EQUIPMENT SUBMITTAL

PROJECT:

KAIS - Air AHU OEM
Detroit, MI

MECHANICAL ENGINEER:

Air Design

MANUFACTURER / PRODUCTS:

SecureAire Technologies, LLC
Dunedin, Florida

September 7, 2022

Description

SecureAire ACS Electronic Air Purification System

The SecureAire Advanced Collector System (ACS) utilizes semiconductor airborne contamination reduction technologies otherwise known as ACTIVE Particle Control Technology to monitor, optimize, and control the primary transport mechanisms of electrical space charge and airflow to efficiently condition, collect and where appropriate deactivate particles of concern in the occupied space. Particle behavior in the size range (.3 to 1 micron) of bacteria and viruses is influenced more by its electrical charge than by its particle mass. As the particle size increases the electrical force influence on its behavior drops significantly above 3 microns.

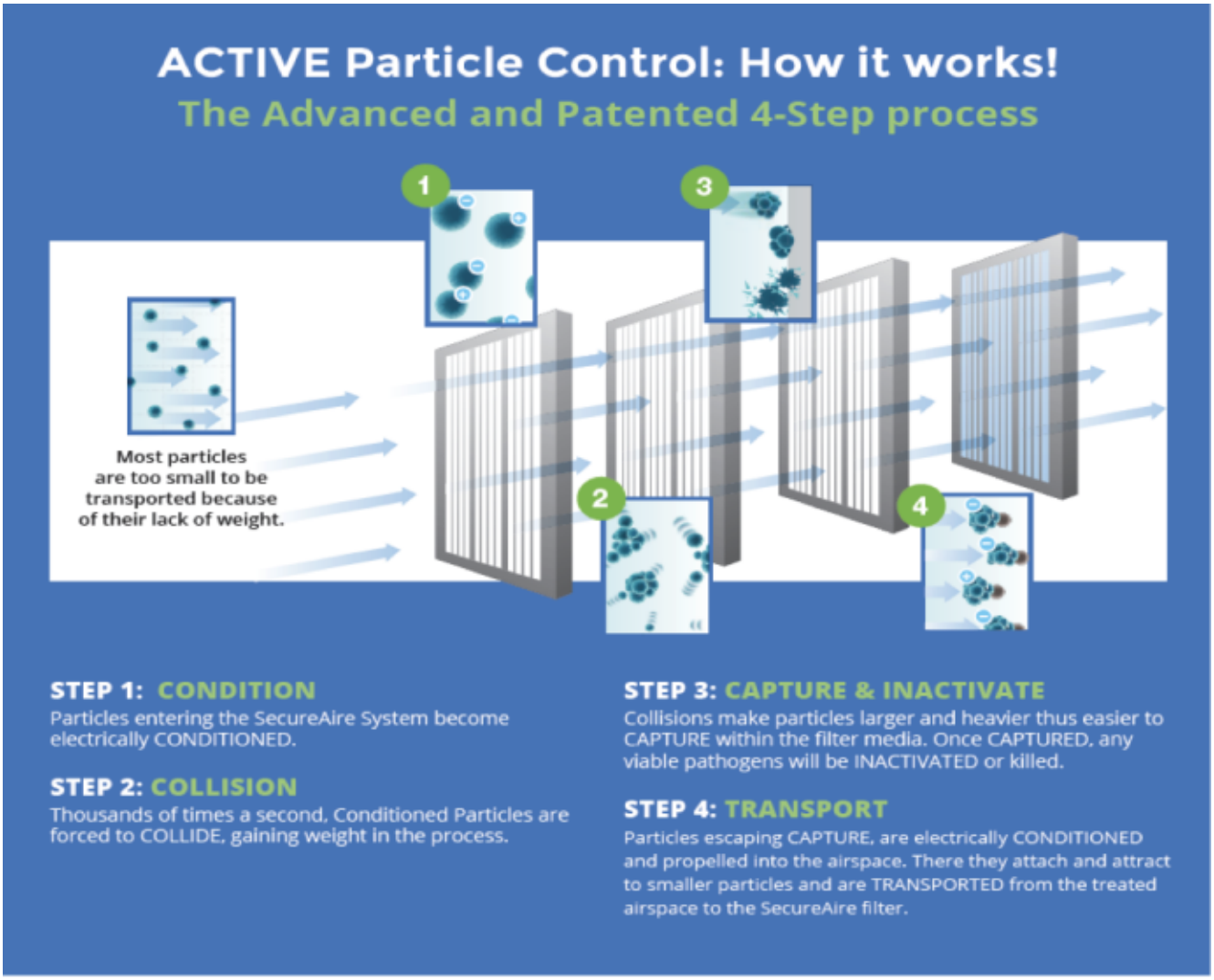
The ACS system makes airflow the dominant transport mechanism and controls the behavior of fine particulates by creating inelastic collisions on a sub-micron level. This causes smaller particles to collide and stay together thus becoming larger, given the electronic filters larger particles to collect.

