



50/60 Hz KITCHENS VENTILATION

SOLUTIONS FOR INDUSTRIAL KITCHENS

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> KITCHENS <

> REQUIREMENTS AND REGULATIONS OF VENTILATION IN KITCHENS>

Ventilation in residential, professional and industrial kitchens is vital moreover in the adjoining rooms also, to guaranty the comfort, safety and health of the people in them. The two main systems to obtain a good ventilation are the extraction and supply; according to the regulations of each country and to meet the standards of hygiene, health, safety and energy savings.

> 1. Requirements

A good ventilation in kitchens and the adjoining rooms must fulfill the following requirements:

Security: It's important that the work environment is safe and healthy for the people inside.

Maintenance, cleaning and hygiene: the installed equipment must have a rigorous and periodic maintenance, as well as be always clean to avoid diseases or sparks of the equipment. That is why the equipment must be accessible and easy to maintain.

Comfort: the ventilation systems must provide a correct temperature in certain areas of the kitchen and near rooms but also ensure a low sound level that doesn't harm the people who are in them.

Energy saving: it is essential to achieve a good extraction and supply of the air that guarantees all the goals set beforehand and also to achieve the minimum possible energy loss.

> 2. Regulations

Casals Ventilación manufactures all the necessary fans for the correct extraction and supply of air according to the following regulations:

UNE 100-165-04	Smoke Extraction and ventilation in kitchens. (Spain).
C. T. E. DB SI 1- Propagación interior	Edification Technical Code – Fire Security. (Spain).
RITE	Regulation of Thermic Installations in Buildings. (Spain).
Regulación ERP 327/2011	Eco-design Directive ERP.
UNE-EN 12101-3:2016	Smoke and Heat Control Systems - Part 3: Specification for Powered Smoke and Heat Control Ventilators (Fans).
UNE-EN 16282-1:2017	Equipment for Commercial Kitchens - Components for Ventilation of Commercial Kitchens - Part 1: General Requirements Including Calculation Method.
UNE-EN 16282-2:2017	Equipment for Commercial Kitchens - Components for Ventilation in Commercial Kitchens - Part 2: Kitchen Ventilation Hoods - Design and Safety Requirements.
UNE-EN 16282-3:2017	Equipment for commercial kitchens - Components for ventilation in commercial kitchens - Part 3: Kitchen ventilation ceilings; Design and safety requirements.
UNE-EN 16282-4:2017	Equipment for commercial kitchens - Components for ventilation in commercial kitchens - Part 4: Air inlets and outlets; Design and safety requirements.
UNE-EN 16282-5:2017	Equipment for Commercial Kitchens - Components for Ventilation in Commercial Kitchens - Part 5: Air Duct; Design and Dimensioning.
UNE-EN 16282-6:2017	Equipment for Commercial Kitchens - Components for Ventilation in Commercial Kitchens - Part 6: Aerosol separators Design and security requirements.
UNE-EN 16282-7:2017	Equipment for commercial kitchens - Components for ventilation in commercial kitchens - Part 7: Installation and use of fixed fire suppression systems.
UNE-EN 16282-8:2017	Equipment for commercial kitchens - Components for ventilation in commercial kitchens - Part 8: installations for treatment of aerosol - Requirements and testing.
BS-EN 16282-9:2017	Equipment for commercial kitchens - Components for ventilation in commercial kitchens - Part 9: Capture performance and retention of extraction systems. Test methods.
BS EN 16282-7:2017	Equipment for commercial kitchens. Components for ventilation in commercial kitchens. Installation and use of fixed fire suppression systems.

The regulations and directives in force on ventilation in kitchens are different depending on the countries. Casals Ventilación offers a wide range of products which tries to adapt and accomplish the requirements of all of them.

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> MAIN GOALS TO ACCOMPLISH IN VENTILATION < KITCHENS

Complying with the requirements of safety, energy saving, maintenance, hygiene, comfort and international regulations mentioned above, we conclude that a good extraction and ventilation system in kitchens must meet the following 4 goals:

> 1. Extract the dirty and stale air from the inside of the kitchens to the outside of the building, so that the kitchen and the adjacent areas are not contaminated. This way the smells, grease particles and harmful gases are reduced for professionals and assistants inside. It is also important to extract the heat and humidity that occurs due to the different reactions that take place inside the kitchen.

> 2. The clean air must be induced from the outside avoiding that the extracted air reenters the kitchen due to a bad calibration of the system of impulsion and/or extraction. Achieving a comfortable and energy-efficient climatization thanks to the induction of air in the kitchen normally at a lower temperature than the extracted air.

> 3. The necessary requirements for healthy, hygienic, comfortable and safety environments for the professionals and assistants must be maintained therefore the standards are defined by the different international regulations and legislations. It is very important to install good systems to eliminate smells and retain all the grease particles, to avoid the exit of contaminating particles or the inhalation of them inside the installations.

