

## RECOMMENDATIONS ON THE USE AND MAINTENANCE OF AIR CONDITIONING AND VENTILATION SYSTEMS TO PREVENT THE SPREAD OF COVID-19

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The Government has [published a guide](#) with recommendations on the use and maintenance of air conditioning and ventilation systems to prevent the spread of COVID-19 in buildings and premises, such as offices, shopping centres, sports and cultural facilities, among others.

The risk of transmission of the SARS-CoV-2 virus by air inside buildings has been shown to be higher when there is little ventilation. These technical recommendations prioritise users' safety against contagion over thermal well-being and energy efficiency.

The **recommendations** are as follows:

**1.** The guide emphasises that **air renewal** is the most important parameter. If possible, a minimum of 12.5 litres per second (l/s) and occupant is recommended, which is the value that the Regulation for Thermal Facilities in Buildings attributes to a good quality air.

To ensure this minimum value, there are two areas which can be looked into: either increase ventilation or reduce occupancy of spaces.

**2.** It is advisable **to verify** that the air renewal teams work at least in their nominal design conditions and that any load losses, especially internal to the system, are minimal (filters with filling, etc.).

**3.** If the system has specific air quality controls (CO2 probes, etc.) it is recommended to disconnect them, giving priority to the **system flow rate** (per hour).

In particular, in **working hours**, it is advisable to work with the maximum flow that the system allows from two hours before opening and up to two hours after closing.

In the **remaining hours** of the week, including weekends, it is preferable that the system continue to operate at low flow rates, but never at less than 25 % of the nominal airflow.

**4.** In those devices that make it possible, the guide recommends removing or reducing **air recirculation** whenever the operating conditions permit.

**5.** As for rotary heat **recoverers**, it is advisable to carry out an inspection before putting them into operation. In plate recoverers, on the other hand, it is recommended to verify possible leaks.

**6.** If there is a specific extraction system for the **toilet area or other areas in the office**, such as changing rooms, it is advisable to keep them active permanently.

**7.** In buildings without mechanical ventilation systems, the opening **of accessible windows is** recommended, favouring cross-ventilation.

Regular window ventilation is advised even in buildings with mechanical ventilation.

**8.** It is recommended not to change the set-point **temperature** (heating nor cooling).

**9.** The regulatory ranges on **relative humidity** — between 30 % and 70 % – are considered appropriate, so the guide advises to keep the pre-established set points in the building.

**10.** In the event that the building has fancoils, splits, inducers or other **internal units of direct expansion**, it is advisable that these devices work in a manner that is compatible and in solidarity with the external units.

It is recommended to increase the recirculated air filtration as much as technically possible if the equipment permits it, and provided that the nominal air flow of the equipment is guaranteed.

**11.** If the premises present **difficulties** in obtaining **satisfactory ventilation**, it is advisable to use portable units equipped with high-efficiency HEPA filters, located in the spaces to be treated. They need to maintain a significant rate of hourly movement. The effectiveness of this equipment depends on their correct selection and sizing, so it must be set up by a competent technician.

In particular, the guide recalls that **ozone-based equipment** can not be used in premises with **the presence of people** and that the WHO warns against the use of **UV-C lamps** to disinfect the hands or any other surface of the skin. Therefore, it is not recommended for use in environments where people are present.

**12.** The document considers the **maintenance tasks** as relevant as system operational ones.

Thus, in the case of those buildings and establishments that have closed or ceased their activity, it is advisable to carry out a general review of the air conditioning installation before reopening, cleaning grids, diffusers, filters and batteries. And if the installation is ventilation based, it is advisable to perform a process of purging the interior air of both the building and the system, for which it would suffice to start the ventilation system to offer a number of renovations of the adequate interior air.

**13.** It is **not** considered mandatory to **clean the ducts** if the previous recommendations are followed on the increase in the supply of outside air, absence of recirculation and stop of rotary recoverers.

This recommendation does not exempt from the mandatory revision, once per season, of the network of conduits according to the criteria of UNE 100012.

**14.** It is advisable to replace **the air filters** according to the maintenance program already established in each building. If the fan of the equipment allows it, it is recommended to improve the efficiency of the filter, provided that the nominal air flow of the equipment is guaranteed.

**15.** It is considered desirable that **the drive and return units** be revised and cleaned.

**16. Maintenance work** must be carried out in accordance with the **security measures** set out in the protocols of each company and in accordance with the guidelines of the Ministry of Health.

In particular, the guide emphasises the need to act safely in the event of filter changes. Protective measures shall be the usual ones, including mandatory respiratory protection and gloves.

**17. In the event of a possible positive case of COVID-19**, it is recommended that the space where the person has stayed be ventilated for at least 4 hours. Ventilation should begin at least 2 hours before starting disinfection work.

Within the space cleaning and disinfection protocol, it is recommended to include the air drive and return grids; removal, cleaning and disinfection of the inner unit filter if any (fancoil, split); and cleaning and disinfecting the inner unit, if any, by spraying a disinfectant solution.