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Mandatory Maintenance

Businesses who can't afford to go powerless are beginning to understand just how important it is to take care of their gensets.

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By Dan Rafter

Harry Oakley, owner of Oakley Services in Okawville, IL, sells plenty of gensets today. Hospitals, data centers, and farmers are among those customers who can suffer catastrophic losses should they lose power for even a short time. And more frequently than ever, these customers are turning to gensets to provide them with reliable backup power.

These customers, who can't ever afford to go powerless, understand just how important it is to take care of their gensets. Consider the case of the hog farmer. As Oakley says, huge losses can mount in minutes if a tunnel-ventilated facility housing thousands of hogs loses its power on a 90°F day.

"Without power, in just eight to twelve minutes, those hogs start dying," says Oakley. "In 30 minutes? The whole house is dead." Chicken farmers face the same issue. Even a short power loss on a hot day can result in devastating losses. This is why Oakley's

farm clients not only purchase gensets as source of reliable backup power, it's why they make sure to take care of these engines, too.



Photo: Blue Star Power Systems

And Oakley isn't the only one seeing this: more than ever, businesses of all kinds can't afford to lose power. The business world has changed over the years. Today, a growing number of companies rely on computers to power their business. If these computers should go down, these businesses can lose a lot of money in just a short period of time. Because of this, businesses are increasingly focusing on the maintenance required to guarantee that their gensets will switch on should their primary source of power fail.

At the same time, as more companies turn to gensets for backup power, businesses and building owners are taking steps to reduce the noise that their gensets make. It's not easy for employees to be productive if they can't hear their phone conversations because a genset is roaring in the background.

Companies are also testing their engines regularly to make sure that they are operating as efficiently as possible while consuming as little energy as needed.

And finally, faced with increasingly stringent state and federal regulations, building owners are working frequently with outside companies to make sure that their gensets are meeting all emissions requirements. Those who don't do this risk the chance of incurring hefty fines. And in today's struggling economy, businesses want to avoid as many extra expenses as possible.

In short, end users today understand the importance of not only relying on a trustworthy source of backup power, they also recognize how crucial it is to keep their gensets in top working order. This is good news for the manufacturers of these sources of backup power. Even as the nation's economy struggles, the genset industry has shown solid growth simply because businesses need what the industry is producing.

"If you don't have power today, you're going to suffer a significant financial loss," says Aniruddha Natekar, sales application engineer with Cummins Power Generation. "In the old days when the power went out, businesses would sweat it out for four hours. Now, with so many businesses relying on computers, losing power equals significant losses. Most businesses today can't be productive when the power goes out. Because of that, more of them recognize how important it is to keep their backup power sources in working order."

The Devastation of Power Loss

Bruce Prange knows all about the importance of reliable backup power. He's president and chief operating officer of Lake Crystal, MN-based Blue Star Power Systems, a producer of gensets. The computer has become the key to the business world. And with that, backup power systems have become more important than ever.

"The more computer-driven the world becomes, the more critical it is for businesses to have uninterruptible power," says Prange. "So many businesses can't even make a financial transaction without turning to a computer today."

That's why Prange so often preaches the gospel of maintenance and testing. By sticking to a regular testing and maintenance schedule, building owners and companies can make sure not only that their gensets will switch on if they lose power, but that they'll use as little energy as possible while doing so.

Prange recommends that building owners test their gensets by running them for 30 minutes every Monday morning. That way if they discover a problem, end users have all week to resolve it. If someone has to order parts, or if the problem requires a visit from a service technician, end users can take the appropriate action before the weekend hits.

The good news is that most gensets sold today give end users the option of automatically scheduling weekly testing. Owners just have to set a timer, and the genset will turn on by itself at a set time. By testing in this way, companies and building owners need only have someone—usually a maintenance worker—present to record the performance of the genset once it turns on.

"Maintenance and testing are by far the biggest factors in determining if a genset operates properly and efficiently," says Prange. "Too many people leave their gensets unattended. They figure if the machines are just sitting there not doing anything, they're good to go. That's when the troubles happen. It's the old out-of-sight, out-of-mind problem."

Prange says that certain end users do a better job than others in remembering to test their gensets. Hospital officials, for instance, know that uninterruptible power can prove a matter of life and death. They, then, are usually focused on making sure

that their gensets are working properly.

Homeowners who own gensets, though, tend to fall down on the job of regular testing, Prange says. They also often forget to spend the money necessary to maintain their gensets.

