unscheduled repairs.
- Budget for unexpected repairs and lock in costs up front.
- Ensure repairs are done right the first time, with factory-trained technicians using genuine Cat parts.
- Return your electric power systems to their original operating specifications, meeting all requirements for safe use and environmental compliance.
- Combine extended service coverage (ESC) with a Customer Value Agreement for complete maintenance and repair protection.

A variety of coverage options

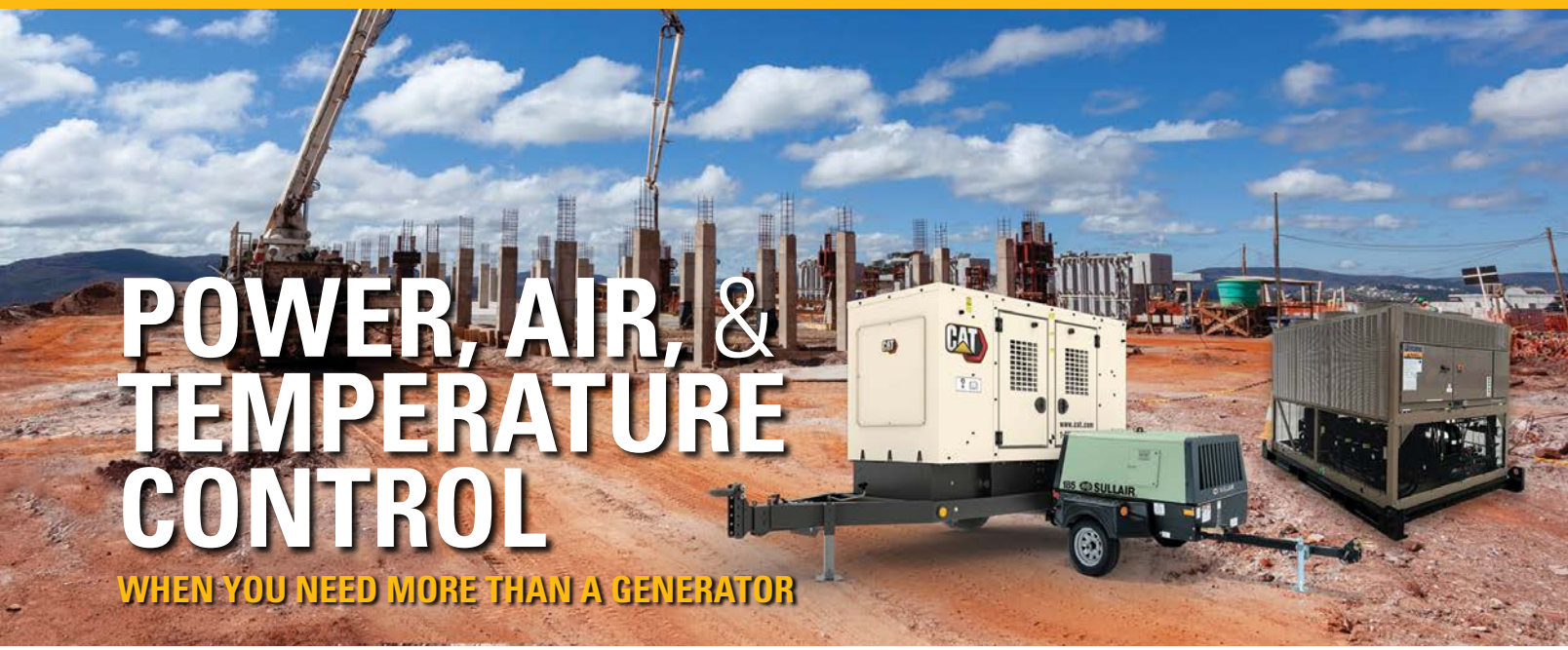
New ESC: Coverage for electric power prime generator sets is available in 24- to 60-month terms (24- to 120-month terms for standby generator sets and automatic transfer switches), if purchased before the end of your factory warranty.

Advantage ESC: Coverage is available in 12- to 60-month terms after the end of the factory warranty period and before the first overhaul. Coverage can be extended up to 25 years from delivery date for standby generator sets, and up to 10 years for prime.

Overhaul ESC: Coverage is available in 12- to 60-month terms after a qualifying overhaul has been completed by an authorized Cat dealer in accordance with the Overhaul ESC Checklist.

Get more out of your power system by minimizing downtime and extending the life of your generator with our preventative maintenance contract.

Contact out dealership to learn more about coverage level flexibility, allowances and long-term options, or go to: cat.com/epsupport.



POWER, AIR, & TEMPERATURE CONTROL

WHEN YOU NEED MORE THAN A GENERATOR

From disaster relief to scheduled power system maintenance, often customers need advice, recommendations, and, in some cases, additional products such as:

- Battery Energy Storage
- Air Compressors
- HVAC units (Temperature Control)

To keep operations running smoothly, our trained experts and extensive dealer network are ready to create a power design that can be fully optimized for your application.

Battery Energy Storage System
Combine traditional mobile rental power with a new mobile battery energy storage system equipped to provide uninterrupted power for a wide range of applications.

Air Compressors
Air compressors are often referred to as the "fourth utility," joining electricity, natural gas and water as an essential service in most industrial and commercial facilities.

Temperature Control
Air conditioning, humidity control, heating, and air handling systems are just some of the vital requirements needed for residential, commercial, industrial and governmental facilities.

Expert Guidance & Support
From fast installation and easy setup to site survey quality, the power systems specialists at our dealership are standing by to ensure your rental solutions are effective and save you time.

To learn more, contact the power systems experts at our dealership.

Cleveland Brothers CAT

www.clevelandbrothers.com

For 90 years, remote industry sites, villages and islands have depended on the power of Caterpillar for reliable energy, grid backup and sustainable, continuous power.

