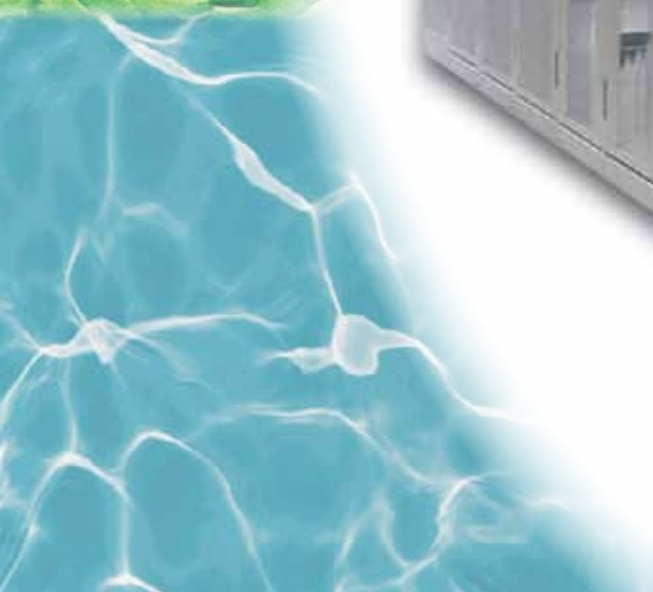




# Secure Power

Uninterruptible Power Sources



## Secure Power

Capstone's Secure Power is the most reliable and affordable microturbine-powered UPS available. Ideal for mission-critical loads, Secure Power produces clean, IT-grade power that offers eight 9s of reliability. We offer two Secure Power products: **UPSource**, which offers efficient primary power that runs parallel to, yet independent of, the grid, and **Hybrid UPS**, which offers dual-conversion power electronics via three modes – High Efficiency, Standard UPS, and Emergency Backup. Fuel efficiency up to 90%, minimal maintenance and no indoor floor space means low costs.



### Secure Power: Microturbine-Powered UPS

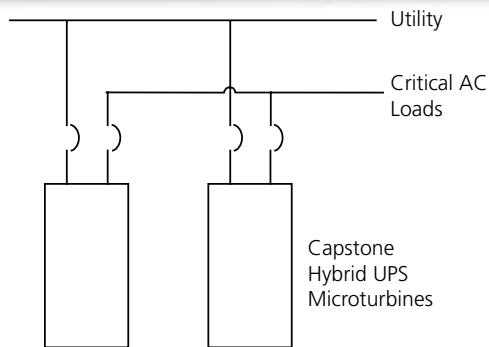
- Clean-and-green (ultra-low exhaust emissions)
- 99.999999% availability
- IT-grade power
- Up to 90% fuel efficient
- Multi-fuel capable
- Multiple power modules – no single point of failure
- Low maintenance – only one moving part, no coolants or lubricants
- No indoor floor space required (and associated costs)
- Expands to match load growth
- Reduces energy cost
  - Combined heat and power (CHP) – uses waste heat for building heating
  - Combined cooling, heating, and power (CCHP) – uses absorption chiller for air conditioning

*Reliable power when and where you need it. Clean and simple.*

# Hybrid UPS

- Dual-conversion power electronics
- Three operating modes
  - High Efficiency
  - Standard UPS
  - Emergency Backup