This collision process continues into the space being treated and aids in the reduction of indoor generated contaminate levels of any type. Only SecureAire has ACTIVE Particle Control Technology that is non-selective and has been proven to treat all indoor and outside air contaminants. Third-party testing proves that, without needing additional equipment, SecureAire technology reduces viruses, bacteria, TVOCs, dissolved gasses, carbon monoxide, carbon dioxide, odors, smoke particles, diesel fumes, and jet fumes.

System Technology

The SecureAire ACS employs electrical field control and placement techniques that convert a low particle capture efficiency filter into a high capture efficiency, while delivering extremely low static pressure drops, long filter life and the ability to Inactivate airborne pathogens.

This represents the most advanced air filtration and purification system offered in today’s marketplace. Review of the system shows the basic inner workings and steps that help to create the most advanced system performance available today.



STEP 1 – Condition the Particles

The first stage of the ACS System conditions particles so that they will be strongly attracted to the Particle Collector, the second stage. Ionization and Polarization are the techniques employed in the Particle Conditioning Unit (PCU), with ionization charging the particles in the airstream and polarization forming dipoles out of particles that pass through it.

STEP 2 – Polarize the Collector

The second stage of the ACS is the Collector. The Collector is placed between two high voltage electric fields in order to create a polarized media within the Collector. Thus creating a high efficiency filter with extremely low static pressure. This further enables both Energy Efficiency and a High Efficiency filtration system for broad application throughout the HVAC world.

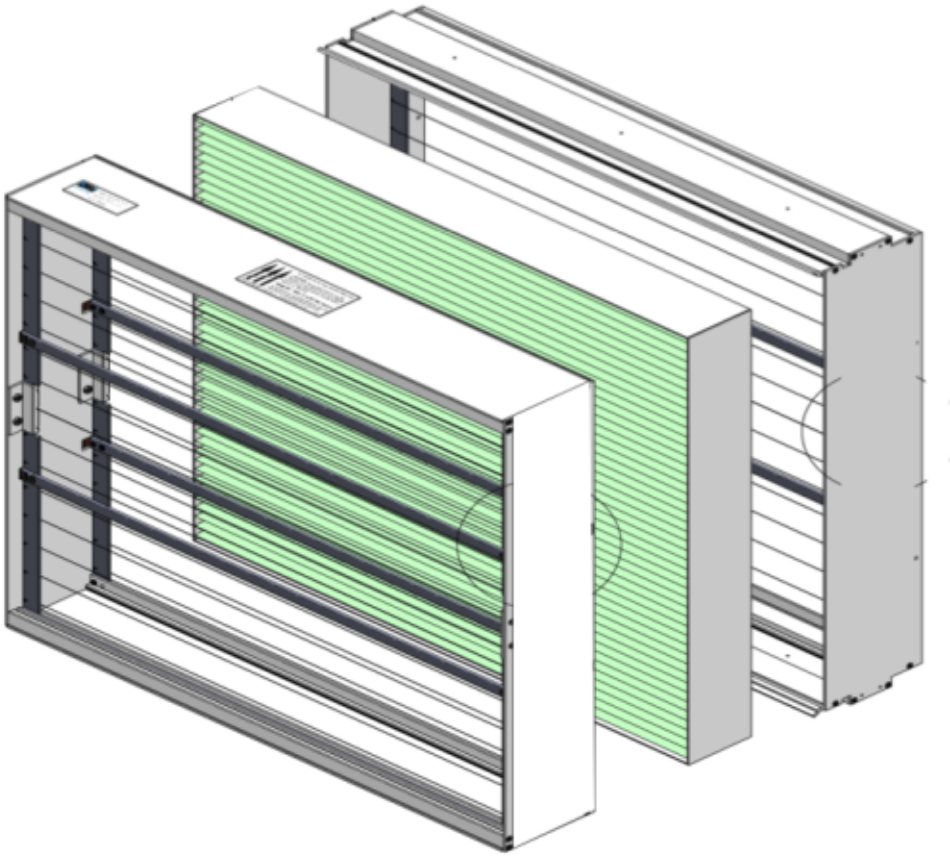
STEP 3 – Capture and Inactivate the Particles

The third stage, which happens within the Collector, is first the trapping of airborne particles followed by their imminent Inactivation. Due to the Polarization of the Collector as discussed in Step 2, we also create electric fields that have constant high voltage. This along with the strong ionizing capability of the PCU, inactivates any potential airborne pathogen in a matter of time.

