

SMARTMOD UE SERIES

Lightweight Enclosure



KEY FEATURES

- Lightweight walk-in steel structure — low maintenance, high quality design
- Superior weather resistance designed to withstand wind loads up to 125 mph and beyond and snow loads up to 200 lbs/ft²
- Custom exteriors — widely accepted in most municipalities and designed to blend with the environment
- Thermal management — “free cooling” utilizes patented flexible air intake hydrophobic filter vent option with standby HVAC for high temperature and emergency conditions
- Noise reduction kits available to meet most municipal requirements
- Vertiv™ offers turnkey packages for custom configurations and installation needs

Versatile, low-cost SmartMod UE Series Lightweight Enclosures protect vital electronics from extreme weather conditions at aggregation nodes throughout your telecommunications network.

Description

The SmartMod UE Series Lightweight Enclosure, constructed entirely of lightweight steel, ensures vital electronic equipment is protected from vandalism and environmental damage. The interior walls and ceiling are covered with a non-metallic, non-reflective wall board, and the floor is finished with an industrial grade non-slip floor tiling. The SmartMod UE Series Lightweight Enclosure comes standard with R12 insulation. Due to the small size of these enclosures, special building permits are not required in most municipal regions. The standard painted steel finish is available in off-white and gray-green. The standard exposed aggregate finish is also available in several textures, colors or brick veneers to match existing environments. Custom finishes are available upon request.

Application

The SmartMod UE Series Lightweight Enclosure is designed to house and protect environmentally sensitive electronics at telecommunications sites including cellular, microwave radio, BBU pools for CRAN, digital subscriber line (DSL) and edge applications with virtualized networks.



SmartMod™ UE Enclosure

Construction

Welded galvanized steel construction provides outstanding impact and corrosion resistance. Interlocking steel panel construction, 14 gauge steel walls, floor and ceiling and 12 gauge steel ceiling joists provide superior weather resistance and protection.

- 200 lb/ft² minimum floor load; custom floor loading available to support heavier equipment
- 200 PSF (maximum) roof live and impact load
- Withstands wind speeds up to 120 mph

Protection

The powder coat finish protects against rain, sleet, snow, splashing water and damage from external ice formation, and meets GR487 Telcordia mechanical and environmental standards for telecom enclosures (720 hrs. salt fog test).

Insulation

To reduce HVAC costs, the floor is insulated with R-12 fiberglass batt, and the wall cavities and cavities between the ceiling and roof are insulated with R-12 fiberglass batt with vapor barrier. Custom "R" values available upon request.

Radiant Barrier Roof

Effective for reducing solar heat gain and reduce cooling costs, the SmartMod UE Enclosure features a radiant barrier roof constructed of 12 gauge galvanized steel in a four truss roof design with a powder coat finish. Features include taped 12 gauge galvanized seams and a rubberized roof coating applied after painting (Garna-White).

- Integrated with 1/4" steel lifting brackets at top
- Center pitched for water run-off
- Garna-Thane rubberized coating reflects 80% of the sun's radiation

Interior Finish

The interior walls and ceiling are finished with white textured Melamine panels over 3/4" gypsum board (1 hr. fire-rated).

Up to 12" Tall Base

To accommodate antenna feeders, the base includes plinth with removable steel cover plates on front and back. Fork lift tubes on front and back are also included.

Access Doors & Hardware

For security and easy access, the cabinet is equipped with an 18 gauge galvanized steel commercial grade insulated door with an outward opening of 30" x 84" (3070) and a 16 gauge galvanized steel frame. Hardware includes:

- Schlage dead bolt lock set
- (3) stainless steel hinges with non-removable pin (per door)
- Weather strip with adjustable brush weather seal
- Stainless steel threshold with brush sweep
- Stainless steel latch guard pick plate
- Door holder with positive engagement latch and rubber bumper stop
- Adjustable-hydraulic closer
- 6" aluminum drip cap above doorway

SmartMod™ UE Enclosure (cont'd)

Common Equipment Kit

We take care of all of your needs by providing a safe environment and protecting your equipment from damage.

- Motion controlled 70 W outside light
- Interior fluorescent lights
- Smoke detectors
- 4T990 Kidde fire extinguisher
- First aid kit
- Safeco eyewash station
- Door contacts for intrusion alarms
- Halo ground
- 12" cable racking
- Telecom board with fold down table
- 950 W Stego panel mount AC fan heater

Commercial AC Kit

The commercial AC kit features a 200 main PTS system with transfer provided between the primary generator and secondary outside generator connection, utilizing a Camlok style generator connector.