Today, Caterpillar is at the forefront of the energy transition, integrating renewable power with smart energy storage and conventional diesel or gas-fueled power generation to keep your industries producing, communities developing and people connected.

As global fuel prices continue to fluctuate and renewable technologies become increasingly competitive and sophisticated, Cat® Hybrid Microgrid Solutions are designed to significantly:

- Reduce your fuel expenses
- Decrease harmful emissions
- Lower your total cost of ownership
- Achieve favorable payback periods

Today, Caterpillar is continuing to develop innovative energy solutions that offer significantly lower operating costs through the displacement of conventional fuels, resulting in lower electricity costs for industries, businesses and communities.

The Cat hybrid microgrid solution provides:

- Increased energy efficiency with no reliance on the grid and optimal total cost of ownership.
- Efficient power that can be produced where and when it is needed without transmission lines and transformer losses.
- High performance, scalable system designed and built using standardized building blocks that are easy and quick to install even in challenging environments.

Cat advanced solar solution

The Cat solar solution offers superior performance reliable and predictable energy in all climates and applications, particularly in high temperatures, high humidity, extreme desert and coastal environments. A fully scalable, pre-engineered solar solution is compatible, quick and easy to install.

Controls: Cat Microgrid Master Controller (MMC)

The MMC manages every source in the entire Cat Hybrid Microgrid Solution, including main-grid when connected, keeping loads energized all the time, with high quality power at the lowest cost.

Energy storage paired with Cat Bi-directional Power (BDP) Module

The Cat BDP module offers state-of-the-art energy conversion and storage technologies. This includes the robust Cat power electronics system, renowned for its operational capabilities in harsh environments, as demonstrated by its utilization in the Cat D7E Track-Type Tractor.

Flexible Fuel Options

Providing all the reliability and durability you need, Caterpillar offers the industry's widest range of diesel, gas and dual fuel generator sets; automatic transfer switches, uninterruptible power systems and switchgear for seamless integration.

To learn more, contact the power systems experts at our dealership.

NEW G3520 Fast Response Genset

High-capacity unit delivers diesel-like performance

A new 3.1 MW natural-gas generator set is Caterpillar's highest-capacity unit with fast-response capability for standby power, grid-connected sites, and microgrids.

Designed for facilities that can't afford outages, the G3520 Fast Response genset is built on the long-running Cat 3500 engine platform, and delivers diesel-like responsiveness in a natural-gas package.

The new G3520 generator set provides a blend of resiliency, flexibility, and financial upside for operators who need reliable standby power and want the option to participate in grid-support programs.

The key performance feature is its ability to cold start and accept load in under 10 seconds, meeting NFPA 110 standards for critical environments. That level of performance is typically required in hospitals, data centers, emergency services, and other high-occupancy buildings where even brief downtime can be disruptive or unsafe.

Beyond reliability, the G3520 Fast Response genset can be used to capture economic benefits through utility demand-response programs.

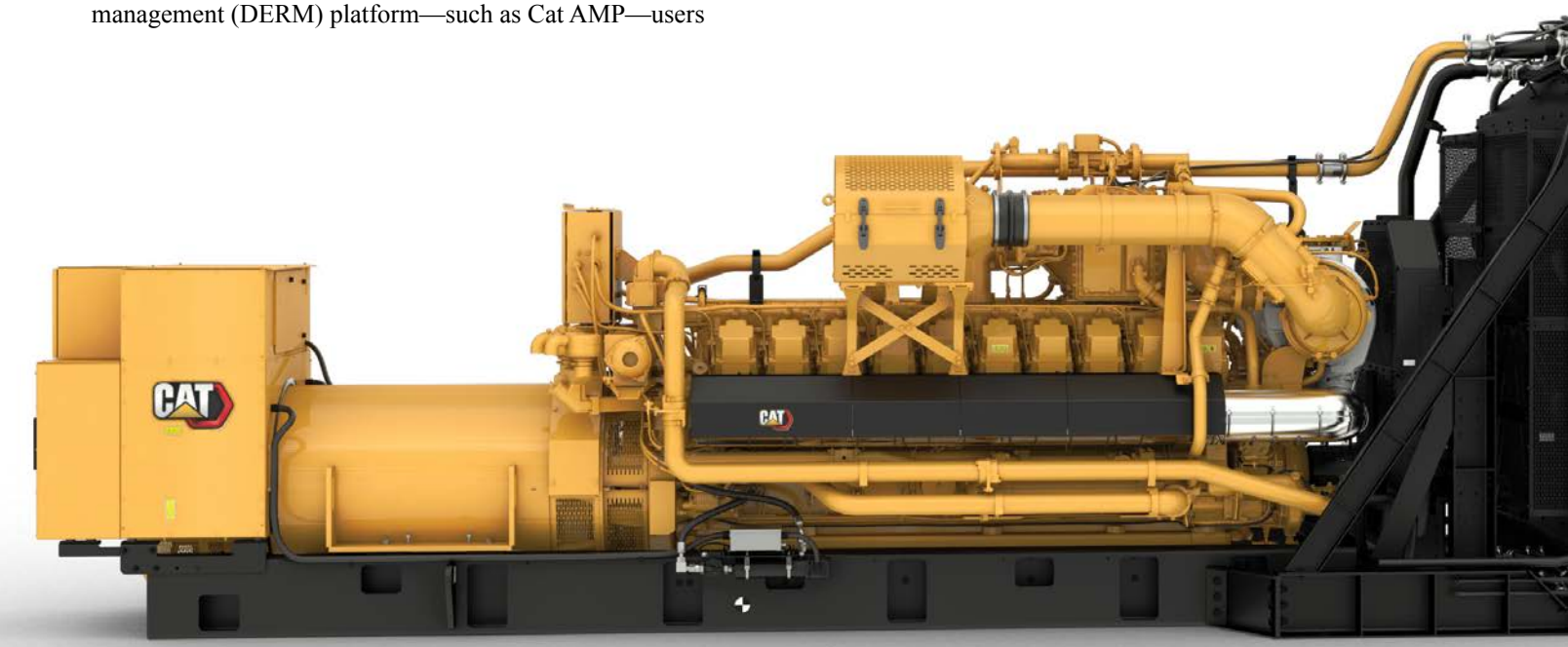
When connected to a distributed energy resource management (DERM) platform—such as Cat AMP—users can automate enrollment and real-time participation in grid programs that pay customers to reduce load or supply power during peak periods. This creates opportunities for cost recovery or additional revenue that go beyond the generator's traditional standby role.

