Comet

40/50/65/80/100/125/150 kVA

Power Protection for Mission Critical Environments

Advanced Features

- Whisper quiet operation
- High reliability transformerless topology
- Very high efficiency for lowest operating costs
- True on-line double conversion topology for complete isolation from utility
- Small footprint
- Integrated input filter for distortion free power
- Power surge stabilization for managing start-up of IT equipment
- Cross platform power management software (SNMP)
- Web based monitoring options
- Advanced battery management for maximum battery life
- Protected by factory trained MGE Field Service Engineers

Critical load protection from the world's largest three phase UPS manufacturer

Engineered for optimum reliability – Whether you are operating an enterprise system or an air traffic control tower, MGE understands the concept of critical power. That's why more people worldwide use MGE for critical three phase power solutions than any other UPS company. Ideal for computer and network applications, the **Comet** offers the advantage of a **centralized power source** while still allowing **individual control of servers over the network.**

Packaged in a **space-saving footprint** complete with maintenance bypass, harmonic elimination input filter, and options available to suit any user, the **Comet** is the right choice for your critical power application.

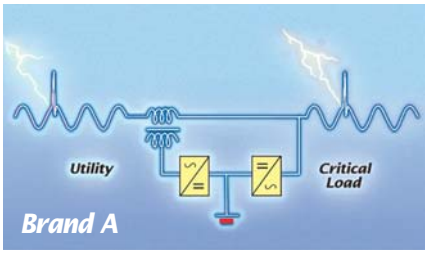
Installed in over 3,500 critical applications

MGE UPS SYSTEMS

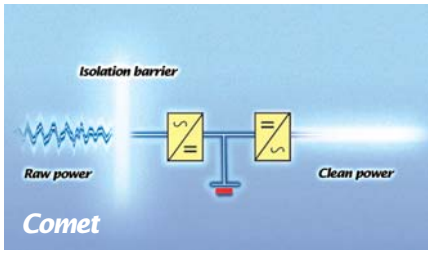
THE UNINTERRUPTIBLE POWER PROVIDER

True On-line Topology that Provides 100% Isolation from Raw Utility Power

The Comet's on-line double conversion topology (the only recognized true "on-line" topology for use in high reliability applications) uses the rectifier & inverter to isolate devices on the UPS output from the dangers of raw utility power. Other conversion topologies allow poor power conditions such as low voltage surges to travel through the UPS and reach devices on the UPS output. Double conversion topology also allows the UPS to regulate the output frequency without switching to battery power, a necessity for continued reliable operation with a generator.



Other conversion topologies have limited isolation from the dangers of utility power, letting raw utility power flow right through the UPS to devices on the output.



Double conversion topology completely regenerates 100% of the output power from the inverter ensuring that only clean, regulated power is fed to the output. The inverter is an effective isolation barrier against poor power conditions. No raw utility power ever reaches sensitive devices on the output.

High Reliability Transformerless Topology

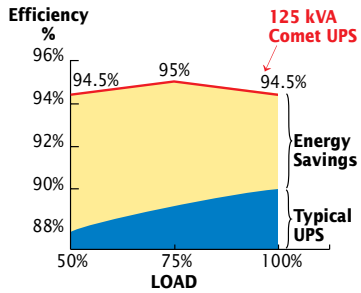
The Comet uses a state of the art transformerless topology which eliminates the requirement for an output transformer found on just about all UPSs. The result is a 100% high frequency switching design that offers benefits including:

- Increased efficiency due to no large magnetic losses
- Increased reliability and the ability to place voltage conversion transformers inside the UPS cabinet for significant space savings

