



Three-Step HVAC Strategy to Ensure the Safe Return of Building Occupants and Users

Spring / Summer 2020

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Maintain Building Performance

STEP 1

IMMEDIATE IMPLEMENTATION

1. Keep HVAC and Electrical Systems running.
2. Reprogram Systems.
3. Maintain Temperature / Humidity Levels.
4. Increase Outdoor Air Ventilation.
5. Maximize Air Circulation.
6. Validate Controls.

Enhance Indoor Air Quality

STEP 2

WITH SPRING MAINTENANCE

1. Replace / Upgrade Filters.
2. Evaporator / Condenser Coil Cleanings.
3. Steam Clean Coils.
4. Confirm Operational Readiness of Electrical and Emergency Power System.

Eliminate Airborne Microbes

STEP 3

ADDITIONAL PROTECTION

1. Implement Ultraviolet (UV) Solution.
2. Implement Ionization Solution.
3. Deploy Air Quality Monitoring.
4. Humidification Solution
5. Utilize Duct Fogging System.

Maintain Building Performance

1. Keep HVAC and Electrical Systems running. Even if buildings are unoccupied, insufficient temperature and humidity control can lead to mold and disease growth. Ensure emergency power systems (e.g., stand-by generators) are operational.
2. Reprogram Systems. One dedicated member from the onsite maintenance team should reprogram systems to match changes in occupancy or operational needs.
3. Maintain Temperature / Humidity Levels. Maintain a temperature between 55 and 80 degrees and a maximum humidity of 60%.



Applicable To:

➤ Commercial Buildings & Common Use Facilities



➤ Data Centers & Mission Critical



➤ Education Facilities



➤ Government Facilities



➤ Healthcare Facilities



➤ Industrial & Manufacturing Facilities



➤ Sports & Entertainment Facilities



Maintain Building Performance



Increase Outdoor Air Ventilation. Disable demand-controlled ventilation (DCV). Adjust manual fresh air dampers or electronic dampers, as applicable, such that fresh air intake is maximized, and mold growth risk is mitigated.



Maximize Air Circulation. Lock the Fan Setting on all Thermostats in the ON position to ensure continuous air circulation.



Validate Controls. Ensure all systems (e.g., Thermostats and BAS Systems) are operating safely and efficiently.



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Enhance Indoor Air Quality

 **Replace / Upgrade Filters.** Replace filters with MERV 13 or 14 rated high efficiency filters, and seal edges of filters to limit bypass.

 **Evaporator / Condenser Coil Cleanings.** Inspect and clean evaporator / condenser coils, as necessary.

 **Steam Clean Coils.** Steam cleaning deemed to be far more effective than chemical cleaning in eradicating microbes and odors.

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Enhance Indoor Air Quality (Cont'd)

MERV Rating	Air Filter will trap Air Particles of size 0.03 to 1.0 microns	Air Filter will trap Air Particles of size 1.0 to 3.0 microns	Air filter will trap Air Particles of size 3 to 10 microns	Filter Type ~ Removes These Particles
MERV 1	<20%	<20%	<20%	Fiberglass & Aluminum ~ Pollen, Dust Mites, Spray Paint, Carpet Fibers
MERV 2	<20%	<20%	<20%	
MERV 3	<20%	<20%	<20%	
MERV 4	<20%	<20%	<20%	
MERV 5	<20%	<20%	20% - 34%	Disposable Pleated Filters ~ Mold Spores, Cooking Dusts, Hair Spray, Furniture Polish
MERV 6	<20%	<20%	35% - 49%	
MERV 7	<20%	<20%	50% - 69%	
MERV 8	<20%	<20%	70% - 85%	Better Home Box Filter ~ Lead Dust, Flour, Auto Fumes, Welding Fumes
MERV 9	<20%	Less than 50%	85% or Better	
MERV 10	<20%	50% - 64%	85% or Better	
MERV 11	<20%	65% - 79%	85% or Better	
MERV 12	<20%	80% - 90%	90% or Better	Superior Commercial Filters ~ Bacteria, Smoke, Sneezes
MERV 13	Less than 75%	99% or Better	90% or Better	
MERV 14	75% - 84%	90% or Better	90% or Better	
MERV 15	85% - 94%	95% or Better	90% or Better	HEPA & ULPA ~ Viruses, Carbon Dust, <.30 pm
MERV 16	95% or Better	95% or Better	90% or Better	
MERV 17	99.97%	99% or Better	99% or Better	
MERV 18	99.97%	99% or Better	99% or Better	
MERV 19	99.99%	99% or Better	99% or Better	
MERV 20	99.99%	99% or Better	99% or Better	



Source: [TO COME]

Protect Electrical System

1. Confirm Operational Readiness of Electrical System. Complete visual inspection and infrared scanning to identify hotspots and potential failures.
2. Confirm Operational Readiness of Emergency Power System. Ensure emergency backup systems (e.g., standby generator systems) are operational.

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Airborne Microbes Protection

Most bioaerosols are too small for filters, and the only way to cost effectively eliminate airborne microbes and viruses from the indoor air is via an electronic method.

1. **Ultraviolet (UV) Systems.** UV technology is well established in healthcare and other applications, and several are approved against viruses such as the SARS Coronavirus (NOTE: None certified for the COVID-19 Coronavirus yet).
2. **Ionization Solutions.** Can be even more powerful relative to UV technology in eliminating infectious bioaerosols.



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Airborne Microbes Protection

3. Air Quality Monitoring: Sensor-based solutions available for temporary or permanent monitoring of air quality and early detection of issues in a building, including:

- ❑ Temperature
- ❑ Humidity (RH)
- ❑ Carbon Dioxide (CO₂)
- ❑ Carbon Monoxide (CO)
- ❑ Particulate Matter (PM)
- ❑ Chemical Pollutants (TVOC)



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