

## DATA CENTER OPERATIONS CASE STUDY

### Reliable Power with an Unreliable Grid

#### Case Study 1: Is utility power available or reliable?

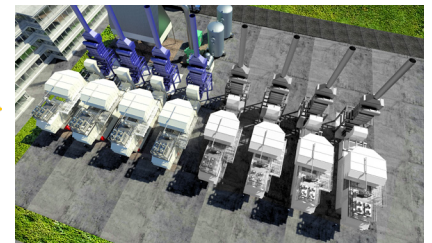
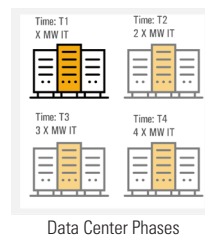
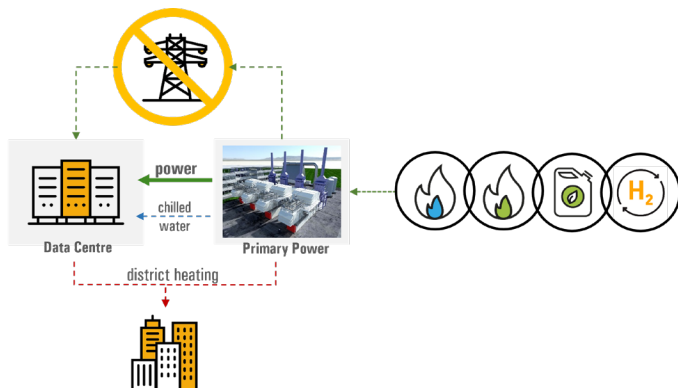
In many Tier 1 locations for data centers, the growth of data center construction has outpaced power generation and power transmission planning resulting in a power deficit. To overcome this challenge, a microgrid solution consisting of high efficiency, high power density gas turbines in a combined cycle power plant configuration can be deployed.

#### Stationary, scalable, high power density, high efficiency primary power plant

We offer sustainable and high efficiency configurations that align with the phases of data center construction. Colocation data centers are often built in multiple stages to optimize cash flow and capital investment. Our microgrid, or primary power plant, provides maximum resiliency and efficiency throughout the entire data center construction process.



The primary power plant's redundancy is carefully selected to match the data center's power, resiliency and efficiency needs at each construction phase. This is achieved by selecting individual power blocks, including gas and steam turbines that are suitable for the specific requirements of each phase among our modular generating units – Power Generation Modules (PGM) ranging from 6 MW to 8 MW or larger 15 MW units. The same modular approach applies to the combined cycle system.



# Solar® Turbines

A Caterpillar Company

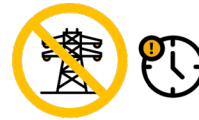
Powering the Future Through Sustainable, Innovative Energy Solutions

The gas turbine operation can be equipped with a battery energy storage system depending on the desired operational strategy. This solution offers several benefits such as:

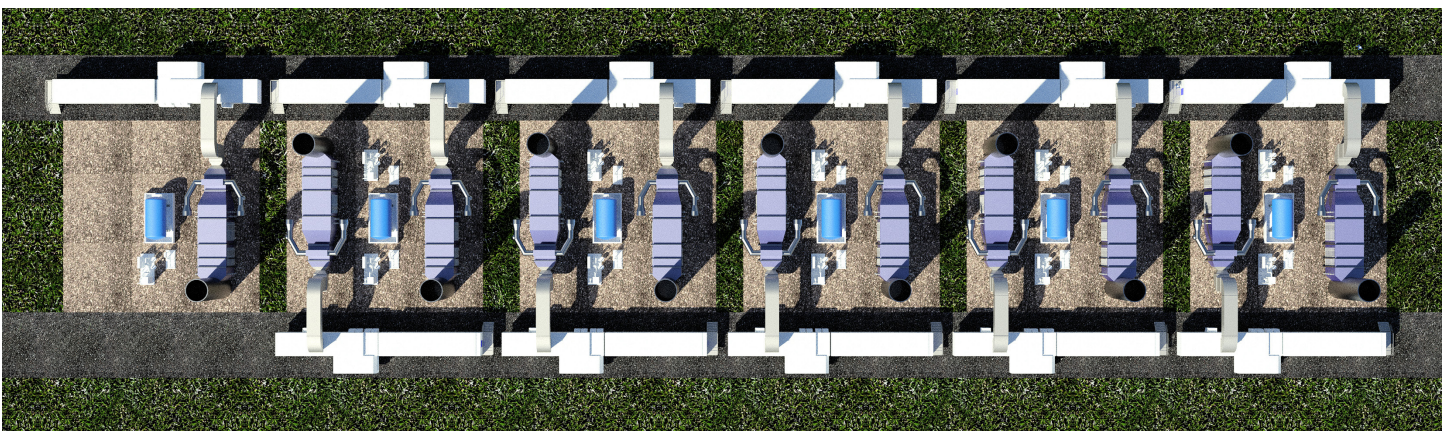
- A smaller footprint (40% smaller than a typical gas engine solution)
- Lower total cost of ownership which can benefit your customers
- Ability to run in island mode, in parallel, and to support the utility grid with capacity or frequency restoration service
- Ability to take 100% load blocks
- Ultra low NOx emissions in both gas and liquid
- Lower greenhouse gas emissions while running on natural gas due to the high efficiency of the solution and very low methane slippage
- Ready for green fuels (HVO, RNG/biomethane, H2)

## Mobile, modular, high power density primary power plant

When the redeployment of the power generation asset is essential, a solution may be to install a mobile primary power plant. The power plant grows with you since mobile units can be added as the data center expands. The Solar® Mobile Turbomachinery (SMT) is available in two power ranges, 6 MW (SMT60) and 16.6 MW (SMT130). These SMT units include the same features as Solar gas turbines – green fuel ready, full load block acceptance, low NOx emissions, and island mode availability, and they are available in 50 Hz and 60 Hz configurations.



Combined Cycle Modules	2 x GT + ST	4 x GT + ST
Based on PGM60	15 MWe	30 MWe
Based on PGM70	20 MWe	40 MWe
Based on PGM130	40 MWe	80 MWe
Based on Titan™ 250	55 MWe	110 MWe
Based on Titan™ 350	90 MWe	180 MWe



Data center mobile primary solution based on 11 x 16.5 MW mobile units (SMT130)

## Corporate Contact Information

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