Cost Savings that Matter

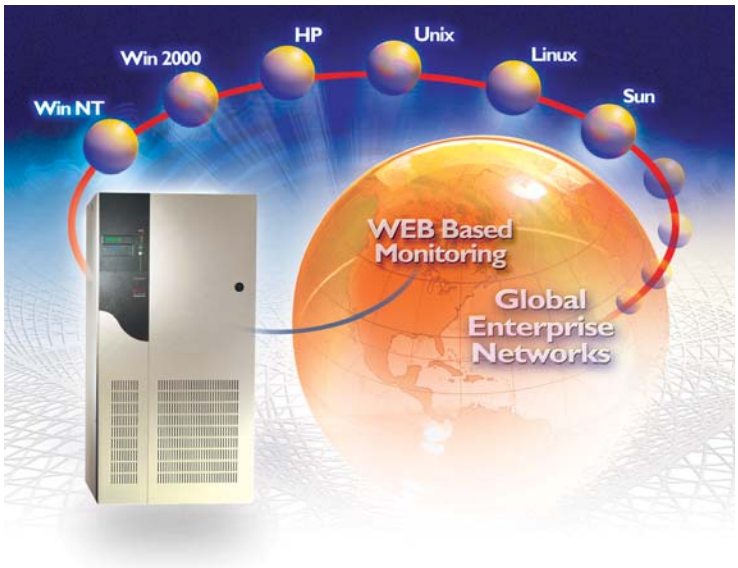
Energy efficiency: With efficiencies as high as 95% for non-linear computer loads, the Comet can deliver significant operating cost savings (close to the value of the UPS over a few years). Furthermore, most UPSs operate at approximately 50% of their rated output where their efficiency drops sharply. Comet's efficiency stays virtually constant from 50% to 100% of rated power ensuring your savings.

Fact: *A 3% energy efficiency advantage can save the average user $20,000 in 3 years.*



Energy savings can equal the value of the UPS in as little as a few years! This often makes Comet *the least expensive choice in the longrun.*

Versatile Power Management Software



Web Monitoring Module

MGE's new web based monitoring module makes supervising your critical power system easier than ever! The system features detailed alarm notification and operates independently of any servers or networks.

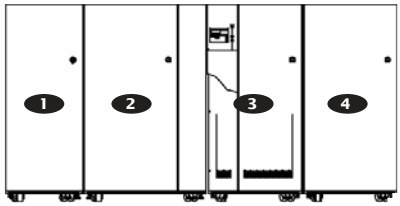
MGE *Solution-Pac WAN* software (included with the Comet) simplifies centralized power management of multiple servers.

Solution-Pac Power Management

Featuring true TCP/IP based software with a distributed architecture, *Solution-Pac WAN* performs critical power management functions on just about any platform with any operating system.

- Automatic shutdown/reboot of an unlimited number of servers
- View power system status from any point on the WAN
- Distributed, TCP/IP-based architecture for universal o/s compatibility
- Trap reception acknowledgement minimizes network bandwidth usage by UPS
- Integration with Enterprise-wide management systems
- Pager or E-mail notification of power events
- Load shedding for optimized use of backup power (UM-Switch option)
- Environmental monitoring and management (UM-Sensor option)

Comet System Components



Comet UPS System

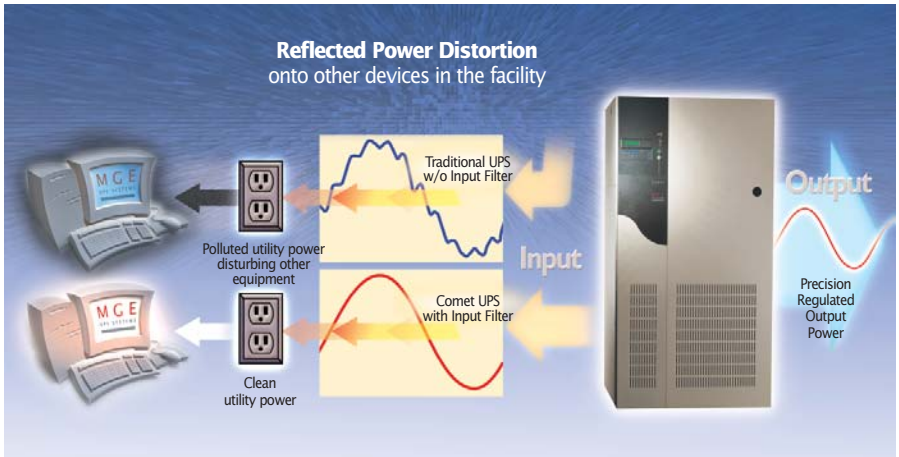
1. External Maintenance Bypass Cabinet: 2 or 3 circuit breaker wrap around maintenance bypass
2. Distribution Cabinet (84 pole distribution or submain breakers)
3. UPS Module (includes input filter & voltage conversion transformers if required)
4. Battery Cabinet: (includes internal disconnect)

All Comet UPSs are manufactured in MGE's Costa Mesa, California flagship plant. Before being put on site each unit is individually tested and operated for four to eight hours ensuring reliable on site operation.

