

Revision of the ventilation part of EN16798-1 and -2

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SUMMARY

As part of the mandated standards for estimating the energy performance of buildings CEN 16798-1 and -2 was developed to provide input for the indoor environment (thermal comfort, air quality/ventilation, lighting, acoustic) to energy calculations and design of buildings with its heating, cooling, ventilation, and lighting systems. A revision of this standard has now been started.

KEYWORDS

Indoor air quality, standard, ventilation, air cleaning, cross contamination

1 ORGANISATION OF THE REVISION

The existing standard was developed under CENTC156 Ventilation in Buildings. As the standard also deals with other aspects of the indoor environment than ventilation, there were several complaints from other TC's. It has now been agreed that the standard will be divided in 5 main parts split up on 4 different TC's:

1. Overarching TC371WG3
2. Thermal Comfort TC371WG4
3. Indoor Air Quality TC156WGxx
4. Lighting TC169
5. Acoustic TC126

The standard will still be issued as one standard.

2 SCOPE OF THE REVISION FOR INDOOR AIR QUALITY

The standard specifies the relevant parameters for determining the indoor air quality in buildings and how these parameters are used for building systems, design, assessment, operation, and energy performance calculations.

The standard is applicable where the criteria for indoor air quality are set for human occupancy and where the production or process does not have a major impact on indoor air quality.

The standard includes design criteria for the ventilation of buildings in both residential and non-residential buildings.

The standard does not specify design methods but gives the relevant input parameters for the design and assessment of the ventilation, air treatment systems, building automation and control systems. In addition, it proposes methods for determining the indoor air quality and classes for different limit values.

The scope includes now also parameters for assessment and design of air treatment systems, building automation and control systems

3 PROPOSED REVISIONS

The overall concept of the standard will stay the same including an Annex A for national criteria, Annex B with recommended criteria. It should still include the three methods:

1. Method 1 based on perceived air quality
2. Method 2 based on individual substances
3. Method 3 based on simple table values

Following several of the proposed changes are discussed

3.1 Alignment of Method 1 and 2

In the existing standard Method 2 will be based on higher CO₂ concentrations than Method 1, which will result in less ventilation and decrease in air quality. There is a need to provide more consistency between the methods

3.2 Use of CO₂ as control set-point for demand control ventilation

In general, it is assumed that if the ventilation is controlled after a fixed CO₂ level during variable occupant density will provide the same level of air quality. This is only true if people are the only sources of emissions. Therefore, the set-point should vary with occupant density and building category (low emission, very low emission)

3.3 Health criteria

In the existing standard a minimum ventilation rate of 4 l/s per person is recommended. Due to the risk of cross contamination and experience from the pandemic additional health related ventilation requirements will be established. In the standard health criteria for only a few substances are included. There is a need to include more substances like particles.

3.4 Air cleaning

Since the standard was issued the use of different air cleaning technologies in buildings has increased significantly. The standard must in the future include more in relation to the effect of air cleaning on health and indoor air quality.

3.5 Personalised Environmental Control Systems

Because of individual comfort, cross contamination, individual control there is an increasing interest for personalised systems. There is, however, a need for design criteria and methods to evaluate the performance of such systems.

3.6 Key performance indicators

To be able to express the yearly performance regarding indoor air quality we need to establish methods to integrate the performance over a year

4 ACKNOWLEDGEMENTS

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5 REFERENCES

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CEN, CEN/TR 16798-2:2019, Guideline for Using Indoor Environmental Input Parameters for the Design and Assessment of Energy Performance of Buildings, Draft for Working Group Red, BSI, 2019.