- Interior accessible only
- 24 distribution positions
- Mechanical interlock
- TVSS surge protection
- 30 A rectifier breakers
- 30 A HVAC breakers
- 15 A smoke detector breaker
- All associated TECK90 wiring
- DC powered lighting kit
- Alarm tie block

Grounding

The SmartMod UE Enclosure includes all associated ground cabling and follows basic principles of P.A.N.I.

- Main ground bar
- Frame ground
- Building ground
- Power plant ground
- AC service ground connection

Standards Compliance

- National Building Code: Canada, 2005
- National Building Code: USA, 2009
- ASTM A653: galvanized steel
- Welding conformance to CWB: CSA Standard W47.1 and AWS D1.2/D1.3/D1.6
- Zone 2 Seismic Compliance
- GR487 compliant for corrosion, water intrusion, ultraviolet radiation and impact resistance
- DC Power System: UL Listed 1801, cUL, NEBS Level 3
- PTS: UL891 and UL1008 compliant, CSA C22.2, CEC1998
- UL/CSA compliant climate and other miscellaneous electrical equipment
- Electrical certification as per CSA and NFPA70 (NEC) requirements
- Installation method compliant to GR1275

DC Power

NetSure™ 5100 Series

The NetSure 5100 Series, a compact 48 volt DC power solution, provides up to 600 amps of current. This system features an advanced control unit, up to (29) positions for 2000 W high-efficiency eSure rectifiers or 1500 W -48 V to +24 V converters or 2000 W solar converters, a single or dual row distribution cabinet, and hybrid and solar connectivity panels.

NetSure 721 Series

The NetSure 721 Series is a modular 48V DC and 24V DC power solution. Utilizing 3500 watt or 2000 watt high efficiency rectifiers and 1500 watt DC to DC converters, this power system provides up to 4000 amps of current for -48 volt systems and up to 520 amps at +24 volts.

Thermal Management

Vertiv™ offers flexible air conditioning systems for the SmartMod UE Series telecom shelters, protecting sensitive electronics from the elements and ensuring reliable service with minimum downtime.

Higher Availability and Lower Total Costs of Ownership

The SmartMod UE thermal management systems are flexible with five available capacities, ranging from 2 to 5 tons. For easy service access, the compressor is located on either the left or right side of the UE.

Vertiv can engineer the primary cooling system as a filtered vent Gore system with backup HVAC or as two wall mounted HVAC's with economizer option. Both thermal management options utilize outside air for cooling, and the self-contained units minimize installation time.

HVAC (Heating Ventilation & Air Conditioning)

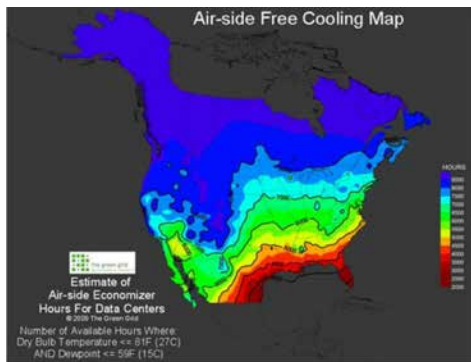
The SmartMod UE Series Enclosure comes standard with one HVAC system, and a second HVAC can be factory or field installed. The energy saving Economizer option reduces operating costs by utilizing outside air for cooling.

- One 8000 BTU to 36000 BTU HVAC system
- One fully programmable digital lead/lag controller
- No filters required
- Supports the following modes:
 - Redundancy
 - Lead/lag (for duty cycle balancing)
 - Dual capacity (up to 48,000 BTU)

GORE® Vent Fresh Air Cooling System

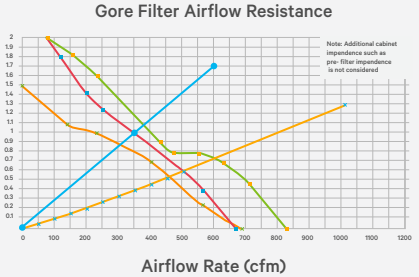
This compact free air cooling system with hydrophobic filter system is designed to control internal environments of communication shelters and provides better airflow and more consistent temperatures throughout the shelter, compliant with GR487. The central controller manages air movers for the free air cooler and the active wall mounted HVAC when needed, based on temperature threshold settings.