The new 3.1 MW model extends the fast-response performance the company has been developing in natural-gas power systems, bringing them closer to the startup and load-acceptance behavior historically associated with diesel units.

With this release, Caterpillar now offers seven EPA-certified standby power nodes ranging from 500 kW to 3.1 MW for 60 Hz markets, along with 2.5 and 3.1 MW options for 50 Hz regions.

The unit is available for both 50 and 60 Hz applications, enabling it to be deployed globally.

To learn more about the new G3520 Fast Response generator set, contact our dealership.



GUARDIANS at the GATE

Cat® gensets safeguard data center

Located 30 miles northwest of Washington, D.C., Loudoun County, Virginia is the world's largest Internet hub, with an estimated 70 percent of all digital traffic passing through 414 data centers (and counting). These facilities require a massive amount of energy: By some estimates, they require the combined output of four nuclear power plants.

As one of the largest data center providers in the world, CloudHQ has a major presence with 11 data centers in Loudoun County, which is commonly referred to as "Data Center Alley."

Founded by renowned data center pioneer Hossein Fateh, CloudHQ has grown into a global powerhouse, operating in 22 markets worldwide and leasing more than two gigawatts of IT power capacity, which is greater than the total capacity of major markets such as Germany.

CloudHQ's mission is to build the physical backbone of the digital age. Its data centers serve as the unseen infrastructure behind everything from streaming video to cloud computing and artificial intelligence (AI).

"We are the landlords of the public cloud," Fateh says. "As technology improves and Internet speeds increase, more and more applications are hosted inside the public cloud. And we provide the space and power to make that possible."

AI drives exponential growth

The company's rapid global expansion reflects an industry that is evolving at lightning speed. Fateh says the need for data has evolved considerably over the last 20 years.

"In 2004 it was the advent of search. In 2006-2007, it was social media. By 2013, everything was quickly moving to the public cloud."

Today, he says, a major transformation is underway with the advent of AI and high-intelligence computing. These trends have fueled unprecedented demand for computing infrastructure, and by extension, for reliable, resilient power.

"Electricity is the lifeblood of a data center," says Brian O'Hara, Global Head of Operations at CloudHQ. "And standby power generation is required to keep a data center operating. Generators come online as needed when power from the utility grid isn't available."

And the stakes are enormous.

"If we did not have this backup power, everything would turn off," O'Hara notes. "Servers would shut down. Cooling systems would stop. Depending on the application, you might not have immediate access to your information—even at a personal level."

On a global scale, Fateh sums it up this way:

"The Cat gensets are backup power, so they're protecting data. We only need them for maybe 20 hours a year, but those 20 hours are vital. Without them, people wouldn't have access to their data, which is a major issue.

"It's not just about Instagram; it's financial systems, health

CUSTOMER PROFILE

CloudHQ

Location: Ashburn, Va.
LC4 Data Center

Cat® Equipment: C175-16 & C175-20 diesel generators (101)

Cat Dealer: Carter Machinery

care, and even the world's pension funds," Fateh says. "This is vital information that must be protected. Seventy percent of the world's money management is run on a product called Aladdin."

In an increasingly digital society, the consequences of unscheduled downtime are staggering.

"People expect to access their money, their health care, their information," Fateh continues. "Without those generators, there's a chance that power could be out, and that's just not acceptable. Financial companies managing 401(k)s and pension funds wouldn't have access to manage that money."

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HOSSEIN FATEH, FOUNDER
CloudHQ

CloudHQ's LC4 data center

As the newest addition to CloudHQ's substantial presence in Ashburn, LC4 is a massive 1.5 million sq. ft. facility with 32 acres of floor space and an IT capacity of 180 megawatts, and 313 megawatts of standby power generation.

That disparity between IT load and generating capacity reflects the industry's rigorous redundancy requirements. "Regardless of the distinction, it's a lot of power," O'Hara says.

LC4 is equipped with 101 Cat® C175 diesel generator sets—a combination of 16- and 20-cylinder models—which are some of the largest diesel-powered reciprocating engines made by Caterpillar.

The building's massive scale and density reflect what O'Hara calls "the densification of compute." Due to increased demands fueled by AI, today's data centers must do more with every square foot.

"This building is bigger and more dense," he says. "It's the evolution of data center development."

Timely procurement

Delivering a data center of this scale requires flawless coordination, and delivering the generators on time is essential.

"Having the generators delivered in a timely manner drives development," O'Hara says. "Knowing that the products are going to arrive on site in time helps make the construction process seamless. Huge efforts are put into scheduling, and being on time is absolutely critical."

Olu Afolabi, Sales Manager for Carter Machinery, CloudHQ's regional Cat dealer, echoes this sentiment.

"You can imagine that in order to construct the data centers, there's a lot of moving pieces and long-lead items. The generators are one of those critical elements," he says. "As we plan with the CloudHQ team, we partner with Caterpillar to make sure that when they need those generators, they're going to be there."

