

The COVID-19 pandemic, with the need to keep viral transmission in closed spaces to a minimum, has only increased the importance of installing effective heating, ventilation, and air-conditioning (HVAC) systems in buildings, including Livery halls. If properly maintained and where necessary adapted for use in the new circumstances, HVAC systems can help in efforts to reduce potential airborne transmission of SARS-CoV-2.

However, measures to improve ventilation should not be taken in isolation. They need to be just one part of an approach that considers all possible transmission routes and applies a hierarchy of risk controls. To mitigate aerosol transmission in particular, ventilation should be considered alongside measures to monitor and control the levels and indoor air quality and potential sources of transmission.

Even before the pandemic, changing environmental regulations and health and safety standards meant that air-filtration requirements in a variety of industries and other settings were becoming stricter.

Managers of Livery buildings should review their HVAC systems, ensure that filters are upgraded where necessary, and maintain and then monitor their HVAC systems in accordance with the manufacturers' instructions. It is particularly important to ensure that filters and grills are cleaned and changed regularly. It is also advisable to check that flexible ducting is not used. It is [a legal requirement](#) to inspect all air-conditioning systems with a rated output over 12kW at intervals not greater than 5 years. This includes systems consisting of individual units which are less than 12kW, but whose combined effective rated output is more than 12kW.

## **HVAC systems and air exchange**

[UK.GOV guidance](#) and building regulations set out the minimum number of air exchanges per hour. These intervals should always be adhered to. In closed spaces, a boost of fresh air is required to increase air exchange, thereby reducing the risk of virus transmission.

Air exchange may be achieved through natural or mechanical ventilation, depending on the setting. All Livery halls are different, so each needs to develop its own recommendations for natural ventilation, by opening of windows and doors. This advice will vary according to the size of the room, what it is being used for and the numbers of people using it at any given time. Depending on the season of the year and the weather conditions, a balance will need to be struck between the requirement for ventilation, energy conservation, and the comfort of the users.

Ventilation is likely to be adequate to minimise the risk of COVID-19 aerosol transmission if:

- the rooms or spaces in building(s) are used within the occupancy limits specified in the building design, and have a sufficient fresh air supply to meet the current minimum building standard
- advice has been obtained from a competent ventilation engineer or, as a precautionary approach, your system is operated on the maximum air-flow rate
- ventilation is not only through mechanical extraction but has a balance of fresh air and extraction avoiding recirculation.

It is recommended that as a minimum, at least 10l/s/person of supply of outside air is maintained for acceptable temperatures and thermal comfort ([CIBSE, 2020](#)).

The Health and Safety Executive provides advice on working [safely](#) and on [ventilation](#) and air conditioning. Detailed ventilation guidance for workplaces and public buildings during the pandemic is provided by the Chartered Institution of Building Services Engineers ([CIBSE](#)).

## Energy-efficient operation

Electricity use can be reduced significantly while improving occupant comfort by using energy-saving settings, such as demand-controlled ventilation (DCV), in central HVAC systems. Some intelligent DCV systems can be used with either new or legacy HVAC systems, avoiding the need to replace older systems. However, while the COVID-19 pandemic endures, thermostatic settings with timers, humidity levels and CO<sub>2</sub> detectors also need to be looked at for their possible impact on risks of transmission.

Consideration should be given to running HVAC systems for longer periods than normal. Direct air flow, however, should be diverted away from groups of people using the space, to avoid the dispersion of SARS-CoV-2 virus droplets from infected people to others. As a general principle, mechanical ventilation equipment should be adjusted to minimise sustained air flow towards people when they are seated or otherwise unable to move around. Technical and maintenance teams should be directed to explore options that avoid the use of recirculated air as much as possible.

In efforts to avoid or reduce air recirculation, follow information provided by the manufacturer, or else seek their updated advice. It is not recommended to change heating set points, cooling set points and possible humidification set points of HVAC systems as a measure to reduce potential SARS-CoV-2 transmission.

Seek technical expertise to advise on the physical placement of HVAC systems in closed spaces. Thought needs to be given to the expected number of users at any given time and the activities for which they need the space.

## Keeping everyone safe

Livery halls need to provide clear guidance to staff, event organisers and guests on the need for and use of personal protective measures, including:

- Physical distancing
- Hand hygiene
- Respiratory etiquette (visual alerts, cough etiquette etc.)
- Appropriate use of face masks, if required for staff and others, especially in areas where physical distancing cannot be maintained for one reason or another.

Such guidance needs to comply with national and local regulations.

If a Livery hall has been closed for an extended period and has air-conditioning units that have a source of water that itself can generate aerosol droplets, you will need to assess the risks of legionella being present before restarting.

Small wall or ceiling-mounted units with closed cooling systems should not present a risk. Split air conditioning systems can provide and regulate thermal comfort and the air movement provided can disperse any stagnant air in corners, but this method does not provide an outside air supply and could act as a recirculating method spreading airborne viral particles into rooms of socially distanced occupants ([SAGE-EMG, 2020](#)).

Larger units may present a risk if their condensate trays have not been drained or have humidifier or evaporative cooling sections where water can stagnate. These can act as a reservoir in which bacteria are able to grow.

Check your units, or have them checked, and if need be clean them before they are turned on.

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