- 5550 W (max) DC high efficiency thermal management system:
 - Variable speed fan control for reduced noise
 - Hydrophobic filter system
 - Washable pre-filter assembly
 - Color matched to shelter
- Controls up to two external climate units
- External climate unit exercises every 10 days (duration: 5 minutes)
- Controls external heater element
- Automatic shutdown in case of smoke alarm



Free Air Cooling Zones

Gore Filter Airflow vs. Pressure Drop



6 x 6 Shelter – Energy Costs HVAC Primary Cooling vs. Gore Vent System

| HVAC primary cooling Est. Energy Costs | | | | |
|--|-----------------|---------------------|---------------|------------|
| Site Load (W) | Heat Load (W) | DC Vent Draw (W) | HVAC Draw (W) | |
| 3500 | 3500 | 288 | 2200 | |
| HVAC Draw | Hours in a year | Duty Cycle | Watt-hours/a | |
| 2200 | 8760 | 0.7 | 1349069 | |
| Watt-hours/a | / | 1000 | kWh/a | |
| 1349069 | | | 1349.0 | |
| kWh/a | \$ per kWh | HVAC Energy \$/a | | |
| 1349.0 | \$0.16 | \$1,158.8 | | |
| DC Vent Draw (W) | Hours in a year | Duty Cycle | Watt-hours/a | |
| 288 | 8760 | 0.05 | 25228.8 | |
| Watt-hours/a | / | 1000 | kWh/a | |
| 25228.8 | | | 25.2288 | |
| kWh/a | \$ per kWh | DC Vent Energy \$/a | | |
| 25.2288 | \$0.16 | \$4.04 | | |
| Total Annual Energy Usage in \$ = | | | | \$2,162.84 |

| DC Gore Filter Vent Est. Energy Costs | | | | |
|---------------------------------------|-----------------|---------------------|---------------|----------------------|
| Site Load (W) | Heat Load (W) | DC Vent Draw (W) | HVAC Draw (W) | |
| 3500 | 3500 | 288 | 2200 | |
| HVAC Draw | Hours in a year | Duty Cycle | Watt-hours/a | |
| 2200 | 8760 | 0.1 | 1927200 | |
| Watt-hours/a | / | 1000 | kWh/a | |
| 1927200 | | | 1927.2 | |
| kWh/a | \$ per kWh | HVAC Energy \$/a | | |
| 1927.2 | \$0.16 | \$308.35 | | |
| DC Vent Draw (W) | Hours in a year | Duty Cycle | Watt-hours/a | |
| 288 | 8760 | 0.5 | 1261440 | |
| Watt-hours/a | / | 1000 | kWh/a | |
| 1261440 | | | 1261.44 | |
| kWh/a | \$ per kWh | DC Vent Energy \$/a | | |
| 1261.44 | \$0.16 | \$201.83 | | |
| Total Annual Energy Usage in \$ = | | | | \$510.18 |
| Total Annual Energy Cost Savings/Year | | | | \$1,652.66 76.45% |

- Duty cycle of HVAC reduced to less to around 10%
- Energy savings of 75% to 80% when using DC vent as primary over HVAC or air conditioner
- Savings simulation based on Canada climates (Ontario State)
- Energy savings may vary depending on climate patterns for specific locations

Dimensions

| MODEL NUMBER | BAY COUNT | HEIGHT | WIDTH | DEPTH | WEIGHT** |
|--------------|--------------------|--------|-------|--------|-----------|
| WIC6x6 | 3 equipment bays* | 9 ft. | 6 ft. | 6 ft. | 4875 lbs. |
| WIC6x9 | 5 equipment bays* | 9 ft. | 6 ft. | 9 ft. | 5710 lbs. |
| WIC6x12 | 8 equipment bays* | 9 ft. | 6 ft. | 12 ft. | 7750 lbs. |
| WIC8x10 | 8 equipment bays* | 9 ft. | 8 ft. | 10 ft. | 7270 lbs. |
| WIC8x12 | 10 equipment bays* | 9 ft. | 8 ft. | 12 ft. | 8870 lbs. |

*Bay count does not include battery bay, power bay, or MDF.

