

UPDATED ON 16 JUN 2020

FREQUENTLY ASKED QUESTIONS (FAQs) ON BCA-NEA-MOH GUIDANCE NOTE ON BUILDING AIR-CONDITIONING AND MECHANICAL VENTILATION (ACMV) OPERATIONS AMID COVID-19 SITUATION

Guidance Note: <https://go.gov.sg/bca-nea-moh-guidance-bldg-aircon-acmv-ops>

Scope of Guidance Note

Q1. Is it mandatory to comply with the guidelines in the Guidance Note?

No. The Guidance Note is meant to provide a set of general recommendations for building owners and facilities managers to consider when operating ACMV systems in building amid the COVID-19 situation. Building owners and facilities managers should develop their individual operation plans, taking reference from the Guidance Note and considering the existing building condition, to best meet the need of their own buildings.

Q2. Do the guidelines apply to non-commercial buildings such as schools and community centres?

The guidelines apply to the operation of ACMV systems for indoor spaces in buildings, including non-commercial buildings, where air-conditioning is used intermittently or continuously, with the exception of specialised premises such as factory production areas, hospitals, polyclinics and laboratories. The guidelines are applicable to air-conditioned spaces in schools and community centres.

Ventilation

Q3. My workplace is air-conditioned, but there are no mechanical ventilation fans. What should I do?

Windows may be opened for natural ventilation if windows are operable and safe to do so. Portable fans can be used to increase the air flow, but air-conditioning system should be reduced or turned off when windows are opened.

Another option is to keep existing air exhaust systems, such as toilet exhaust fans, operating at full capacity, as this will help to improve ventilation in the indoor space.

In the event where these are not possible, the use of portable air cleaners with HEPA filters should be considered to help remove airborne microorganisms from the indoor space. Employing portable air cleaners would not improve ventilation in the indoor space. Hence, building owners of such spaces should make plans for mechanical ventilation where possible.

Q4. How can I confirm if there is sufficient ventilation air in my workplace?

There is no available evidence to support a minimum ventilation rate that would eliminate the risk of COVID-19 disease transmission in indoor spaces.

Safe Distancing Measures for building occupants, wearing of masks and regular cleaning of high-touch points are proven key measures that would significantly reduce the risk of COVID-19 transmission when adhered to. Increasing ventilation further reduces the risk of disease transmission through dilution and removal of infectious agents from an indoor space.

Q5. Does the virus spread via the air-conditioning system? Will the increased ventilation further spread the virus from one zone to the other?

Although some studies have shown that the small virus particles could be suspended in air for a certain amount of time, well controlled ventilation with high efficiency filtration in air-con system can help decrease their concentration levels and remove them from indoor spaces. Any risk of disease transmission associated with air movement can be reduced through air dilution and removal of infectious agents from indoor spaces.

In air-conditioned workplaces, everyone must do their part and wear a mask as they are outside of their house.

[Air Cleaning](#)

Q6. How effective are UVGI, high-grade MERV filters in dealing with the virus?

The efficacy of UVGI against a range of microbes has been demonstrated by numerous studies, which have found that applying UV-C radiation can inactivate the virus. The effectiveness of this technology depends on many factors in a UVGI system's design and operation, such as its structural design, lamp design, and effective contact time. When using UVGI, care needs to be taken to protect occupants from exposure to UV radiations.

Filters can remove particles of with varying efficiencies. Filters with rating of at least MERV 14 is necessary to substantially remove fine particles, including most viruses and bacteria. In order to achieve the optimal efficiencies, the filters should be properly installed and maintained.

More information is available in the ASHRAE Position Document on Infectious Aerosols https://www.ashrae.org/file%20library/about/position%20documents/pd_infectiousaerosols_2020.pdf

and ASHRAE Position Document on Filtration and Air Cleaning <https://www.ashrae.org/file%20library/about/position%20documents/filtration-and-air-cleaning-pd.pdf>

Energy Consumption

Q7. How will the recommended guidelines affect building energy efficiency/ use? Specifically, what is the impact of increased ventilation on energy?

We anticipate an increase in energy consumption by ACMV systems for occupied spaces, due to the measures that come with increased outdoor air supply and extended operating hours. However, the overall electricity consumption of buildings is expected to drop during the COVID-19 period, since building occupancy during COVID-19 is reduced significantly.

Increased ventilation may demand additional energy on fan power and production of chilled water. However, this increase varies according to building types and their different demand for outdoor air. We are currently estimating the Energy Utilization Index (EUI) values associated with increased outdoor air intake and different occupancy loads in order to understand its overall impact. Nevertheless, under the current COVID-19 situation, the safety and health of building occupants should be prioritized over the energy impact.

Design Standard

Q8. Is there any additional ventilation requirement that will be introduced in new construction for buildings in future?

There is currently no additional ventilation requirement due to COVID-19. In view of the New Normal post-COVID, relevant agencies and industry experts are reviewing the current design practices and explore new requirements to enhance resiliency of future buildings to meet challenges posed by epidemic situations.

Q9. How should ACMV systems in future new buildings be designed to support Business Continuity Plans while taking care of COVID-19 like pandemic situations for future?

In view of potential pandemic situations similar to COVID-19, it would be ideal for buildings to be designed with resiliency features that provide operational flexibility – normal operation mode vs epidemic mode.

For instance, systems could be designed to allow a wider operational range of outdoor air intake and accommodate high efficiency filters.

Building and Construction Authority

National Environment Agency

Ministry of Health

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