That process often begins years before construction starts. Planning usually starts two to five years before the gensets need to be there, Afolabi says. "We're looking at all the details—fuel tanks, enclosures, control systems—just to make sure the entire system is ready to go live."

Carter Machinery's relationship with CloudHQ goes back nearly two decades since the company's inception. And it goes beyond merely providing generators.

"We want to understand their load profile and how we can help mitigate risk in an emergency," Afolabi says

Continued on page 14

Carter's role extends far beyond procurement. The Cat dealer handles customization, allocation, installation, testing, commissioning, and maintenance.

"Their response time is impeccable," O'Hara says. "There are times when Carter people are already here working in the building."

The Carter Machinery technicians provide preventive maintenance quarterly—changing oil, filters, and checking systems. They also help ensure reliability in the event of severe weather and other risk factors.

"These gensets will be here 20 to 40 years, so we have to plan our manpower, parts, and training to support them over the lives of these products," Afolabi says. "We work closely with CloudHQ's engineering team to make sure the proper equipment is installed to keep them operational during 50- or 100-year storm events. That's why commissioning is so extensive. We test every scenario to make sure the generators respond exactly the way they need to."

Because downtime is not an option for a data center, dealership product and service support is essential to maintaining 100 percent uptime.

"Customers like CloudHQ trust that when they need their generators to run, they're going to be ready," Afolabi says. "Cat generators are highly reliable, and we stand by them. I think our customers understand the value of that commitment as well. They're going to run when you need them. And when you call us for help, we're going to be there as soon as possible."

Cat Financial makes it happen

Financing such massive undertakings is another challenge, and that's where Cat Financial comes in. Fabian Goehring, head of Capital Markets at CloudHQ, says the alliance has been instrumental to its continued growth.

"Cat Financial has supported us through the entire journey, whether it was smaller buildings early on, or at our very large facilities like LC4," he says.

The presence of Cat Financial provides confidence to both developers and investors.

"When we go to market and have banks underwriting these facilities, they always want to make sure we have stable partners," Goehring says. "Having a partner like Cat Financial gives us the confidence we need to develop those projects—and that gives our banking partners confidence too."

Goehring adds that Cat Financial's deep understanding of the equipment creates a unique synergy: "They have insight into what goes into our facilities and how that fits into the broader project. That alignment of our respective interests is invaluable."

Beyond providing financing, the relationship is built on trust and proximity.

"We meet regularly with Robert (Hughes) and the Cat

Financial team," Goehring notes. "They come to D.C., they see our project sites, and they know what we're doing. There's a strong degree of trust, and that's a differentiating factor."

Cleaner power for a digital future

As CloudHQ expands, minimizing its environmental footprint is also a priority.

"Our hyperscale customers all have carbon-neutral goals—most by 2030," Fateh says, "and they're the biggest buyers of renewable energy in the world."

For its part, CloudHQ is integrating Tier 4 Caterpillar generators, which dramatically reduce emissions.

"Tier 4 generators emit significantly less carbon and particulate matter," Fateh explains. "Moreover, the Cat generators are designed to use HVO rather than diesel fuel."

Hydrotreated Vegetable Oil (HVO), a renewable fuel made from waste oils, is already in use at several CloudHQ facilities. Serving as a drop-in replacement, switching to HVO will reduce lifecycle greenhouse gas emissions compared to diesel.

"We have a couple of facilities using HVO across the board," says O'Hara, adding that performance is virtually identical to diesel: "There's no difference in operation."

The Cat generators are equipped with Selective Catalytic reduction (SCR) systems, which are required at the LC4 campus to further reduce emissions, O'Hara says.

"With a site this big, we want to be good neighbors. The gensets are equipped with Cat SCRs, and we're achieving about 95 percent reduction of nitrogen oxides."

A network built on reliability

CloudHQ's commitment to reliability extends globally, thanks in part to the strength of the Cat dealer network.

"The Cat network is an outstanding asset," O'Hara says. "We have access to Cat corporate, which allows us to communicate with the network and develop processes here in Northern Virginia, in Europe, and APAC (Asia Pacific). There's a uniform level of professionalism everywhere in the Cat dealer network."

As CloudHQ continues to expand into Latin America, Asia, and beyond, that consistency will be key. "There isn't a market we don't want to tackle," O'Hara says. "And the Cat dealer network enables us to do that confidently."

Afolabi from Carter Machinery agrees: "We're fortunate to be right here in what we call Data Center Alley in Northern Virginia—the most concentrated collection of data centers in the world outside of China. At Carter, we train other Cat dealers to understand what data center customers expect. We're sharing our expertise as data centers proliferate across the country."