**Without batteries and customer equipment.

Technical Specifications – Power Systems

| INPUT | NETSURE™ 5100 | NETSURE 721 |
|-----------------------------------|--|---|
| Nominal | Rectifier: 120 VAC, 208 VAC, 240 VAC; Solar Converter: 140 VDC to 400 VDC | Single Phase: 208/240/277 VAC (277 VAC for 3500 W rectifiers only); Three Phase: 208 VAC or 277/480 VAC (277/480 VAC for 3500 W rectifiers only) |
| Operational | Rectifier: (Single Phase) 85 VAC to 300 VAC; Solar Converter: 120 VDC to 420 VDC | 176 VAC to 264 VAC |
| Frequency | 45 Hz to 65 Hz | |
| Input Connections | Molex, terminal strip or breaker (solar) | Terminal block |
| OUTPUT | | |
| Nominal | -48 VDC (-42 VDC to -58 VDC range) | Primary: -48 VDC (-42.0 VDC to -58.0 VDC range); Secondary: +24 VDC (+24.0 VDC to +28.0 VDC range) |
| System Capacity (at 40 °C) | 400 amps at -48 VDC plus redundancy (single row); Up to 600 amps at -48 VDC plus redundancy (two row); Up to 400 amps at +24 VDC plus redundancy (two row) | 2000 amps (48 VDC) and 520 amps (24 VDC) |
| Rectifier | 2000 W (R48-2000e3) | 3500 W (R48-3500e) or 2000 W (R48-2000e3) |
| Converter | -48 VDC to +24 VDC, 1500 W (C48/24-1500) or Solar: 2000 W (S48-2000e3) | 1500 W (C48/24-1500) |
| Shelf | 70 amps to 250 amps (1 RU shelf), 19" or 23" rack mount | 438 amps (3 RU shelf) or 250 amps (1 RU shelf) |
| Distribution Panel | 400 amps | 600 amps |
| Breakers | 1 A to 300 A E/M or E breakers | |
| Fuses | 3 A to 100 A TPL/TLS and 18/100 A to 15 A GMT | |
| ENVIRONMENTAL | | |
| Operating Temperature | -40 °C to +65 °C (40 °F to +149 °F) | -40 °F to 104 °F (-40 °C to 40 °C) continuous operation |
| Storage | -40 °C to +85 °C (-40 °F to +185 °F) | -40 °F to 185 °F (-40 °C to 85 °C) |
| Humidity | 0% to 95% relative humidity, non-condensing | |
| Ventilation | Rectifiers and converters are fan-cooled front to rear | |
| STANDARDS COMPLIANCE | | |
| EMC | Conforms to FCC rules Part 15, Subpart B, Class B and EN55022 Class B, radiated and conducted | |
| Safety Compliance | UL Listed 1801, cUL, NEBS Level 3 | |

