

# Humidity control: virus protection, IAQ and care homes

As the Indoor Air Quality (IAQ) debate takes on ever greater significance and dominates headlines during the pandemic, John Barker, managing director of Humidity Solutions, examines the research on the role humidity control can play, and looks at some of the solutions for care homes, hospitals and places of work

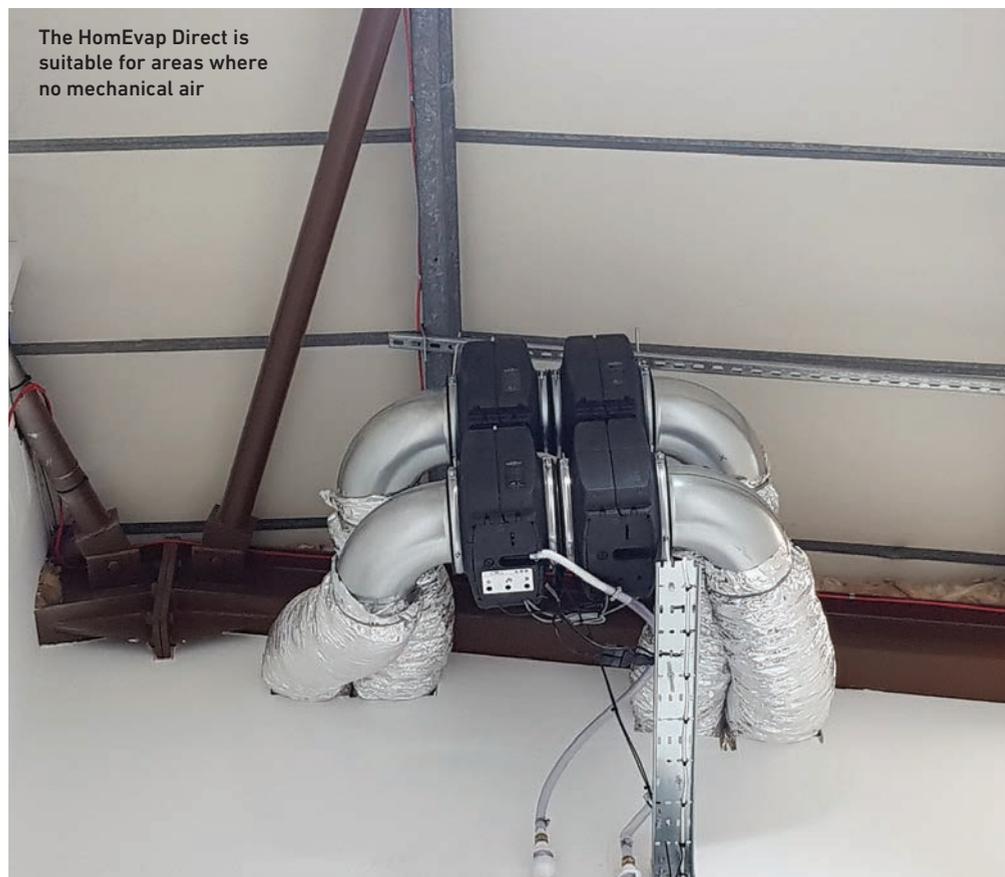
Clearly, since the global pandemic of COVID-19, the emphasis on infection control has become of utmost importance, in particular in care homes and hospitals and how best to assist with limiting the transmission of airborne viruses within these establishments.

This is part of the greater discussion around IAQ and how we can protect people who are working, studying or being cared for in increasingly airtight buildings for the majority of their day.

## Research and data

Scientific data does show that to maintain a humidity of 50% relative humidity (RH) will reduce the transmission of viruses by keeping the bodies defence mechanism (mucus membrane in the nose and throat) moist and able to capture airborne bacteria and virus before it enters the body. Maintaining an RH of between 30-60% has been shown to influence the survivorship of viruses and reduce the transmission and infectiousness of viral diseases.

More recent studies have taken aim at the influence of RH on specific families of viruses, like influenza and coronavirus. These studies focus on the observed survival on surfaces and in the air



The HomEvap Direct is suitable for areas where no mechanical air

column, and the rates of infection under different environmental conditions. Below we outline key findings from commonly referenced or recent studies. Links to the studies are posted as well.

- Maintaining an indoor RH between 40%-60% may help to limit the spread and survival of novel coronavirus. Humidification maintains hydrated and intact mucosal barriers of human occupants, resulting in an increase in resistance against any microbial attack. (Dietz et al., 2020).
- While coronaviruses are durable on surfaces relative to influenza viruses, survival rates are reduced at moderate RH of 50%. (Casanova et al., 2010)
- The infectiousness of airborne influenza viruses was significantly reduced when RH was above 40% (Noti et al., 2013)
- Humidification in homes can reduce survival of influenza and promote recovery, by improving restfulness in sick individuals (Myatt et al., 2010)
- Maintaining 40-45% RH in hospitals reduced perceived air dryness and airway symptoms of patients and hospital staff (Nordström et al., 1994).

**Solutions**

So, where a humidity control system is not already in place in a facility, is there a practical solution to retro fit into the office, care home, classroom etc? Mobile humidifiers can be used but they do require regular manual filling and take up floor space.

Commercial systems can be installed into the fresh air supply, such as an air handling unit, but sometimes this is not possible, or such a system is not already installed into the building.

One excellent solution is to use the HomEvap, a cold water evaporative humidifier, which can be fitted to a heat recovery unit in a house or supplied office – out of the way, plumbed in, and providing excellent control automatically. Energy usage ranges between 20 -90 watts dependant on if you require a fan or not. A single humidifier can evaporate five litres of water per hour which will provide humidity control to a space with a volume of approximately 1200m<sup>3</sup>. The result is a comfortable, healthier environment for net zero energy usage (temperature can be reduced by 2°C when the humidity is raised from 30 – 50% RH for the same thermal comfort).

In a care home the solution is often not to put the humidifier in the day room



Humidity Solutions  
MD, John Barker

or bedrooms, but to control the humidity in corridors serving these rooms and to allow the humidity to migrate to the areas of concern. This way there is no noise issue (although very low in a bedroom, a small fan can still be a nuisance) and maintenance when required does not disturb the occupant of the room.

Humidity Solutions has a wealth of experience, expertise and application knowledge in the field of humidity control please do contact us for free advice.



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