

FRAMING A SOLUTION FOR DATA CENTERS

Kohler eFrame enclosures target data centers and mission-critical applications.

By **Mike Brezonick**

While make-or-buy decisions are a fact of life for most manufacturers, sometimes the best option is to do the important things yourself.

That was the conclusion that Kohler Power came to that led to the development of its new eFrame generator set enclosures.



KOHLER TAKES FIRST STEP INTO ENERGY

When Kohler Power unveiled its new Power Reserve line of energy storage batteries, it was the company's next step into an increasingly important segment of the power generation industry.

Designed for home and small commercial standby power applications, Kohler said its new Power Reserve batteries offer customers a modular backup system to store and access energy produced by photovoltaic (PV or solar) generation systems. For non-solar installations, the company said it is a way to store energy from the grid during times of lower rates to use during peak rate periods while providing backup power to cover outages.

"Power resilience is and has been a big part of our business," said Brian Melka, group president of Kohler Power. "The Power Reserve is a great

product extension for us and fits very well with our residential and light commercial business.

"We felt the timing was perfect for us to move into this technology. There are two big factors affecting the market at the same time. The first is a significant increase in power instability – a lot more customers are recognizing they need power resilience, they need energy resilience, the grid is not reliable, and their solar systems are not reliable.

"Many PV installations actually don't work if the grid goes down because they're grid tied. If you're producing excess energy in a grid tied solution, when the grid goes down, if you have no energy storage, you have nowhere to go with it. In many installations, a customer can actually feed back through their meter and receive energy credits

as a result of their PV. But when the grid goes down, they can no longer feed through the meter, and they no longer have reliable power for their homes either.

"With the recent pandemic, you also have people spending much more time in their homes. They are recognizing that power resilience is important, and that their power is not as reliable as they thought it was. Grid power actually goes out more than they were aware of and the solutions they have in place with PV aren't as reliable as they thought they were.

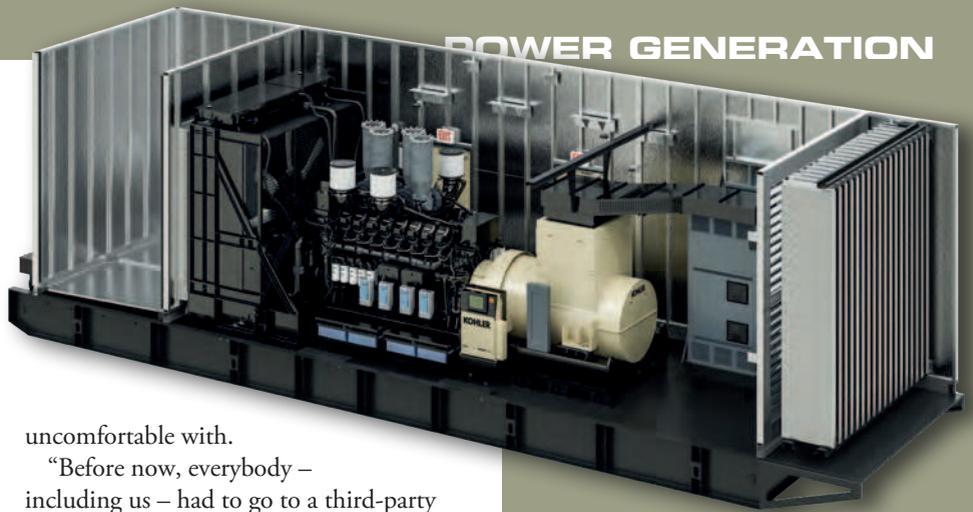
"The other big change that is happening at the right time is that the cost per kWh has come down. The main component of these systems is the battery, and battery costs have continued to decline and are expected to continue declining

The eFrame enclosures, designed to house Kohler's largest 2.0 through 4 MW KD Series gen-sets, have been engineered to meet the specific requirements of mission-critical applications – primarily data centers – while providing shorter lead times, earlier installation and better service, and maintenance access.

"When we developed the KD gen-sets, we also launched enclosures up to 2500 kW," said Brad Meissner, product manager at Kohler Power. "We were the first in the industry to offer factory packaged enclosures above 1 MW."

But as the size of the KD range expanded to larger sizes, the generator sets had to be shipped to third-party enclosure packagers, something that, while a relatively common practice in the power generation industry, Kohler was increasingly

Kohler has developed the new eFrame walk-in enclosures for its KD Series generator sets.



The eFrame enclosures primarily target data centers and other applications where easy access to gen-set components is important.

uncomfortable with.

"Before now, everybody – including us – had to go to a third-party manufacturer for this size unit," Meissner said. "There are a handful of them here in Wisconsin and many throughout the U.S."

"Some of these are small manufacturers which you could almost compare to a job shop. Some are bigger than others, but they all have the overarching issue of scale. The ability to handle product for many manufacturers, for many customers, can be an issue for them. Then you also encounter issues with product consistency and lead times, etc."

DATA CENTER DEMANDS

Complicating the situation was also the fact that data center customers tend to be very exacting in terms of their enclosures.

"We found that the enclosures we were making for the KD gen-sets are a little bit different style than what something like a data center is going to require," Meissner

said. "Those enclosures were more like a skin-tight enclosure. Data centers tend to want a walk-in enclosure."

