

Case Study of Gas Turbine Power Usage vs. Grid Electric: IT Data Center



Data centers are part of the critical infrastructure that powers the information world. They are characterized by high and continuous power demand and their need for constant climate controls; HVAC power allocation is mission-critical to prevent CPU arrays and data hubs from overheating. Distributed generation and combined heat and power systems can provide considerable benefits IT Data Centers: 1) by reducing the cost of power, 2) by reducing the carbon footprint, relative to grid electric (about 50% non-cogenerated gas turbine and other gas combustion), and 3) by providing greater reliability for a sector that needs to never be offline. Moreover, gas turbine-powered, on-site power can provide up-scale and down-scale without the need for dramatic infrastructure changes. Below is a power consumption chart in the IT Data Center/Server Farm vertical, with respective gas cost allocations, in a cost scenario assuming a Flex Energy GT1300S gas turbine.

Flex Energy GT1300S Financed over 10 years		1,300,00 Watts		\$ 0.048394 fuel cost per kWh	
	Sub-Category	Percentage (1.3 mW)	Power Draw (kW)	Grid Electric Cost	GT1300S - 10 Year
Total Power Consumption	Site Infrastructure	50%	650000	\$75000	\$3,1456.10
	Equipment	5%	65000	\$7500	\$3,145.61
	Storage	5%	65000	\$7500	\$3,145.61
	High-End Servers	2%	26000	\$3000	\$1258.24
	Mid-Range Servers	4%	52000	\$6000	\$2,516.49
	Volume Servers	34%	442000	\$51000	\$21,390.15
Micro-turbine Monthly Payment					\$23,000
Maintenance Charge				Not Applicable	\$17,000
Monthly Gas Cost (\$.45/therm)					\$45,000
Total Monthly Payment				\$150,000	\$85,000

