Infrastructure Masons

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Hydrogen-Ready Generators Provide Faster, More Flexible and Cleaner Solutions for Data Centers, INNIO Group Says

The iMasons Legacy Podcast
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Hydrogen-Ready Generators Provide Faster, More Flexible and Cleaner Solutions for Data Centers

Left to right: Santiago Suinaga, Chief Executive Officer, Infrastructure Masons; Thomas Seeber, Managing Director, Data Center Power Generation, INNIO Group.

Powering AI Responsibly

Electric grids around the world today are ill-equipped to handle the increased power demand from data centers equipped to process and serve artificial intelligence (AI) workloads, according to experts throughout the power and digital infrastructure industries. This power gap threatens to slow advances in AI.

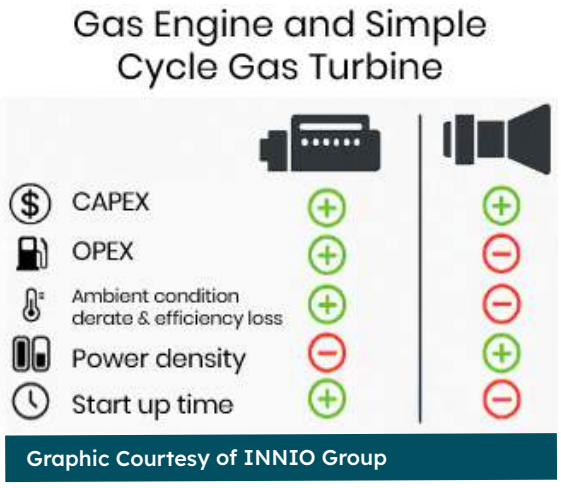
Compounding the power challenge are commitments from companies throughout the digital infrastructure industry to decarbonize their operations to protect the planet, which requires a shift away from fossil fuels toward clean energy technologies.

Hydrogen-ready generators deployed onsite at data centers can help the industry overcome the short-term power challenge and put companies on a path to achieve net zero carbon emissions, according to Thomas Seeber, Managing Director – Data Center Power Generation at INNIO Group.

What's more, he added, data centers with the company's Jenbacher generators, which can run on natural gas or hydrogen, bring flexibility to the power grid. Data center operators can shift to onsite power during times of peak demand or grid stress, for example.

The flexibility of data centers to readily switch to onsite generators also enables grid managers to increase integration of variable solar and wind power resources. When the wind slackens or solar production dips, the data centers can switch on their generators, which reduces load on the grid.

"Data centers can team up with the grid instead of being a burden on the grid," said Seeber.



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Bridge to the Future

INNIO's "Ready for H2" generators help address several major challenges facing the digital infrastructure industry today, according to Santiago Suinaga, Chief Executive Officer of Infrastructure Masons (iMasons).

Access to power consistently ranks as the top-tier challenge to sustainable growth of the digital infrastructure industry, he noted. iMasons members are searching for solutions that enable continued growth today, and onsite generation is emerging as a preferred option.

"The hybrid approach to start with natural gas and transition into green hydrogen with the same engine is an interesting and innovative solution," he said. "It helps to balance the priority for power with protecting the planet."

Hydrogen is considered a clean energy solution for the future. When used in an engine, the emissions are water and nitrogen oxide. The challenge for hydrogen today is insufficient infrastructure to efficiently separate hydrogen from compounds such as water and natural gas, then store and transport it for use.

As the hydrogen economy scales up, INNIO's Jenbacher generators can run on natural gas, which emits up to 25% less carbon dioxide and up to 95% less nitrogen oxide than diesel, the traditional fuel source for onsite generators at data centers.

"Natural gas is an intermediary step," said Seeber. "Our engines are 'Ready for H2' and can be converted to run on hydrogen whenever hydrogen is available."

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>
> — Santiago Suinaga, CEO of iMasons

Time to Power

Thomas Seeber Managing Director, Data Center Power Generation, INNIO Group.

“We do not require our clients to redesign their data center based on our solution. We have adapted to their needs.”

—Thomas Seeber
Managing Director,
Data Center Power Generation,
INNIO Group

INNIO Group’s “Ready for H2” generators are engineered to fit the same footprint and have the same power capacity and similar start times as diesel generators traditionally found at data centers for backup power during grid outages and other emergencies.

“We do not require our clients to redesign their data center based on our solution. We have adapted to their needs,” Seeber said.

The adaptations include innovations that enable the engines to start within 15 seconds and the capability to follow the variable and spikey loads associated with AI model training, he noted.

The reduction in air pollution from using natural gas or hydrogen instead of diesel as the fuel source for onsite power generation can also ease the permitting process for around-the-clock operations, noted Erik Brumbaugh, Senior Business Development Manager for INNIO Group.

In power constrained markets, the capability to run onsite generators around the clock accelerates the time to power for a new data center build by as much as three to seven years.

“The data center industry has created this demand for power that the utilities can’t meet, so data centers are looking for creative ways to generate power without connecting to the utility grid,” Brumbaugh said. “That’s what we’re providing.”

Utility Partnerships

Onsite generation also allows data centers to gradually shift to grid power as grid connections and capacity become available. Once a full grid connection is established, the generators are available for traditional emergency backup power.

“INNIO’s Jenbacher gas generators are never a stranded asset or a lost investment due to their flexibility,” Seeber said.

Data centers with a grid connection and sufficient onsite power generation for around-the-clock operation also open the door for partnerships with utilities, noted Brumbaugh.

For example, the utility and data center operator can reach an agreement that compensates the data center to switch on generators during times of peak demand or grid stress.

Such arrangements are rare today, Brumbaugh said. That’s largely because the data center industry traditionally uses diesel generators to maintain service reliability and availability during emergencies.

“But the opportunity has raised interest,” he said. “If there’s an outage in the area, the data center can shed load from the utility, which would provide power back to the local grid operators. There’s a story there of being a good neighbor, which the data centers are looking to tell.”

Suinaga, the iMasons CEO, said the impact of data centers on local power grids is a leading source of friction between the digital infrastructure industry and communities where data centers are deployed.

Reducing this friction is a key component of the iMasons Social Accord, a framework for how data centers can integrate with communities, become a part of them.

“Our vision is for data centers to achieve economic, social and ecological balance with the communities where they are deployed,” Suinaga said. “INNIO’s approach with hybrid generators helps to make the local power grid more reliable for everyone.”

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— Erik Brumbaugh,
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