Ordering Information

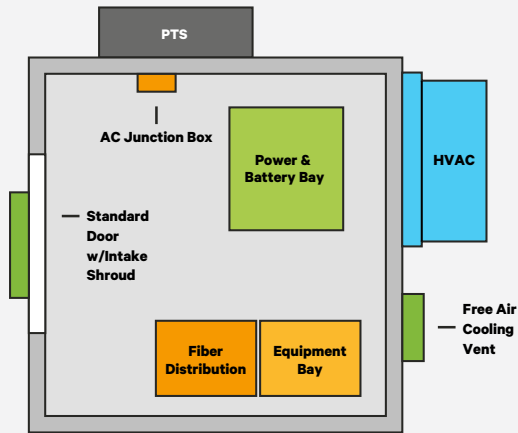
| PART NUMBER | DESCRIPTION | COLOR OPTIONS ² |
|-------------------------------------|--|-------------------------------------|
| WIC6x6 ¹ | SmartMod™ UE, 3 equipment bays | ANSI61 gray, tan (beige), off-white |
| WIC6x9 ¹ | SmartMod UE, 5 equipment bays | ANSI61 gray, tan (beige), off-white |
| WIC6x12 ¹ | SmartMod UE, 8 equipment bays | ANSI61 gray, tan (beige), off-white |
| WIC8x10 ¹ | SmartMod UE, 8 equipment bays | ANSI61 gray, tan (beige), off-white |
| WIC8x12 ¹ | SmartMod UE, 10 equipment bays | ANSI61 gray, tan (beige), off-white |
| UE EQUIPMENT RELAY RACK OPTIONS | | |
| 524961/534643 | 23" relay rack, welded, Zone 2 rated | |
| 524913/541340 | 23" relay rack, welded, Zone 4 rated | |
| 520233 | Heavy duty swing frame (right or left hand hinge) 23 in. | |
| PC00438 | Light duty swing frame (left hand hinge) 23 in. | |
| POWER OPTIONS | | |
| 582137100 | NetSure™ 5100 -48 V DC power system, 40 A to 600 A, fully configured | |
| 582127000 | NetSure 721 48V DC & 24V DC power system, 100 A to 4000 A | |
| M830BNA | NCU 3.0+ controller, 1 x 2 RU | |
| M830D | NCU 3.0+ controller, 2 x 2 RU | |
| M820DNA | ACU+ controller | |
| 1R483500E | 3500 Watt eSure™ rectifier | |
| 1R482000E3 | 2000 W eSure rectifier | |
| 1C48241500 | 1500 W -48 VDC to +24 VDC converter | |
| 1S482000E3 | Solar converter, 2 kW, high efficiency | |
| 588705000 | Power shelf for 3 RU rectifiers and converters | |
| 588705300 | Power shelf for 1 RU rectifiers and converters | |
| BATTERY & BATTERY BAY OPTIONS | | |
| 520209 | 700 Ah battery tower, each with cabling and termination (size for 700 Ah front access batteries) | |
| 2379 – CDN004 | 510 Ah/465 Ah battery tower each with cabling and termination (size for 170 Ah front access batteries) | |
| 2411 – CDN085 | 100 Ah front access 48 VDC VRLA battery string | |
| 2411 – CDN121 | 155 Ah front access 48 VDC VRLA battery string | |
| 126111 | 170 Ah front access VRLA battery 12 V cell (four required to make 48 VDC string) | |
| 241264760 | 1600 Ah front access 100G33 GNB 48 VDC battery string | |
| 588820200 | Battery rack, -48 V, 23" | |
| PTS (POWER TRANSFER SWITCH) OPTIONS | | |
| Internal PTS | 100 A, 200 A or 400 A 30-position load center mounted on rear wall of enclosure | |
| External PTS | 100 A, 200 A or 400 A 30-position load center, set flush with front surface wall of enclosure to right of door | |

¹ Each SmartMod UE models are ordered under a single custom-configuration part number that will be assigned once final configuration and layout have been approved.

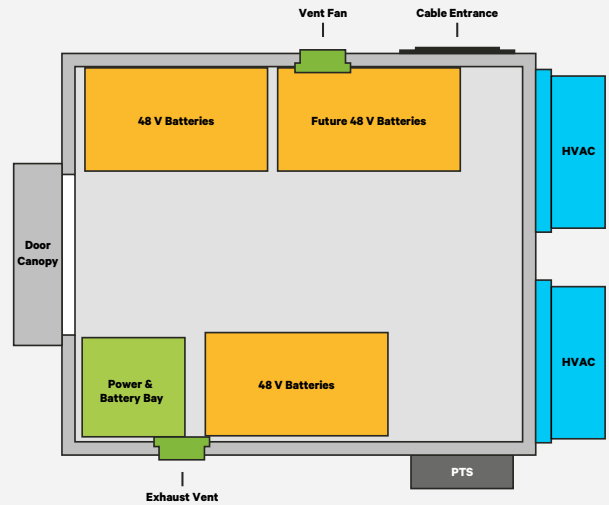
² By default, all SmartMod UE models come standard with off-white, beige or industrial gray color and standard exposed aggregate finish. Other standard and custom finishes are available upon request. This must be determined at the time of order. When a color is chosen, the following items will be affected: external PTS, door, HVAC, DC ventilation system.