> 4. The air renewal inside the kitchen and adjacent rooms must be maintained at appropriate and specific temperatures according to the specified requirements of each room. It is important that when the air is extracted or induced, they do not mix, producing an inefficient and harmful air renewal in the different rooms and kitchen.



Other technical data to achieve the goals and requirements of a good ventilation in kitchens.

Always that the installed power of the elements destined to the preparation of food in the professional kitchens is superior to 20kW, they will be classified as special risk areas. The ducts must be independent of any other extraction or ventilation. The mechanical smoke and heat extractors will have a fire classification F400/2 hour. In the case where the total cooking power is higher than 25 kW the extraction will be mandatory and therefore the mechanical supply of air as well, but in the case where the total cooking power is lower than 25kW only mechanical extraction will be required.

The air flow of an extraction will be calculated from a suction speed from the free perimeter respect to the height of the hood. The suction speed of the base of the hood will depend on the open sides. A suction speed of 0.6 m/s is recommended in island-type hoods (four open sides), 0.45 m/s for hoods with 3 open sides, for hoods with 2 open sides 0.35 m/s for the hoods with only one open side 0.25 m/s.

To achieve an adequate thermal comfort Casals Ventilation recommends that the ambient air inside the kitchen oscillates between 18°C and 26°C with humidity levels around 30% to 65% RH. Casals also recommends a maximum acoustic level of 60 dBA within the work area (unit value of the sound level produced by ventilation only) to achieve an adequate acoustic comfort. Hygiene should have a maximum depression of 10% established in the kitchen. As we have mentioned before, the induction of fresh air must be from the outside, it cannot be air recycled from other rooms. Regarding filtration, standard levels recommended according to IDA2 (EN13779) = the average indoor air quality with F8-F9.

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> ESSENTIAL ZONES WHERE FANS SHOULD BE INSTALLED <

> Smoke exhaust OUTSIDE



CTH-3A

CTH-3

CTH-4

BOX BSTB

BVFC

DHUMAT

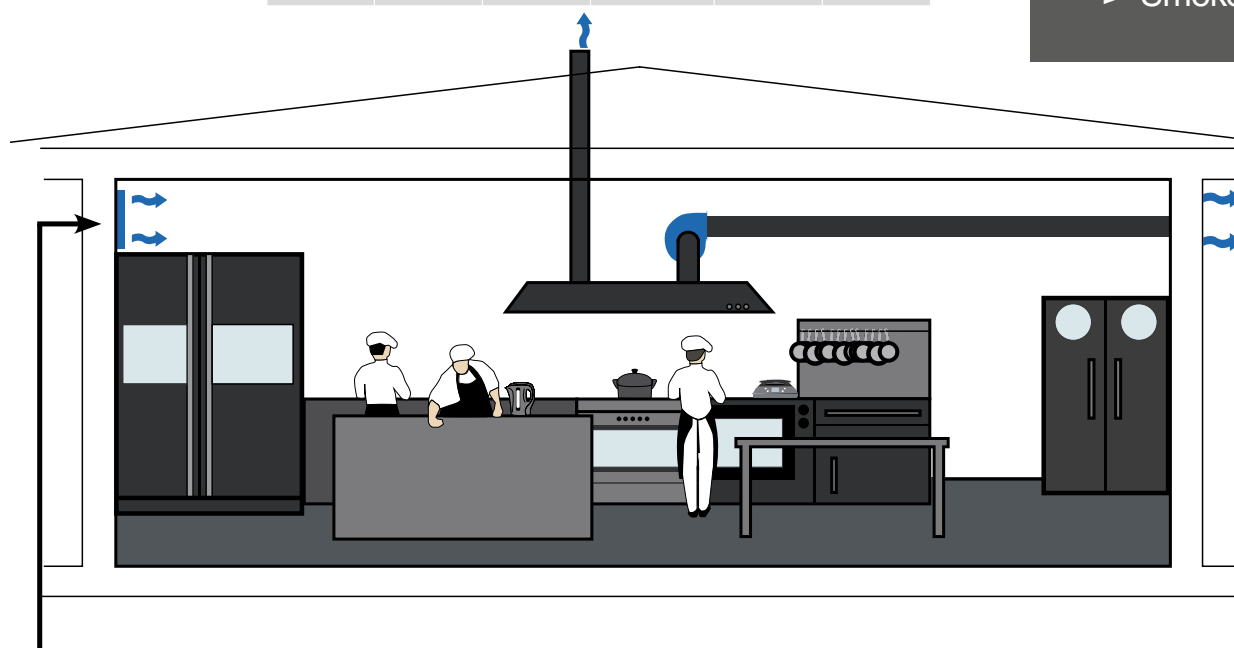
> Smoke exhaust INSIDE



IGNÉO



BOX RLF



> Air supply



BOX BD

BOX RL

BOX RL
PLUS EVO

BOX BSTB

BOX BD CA

TWIN BOX
BD/BV AC&EEC

TWIN BOX
BD/BV PLUS

SB-2

SBC-2



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