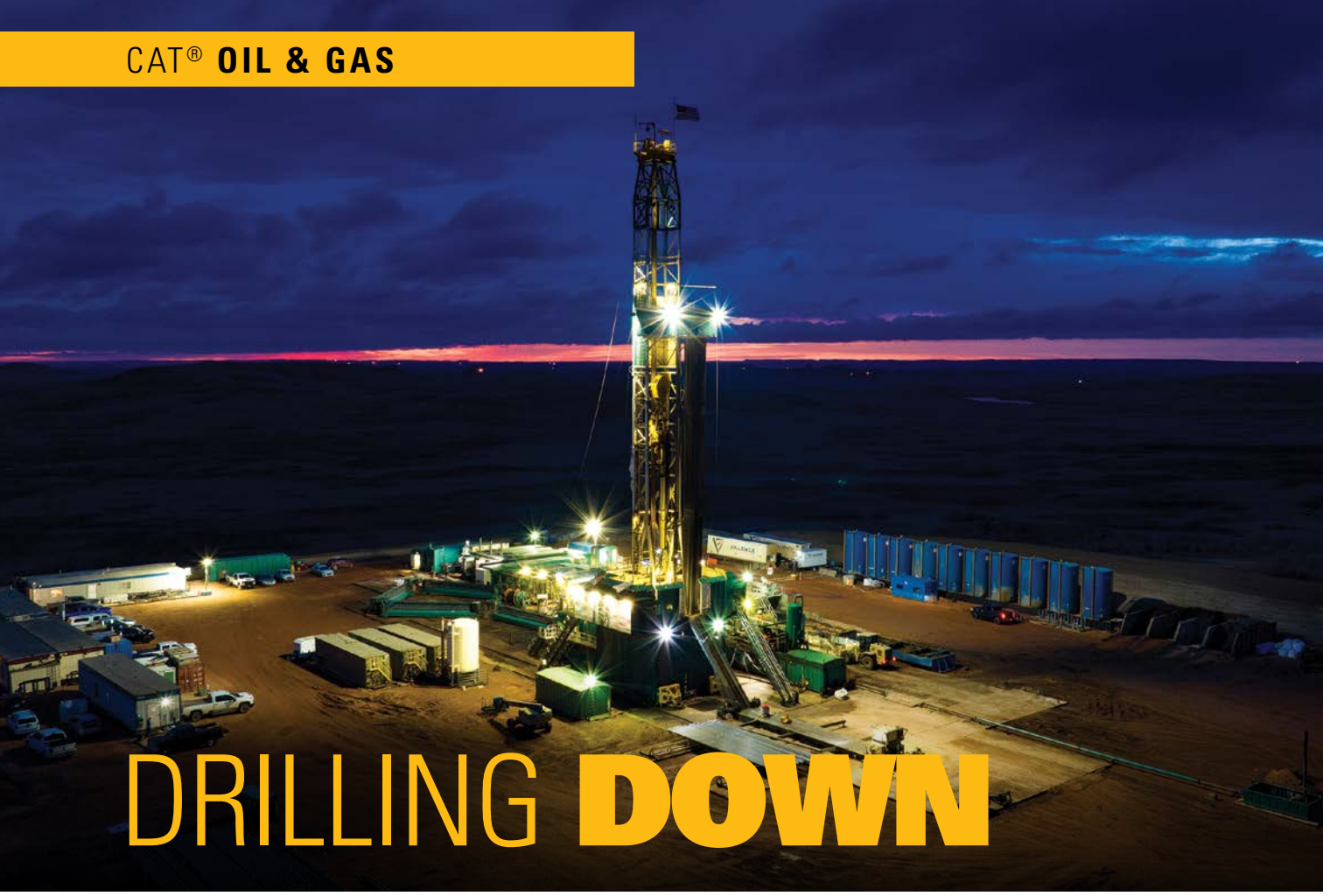
The last line of defense

Ultimately, the Cat generators that back CloudHQ's data centers form the last line of defense. A combined total of 847 Cat gensets are installed at CloudHQ data centers, providing reliability and the ability to scale. That includes 3512 and 3516 diesel units.

Fateh describes CloudHQ's mission as both a repository and guardian of data in the following terms:

"It's everything from social media and photos, to supporting financial systems and health care. All that information sits in these data centers, and it's backed up by those wonderful yellow generators.

"As technology increases, we're going to have more and more applications, more data, and more dependence on it," he says. "And that's why it's vital to protect it. Our customers' data must always be available, and the Cat generators are there to make sure it is."



DRILLING **DOWN**

Cat® hybrid solution reduces emissions and operating costs

Sustainability has become an important topic in numerous industries. Companies are striving to ensure that their operations are not only sustainable, but also are efficient and reliable.

Enerplus, a leading exploration and production (E&P) operator focused on the responsible development of high-quality crude oil and natural gas assets, is an innovative company that challenges the status quo by embracing new approaches.

Enerplus takes pride in being an early adopter of technologies that help lower greenhouse gas (GHG) emissions in their operations, while also cost effectively maximizing production. This ultimately supports their goal of attaining a 30 percent reduction in emissions intensity by 2030.

Their objective to be "best in basin" relies on adhering to three core principles: using the safest and best technology; operating the most productive wells; and having the strongest industry relationships.

Reducing GHG emissions

True Drilling is a private, family-owned contract drilling company focusing on oil and gas drilling, primarily in the Rocky Mountain region. It performs work for E&P operators such as Enerplus.

A theme that has underpinned True Drilling over its 75 years is its focus on being best in class; not the largest. The company takes a long-term view and prioritizes relationships and teamwork. True Drilling has used Cat® equipment from day one. Today, their equipment includes C32 and C3512 generator sets. Their current genset fleet operates in the harsh extremes of the Rockies on 24/7 continuous duty.

CUSTOMER PROFILE

True Drilling

Location: Casper, Wyoming

Dealer: Wyoming Machinery Co.