Generic Shelter Layouts

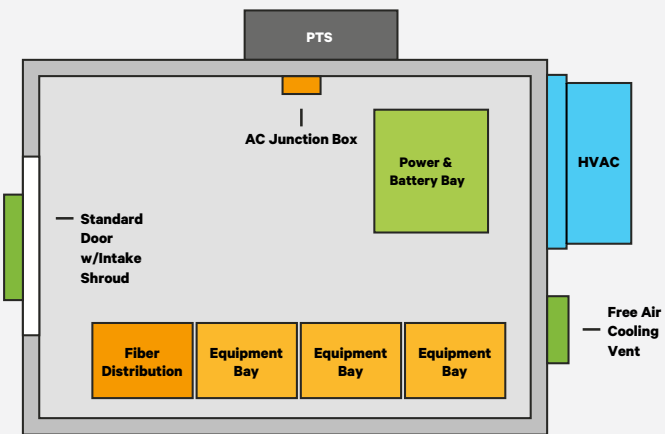
6' X 6' SHELTER



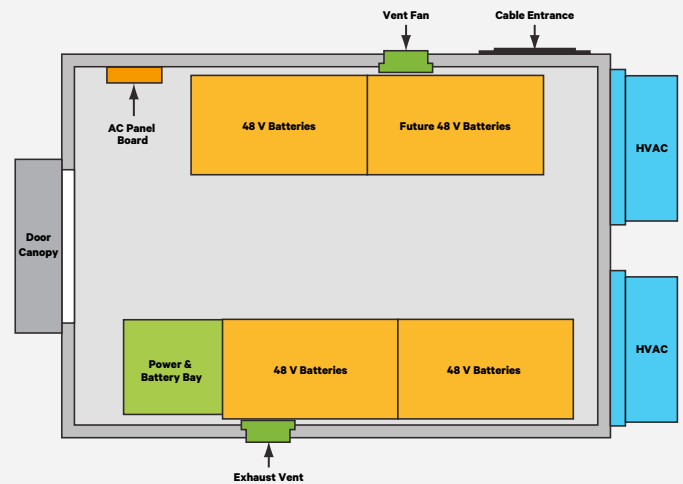
8' X 10' SHELTER



6' X 9' SHELTER

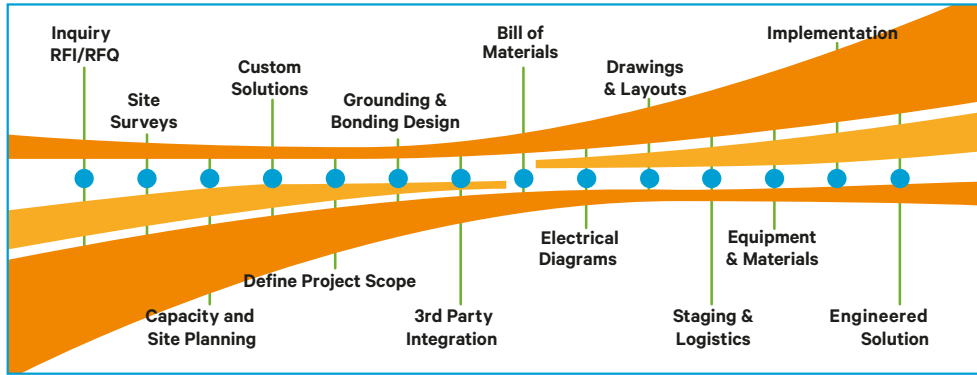


8' X 12' SHELTER



Global Resources with Local Knowledge

Vertiv™’s service expertise and project management capabilities make core site planning and deployment easy. We have the resources to service your facility anywhere, anytime. We are available 24/7/365 to support your site needs.



From proposal to optimized site solution, Vertiv supports your critical network infrastructure.



Effectively manage energy consumption with EnergyMaster™ monitoring systems.

NetPerform™ Telecom Services

Project Services

Simplifying Installation

Vertiv™’s Services team takes a holistic approach to your network to make sure that every facet of your infrastructure is rapidly deployed and operating at maximum efficiency from day one. We offer a full portfolio of essential services, from site survey to hand over of the site, all managed through a single interface thanks to regional project management teams.

Performance Services

Improving Availability, OpEx and CapEx

By leveraging our in-house knowledge of DC power, inverters, batteries, generators, thermal management and UPS, we pay attention to the entire system and help keep your network reliable in even the most remote or challenging environments. With remote monitoring – managed by your Network Operating Center or our Energy Operation Centers, staffed 24/7/365 with experts in all disciplines – you receive a continuous stream of vital health parameters and alarms from the site. This knowledge provides early warnings to protect you against failures or enable you to act quickly if an issue should arise.

Maintenance Services

Preventive Maintenance

Keeping your equipment at best possible status requires regular maintenance. Vertiv can serve as the single point of contact for all your maintenance needs. We understand your unique challenges and will tailor a service agreement that meets or exceeds your requirements. Complete documentation is provided following each maintenance visit. Reports provide a clear picture of system status and recommendations of corrective steps to prevent future problems.

To customize your solution and request more information, email EnergySystems@VertivCo.com.

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