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|    | <h2>Content</h2> <ul style="list-style-type: none">Requirements on ventilation of dwellingsVentilation systems in residential buildings stock and marketRequirements on ventilation of non-residential buildingsVentilation systems in non-residential buildings stock and marketTrends in the inspection of ventilation systemsTrends in innovative systems and marketConclusions |
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Requirements on ventilation of dwellings

Goal

Ministerio de Fomento

Secretaría de Estado de Vivienda y Urbanismo

Departamento de Vivienda y Urbanismo

Documento Básico

HS

Salubridad

HS 1 Protección frente a la humedad

HS 2 Recogida y evacuación de residuos

HS 3 Calidad del aire interior

HS 4 Suministro de agua

HS 5 Evacuación de aguas

HS 6 Protección frente a la exposición al ruido

Buildings shall be provided with means so that they can be suitably ventilated, and contaminants produced during normal use can be removed. A sufficient flow of external air must be provided and indoor polluted air must be extracted

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Requirements on ventilation of dwellings

Performance

Maximum CO₂ yearly average concentration

900 ppm

Maximum CO₂ accumulated value per year

500000 ppm per hour accumulated above 1600 ppm

Minimum constant flow rate

1.5 l/s

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Simulation

```

graph TD
    OutdoorCO2((Outdoor CO2)) --> DesignConditions[Design conditions]
    IndoorCO2((Indoor CO2 generation)) --> DesignConditions
    Occupants((Occupants)) --> DesignConditions
    OccupancyScenario((Occupancy scenario)) --> DesignConditions
    ClimateConditions((Climate conditions)) --> DesignConditions
    DesignConditions --> OutdoorCO2
    DesignConditions --> IndoorCO2
    DesignConditions --> Occupants
    DesignConditions --> OccupancyScenario
    DesignConditions --> ClimateConditions
    RealData((Real data)) --- DefaultData((Default provided data))
            
```

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Deemed-to-satisfy solutions

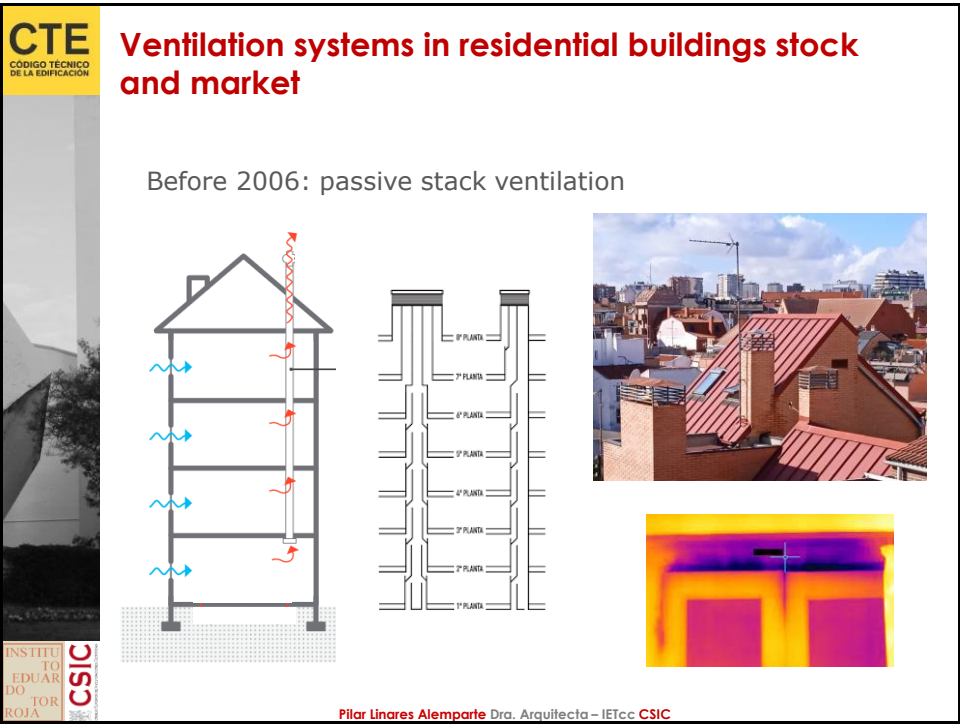
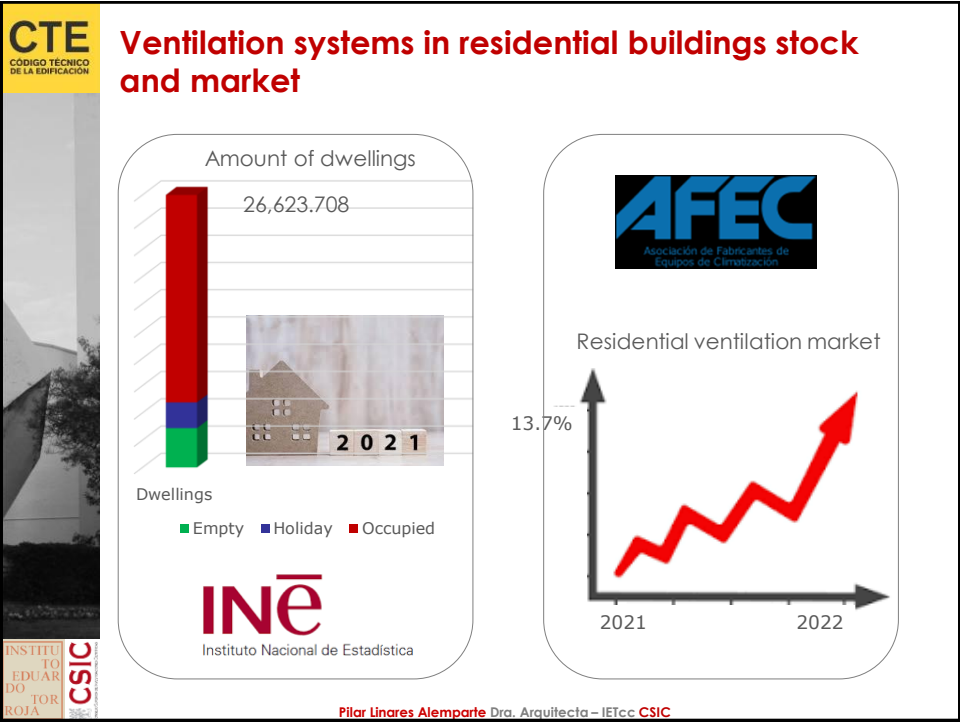
| Type of dwelling | Minimum constant ventilation flow [l/s] | | | | |
|------------------|---|----------|----------------------------|----------------|------------------|
| | Dry rooms | | | Wet rooms | |
| | Master bedroom | Bedrooms | Dining and living room (1) | Global minimum | Minimum per room |
| 0 or 1 bedrooms | 8 | - | 6 | 12 | 6 |
| 2 bedrooms | 8 | 4 | 8 | 24 | 7 |
| ≥ 3 bedrooms | 8 | 4 | 10 | 33 | 8 |