STEP 4 – Conditions Particles that have escaped to assist in the Continued Cleanup of the Space

Finally the last stage, which is now internal to the device, takes any particles that may have escaped the first stages of the ACS and makes them larger by colliding these particles together inelastically. Alternating the polarity of the electric fields makes particles want to combine by put opposite charges on them, then forcing them to come together forming these inelastic collisions. These conditioned particles, which are now larger, travel into the occupied space to collect other particles (gases, odors and TVOC's) that are transport limited by electromagnetic fields in the occupied space environment. If not absorbed, these particles could stay in the occupied space indefinitely.

The final result of this process is an air filtration and purification system that has an extremely high capture efficiency, low static pressure, the ability to Inactivate, utilizes ACTIVE Particle Control Technology and is energy efficient!



STEP 1 ***STEPS 2, 3 & 4***

SecureAire

Submittal Data

Filtration efficiency: The air purification unit shall have a minimum efficiency reporting value (MERV) of 15, per ASHRAE 52.2-1999 test procedure at a face velocity of 400 feet per minute (FPM).

Resistance to airflow: The air purification unit shall have nominal initial resistance of 0.28” wg. at a face velocity of 492 feet per minute (FPM), per ASHRAE 52.2-1999 test procedure. Only this standard without modification is acceptable by ASHRAE.

Inactivation Potential and Effectiveness: Independent laboratory testing shall document effectiveness at inactivating microbes, to include at a minimum, tests on representative specie organisms for the following categories:

a. mold spores
b. bacterial spores
c. gram positive bacteria
d. gram negative bacteria
e. viruses

ACTIVE Particle Control Technology: All systems must include the use of a pulsed Electrodynamic Field downstream of the collector, which conditions any exiting particles and causes them to inelastically collide. This creates the final stage of absorbing and adsorbing the remaining particle contamination in the specified space.

Systems Specifications:

Overall System Depth (airway length): 9.0”/12.0” with racking.
Power Requirements: 120/240 VAC
Power Consumption: 5 watts per ACS Panel
Safety Protection: SB 0.5 A/250V fuses
Electrical Certifications: UL 867: 2011 R8.13, CSA C22.2 NO. 187-09
Humidity Range: Racking: 1” Vertical Support Rails (not Included) and 2” Horizontal Rails
Mounting: Front load
Upstream Service Access For Front Load: 18 Inches (Minimum)
Minimum Downstream distance to next component: 2 Inches (Minimum)

Installation

Air Handling Manufacturer or Contractor will install the entire system.

Access doors, Electrical connections, Filter racking system, required Blank-offs, service area for replacing the filters media, door switches, and filter gauges will be installed by Air Handling Manufacturer or Contractor.