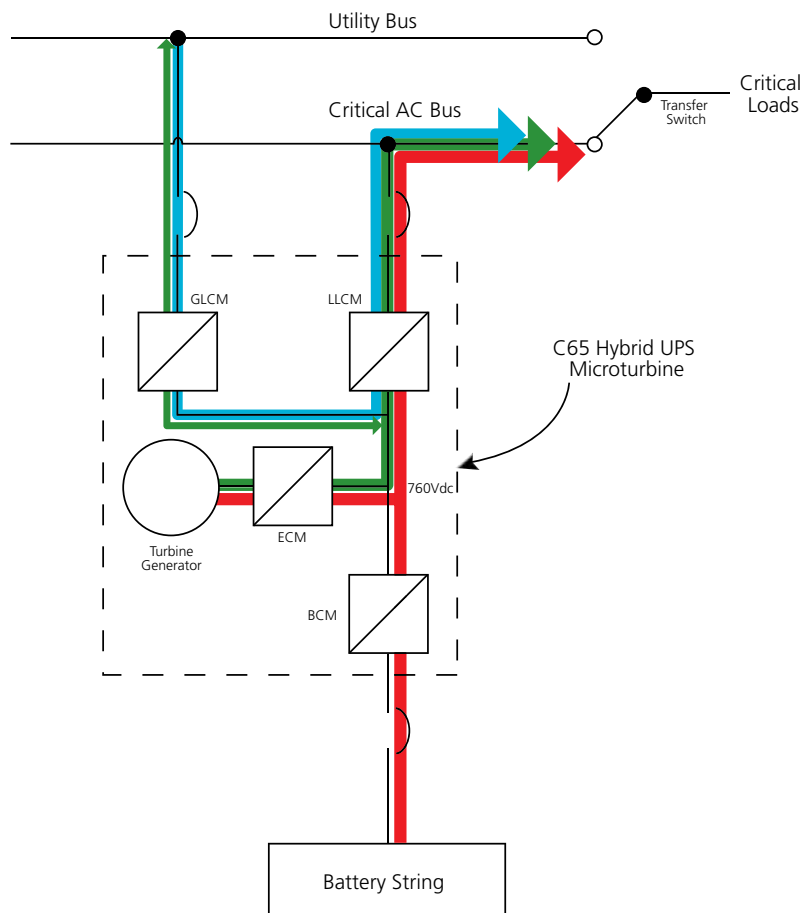
## The Hybrid UPS Solution



In the Hybrid UPS solution, the utility is normally connected to the critical bus through the microturbines. Power for the critical loads can be supplied from the microturbine, from the utility, or a combination of both.

## How It Works

- High Efficiency Mode
- Standard UPS Mode
- Emergency Backup Mode

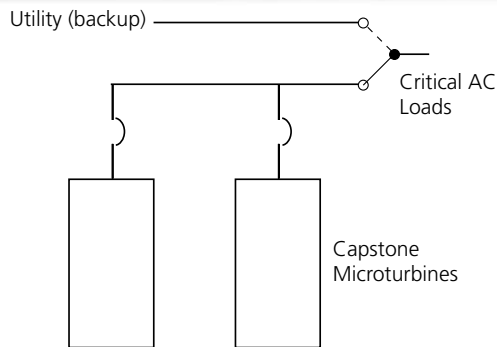


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Note: During Extended outages, microturbines can provide power

# UPSource

- Microturbines are primary power
- Operates independently of utility 24/7
  - Stays synchronized with utility
  - Seamless transfer to utility grid when needed