"Data center customers are in and around their gen-sets more frequently than the typical user. For the typical user it's a safety net for their operation. Data centers consider it a more integral part of their operation because the power and uptime of their facilities are so critical. They are constantly working on testing, making sure that their generators are ready to go in case of an outage. That's where that walk-in clearance is going to

STORAGE

over the coming years. Customers have more understanding of the need for power resilience and at the same time the cost to address that concern is coming down. We felt it was just the perfect kind of connection of those two things happening for us to become a player in the market."

BATTERY SAFETY

In development for nearly two years, the Kohler Power Reserve system consists of three main segments – batteries, inverters and an app used for control and monitoring.

The batteries are lithium iron phosphate (LFP) chemistries available in 10, 15 and 20 kWh capacities. The batteries offer outputs of 5.76 to 7.6 kW continuous (7.6 to 9 kW peak for 60 seconds) and carry a 10-year/3 MWh per kW



BRIAN MELKA, Kohler

battery warranty. Weighing from 346 to 580 lb., they meet UL (1741 SA and 9540), CA Rule 21, HECO Rule 14, IEEE (1547 and 1547.1) and CSA 22 regulations, Kohler said.

"The lithium battery solution we've chosen is safe for use in residential settings," Melka said. "Something we were very concerned about was making sure that not only we had power density and long run time, but we had a safe solution for those customers who want to mount these either on or inside their homes."

The batteries and inverters are designed to operate with any type or brand of solar panel system. "With some manufacturers, you can't buy their energy storage unless you buy their solar arrays and inverters," Melka said. "This leaves a large population of customers looking for a storage solution that may already have solar installed."

"Our solution is agnostic – you can use it with

A key feature of the eFrame enclosures is a modular design that enables the enclosure to be separated into three sections, each able to be independently removed in the field.

come in – it’s much easier for the technicians and their operations teams to be in and around the gen-sets.”

The eFrame walk-in enclosures are available in three configurations – V12 (2000 kW to 2500 kW), V16 (2800 kW to 3250 kW) and V20 (3500 kW to 4000 kW). They incorporate an all-aluminum skin and frame construction, as well as a fade/scratch/corrosion-resistant powdered coat exterior. The enclosures meet or exceed 135-mph wind load ratings, the company said.

In addition to the wind rating, it is also UL2200 FTTP certified for construction and IBC certified via analysis for site specific use. The sub-base tanks meet UL 142, ULC, and state specific requirements.

A modular design allows the eFrame enclosures to be separated into three sections, each able to be independently removed in the field. This is intended to enable users to service the engine and



radiator without disconnecting any site connections that occur in the rear section. It also localizes the service work to avoid potential mishaps to other components while significantly reducing service costs and downtime, the company said.

QUICK DEPLOYMENT

Installation is also straightforward, with the sub-base fuel tank set in place, the generator set mounted directly to the tank, and then the enclosure placed atop the generator, making it essentially a “connect and go” system, Meissner said.

“That was one of the biggest things we heard from data center customers,” Meissner said. “They want to be able to get a unit on order, get it onto their site,

and then deploy it as quickly as possible. And as we know, skilled labor is stressed within the U.S., so the less stuff they have to do on the job site, the more they like it.”

Thanks to the expansion at its manufacturing site in Mosel, Wis., Kohler can now provide a totally integrated package, with all components single-sourced from the Kohler factory including engineering, manufacturing, testing and enclosing. “It’s the single source philosophy,” Meissner said. “A customer only has to deal with Kohler. There is no finger pointing, with third party packagers, if something occurs in the field, it can be dealt with in-house here.

“It allows us to control our own destiny as well. Especially now, where supply chains are getting very constrained. The more content you own, the more you can control it, and the better service you provide your customers.”

 www.kohlerpower.com

virtually anyone else’s system.”

Customers can access and manage their stored power through an app designed to provide insights into real-time power flow for the home or business, deliver a timeline of power information for the day and provide historical statistics for the system.

It also allows users to choose the operation mode for their system – backup, self-supply, or time-of-use– to personalize their battery’s storage and output.

“One of the things we wanted to make sure we delivered was a very intuitive, easy-to-use app so that people can see their power needs,” Melka said. “When we looked at this, we learned that early adopters wanted to see lots of bells and whistles and data, etc.

“But we’re beyond the early adopter phase. What most people really expect is that it’s going to work and that it’s reliable. They want to trust it.

Kohler’s Power Reserve range of lithium iron phosphate (LFP) batteries target home standby and light commercial standby power applications.



They want some basic information and want it to be easy to use so they don’t have to program it like a 1987 VCR with 47 buttons and 16 steps. They really want simple and reliable.

“One big thing that customers told us is that they want to make sure the company that builds and installs these units is going to stand behind them and be here in 10 or 20 years if it needs service or replacement. One of the reasons people have been asking us to do this is that Kohler has

been in this business of distributed energy for 100 years – and we expect to be in it for another 100 years.

“Core to what we do is providing resilient power, from mobile equipment to home and industrial standby and even prime power. It’s what we do. It’s our core business, and we intend to leverage our distribution and service capabilities across the U.S. and around the world to support this product.”