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Ventilation systems in residential buildings stock and market

From 2006:

- mechanical or hybrid ventilation (fully natural ventilation not allowed)
- specific air inlets: microventilation or trickle vents

Most common: hybrid ventilation

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Ventilation systems in residential buildings stock and market

Second most common: mechanical extraction (single flow)

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Ventilation systems in residential buildings stock and market

Increasingly more common: mechanical extraction and supply with heat recovery (double flow)

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Requirements on ventilation of non-residential buildings

Objective

Ventilation system must provide for enough outdoor air flowrate that avoids the accumulation of high concentration of pollutants according to table

Table. IAQ categories (RITE)

| IAQ categories | Examples |
|-----------------|-----------------------------------|
| IDA 1 (optimal) | Hospitals, kindergardens |
| IDA 2 (good) | Offices, museums, classrooms |
| IDA 3 (average) | Shops, cinemas, restaurants, gyms |
| IDA 4 (poor) | Laundry rooms |

Paraninfo

Reglamento de Instalaciones Térmicas en los Edificios

Real Decreto 1027/2007 de 20 de julio de 2007

Actualizado según el Real Decreto 240/2013 de 1 de marzo

Índice Normativo Técnico Complementario

Edición 2013 Normas y Actualizaciones

RITE

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Requirements on ventilation of non-residential buildings

Verification methods

5 methods:

- airflow per occupant indirect method
- airflow per net floor area indirect method
- perceived air quality direct method
- CO₂ concentration direct method
- dilution method.

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Ventilation systems in non-residential buildings stock and market

Amount of properties

2.000,000

Properties

■ Non residential

GOBIERNO DE ESPAÑA

MINISTERIO DE HACIENDA

SECRETARÍA DE ESTADO DE HACIENDA

DIRECCIÓN GENERAL DEL CATÁSTRO

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Ventilation systems in non-residential buildings stock and market



From 2021 to 2022:

- the market in air distribution and diffusion increased by 19.7%
- the air handling units and ventilation units market also increased by approximately 10%
- the industrial/tertiary ventilation market increased 17.5%
- the residential and tertiary market represent 20.3% of the total revenue in 2022 from HVAC products

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Trends in the inspection of ventilation systems



- Initial and periodic inspections
- Authorised companies or inspection entities
- Every 4 years
- Comprehensive every 15 years

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Trends in innovative systems and market

Innovative systems must demonstrate compliance with the essential requirements of CTE by **technical approval**












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Conclusions

- IAQ regulations in Spain are performance-based
- The IAQ requirement in dwellings is identified in terms of CO2 concentration
- Performance-based regulations allow the use of innovative, energy efficient systems
- The requirements may be met through simulation or deemed-to-satisfy solutions
- Ventilation market in Spain is strong and keeps increasing

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The IAQ performance-based regulation in Spain

October 2025

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Thank you for your attention

Any questions?

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