Segment: Drilling

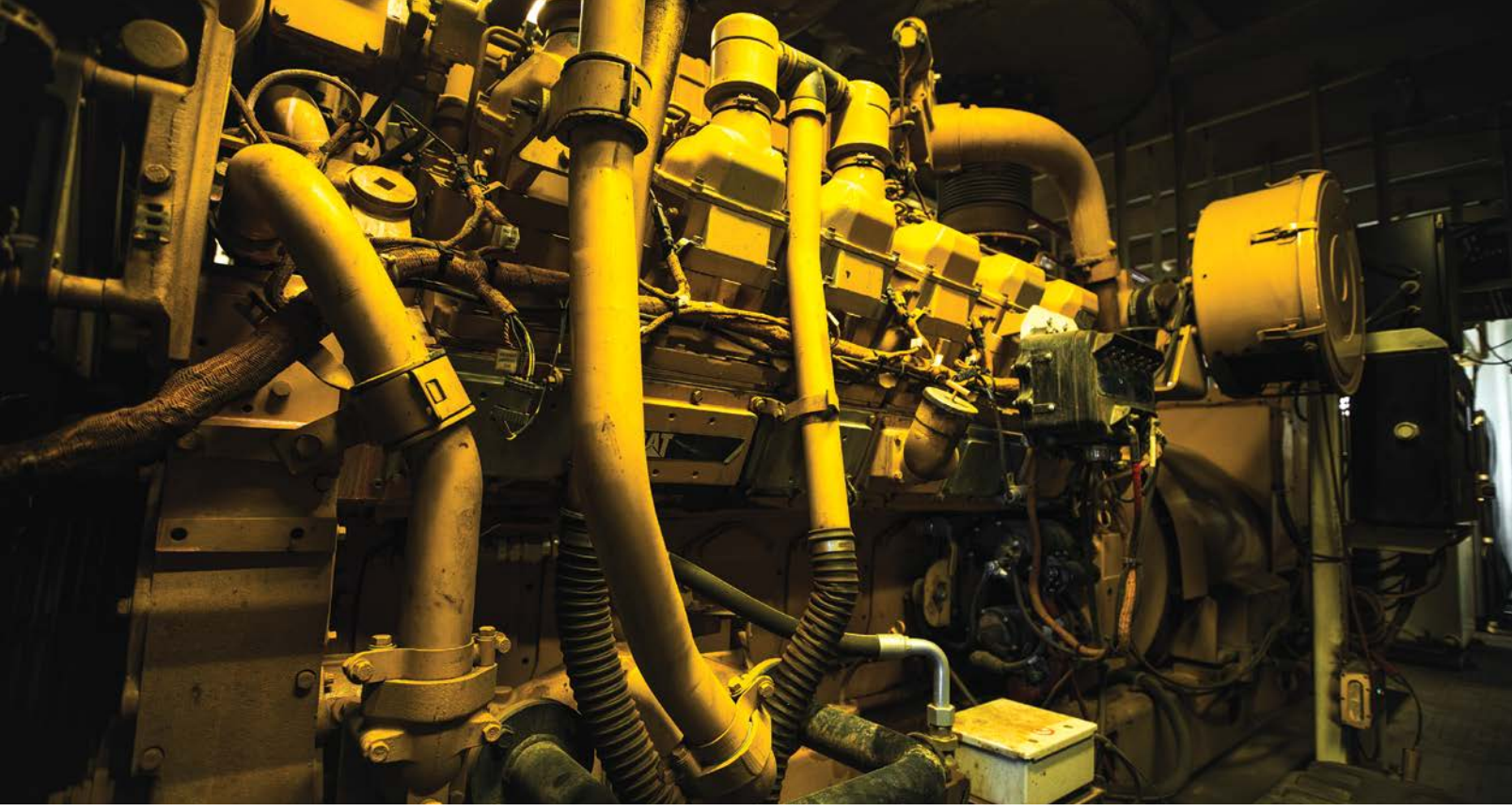
Solution: Cat® Hybrid Energy Storage System

Segment: Cat ESS, Smart EMS, and DGB Engines

"Cat equipment is so dependable we can essentially set it and forget it," commented Bill DeGraeve, True Drilling's director of drilling.

When Enerplus approached True Drilling to help identify a way to reduce their emissions profile and operating costs, the driller engaged Wyoming Machinery Co., a Cat dealer they've trusted for more than 25 years.

Wyoming Machinery has helped pioneer the new Cat Hybrid Energy Storage Solution, having installed a majority of the first solutions in the field. The Cat dealer quickly



recognized the Cat Hybrid Energy Storage Solution would perfectly meet Enerplus' goals of lowering emissions, maximizing uptime, limiting operating expenses and optimizing existing equipment.

"As E&P's and drillers strive to lower their emissions and maintain the performance they're accustomed to, the Hybrid Energy Storage Solution is a gamechanger," said Lukas Munsell, director of power systems at Wyoming Machinery Co.

The Hybrid Energy Storage Solution is a custom-designed battery storage system that can be combined with diesel, natural gas, or blended fuel (DGB) engines, and stores excess power from the jobsite, so it can be discharged as needed. When combined with a natural gas genset, the transient response is even faster than in traditional diesel-only rigs. The technology is an important advancement for the drilling industry as it gives drillers maximum fuel flexibility, while ensuring critical transient response capability. This eliminates the need for a redundant engine—even at high altitudes—and reduces runtime hours and emissions.

The three companies collaborated to install the leading-edge technology and ensure True Drilling and Enerplus reaped all its benefits. Caterpillar engineers also joined the teams on-site to share knowledge about the new technology and fine-tune the Hybrid Energy Storage Solution for the project's needs.

The customizable solution provided to True Drilling equipped its rigs with a combination of key technological shifts to reduce greenhouse gas, nitrogen oxide (NOx) and particulate matter emissions:

- Cat Hybrid Energy Storage Solution
- Cat DGB engines operating with compressed natural gas (CNG)
- Cat Smart Engine Management System (Smart EMS)

Sustainable impact

The diligent efforts of Enerplus, True Drilling, Wyoming Machinery and Caterpillar paid off as the technology reduced diesel use and GHG emissions.

With the Hybrid Energy Storage Solution, True Drilling went from four gensets to three and reduced daily engine hours by one-third, with a corresponding reduction in diesel consumption and emissions.

The technology provides Enerplus and True Drilling with the most efficient platform to redeploy the produced natural gas, while maintaining their uptime, which is important, as downtime costs thousands of dollars per hour.

With unwavering support through a collaboration of Cat dealers, Enerplus and True Drilling were able to maintain optimal system performance as the rig moved to the next site. This level of mobility, an important consideration when selecting the solution, proved advantageous for both True Drilling and Enerplus.

