



Guidance on the recirculation of air in buildings



Recirculation of air in buildings

The Building Engineering Services Association (BESA) has released further guidance on the recirculation of air in buildings, more specifically, the decision of whether a fan coil / DX terminal unit should be put back into operation.



There has been much deliberation regarding the recirculation of localised air within occupied areas of buildings. The means of recirculation is generally via fan coil units (FCUs) or active chilled beams designed to condition the space within which they are installed (including DX FCUs connected as a single split or part of a multi-split or VRF/VRV system). Whether the unit should be switched off largely depends on the location, use, and occupation density of the area it serves. Ultimately, the logic behind stopping recirculation and maximising fresh air is about reducing risk and the flowchart in appendix 1 should be consulted to determine the best way forward.

Key factors to consider:

- Recirculation of air between spaces within buildings should be avoided where possible if occupied by different people.
- If the terminal unit serves an area occupied by one person with access of other persons limited or prohibited, and the air recirculation is entirely local to that zone, then there is no harm in allowing the unit to operate as normal.

Any potentially contaminated droplets of moisture present within exhaled air will only be recirculating to the person who exhaled it in the first place. The unit should be disabled when that person leaves the zone in case others enter during

their absence. Additionally, it is advised that surfaces are cleaned down before the unit is enabled again.

- If the terminal unit serves a multiple occupied area and the unit is also the means for distributing fresh air, then it is advisable to keep the unit operational due to the benefit of maximising the air exchange rate with outside air within the space. Building managers may need to assess the location of the occupants in relation to the air flow pattern emanating from the units, and re-arrange furniture as required.

Additionally, the fan speed should be turned down to a low speed setting to minimise air throw. In situations where the terminal unit does not provide fresh air into the space and is essentially recirculating air within the area served, the potential for air flow distributing a contaminated air droplet towards other people is higher – therefore in this instance, it is recommended to disable the unit.

- In situations where terminal units cannot be disabled, care should be taken as to where people are positioned in that area in relation to the airflow emanating from the unit. Additionally, the fan speed should be turned down to a low speed setting to minimise air throw.
- On the terminal unit heat exchanger surface, it is possible to inactivate COVID-19 virus particulate by heating the coil to a temperature of 60°C for a period of one hour, or 40°C throughout the day.



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It is recommended that the system is set to enable full heating mode every evening, or at a time when the building or affected space is unoccupied, to allow the coil temperature to rise to 60°C for at least an hour with the fan enabled at full speed to ensure as much air as possible passes over the hot coil.

- Increasing filter grade material within terminal units may put an undue strain on the fan motor causing burn out, or in the case of DX FCUs cause liquid refrigerant to slug back to the outdoor unit, damaging the compressor. For this reason, it should only be done where the air flow can be maintained at a suitable level.

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I hope you find this information useful - should you wish to discuss the guidance in greater detail or have any specific operational concerns relevant to your own buildings, please do not hesitate to contact me.



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[Please note – the information provided within this guidance document is based on knowledge available at the time of writing (7th August 2020). You should seek independent advice for information regarding any specific technical and/or legal issues.]

Figure 1:
Decision flow chart