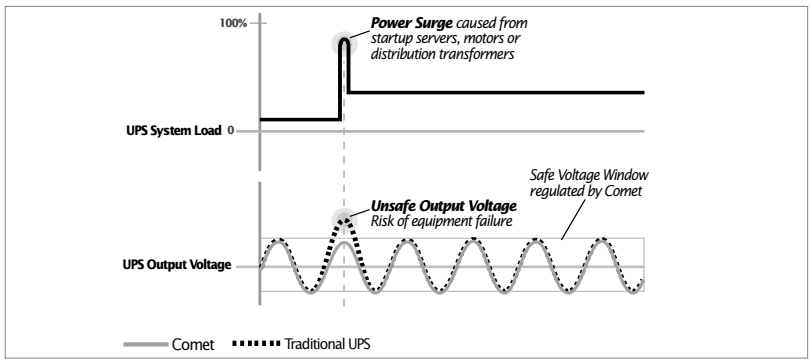
Integrated Input Filter Keeps Facility Power Clean

While UPSs provide clean power on the output, they can often have an adverse affect on input (utility) power, reflecting powerful harmonics onto the utility and disturbing other equipment sharing the facility power. The Comet's integrated input filter tames reflected harmonics, keeping the input power clean and safe for other equipment.

- Clean input and output power
- Utility power is kept clean for all devices in the facility
- No hidden costs for input filter "options"

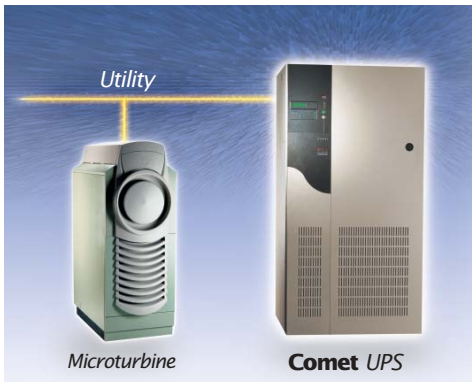


Load Surge Management Technology



Computer power supplies and distribution transformers draw extreme surge currents when they are powered up. This often causes sags and surges on the UPS output compromising other devices already on UPS power. To eliminate this frustrating phenomenon the Comet UPS was designed to instantaneously provide 100% of its rated power while still precisely regulating the output voltage, eliminating disturbances to other equipment during start-ups.

Integrated Microturbine Power Generation System



For applications requiring a separate power generation source either for prime power or backup power, the Comet can be paired with a microturbine. Microturbine generators offer unique advantages including pollution free operation, operation of most fuel sources including natural gas, very quite operation and can operate for years at a time with no major maintenance requirements. Combining the UPS with the Microturbine will significantly reduce the UPS energy storage requirements resulting in a smaller foot print and lower maintenance costs.

The benefits of an integrated microturbine/UPS solution include:

- Higher inherent reliability
- Reduced energy storage
- Extended battery life
- System cost reduction
- Modularity, scalability and redundancy
- Fuel flexibility

