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How to leverage your HVAC System to create a healthy IAQ Environment

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Greetings and Salutations

Greetings



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The Objective of this Presentation

To share with the group the current recommendations on how to create a healthy environment in public spaces such as schools, offices, churches, cinemas, supermarkets, etc in order to minimize the spread and transmission of the Covid-19 virus and other infectious agents as well as to maximize team member well being and productivity



KEY TAKE AWAYS AFTER THE PANDEMIC

After country was re-opened on a phased basis after the ending of the pandemic Recommendations were made by the government on a number of areas. These included the following recommendations from the GOJ.

B. Install and Maintain Effective Ventilation Systems.

In creating and maintaining a healthy work space, the following considerations are to be implemented with the aim of improving the building ventilation system. This may include some or all of the following activities:

- Ensure ventilation systems operate optimally, and provide acceptable indoor air quality for the current occupancy level for each space.
- Improve central air filtration to the MERV-13 or the highest compatible with the filter rack, and seal edges of the filter to limit bypass.
- Implement preventive maintenance schedules.



Who Are The Heating Ventilation and Air Conditioning Authorities in the World?

There are two premier organizations throughout the world that put out standards on Air Conditioning Best Practices. They are:

1. The American Society of Heating Refrigeration and Air Conditioning Engineers (ASHRAE)
2. The Federation of European Heating, Ventilation and Air Conditioning Associations (REHVA)

Both organizations have put out recommendations based upon the available scientific knowledge about the virus designed to minimize the transmissibility of the virus at the workplace.



ASHRAE's Two Position Statements on the transmission of Covid 19

ASHRAE leadership has approved the following two statements regarding transmission of SARS-CoV-2 and the operation of HVAC systems during the COVID-19 pandemic.

Airborne transmission of SARS-CoV-2 is significant and should be controlled. Changes to building operations, including the operation of heating, ventilating, and air-conditioning systems, can reduce airborne exposures.

Ventilation and filtration provided by heating, ventilating, and air-conditioning systems can reduce the airborne concentration of SARS-CoV-2 and thus the risk of transmission through the air. Unconditioned spaces can cause thermal stress to people that may be directly life threatening and that may also lower resistance to infection. In general, disabling of heating, ventilating, and air-conditioning systems is not a recommended measure to reduce the transmission of the virus.



What Does The Mean?

In summary the strategies for reducing the transmission include:

1. Diluting the concentration of the virus in the air by ventilation
2. Removal of the virus from the air through filtration
3. Removal of the virus from the air through sterilization
4. Reducing the aerosol effect of the virus by controlling the temperature humidity
5. Regular servicing with a reputable hvac service provider



Strategy #1: Improving the ventilation in a space

The first strategy of improving ventilation is achieved via several means:

- Opening windows and doors where possible and applicable
- For buildings with air conditioning then we would open fresh air dampers to their maximum position to maximize the amount of fresh air into the space
- Running the air conditioning system indoor fan overnight to increase the dilution of the air in the system using as much fresh air as possible.
- Using devices such as Energy Recovery Ventilators and Dedicated Outdoor Air Systems to bring in outdoor air without significantly compromising the cooling of the existing air conditioning system.



Strategy #2: Improving the Filtration of the space

The second strategy is to upgrade the filters of the air conditioning system where possible to MERV 13.

1. The acronym MERV means Minimum Efficiency Rating Value and is a scale used to indicate efficiency of an air filter in catching particles of varying sizes
2. The higher the MERV rating, the greater the air filtration capabilities



Strategy #2: Improving the Filtration of the space Continued

How does the MERV rating system work?

1. MERV ratings range from 1 to 20. 1 is the lowest level of filtration and 20 is the highest. Filters that are MERV 16 through 20 are usually only found in hospitals, cleanrooms and nuclear power plants.
2. Most air conditioning systems come with MERV 8 filters. These are designed to catch pollen, dust, dust mites, mould and bacteria. • MERV 8 filters must filter 70% of E3 (3.0-10.0 μm) particles and 20% of E2 (1.0-3.0 μm) particles.



Strategy #2: Improving the Filtration of the space Continued

1. MERV 13 filters remove everything that a MERV 8 filters does such as pollen, dust, dust mites, mould, bacteria and pet dander. It also filters cooking oil smoke, smoke and viruses.
2. MERV 13 filters must successfully remove at least 90% of E3 particles, 85% of E2 particles, and 50% of E1 (1.0-3.0 μm) particles.



Strategy #2: Improving the Filtration of the space Continued

If you don't have a central system but only mini splits then we would recommend stand alone air filtration systems.

There are other air cleaning technologies such as Needlepoint Bipolar Ionization etc that are said to be effective in reducing the transmission of the virus.



Strategy #2: Improving the Filtration of the space Continued



Strategy #3: Sterilizing the Air using UVGI

This strategy consists of using UltraViolet Germicidal Lamps (UVGI) to damage the RNA in the virus and prevent from replicating.