"Then the power goes off, and the thing doesn't work. They're standing there trying to figure out why," says Prange. "Maintaining a genset is just like maintaining a car. If you drive it down the road and never do anything about it, that car is eventually going to fail. It's the same with a genset."

In addition to regular testing, owners can make sure their gensets are consuming as little energy as possible by following a regular maintenance schedule, Prange says. Each genset sold will come with its own recommendations for regular maintenance checks. Prange says it behooves owners to follow this recommended schedule.

"It's mainly an inspection thing," he says. "You need to make sure no animals are living in it—no birds are making nests in it, or mice chewing the wires. You see that all the time because these gensets are stationary."

Oakley from Oakley Services Inc. says that he advises his customers to purchase those gensets that test themselves automatically every week. He also recommends that his clients pay for his company's technicians to come out once a year to give gensets a thorough checkup. Again, by spending this money, end users can avoid the higher costs associated with emergency repairs and increase the odds that their gensets will operate as efficiently as possible.

"The systems that take care of themselves, that test themselves every week, are much more reliable than are those that rely on humans to remember to test them," says Oakley. "Bless everyone's heart—I know people mean well—but everyone gets busy living their day-to-day lives. To make a long story short, the less manual, and the more automatic, testing is, the better."

The Right Size for the Job

There's another important step that building owners and companies can take to make sure that their gensets consume as little energy as possible while they're operating: they can order the genset that's the perfect size for their building.

Jim Crouse, executive vice president for sales and marketing with Capstone Turbine Corporation, says that Capstone spends countless hours training its distribution partners to truly understand the needs that end users have when they're ordering a microturbine.

This means that Capstone installations result in building owners installing the right size microturbine for the space they are attempting to power, Crouse says. And when turbines are sized properly for a given application, they consume less energy while operating, saving end users money.

"We've all seen the installation where someone wanted to sell more equipment than required for the application," says Crouse. "You end up with half the units sitting idle for most of the year. We make sure our distributors work with building owners or engineers to right-size the application."



Photo: Weg
The key is choosing the right size to fit your needs.

Sometimes a Capstone installation might almost look under-sized, Crouse says. But this is a case of making sure that no extra equipment was ordered, he says.

"Training our distributors is a big part of making sure we order the right amount of equipment for every application," says Crouse.

Capstone offers a wide variety of microturbine sizes, including small ones, Crouse says. This provides building owners with the flexibility to create a microturbine array that provides the perfect amount of power for their applications.

Many Capstone customers order three, four, five, or as many as thirty microturbines for their applications, Crouse says. By giving their end users the ability to custom-build their microturbine arrays, Capstone helps them maintain the highest level of energy efficiency.

"We are able to match the number of turbines that are running with the customer's building profile," he says. "That allows us to maintain a higher overall efficiency level."

Natekar from Cummins takes the same approach when it comes to keeping a genset operating as efficiently as possible. Maintenance, he says, is the key factor.

He points out that most gensets typically run for less than 30 hours every year. That's not a lot of run time. Owners who let their engines sit idle for most of the year are asking for trouble, he says.

"You can't just expect it to fire up six months from now on cue," says Natekar.

Cummins recommends scheduled maintenance dates for its gensets. Natekar also recommends that end users exercise their gensets at least two times every month. "That way you can make sure that your battery isn't discharged all the way. You make sure that there are no problems that you aren't aware of. You'll make sure that your system will be up and running when you need it to be."

Other factors play an important role, too, in making sure that a genset is operating properly. Air flow is one of these. Natekar compares it to an athlete running a marathon. Even the most elite of athletes will struggle if they're not getting enough air into their lungs.

The same holds true for gensets: they simply won't run efficiently if they're not getting enough air flow.

And like Crouse, Natekar says that sizing is another key element for efficient gensets. Gensets that are too small, or too large, for their given applications won't consume the lowest amount of energy, he says.

"It's always best to have a good estimate of what loads you want to put on a genset," states Natekar. "You don't want to shut down a genset because you have too large a load on it."

The Emissions Challenge

Today's genset end users have other issues with which to deal: making sure that their engines meet all state and federally mandated emissions requirements is one of the most important.

Fines for businesses that don't follow these regulations can be hefty. That's why businesses are so intent on avoiding them.

