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INTEGRATING A MICROGRID WITH SOLAR POWER FOR ENERGY SELF-SUFFICIENCY

A U.S. airport is making history as the 1st in the country to get 100% of its power from a microgrid

Background

As part of its ongoing sustainability efforts, an airport in Pennsylvania decided to create a power generation microgrid to make the facility more resilient to grid outages.

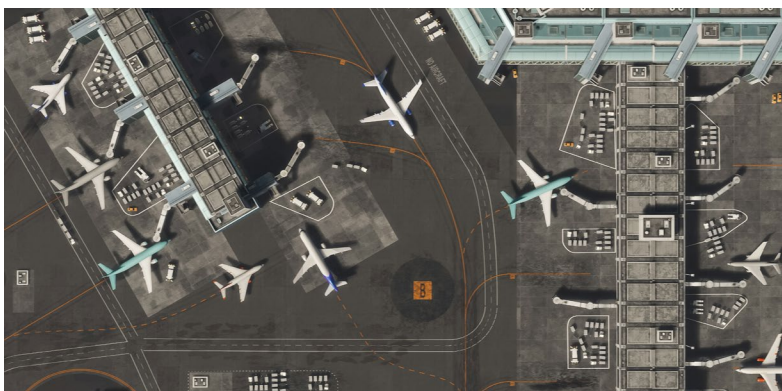
Its new microgrid employs virtually net-metered solar panels supported by five Jenbacher gensets that run on pipeline gas, offering an economical power alternative to the public grid. With black start and island mode capability, the microgrid delivers on its promise of greater reliability and resiliency while also cutting emissions.

A greener solution

The airport's new power plant is owned by Peoples Natural Gas, the largest natural gas distribution company in Pennsylvania. The solar array at the plant is owned by IMG Energy Solutions—a Pennsylvania-headquartered company that addresses the evolving needs of its customers for reliable, innovative, and environmentally conscious energy solutions. Together, Peoples Natural Gas and IMG own the microgrid. Key to the project's success was a IMG's focus on offering a distributed portfolio of highly efficient, reliable, pipeline gas-fueled power generation assets along with a swiftly growing portfolio of solar energy solutions.

Peoples Natural Gas and IMG turned to INNIO Group's authorized distributor Northeast Energy Systems (NES-WES) to provide and integrate the microgrid, centered on five Jenbacher J624 gensets. Selected for the project due to their high electrical efficiency, the Jenbacher units contribute approximately 4.4 MW of electrical output each to the new 21.8 MW plant.

NES-WES provided engineering, field project management, and commissioning support during the project design, installation, and startup. The plant was commissioned in May 2021. NES-WES continues to provide planned and corrective maintenance activities for the plant.



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Results

Delivering black start and island operation capability, the new microgrid provides all of the energy needed for the airport. In fact, because the microgrid generally generates more power than the airport needs, excess energy is fed back into the public grid. This energy self-sufficient solution is bringing added reliability and resiliency to the U.S. transportation sector while also reducing environmental emissions in the region.

The project has reduced CO_2 emissions regionally by approximately 6,000,000 pounds in 2022.[1]

In addition, a real-world example underscores the resilience of this solution. In early 2025, fires at two separate substations disrupted the airport's backup power feeds. By disconnecting from the compromised grid and switching to island mode, the microgrid enabled uninterrupted airport operations, preventing a five-hour shutdown.

[1] according to the customer

Key technical data

Installed engines	5x J624
Energy source	Pipeline gas
Electrical output	21.8 MW
Electrical efficiency	44.7%
Commissioning	2021

Video:
Jenbacher powered microgrids—
When reliable power supply is key

Customer benefits

The new microgrid is delivering substantial benefits including:

- Significant energy cost savings of about $1 million annually. Plus, the ability to sell excess energy back to the public grid.
- Excellent overall plant efficiency of nearly 45%
- Enhanced reliability, availability, and resiliency
- A greener solution that significantly reduces CO_2 emission regionally
- Service team with fast response for spare parts and repairs as needed

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