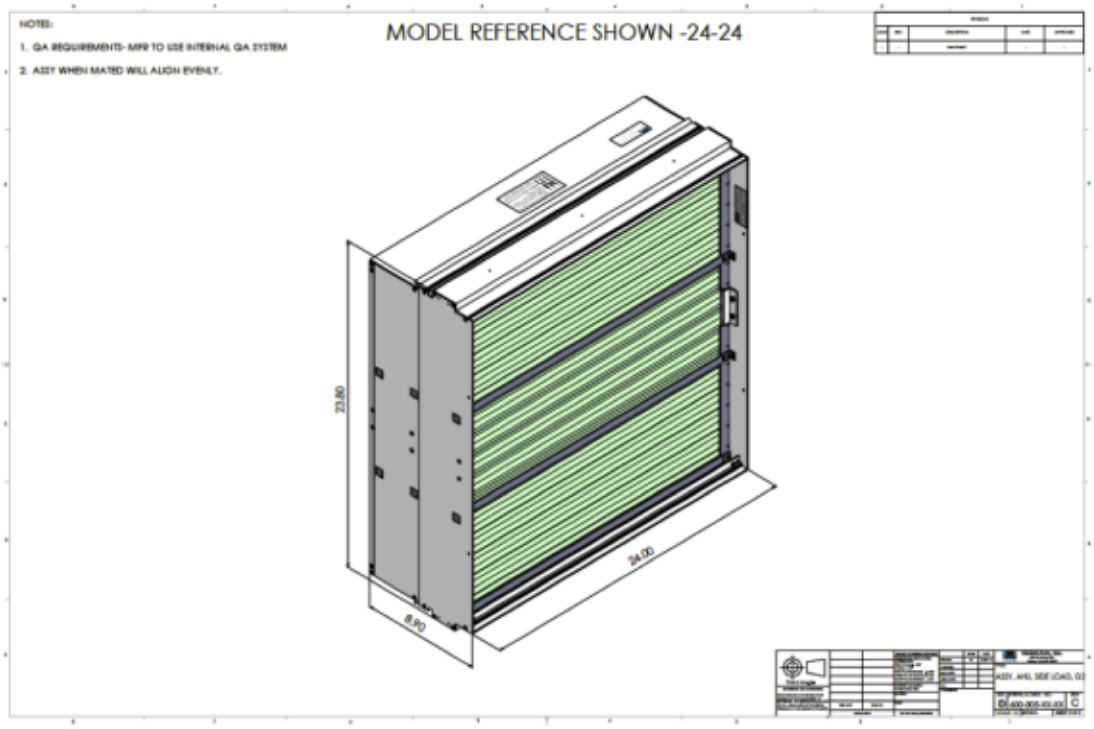
Factory training and startup service will be provided by and supported by SecureAire.

Replacement Filter media will be purchased and supplied through SecureAire or an approved local Representative.

