

Scope of Work: Dust & Carbon Particle Killer System for Telecom Data Centers

1. Objective

To supply, install, and commission an advanced dust and carbon particle suppression system inside telecom data centers. The system is intended to mitigate fine particulates (PM2.5, PM10) and carbon dust generated by telecom equipment such as servers, UPS systems, battery banks, and other electronics, ensuring optimal equipment performance, cooling efficiency, and air purity in compliance with data center standards.

2. Applicable Standards & Guidelines

- **TIA-942:** Telecommunications Infrastructure Standard for Data Centers
- **ASHRAE TC 9.9:** Recommended Environmental Guidelines for Data Centers
- **ISO 14644-1 (Class 8 or better):** Cleanroom standards for air cleanliness
- **NEBS (Network Equipment-Building System):** Where applicable

3. System Scope and Features

A. Air Purification Units

- **Multi-Stage Filtration System:**
 - **Primary Filter (G4/F7)** – for coarse dust
 - **Secondary Filter (F9 or MERV 15)** – for fine particulate matter (PM2.5/PM10)
 - **Activated Carbon Filter** – to trap carbon particles and chemical gases (VOC, ozone, etc.)
 - **HEPA Filter (H13 or higher)** – optional, based on criticality level

B. Airflow & Distribution Enhancements

- **Standalone or Inline Units:** Designed to integrate with existing HVAC or operate independently.
- **Air Circulation Fans:** High-efficiency, low-noise fans to maintain uniform air movement.
- **Anti-static Dust-Repellent Panels:** Optional internal wall linings to reduce dust adhesion.

C. Sensors and Monitoring

- **Real-time Air Quality Monitoring System:**
 - PM2.5 and PM10 particle sensors
 - Carbon dust sensors (based on electrochemical or laser scattering)
 - Display dashboard for local or remote access
 - BMS integration for alarms and reporting

D. Controls & Automation

- **PLC/Smart Control Panel:**
 - Scheduled and sensor-driven operation
 - Auto alerts for filter replacement or performance drop
 - Power backup (UPS) integration for continuous monitoring

4. Scope of Work

1. Assessment & Design

- Conduct a detailed **site survey** to identify internal dust sources and air flow dynamics.
- Propose system layout, filtration requirements, and integration points.
- Prepare shop drawings, air change rates, and airflow simulation if needed.

2. Supply

- Deliver all dust killer units, sensors, filters, electrical panels, and accessories to site.
- Ensure all equipment is compliant with telecom-grade operation (24/7, high uptime).

3. Installation

- Position air purification units as per airflow requirements and access constraints.
- Install ducting (if required), electrical cabling, and control wiring.
- Integrate monitoring devices with existing Building Management System (BMS) or provide standalone interface.

4. Testing & Commissioning

- Perform air quality baseline testing pre-installation.
- Validate filter performance and particle reduction post-installation.
- Commission all systems and hand over with test reports.

5. Training & Documentation

- Train facility management/technical team on system operation and maintenance.
- Submit the following:
 - As-built drawings
 - Filter replacement schedule
 - Warranty certificates
 - O&M manuals

6. Maintenance Support (Optional)

- Offer AMC (Annual Maintenance Contract) for filter replacement, sensor calibration, and system checks.

5. Exclusions

- Structural modifications (unless stated)
- HVAC upgrades or replacements
- Power supply upgrades not related to system itself