"The Hybrid Energy Storage Solution helps fulfill our goals of improving capital efficiency, reducing emissions, driving the evolution of technology and effectively managing the resource through the reduction in flaring," said Terry Eichinger, vice president, drilling, completions and operational support for Enerplus.

The Hybrid Energy Storage Solution has reduced True Drilling's startup times, as they simply flip a switch and the system is energized. Additionally, they observed that the hybrid technology can significantly reduce costs by curbing daily peak power load.

Says DeGraeve: "With the Hybrid Energy Storage Solution, we can give operators consistent drilling performance time, drill deeper faster, and increase safety." RR

SPECIAL **DELIVERY**

Hybrid power a competitive advantage for offshore vessel operator

In just seven years, PKR Offshore (PKRO), part of the renowned Singapore-based Marco Polo Marine Ltd. group, has grown into one of the leading offshore vessel owner/operators in Taiwan. PKRO has quickly established a diverse fleet of specialized ships to support development, construction, commissioning, operations and maintenance needs for major Taiwanese offshore wind farms.

The vessel owner/operator is committed to expanding its operations beyond Taiwan's borders to serve offshore wind farms in Japan and Korea with support vessels capable of reducing greenhouse gas (GHG) emissions, while ensuring reliable operation.

This is essential for the offshore wind companies PKRO serves, as there's a critical shortage of commissioning service operations vessels (CSOVs). Offshore wind farm operators in the region not only desire the availability of more CSOVs, but also that those ships support each wind farm operator's climate-related objectives.

When PKRO sought to build its first battery hybrid CSOV, along with additional crew transfer vessels (CTVs), it consulted Cat Marine to help plan—and power—the innovative new ships.

Hybrid Power Solutions: A Competitive Advantage

Cat Marine worked closely with PKRO to ensure that the new CSOV, the MP Wind Archer, would have the power required to support comfortable accommodations and safe transfer systems, while affording the flexibility to provide new services such as emergency port support, onboard inspection, SOS distress calls and maintenance.

To support these varied uses, the Cat® 3512E was selected to provide auxiliary power as part of a battery hybrid system. As the commercial marine industry adjusts their operations to meet U.S. EPA Tier 4 Final, IMO III and EU Stage V emissions standards, Cat Marine has introduced a solution built to maximize performance while meeting regulations. Caterpillar's combination of a fuel-efficiency-optimized

CUSTOMER PROFILE

PKR Offshore

Location: Taiwan

Dealer: Capital Machinery Limited (CML)

Product: Cat® C32 and 3512E

Industry: Offshore Wind

engine and a selective catalytic reduction (SCR) aftertreatment system not only reduces NOx emissions, but can also lower owning and operating costs.

As PKRO is required to report how its operations support Taiwan's decarbonization initiatives when pursuing new contracts, the hybrid power solution provides the vessel owner/operator a powerful competitive advantage.

The 3512E is engineered to increase fuel efficiency and reduce NOx emissions[1] – and it's methanol ready, enabling PKRO to leverage the engine's methanol dual-fuel capabilities in the future.[2]

In addition to the MP Wind Archer, PKRO also purchased three new CTVs to satisfy the demands of regional offshore wind farms. Each new CTV was equipped with two Cat C32 engines that deliver dependable power and fuel efficiency. Designed to meet European Union (EU) Stage V standards, the C32 technology supports PKRO's climate-related and operational objectives.

In support of PKRO's local content drive—a priority for the local government—the Taiwan-based Cat dealer Capital Machinery Limited (CML) provides critical support to help ensure the new CSOV and CTVs enjoy maximum uptime. CML strategically plans PKRO's service intervals in advance to minimize operational disruptions. Key parts are stocked at CML's local facility and delivered within a few hours, reducing downtime. CML's experienced technicians are poised to arrive on-site within a couple hours should urgent needs arise, optimizing fleet availability.

"Our collaboration with Cat Marine and CML has been integral to the success of our regional expansion plans," commented Kelvin Teo, Managing Director of PKR Offshore. "We're well positioned to serve the needs of offshore wind farms across Taiwan, Japan, Korea and the upcoming new markets in the Asia-Pacific region, in a manner that helps us reduce costs and GHG emissions."

Reducing GHGs and fuel consumption

The MP Wind Archer entered the water in early 2025. According to PKRO, the CSOV's hybrid propulsion system reduces carbon emissions by 15-20%. This enables PKRO to decrease GHG emissions, while also reducing fuel consumption and costs.