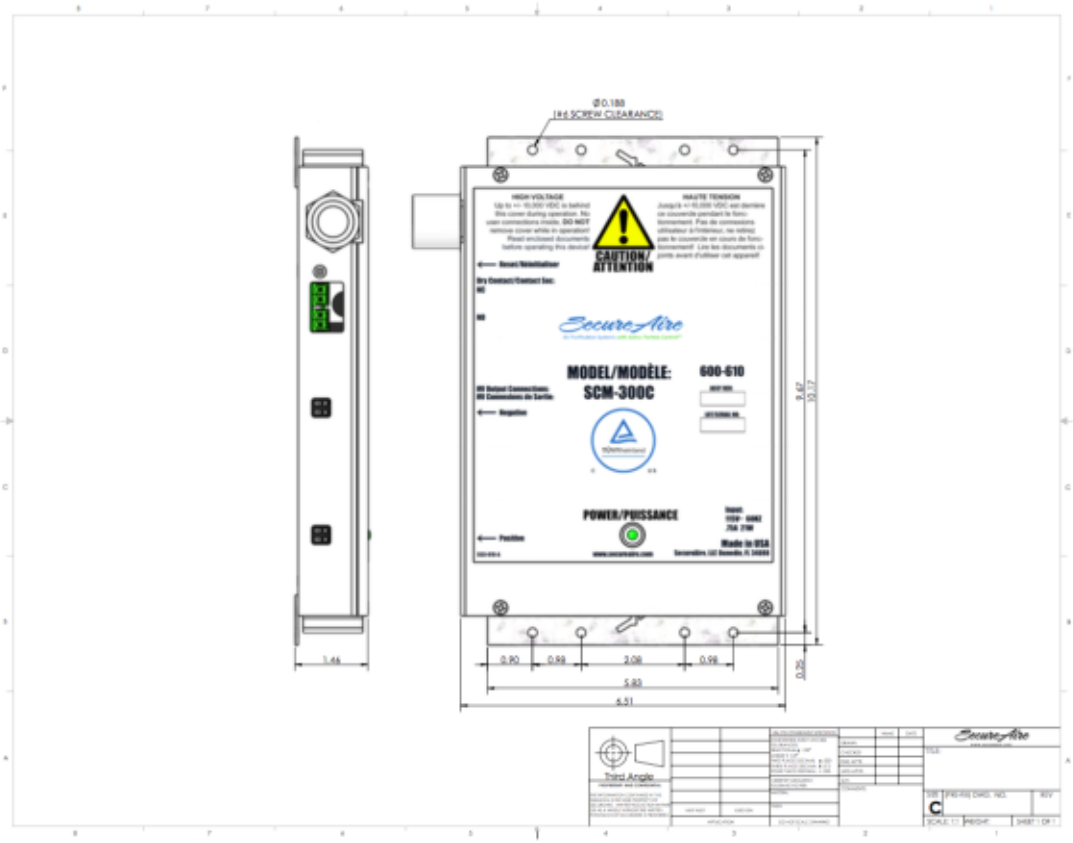
Additional Notes

1. SecureAire ACS modules are 9.0” in airway length, with racking extending to 12” OAL.
2. **Final Resistance or filter change out is recommended at 0.80” wg.**
3. Horizontal frame materials referenced herein are included with this equipment.
4. Access door required for SecureAire ACS Air Unit (AU) maintenance.
5. Access door required for filter replacement or system maintenance.

ACS Base Unit Component Drawing

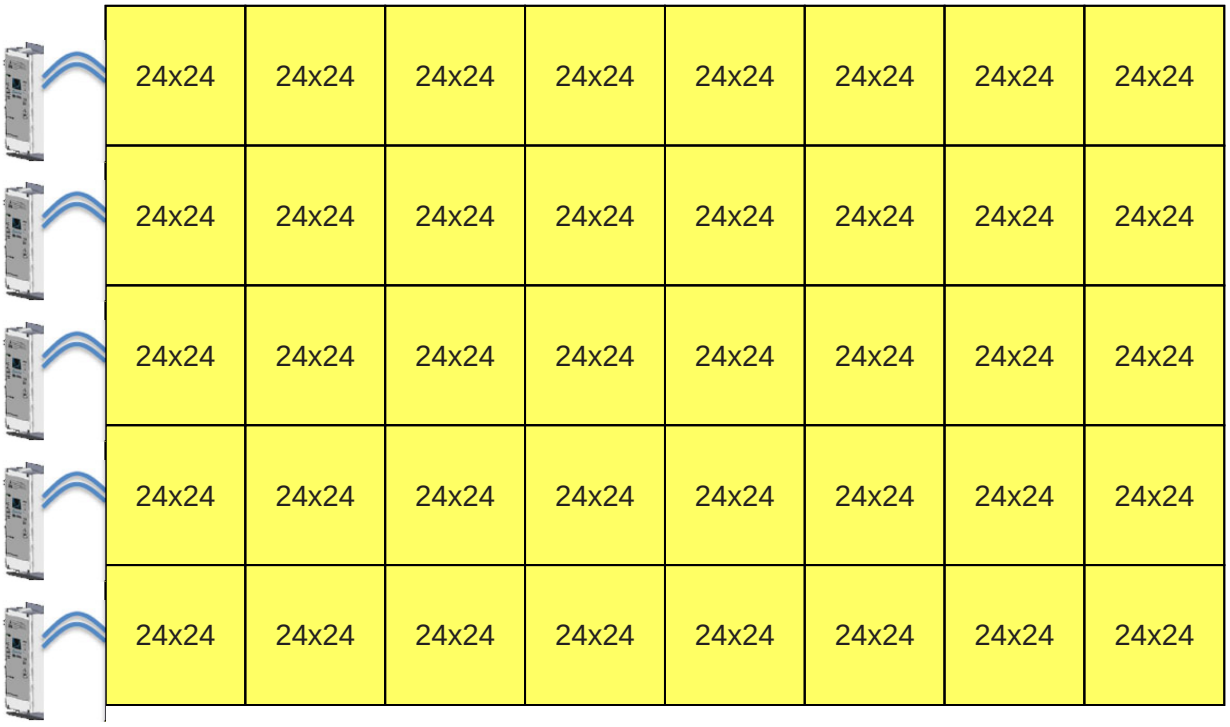


SCM 300 Power Supply Drawing



AHU Layout Configuration

AHU T-8 -2



SecureAire System Part Number
ACS-8W-5H-FL-5PS

Notes:

1. **Blank offs to be incorporated as needed.**
2. **Support racking system should be mounted near the end of the filter section.**
3. **1- 120 VAC, 15 amp circuit to be provided in conduit per code for power connections.**
4. **Replacement SecureAire Filters are changed out in a front-loading configuration.**
5. **The average initial resistance for this AHU is calculated to be 0.28” wg. at a Face Velocity of 500 FPM.**
6. **This AHU configuration is a Front Load System**

Legal Notices

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