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Powering the Future of Communications

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As the digital economy's dependence on data grows more intense by the day, the information storage and connectivity that data centers provide is becoming inextricably tied to day-to-day success—for communities, families, individuals, or businesses. The importance of the data center cannot be overstated: the global market is expected to grow by $519.34 billion from 2021-2025. When considering these crucial information hubs, standard systems like cooling, networking and physical security come to mind, all of which play an important part in the care and keeping of data. The overall viability of the data center hinges, however, on its ability to stay up, on and fully powered—regardless of what kind of disruptions may come its way.

As the importance of IT rises across the world, so too does the need to maintain uptime with the right equipment. If a data center loses power, a crucial facet of an organization's growing connectivity fabric can be rendered unusable. Now, the cost of downtime is higher than ever, and data centers (and their tenants) are risking more across bottom lines, customer trust and operational capabilities should a system be compromised. It's for this reason that the diesel generator is now one of the most important assets for a data center.

When utility power is gone, whether from disruptive weather, human error or any other unforeseen circumstance, continuity and uptime can be preserved through gensets. The UPSs, power chillers, cooling systems, and even the emergency egress systems that help employees operate safely in the facility, all need to be supported in the event of an outage. In short, secure space, storage, and connectivity—the pillars of the data center and networking experience—are

only as capable as the power that enables them. The genset can be the tool that empowers all elements of the data center to remain uninterrupted in the most critical moments.

Of course, these are the fundamental business continuity aspects that make gensets a necessity for data center providers. Still, there are a host of other reasons why making the most informed decision regarding the generator—and generator partner—can be what sets a data center apart. As we look toward a digital future that is rapidly scaling and factor in things such as sustainability, several other considerations come into play.

Technical table stakes

Deciding what generator product is right for the data center starts with a relatively simple need. All facility providers are looking for similar outputs: they want backup power to go on when it needs to. However, addressing this requirement from a technical deployment perspective comes down to several key elements.

Early-stage success in selecting a solution means ensuring the product is right-sized for the use case, which encompasses the data center's needs today, as well as its long-term growth potential. Ensuring the right fit is imperative for supporting immediate fuel efficiency optimization and emissions outputs. Selecting based on current needs is a relatively intuitive decision but prepping for future power demands is trickier.

Today, many are opting for systems that are close-coupled with the utility, which helps enable data halls to grow as needed with more expandability compared to paralleling frameworks.

A modular solution is key for maintaining flexibility down the line as well. We can see this specifically when it comes to the idea of sustainability. Regulations on emissions are continuing to grow tighter as a focus on a green future becomes more acute—and making sure existing generator deployments can accept a compliant solution (think Tier 4 EPA compliance) is valuable.

While EPA Tier 4 solutions come from the factory with the tier-approved solution in place as a day-one added cost, they're not adaptable in the field. As nitrogen oxide (NOx) or particulate emissions standards intensify, adding after treatments in the field is key, making a standard compliant solution better from the outset in many cases. We don't know exactly what tomorrow holds on this green front, but we know change is coming as sustainability becomes a major motivator. Making sure the product is sound as-is while also allowing for iterations should be top of mind.

The above points are only scratching the surface of genset selection and technological specification. It's a sometimes-complex process that doesn't just take specs into account—it reconciles the specifications with evolving, forward-thinking plans. Not just any old backup generator will set a data center up for long-term success. There's another side to this coin that just might hold the true key to getting the right solution from the onset.

Why customer service really makes a difference

In many ways, procuring a successful long-term generator solution means finding a provider that can meet a customer's service needs before it meets the product needs. Identifying a partner that brings the right insight to the table—on top of the most innovative and robust products—and can ensure ongoing care is what makes all the difference. This partnership is what keeps a data center ahead of the curve, whether with disaster recovery and resilience or with sustainability and ongoing innovation.

The generator is about more than the moment the power goes out. It's not a set-and-forget tactic, it's a safety net that needs attention and support so that it can deploy as needed when the moment strikes. Key to a generator's viability (and in turn to the data center's reliability and the provider's peace of mind) is quickly and responsively addressing servicing conditions, making sure the equipment is maintained and ready at all times. All that processing is amplifying what the product is there for—it's an insurance policy, but beyond that, it's a partnership policy and a trust-building necessity.

It's crucial to take the entire product lifecycle into account and see how a provider caters to every aspect. Can they build and deliver the product on time with a robust sourcing supply chain? Can they commission equipment, turn it up, and then be there for the customer throughout the ongoing service needs? Can they easily and reliably service the equipment globally as the customer scales? Furthermore, is the genset provider investing in the future and helping the customer benefit from that innovation as well?

Again, sustainability is an example of why a provider's attitude toward long-term product innovation is vital in a world where data centers must lead broader societal progress on top of providing basic space, power, and connectivity. It's important to note first that for any generator manufacturer, any technology that goes into the genset—even at an EPA Tier 2 level—offers emissions levels that are much better than what they've been in the past. When you move up the tiers, that impact improves even further—and selecting a provider that delivers robust solutions in those higher tiers is key for getting a product that is both powerful and conscientious.

Tier 4 generator sets, for instance, can be considered a clean-air-making machine. In some environments (and with the right sustainable solution), the air is cleaner going out of the genset than it is going in. Optimizing these green strategies with innovative after-treatment technologies, allowing for minimal maintenance demands and optimized continuity while meeting EPA mandates, isn't something that can be found everywhere in the generator landscape—but it makes a difference. Thinking this way is a complicated task, but it's the right way to look at our collective future.

A great genset partner will provide tailored solutions while also asking themselves: how do we make this more fuel-efficient? How do we make my system allow for less testing on the job site? How do we minimize wet stacking and monthly load tests, and furthermore, how can we augment this generator to reduce its impact on its surroundings further with something like a generator

enclosure? This holistic approach treats the generator as part of a living, breathing system, and it creates more success in the short term while paving the way for industry leadership going forward. In this way, investment in the right generator partner becomes more than an investment in the data center's well-being; it becomes an investment in ethical growth and innovation.

A new type of connected ecosystem

Networking isn't just key for shuffling data to endpoints and across business footprints. There's another kind of network that is just as important as physical fiber: the network of partners and the ecosystem of entities that an IT solutions provider is connected to. A data center generator provider is no exception. As outlined above, a generator is not just a standalone asset, it's the product of extensive education, development, problem-solving and ongoing iteration. Sustainability, reliability, scalability, and efficiency all demand unique approaches, and with them comes the need to be sourcing complementary insight and services.

Just as no data center can maintain perfect uptime alone, no genset provider can deliver all the right tools and capabilities in a silo. When it comes to remaining prepared for changing regulations, close relationships with governing bodies are conducive to more successful products. Similarly, carefully selected third-party partner providers help keep deployments flexible according to unique demands, and they help teams access gensets across the world when they need additions or maintenance. This is a new type of networking that supports the data center holistically, in turn ensuring the utmost reliability and service excellence for mission-critical generator needs.

What's ahead?

Data centers hope and pray that an outage doesn't occur, and of course, the power provider does too. In a perfect world, a data center would never need a backup power product and data would always be out of harm's way—but this isn't reality. Instead, data centers must look for the next best thing—a great diesel generator.

Though often looked at as a necessary evil, the truth is that the necessity of these genset solutions is what's driving progress and helping to build a more sustainable, reliable industry. At the end of the day, the backup generator is one of the most pivotal parts of today's data hubs, and the right solution can be a make-or-break decision. Still, no data center has to do it alone, and with the right power partner on board, global data centers can scale securely.