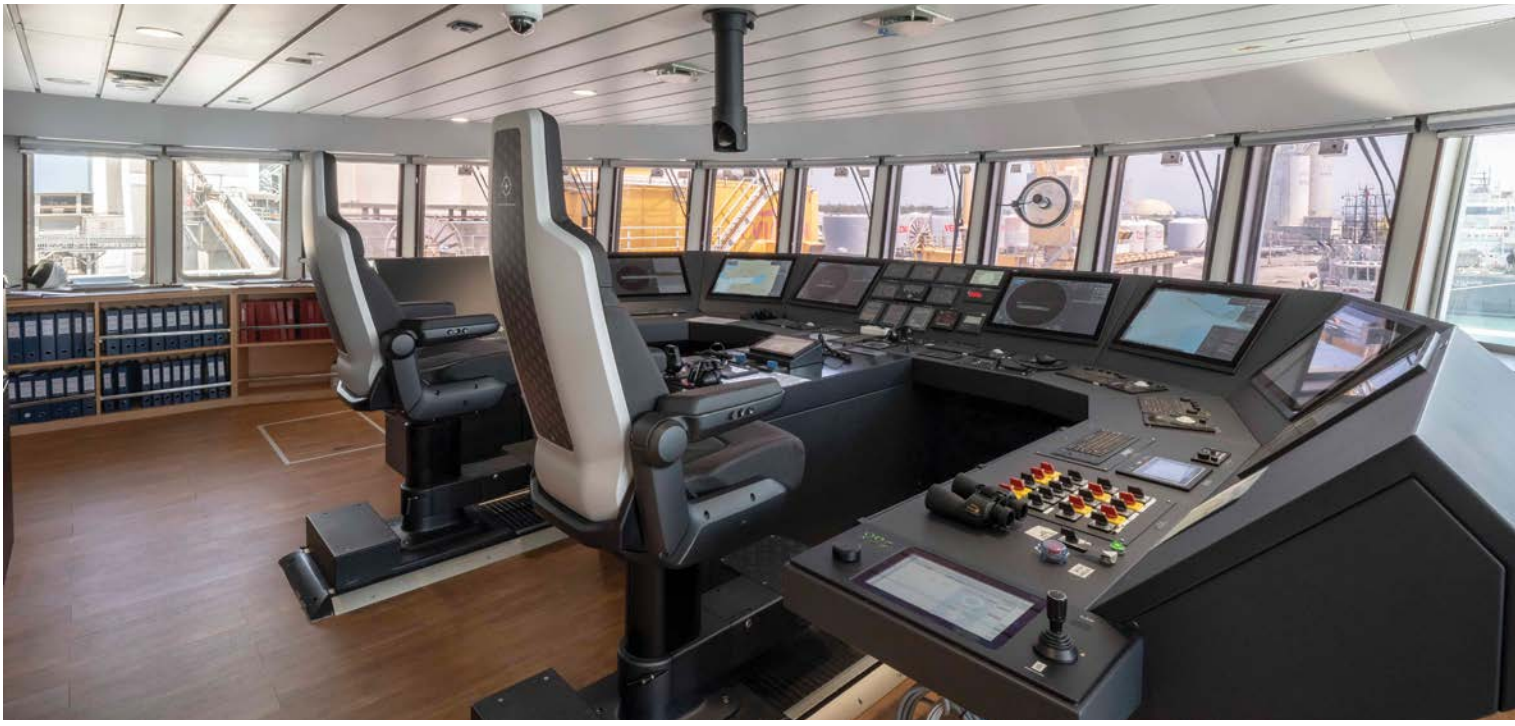
The three C32-equipped CTVs have been operating since April 2025. The C32's design provides PKRO the flexibility to incorporate hybrid power options and lower carbon-intensity fuels at the vessel owner/operator's discretion. The new CTVs are expecetd to significantly reduce fuel costs compared to PKRO's older CTVs.

The new CSOV and CTVs empower PKRO to address unmet needs in the offshore wind industry and expand its fleet's capabilities. In the coming years, PKRO plans to add more new CTVs and CSOVs to ensure PKRO keeps pace with sector demands.

"Working with Cat Marine and CML has proven very valuable to our team," added Teo. "We can confidently expand our geographic footprint knowing that we're backed by the technical expertise and support of Cat Marine and the entire Cat dealer network—both have operations everywhere we wish to be."

[1]Cat® 3512E Commercial Propulsion Engines. https://www.cat.com/en_US/products/new/power-systems/marine-power-systems/commercial-propulsion-engines/1000031003.html

[2]Caterpillar Marine To Support Select Cat 3500E-Series Engines With Dual Fuel Methanol. September 2022. https://www.cat.com/en_US/news/engine-press-releases/caterpillar-marine-to-support-select-cat-3500-E-series-engines-with-dual-fuel-methanol.html



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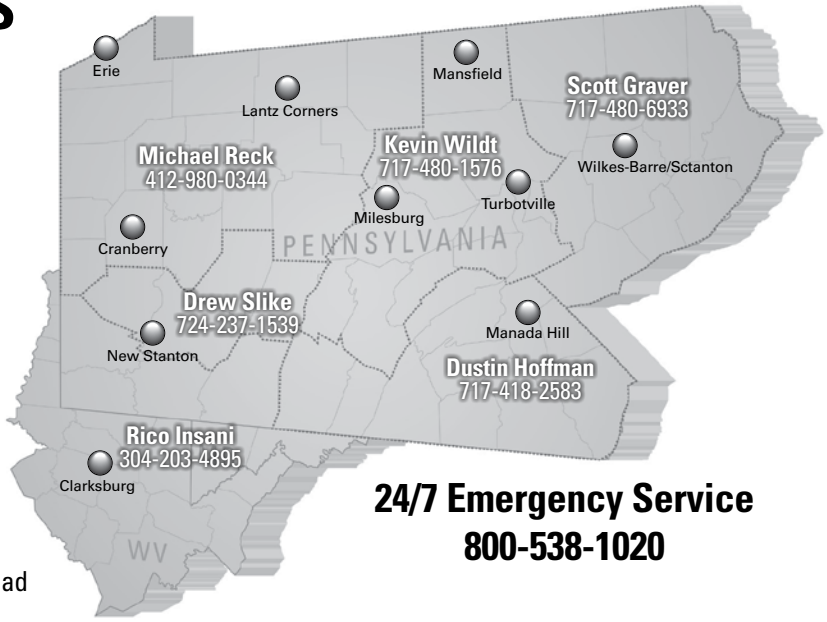

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NEW G3500K SERIES GAS GENSETS

If you're looking for reliable, quick-responding, high-efficiency prime or continuous power, choose the new Cat® G3500K series gas gensets. They're designed for reliable performance in a wide range of applications and demanding environments including high altitudes and higher ambient temperatures.

The first product in the series, the G3520K HR (High Response) is available now with four additional models to be launched during late 2025. Rated at 2.5 MW of continuous power and available in 50 and 60 Hz packages, the G3520K starts quickly and accepts high loads quickly, ramping up to 100% faster than previous models.

To learn more about the benefits of the new G3500K series and its suitability for your application, contact the power systems experts at our dealership.