Technical Specifications

Rated Power	40 kVA/32 KW				50 kVA/40 KW				65 kVA/52 KW				80 kVA/64 KW			
Input Voltage (V)	208	480	480	600	208	480	480	600	208	480	480	600	208	480	480	600
Output Voltage (V)	208	208	480	208	208	208	480	208	208	208	480	208	208	208	480	208
Nominal Input Current (A) on Bypass	111	48	48	39	139	60	60	48	180	78	78	63	222	96	96	77
Maximum Input Current (A)	131	57	57	38	164	71	71	56	212	92	92	74	261	113	113	91
Maintenance Bypass Switch Frame Size	100	100	100	100	100	100	100	100	150	150	150	150	150	150	150	150
UPS Output Current (A)	111	111	48	111	139	139	60	139	180	180	78	180	222	222	96	222
System Efficiency 100%	90	90	93	90	90	90	93	90	91	92	94	91	91	91	94	91
Full Load Heat rejection (000's BTUs)	16.9	15.2	10.3	16.9	16.9	15.2	10.3	16.9	17.6	15.4	11.3	17.6	21.6	18.9	13.9	21.6
Module Dimension Height"	66.7	66.7	66.7	66.7	66.7	66.7	66.7	66.7	66.7	66.7	66.7	66.7	66.7	66.7	66.7	66.7
Width"	32.75	32.75	32.75	59.29	32.75	32.75	32.75	59.29	32.75	32.75	32.75	59.29	32.75	32.75	32.75	59.29
Depth"	33.42	33.42	33.42	33.42	33.42	33.42	33.42	33.42	33.42	33.42	33.42	33.42	33.42	33.42	33.42	33.42
Weight (lbs)**	1,760	1,360	880	2,460	1,760	1,360	880	2,460	2,115	1,600	950	2,690	2,115	1,590	970	2,190

Rated Power	100 kVA/80KW				125 kVA/100KW				150 kVA/120K			
Input Voltage (V)	208	480	480	600	208	480	480	600	208	480	480	600
Output Voltage (V)	208	208	480	208	208	208	480	208	208	208	480	208
Nominal Input Current (A) on Bypass	256	109	106	91	316	134	130	109	378	160	155	131
Maximum Input Current (A)	301	128	125	107	371	158	154	129	444	189	182	154
Maintenance Bypass Switch Frame Size	240	240	240	240	240	240	240	240	240	240	240	240
UPS Output Current (A)	278	278	120	278	347	347	150	347	416	416	180	416
System Efficiency 100%	91	93	95	91	90	92	95	90	90	92	94	90
Full Load Heat rejection (000's BTUs)	28.3	22.3	15.4	28.3	38.2	30.7	20.8	38.2	50.7	41.6	26.3	50.7
Module Dimension Height"	66.7	66.7	66.7	66.7	66.7	66.7	66.7	66.7	66.7	66.7	66.7	66.7
Width"	69.29	42.75	42.75	69.29	69.29	42.75	42.75	69.29	69.29	42.75	42.75	69.29
Depth"	33.42	33.42	33.42	33.42	33.42	33.42	33.42	33.42	33.42	33.42	33.42	33.42
Weight (lbs)**	3,400	2,450	1,450	3,400	3,400	2,450	1,450	3,400	3,400	2,450	1,450	3,400

* 600 VAC output available
** Consult installation drawings for specific weights

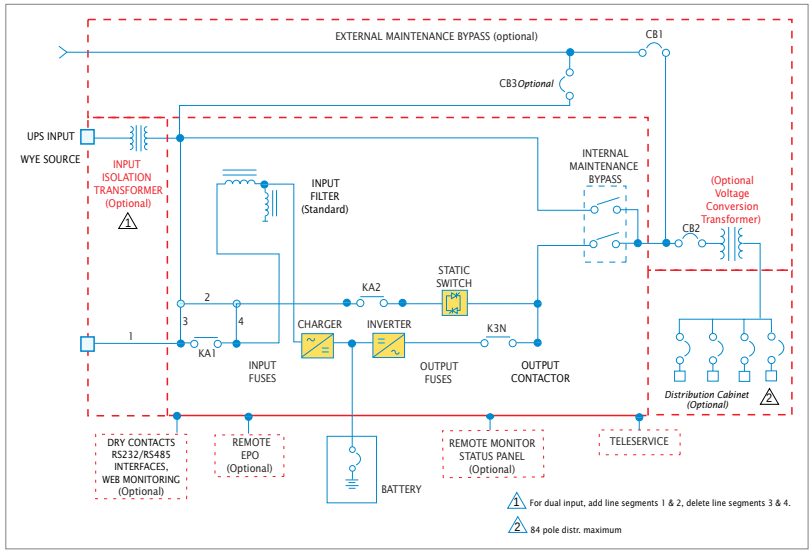
Battery Options

Back up time (minutes)
100% Load / 50% Load
Longer duration batteries available – call factory for details