Dale Gremaux, sales and marketing manager with Newberg, OR-based Harco Manufacturing, knows just how focused genset end users are today on emissions. His company operates as the middleman between the genset manufacturers and those companies that make particulate filters and selective catalytic reducers.

Harco, then, helps end users receive gensets that will automatically meet all state and federal emissions requirements. To do this, Harco must first obtain critical information, such as the size of a genset and the task with which it is being charged. The company then works with the manufacturers of the emission control products, whether these products be in the catalyst or filter families, to create a genset that meets emission rules.

"We get a lot of calls today from end users as well as municipalities that want to make sure that they are following the EPA's standards," says Gremaux.

Harco's business is strong today, Gremaux says. And that's because of two main reasons: First, many genset manufacturers have made the business decision to not add emission-control equipment to their engines. That leaves companies such as Harco to pick up this work.

Second, many end users own gensets that are already working well. They just need to be retrofitted to meet new emissions standards. Instead of purchasing an entirely new genset, these companies will hire a firm such as Harco to make sure that they meet the new standards.

"People today want to be informed as much as they can about what the emissions standards are," says Gremaux. "They want to know what the standards are changing to. I tell them what I know, and then I also give them the resources to do further research on their own. I may direct them to the EPA website or different air research board websites. People are curious today. They don't want to face any fines or penalties."

Aaron Huff, product specialist manager with GT Exhaust in Lincoln, NE, is familiar with the increasing demand for emissions-control systems. He, too, works frequently with genset owners who hope to reduce the amount of emissions spouted by their engines.



Photo: Taylor Power Systems
Each TD350 handles one story of the building.

The key to doing this successfully, Huff says, is to get as much information from these end users as possible. "Typically, when someone comes to us with a proposal, we start out by asking some basic questions. We want to find out who is specifying that they need an emissions reduction. Sometimes it's national; other times end users are trying to meet a local standard. Sometimes the end users are saying that they want to reduce smoke and odor. We even get some people who say they want to be green. You need to know what the clients want before you can help them."

John Meola, vice president of marketing and sales with GT Exhaust, says that demand is increasing for his company's services among genset users. The reasons for this are plentiful, with the EPA's new RICE NESHAP regulations—the National Emissions Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines—at the heart of them. These regulations set new emissions standards for about 1.1 million engines that are already operating in the United States.

End users have to meet these regulations or face penalties and fines. They're turning to companies such as GT Exhaust to help them do this. "Most of the demand is driven by regulation," says Meola.

Huff agrees, saying that most businesses won't spend money that they don't need to spend until EPA or some other agency tells them they have to.

"Retrofitting an engine can be very expensive," says Huff. "It's not cheap. Just doing this because you want to be green can get pretty expensive pretty quick. It's more about having to meet a regulation than being green at this point."

A Quieter Engine

Genset owners also face a challenge when it comes to noise. It's hard for employees to work productively if a genset, when it's operating, growls and vibrates noisily. Unfortunately, this is one issue that too many end users fail to address, says Natekar from Cummins.

End users face three different noise issues when it comes to gensets, Natekar says. First, they must figure a way to lessen the mechanical noise coming from the engine. Then, they must address any noise that the radiator, basically a huge fan blowing out air, makes. Finally, there's the engine exhaust system, which can also prove noisy.

"Most customers think that if they have a good silencer, the noise will go way down," says Natekar. "That's not always accurate. The radiator fan can be just as noisy as the exhaust. You have to look at the complete package, the sound levels coming from the complete package."

The easiest way for companies to address noise issues is for them to buy a complete genset package from a manufacturer that already includes noise-deadening equipment, Natekar says. This way, end users won't have to deal with the issue on their own.

End users can also reduce noise issues by using a bit of common sense, Natekar adds. For instance, they can make sure that gensets aren't going to be blowing out air in the direction of employees' work stations. "Common sense sometimes goes out the window," he explains.

While it's true that genset users face challenges, it's also true that more companies and building owners are turning to these onsite engines for reliable backup power today. And this is something that industry professionals say won't change soon.

Crouse from Capstone says that his company's microturbine business has been increasing by 35% each year for the last four years. Some of this has been because Capstone has added new distributors and is focusing more intently on marketing its microturbines, Crouse says.

But much of the growth is organic, coming from an increasing demand for microturbines, he says. "Customers appreciate the reliability and long service intervals that they get with turbines," continues Crouse. "And that is a trend that we are only seeing getting stronger."

Topics: [Genset](#), [Maintenance](#), [Emissions](#)