

HOW KOHLER IS HELPING DATA CENTERS IMPROVE SUSTAINABILITY

Background

Companies of all sizes worldwide are placing emphasis on Environmental, Social and Governance (ESG) initiatives, and data centers are no exception. Providers of critical digital infrastructure are striving to lower PUE and increase efficiency due to a combination of local regulations requiring more environmentally sound practices, customer demand and their own sustainability goals.

Many advancements are being made to reduce the use of water, power and cooling within data centers, which are used on a daily basis. Backup power sources are used much less frequently — less than 12 hours per year. However, operators can dramatically impact sustainability goals by adopting more innovative practices.

The Challenge

Inefficient Processes of Diesel Generator Maintenance

Data center operators must maintain a failover process that allows them to keep providing critical digital infrastructure services to their customers in the event of an outage. Backup generators are the most commonly used method to keep data centers running after an unplanned outage caused by things like severe weather, power grid failures or human error.

Generators are often powered by diesel fuel, which is known for having harmful emissions. To maintain optimal performance, data center operators typically burn off unused fuel in the exhaust system through a process called wet stacking.

Wet stacking typically occurs when generators frequently run with little or no load because the generator is improperly sized for the power required or because adequate load is not available during the exercising period.

Data center providers frequently have insufficient load and incur additional wear and tear on their generators, the added costs and time to connect an external load bank with higher emissions and extra fuel costs.

The standard solution for wet stacking has been to exercise the generators at 30% of the rated capacity on a monthly basis to burn off unused fuel or prevent buildup.



For a typical Kohler data center customer using between five and ten generators, the cumbersome monthly testing process can add up to a significant time commitment by operations personnel, not to mention unnecessary fuel consumption.

For this reason, data center operators across the industry have voiced a desire to rethink their approach to backup power in efforts to end the use of diesel fuel in emergency generators. New approaches to a critical component in the digital infrastructure power chain had to be carefully considered as operators sought to strike the right balance between reliability and sustainability.

The Solution

Kohler at the Center of Innovation

Kohler has worked with its customers to attack this problem with innovative technologies and solutions. Modern diesel engine designs now incorporate several technologies that enhance operating efficiency and reduce the gaps between pistons and rings that allow unburnt fuel to escape.

These improvements, paired with other measures to boost efficiency, have enabled our customers to revisit the traditional process. The proposed efficiency improvements would enable generator operators to revisit old assumptions about maintenance schedules to significantly reduce load-banking requirements without violating NFPA110 requirements.



Customers using Kohler's KD Series generators can switch to an annual load testing process, which has become standard practice for many data center operators. With this new annual process, customers maintain peace of mind, knowing they are well equipped to continue providing critical services in the event of an outage, and they have the added benefit of elevating their sustainability efforts.



For more information on the technology behind the modern diesel engines powering Kohler's KD Series generators, check out our full whitepaper: [Diesel Generator Maintenance Feasibility and Benefits of No-Load Exercising](#)

[Click Here to Download](#)

KOHLER.

WHITE PAPER
Diesel Generator
Maintenance Feasibility
and Benefits of No-Load Exercising

Diesel Generator Maintenance Feasibility and Benefits of No-Load Exercising.

INTRODUCTION:

Diesel generator operators are all too familiar with the problem of engine stalling or wet stacking, a buildup of unburnt fuel in the exhaust system that can lead to decreased engine performance and premature failure. Wet stacking typically occurs when generators frequently run with little or no load because the generator is improperly sized or because adequate load is not available during the exercising period. Often times applications require additional time and cost to connect external load banks to apply sufficient load to complete an exercise, which results in higher emissions and extra fuel costs.

POWER SYSTEM TOPICS 100

The Result

Reducing Fuel Consumption with Kohler KD Series Generators

The environmental effects of switching from monthly to annual load testing are compelling. A 3250-kilowatt running a load-banking cycle for 30 minutes each month burns about 660 gallons of diesel fuel and emits 186 pounds of pollutants per year. In contrast, performing the same monthly exercise unloaded consumes less than 300 gallons per year and total pollutant emissions are reduced by 82% on a pounds per year basis. There are also collateral onsite savings.

By helping its customers move from the more traditional monthly testing process to annual testing, Kohler has helped customers continue to provide services its customers rely on, while reducing emissions and increasing sustainability measures.

How Else Are We Delivering More Sustainable Mission-Critical Generators?

- Our ongoing technology advances optimize operation and reduce emissions.
 - Electronic fuel injection increases efficiency.
 - Optimized design reduces NOx and PM.
 - After-treatment systems reduce pollutants.
- Today, renewable fuels like HVO cut GHG up to 90%.
 - Risk-free flexible option for Kohler generators provides lower emissions without compromising on performance.
 - To learn more about Kohler's HVO solutions, visit hvo.kohlerpower.com.



LEARN MORE

A global force in power solutions since 1920, Kohler manufactures complete power systems, including generators (portable, marine, residential, commercial and industrial), automatic transfer switches, switchgear, monitoring controls, and accessories for emergency, prime power and mission critical applications around the world. Visit KohlerPower.com, facebook.com/KOHLERPower, and on Twitter at [@KOHLERPower](https://twitter.com/KOHLERPower).