

# UPS Capacitor & Fan Replacement

Maintenance Services



## Benefits of Replacement

Extend the Service Life of Your UPS

- Ensuring uptime and reliability of your critical system.
- Extend UPS unit lifetime.
- Achieve longer mean time between failures (MTBF).
- Planned maintenance service program.
- Accurate long-term budget allocation for maintenance programs.

## Future-proofing your Equipment

You'll also benefit from a preventive service program that **safeguards from unexpected future costs**. Planning these activities with our experts allows a more **precise long-term budget allocation** for maintenance programs.

*Replacement of capacitors and fans is a best practice in order to ensure the reliability and availability of your critical system.*

### Extend the Lifetime of UPS Equipment

Vertiv™ offers a **proactive and programmed service replacement** of capacitor and fan components, **ensuring extension of UPS unit life and protection of your business critical systems**.

Capacitors are UPS components that operate steadily in a circuit, where electrical and environmental factors slowly lead to characteristic changes, gradually increasing the probability of a capacitor failure.

This process is known as capacitor aging and can be identified as a gradual capacitance decrease with simultaneous resistance increase, taking place on both UPS capacitor types: DC (electrolytic) as well as AC (polymeric).

Aging of fans may lead to overheating and cause the load to be transferred to bypass, leaving it unprotected.

### Ensure the Reliability and Availability of your Critical System

Vertiv's comprehensive Service portfolio is designed to maximize the availability, reliability and efficiency of your critical infrastructure. Our approach to service covers all aspects of performance, from single units to entire mission critical systems.

### UPS Capacitor and Fan Replacement

UPS capacitor and fan replacement form part of our maintenance programs and are designed to ensure optimum operation of your UPS and prevent the aging of these components. Accurate planning of these maintenance activities protects your system from ever changing environmental conditions and ensures that it is in the best health to operate.

## How Replacement Works

Our service maintenance program provides a reliable approach to ensuring a **long service life for your UPS**, without encountering uncontrolled downtime.

Our approach to **safely scheduling capacitor replacement** consists of replacing the bank of AC and DC capacitors before they age to the point where there is a significant probability of a capacitor short circuit.

A replacement program to reduce the risk of failure based on years of field-data-analysis recommends, on average, cooling fans replacement after 5-6 years (40,000 – 50,000 hours) and AC & DC capacitors replacement after 6 years (45,000-50,000 hours) or 12-15 years (90,000 – 115,000 hours) depending on your equipment.

Capacitor & fan replacements ensure the system is maintained in accordance with Vertiv Service Agreements.



## Proactive Maintenance Services

Our replacement program for capacitors and fans is based on years of field-data-analysis and experience, thus representing the best method to achieve the highest reliability of your business critical systems.

Vertiv's certified Customer Engineers perform on-site component analysis in order to verify their health status.

Gathering data on data center electrical and environmental conditions, and combining them with expected components lifetime, allows to design a tailored maintenance plan to:

- Enhance system's **efficiency** by reducing downtime risks.
- Ensure system's **safety and security**.

## Costly Downtime

Substantial financial losses can be incurred due to downtime. These costs can vary between facility type.

- **Enterprise Facilities:** \$7,900 / minute.
- **Colocation Facilities:** \$3,000-\$5,000 / minute.
- **Hyperscale Facilities:** Up to \$66,000 / minute.

Taking into account the average incident lasts 90 minutes, these costs can become incredible to our customers. Investing in Vertiv's robust infrastructure and proactive maintenance is crucial to minimizing downtime.

## Component Inspection

Inevitably, the capacitors in your UPS will fail due to several influential factors. Timely replacement is the key to avoiding downtime. Therefore, full bank capacitor replacement performed by Vertiv™ technicians starts with an inspection of critical components to verify age, UPS system performance, and capacitor health. This information can then be compared to our extensive UPS portfolio and serve as a baseline when determining future capacitor replacement.

## Installation

Our factory-trained technicians install capacitors that meet the engineering and safety standards of the original equipment manufacturer (OEM). They have extensive experience with Liebert® UPS systems. Having these data center infrastructure experts handle your full bank capacitor installation ensures optimal performance for your peace of mind.

## Equipment Restart

Vertiv's capacitor replacement services are not complete until your UPS is operating properly. Our technicians restart your power equipment with the newly installed capacitors to ensure there are no anomalies when supporting your business-critical equipment.

## Environmental Stewardship

At Vertiv, We Strive to advance the principles of environmental responsibility, fostering a safe, inclusive and engaging workplace, and conducting our business responsibly. As part of our effort to reduce environmental impacts, Vertiv has implemented a program to recycle used components, including capacitors and fans.

## Ensure the Highest Power Quality

A proactive maintenance approach aims to **prevent** the **component aging** process and **protects your critical load** from potential issues.

UPS systems deliver **high quality power** using large AC and DC capacitor banks, which both degrade under operating conditions. Operating AC and DC capacitors after they have sustained a large degree of deterioration, exposes the UPS system to a risk of failure. Fans are also part of a set of components which need to be serviced and replaced in order to achieve the expected life for a UPS system. Adequate maintenance programs prevent from overheating and consequently protect downstream loads.

Varying conditions within the data center influence performance and life of UPS capacitors and fans.

Over time internal chemical reactions, heat and leakage current slowly lead to electrical characteristic changes, gradually increasing the probability of a failure.

Furthermore, the aging process deteriorates the capacitors slowly over time and impact the rate at which their life span is reached.