40kVA	50kVA	65kVA	80kVA	100kVA	125kVA	150kVA	Height"	Width"		Depth"	Weight (lbs)
13/30	10/25	6/16	–	–	–	–	66	26		33	1,878
33/85	23/60	17/45	12/35	8/25	5/18	–	66	32		33	2,750
47/110	36/90	25/61	20/47	15/36	10/27	7/22	66	48		66	3,350
65/150	52/110	36/85	28/65	19/51	13/40	9/30	66	48		33	4,265
–	60/140	45/100	31/90	25/60	18/46	14/36	66	64	(2x32)	33	5,500
–	–	60/140	46/110	36/90	26/65	21/52	66	96	(2x48)	33	6,700
–	–	–	56/130	42/100	31/80	25/61	66	96	(3x32)	33	8,250
–	–	–	60/155	56/110	37/90	30/70	66	66	(2x48)	33	8,530
–	–	–	–	60/135	46/105	36/90	66	144	(3x48)	33	10,050
–	–	–	–	–	60/150	51/110	66	144	(3x48)	33	12,795

1) All MGE battery cabinets have an internal battery disconnect
2) Cabinets may be ordered adjacent to the UPS or remote
3) Dual feed 208/208 & 600/208 configurations require additional cabinet
4) Max. DC current (ADC): 50 kVA (123 A), 65 kVA (197A), 80 kVA (197), 100 kVA (235 A), 125 kVA (235 A),150 kVA (352 A)
5) Specifications are for 77˚F/ 25˚C
6) Longer duration battery banks available on request

Comet Schematic



Comet Technology

Standard Features

- True on-line operation
- Digital Power Quality logic
- High efficiency (up to 95%)
- IGBT PWM inverter
- Microprocessor-controlled operation
- Advanced battery monitoring system
- Modular power assemblies
- Computer-aided diagnostics
- Maintenance bypass switch
- LCD display (multi-lingual)
- Input harmonic elimination filter
- Top and bottom cable entry
- Single input
- UL 1778 and cUL listed
- FCC compliant

Environmental Specifications

- Audible noise: 63 dBA @ 3'
- Operating temperature: 0˚C to 40˚C
- Relative humidity: 0 to 95% (no condensation)

AC Power Input Rating

- Voltage: 600,480,220,208 VAC ±15%
- Phase: 3ø, 3 wire plus ground
- Frequency: 60 Hz ± 10%
- Surge tolerance: meets IEEE 587/ ANSI C62.41
- Up to 0.98 power factor

AC Power Output Rating

- Voltage: 480 VAC 3ø, 3 wire plus ground; 208/120; 220/127, 480/277, 600/346, 3ø, 4 wire plus ground
- Frequency: 60 Hz ± 0.1% when bypass not available
- Power: Rated kVA @ 0.8 power factor
- Voltage regulation: ± 1% steady state; ± 6% for a 100% step load
- Voltage recovery time: 16.6 msec. (one cycle)
- Voltage distortion: 1% THD for linear loads, <3.5% THD for non-linear loads with crest factor of 3.5
- Unbalanced load: Up to 100% 120˚ ± 3% maximum angle displacement, ± 2.5% maximum voltage deviation

Bypass Input

- Bypass configurable as single or dual input

Options

- Ethernet / SNMP Network connection kit
- RS232, RS485 & dry contact communications cards
- UM Sensor multi input/output communications card
- Web based monitoring
- *Monitor Plus* remote display
- Extended operation battery banks
- External battery disconnect
- External maintenance bypass
- Power distribution unit
- External static transfer switch
- Dual input
- Seismic brackets

MGE UPS SYSTEMS THE UNINTERRUPTIBLE POWER PROVIDER

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