



TRANSWESTERN

REAL ESTATE  
SERVICES

# COVID-19

# TECHNOLOGY & OPERATIONAL CONSIDERATIONS

Part 1:  
Indoor Air Quality (IAQ)

July 8, 2020

# TODAY'S AGENDA

## Part 1: Indoor Air Quality (IAQ)

Guidance From Experts

IAQ Technology Options

Case Studies

Q&A

*[Coming Soon] Part 2: Surface Contact & Healthy Building Certifications*





**BEFORE WE START....**

# GUIDANCE FROM THE EXPERTS





**WHAT'S OUT THERE?**

# IAQ TECHNOLOGY OPTIONS



**Bi-Polar Ionization**



**Needlepoint  
Bi-Polar  
Ionization**



**UV Light**



**Air Filters**

Per ASHRAE: Care and professional judgement should be taken to understand choices for filtration and air disinfection, pros and cons of each, and impact on existing buildings systems.

# BIPOLAR IONIZATION

## WHAT

High-voltage electrodes releases charged atoms that attach to and deactivate harmful airborne contaminants

## WHERE APPLIED

HVAC system

## HOW DOES IT HELP

Neutralizes and enlarges particles which reduces virus potential of passing through filters

## PROS

- Cleans coils, combats bacteria, volatile organic compounds (VOCs) and some viruses

## CONS

- High cost of installation and operation
- Systems may emit ozone
- Convincing, scientifically-rigorous, peer-reviewed studies do not currently exist



# NEEDLEPOINT BIPOLAR IONIZATION (NBPI)

## PRIMARY DIFFERENCE

- Uses open air needles to attract particles

## PROS

- Self-cleaning
- Does not emit ozone
- Live monitoring capability

## CONS

- High initial cost of installation
- Needles need replacing





# ULTRAVIOLET (UV) DISINFECTION LIGHTING

## WHAT

Ultraviolet radiant energy that uses short wavelength ultraviolet (ultraviolet C or UV-C) light to kill or inactivate microorganisms

## WHERE APPLIED

HVAC system  
Elevators/Escalators  
Lobby/Common Areas  
Tenant Spaces

## HOW DOES IT HELP

Neutralizes and kills bacteria, VOCs, some viruses and other pathogens

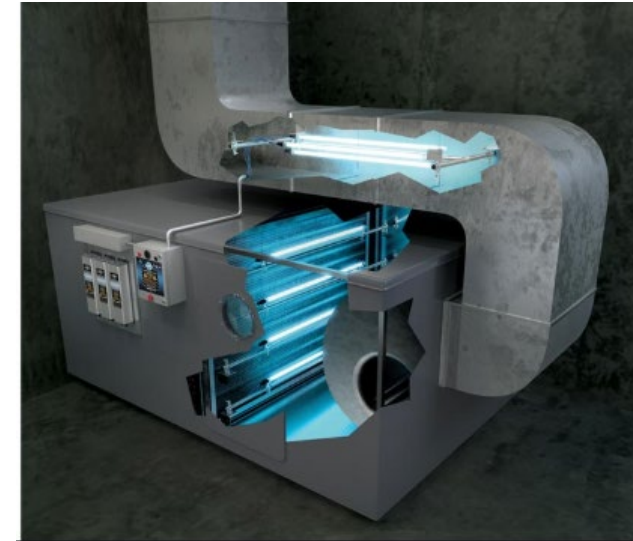
## PROS

- Cleans coils, combats bacteria, VOCs and some viruses
- Proven history.

## CONS

- Annual lamp replacement
- Requirement of UV protection inside air handler
- Increased electrical consumption.

**Also known as:  
UVGI (Ultraviolet  
germicidal irradiation)**



# ULTRAVIOLET (UV) DISINFECTION LIGHTING (cont.)



## SAFETY WARNING

- Requires special PPE to prevent damage to eyes and/or skin from overexposure
- Anything in a shadow will not be reached. Complimentary technology - the area should be cleaned for it to be effective

# AIR FILTERS

## COMMON FILTER RATINGS

- Minimum Efficiency Reporting Value (MERV)
- High Efficiency Particulate Air (HEPA)

## ASHRAE GUIDANCE

- Due to high pressure drops, HEPA filters may not be able to be retrofitted into HVAC systems.
- Some filters have a static electrical charge applied to the media to increase particle removal
- Ensure HVAC systems can handle filter upgrades without negative impacts to pressure differentials and/or air flow rates prior to changing filters





# CASE STUDIES



# CASE STUDY: FILTERS

## One Size Doesn't Fit All

### **CHALLENGE**

- Existing asset had MERV-8 filters

### **QUESTIONS/CONCERNS**

- Design of the systems does not support increasing the MERV rating.
- The increased MERV rating could cause higher static pressure, meaning less airflow over the coil, which causes the air handler to work harder and decreases overall efficiency of the system.
- The HVAC system would not meet the designed minimums for airflow within the space.

### **SOLUTION**

- Replace with an electrostatically charged MERV-8 filter in order to meet the ASHRAE recommended MERV-13 rating to reduce the transmission of COVID19.



# CASE STUDY: NPBI

## **CHALLENGE**

- Improve the indoor air quality of the facility in addition to filtration.

## **QUESTIONS/CONCERNS**

- Would needlepoint bipolar ionization fit in the current air handler configuration?
- Were there open breakers in the current electrical panel to install the system?
- How would the device be measured to ensure it was consistently working per design?
- Is it possible to measure the amount of electrons being produced?

## **SOLUTION**

- A custom design and installation of GPS's needlepoint bipolar ionization system.
- Added live active monitoring via the building's automation system to ensure the ionization process is working at its fullest capacity while the air handler is operating per design, as well as producing the proper amount of electrons.

# SUMMARY



**Bi-Polar Ionization**



**Needlepoint  
Bi-Polar Ionization**



**UV Light**



**Air Filters**

- ✓ **Do Your Research**
- ✓ **Enlist Experts**
- ✓ **One Size Doesn't Fit All**



Q & A





**TRANSWESTERN**

REAL ESTATE  
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# Coming soon...

## COVID-19

### TECHNOLOGY & OPERATIONAL CONSIDERATIONS

#### Part 2:

#### Surface Contact & Healthy Building Certifications



# REFERENCES

- Centers for Disease Control (CDC)
- Environmental Protection Agency (EPA)
- U.S. Food & Drug Administration (FDA)
- The American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE)
- International Sanitary Supply Association (ISSA)
- Building Owners and Managers Association International (BOMA)
- UL (Healthy Buildings)