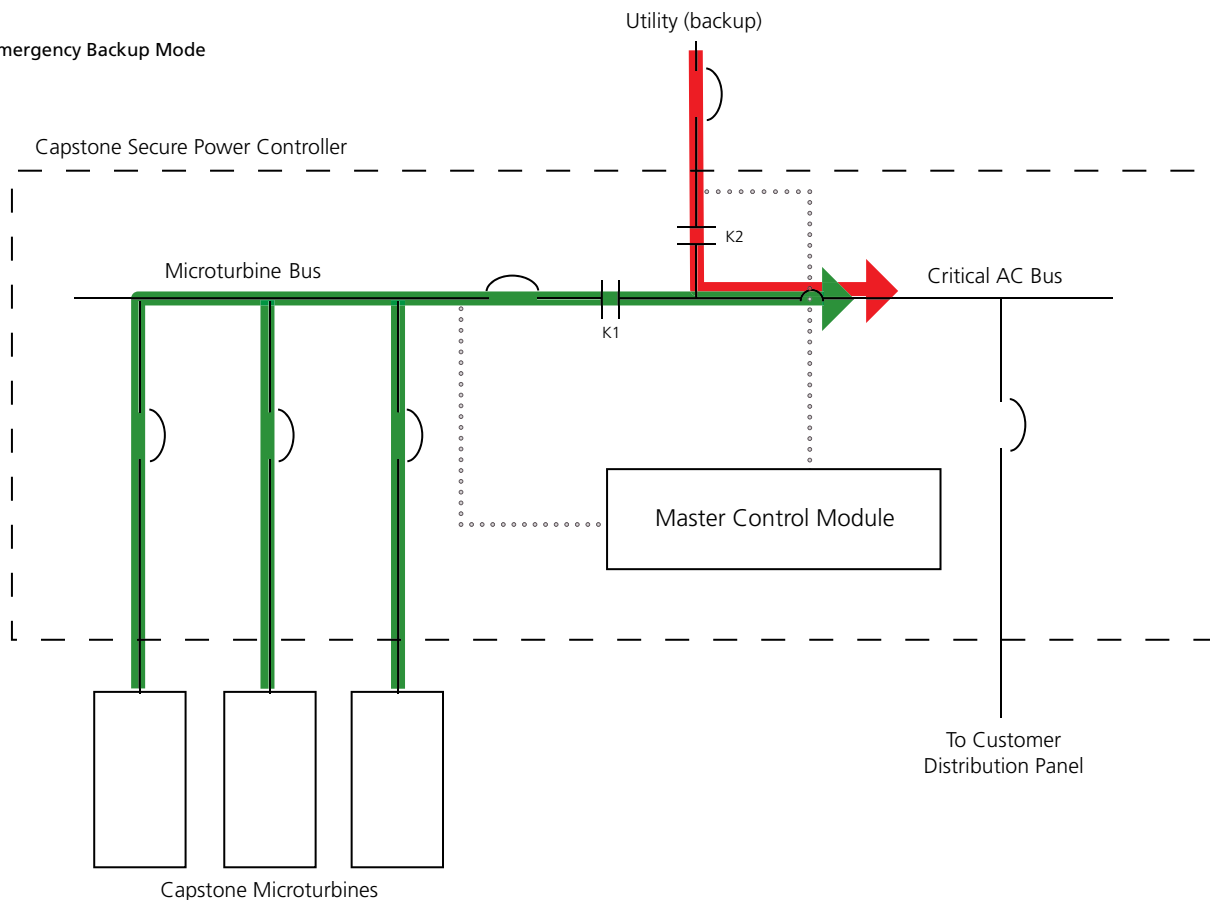
## The UPS Solution



In the UPSource solution, microturbines provide primary power to the critical loads. The system will seamlessly switch to utility power as the backup in the unlikely event that the microturbines are not able to support the load.

## How It Works

- Prime Power Mode
- Emergency Backup Mode



Secure Power's microturbines generate power and heat. Use both and you'll minimize your data center's energy bills, maximize efficiency, and reduce greenhouse gas emissions.

**CCHP and CHP**

With Secure Power in a CCHP application, the microturbines' clean exhaust is used to drive an absorption chiller to meet your data center's air conditioning needs. Or, use Secure Power as a CHP application and the waste heat energy will support your building's heating needs.

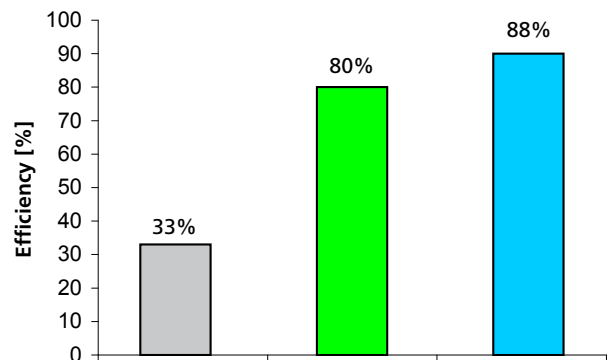
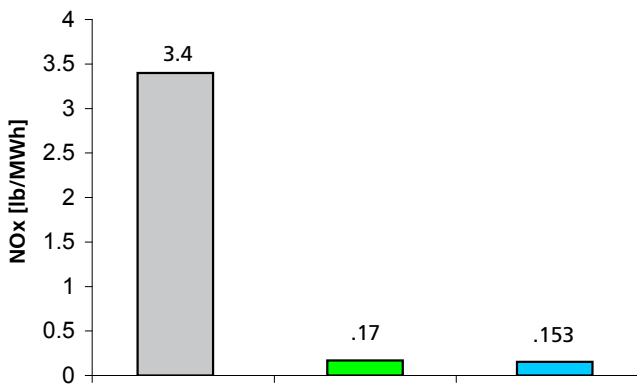
Secure Power provides air conditioning that's virtually electricity-free and cuts operating costs. You can automatically switch between cooling and heating as needed with the advanced functionality of the Secure Power Capstone microturbines.

Secure Power CCHP and CHP solutions: Cooling when it's hot, heating when it's not, and reliable, affordable power every day.



**Secure Power: Cleaner and More Efficient**

Traditional UPS Using Average US Power Plant
  Capstone CHP
  Capstone CCHP



Electrical Characteristics	UPS-80	UPS-250	UPS-580	C65 Hybrid UPS
kVA/kW <sup>(1)</sup>	83/65	249/195	581/455	83/65
Max Output Current <sup>(2)</sup>	100A RMS	300A RMS	700A RMS	100A RMS
Expandable to kVA/kW	332/260	664/520	664/520	830/650
Voltage	400–480 VAC			
Electrical Service	3-phase, 4 wire			
Frequency	50/60 Hz			
Electrical Output Type	IGBT Inverter for all models			
Current THD	5%, IEEE 519 compliant			

Fuel Characteristics <sup>(3)</sup>			
Natural Gas (HHV)		30.7–47.5 MJ/m <sup>3</sup> (825–1,275 BTU/scf)	
Fuel Inlet Pressure		1.4 to 69 kPa gauge (0.2 to 10 psig)	

- ### Certifications
- Certified to UL 2200 and UL 1741 for natural gas operation (UL files AU2687, E209370)
  - Complies with IEEE 1547 and meets statewide utility interconnection requirements for California Rule 21 and the New York State Public Service Commission
  - Models available with optional equipment for CE Marking

NO <sub>x</sub> Emissions <sup>(4)</sup>	
Standard Models	< 9 ppmvd (19 mg/m <sup>3</sup> )

(1) Nominal full power performance at ISO condition: 59°F, 14.696 psia, 60% RH and 480V  
(2) Values are for base system (no expansion)  
(3) Contact Capstone for alternate fuels  
(4) Exhaust emissions for standard natural gas at 39.4 MJ/Nm<sup>3</sup> (1,000 BTU/scf) (HHV) corrected to 15% O<sub>2</sub>  
Specifications are not warranted and are subject to change without notice.