UV Lamps solutions are available for Central Air Conditioning Systems and For Mini split Systems



Strategy #4: Sterilizing the Air using UVGI Continued

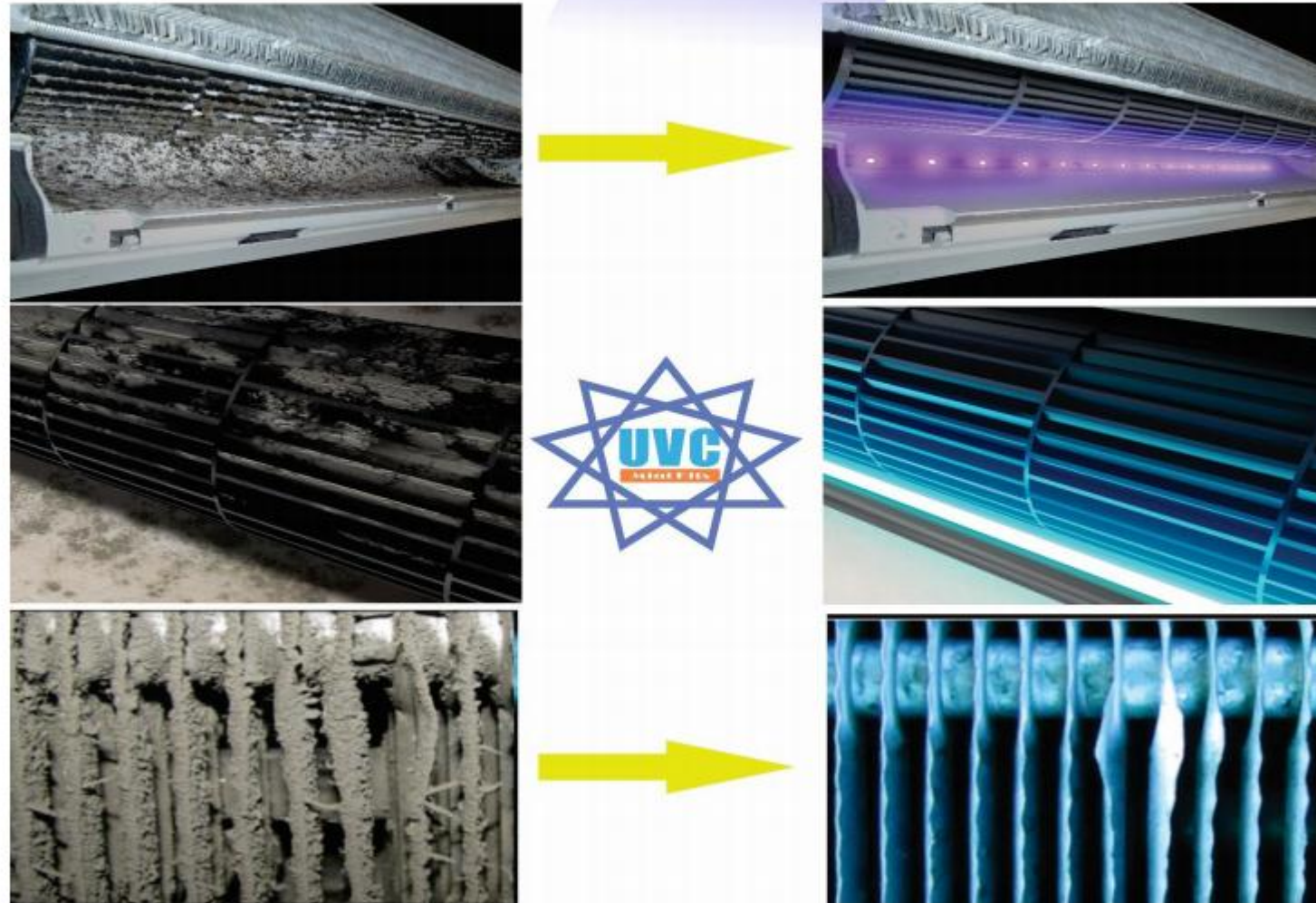
UV lamps have to be sized and custom fitted to the air conditioning system that they are installed in.

These systems offer the following benefits:

1. They kill viruses, mould, bacteria and dust mites
2. They reduce the frequency for servicing by keeping the coil cleaner and improving the efficiency of the hvac system.



Strategy #4: Sterilizing the Air using UVGI Continued



Strategy #5: Better temperature and humidity control

Temperature and humidity has been shown to affect human resistance to infection as well in affecting the mobility of the virus. Relative humidity levels below 40% causes:

1. An increase in the distance that the virus can travel
2. An increase in the viability of viruses
3. Impairs the ability of mucus membranes to resist infections and the immune system



Strategy #6: Proper Preventive Maintenance

Proper preventive maintenance with a reputable HVAC service company who keeps proper records of servicing and ensure that's that your equipment is properly serviced is critical to maintaining the general health and wellbeing of your stakeholders.



Q & A

Q & A



Conclusion

I would like to express my heartfelt appreciation to the JIE President and the secretariat for the kind opportunity to present to our important fraternity



Q & A

If you're interested getting assistance in protecting your building please don't hesitate to contact me at

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If you're interested in joining the Jamaica Air Conditioning Refrigeration and Ventilation Association please don't hesitate in contacting our Jarva President Horace Nelson at

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