



SLOVENSKI STANDARD

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Prezračevanje stavb - Preskušanje lastnosti sestavnih delov/izdelkov za prezračevanje stanovanjskih stavb - 5. del: Prezračevalne kape in strešni iztoki na strehah

Ventilation for buildings - Performance testing of components/products for residential ventilation - Part 5: Cowls and roof outlet terminal devices

Lüftung von Gebäuden - Leistungsprüfung von Bauteilen/Produkten für die Lüftung von Wohnungen - Teil 5: Hauben und Dach-Fortluftdurchlässe

Ventilation des bâtiments - Essais de performance des composants/produits pour la ventilation des logements - Partie 5 : Extracteurs statiques et dispositifs de sortie en toiture

[SIST EN 13141-5:2021](https://standards.iteh.ai/SIST/EN/13141-5:2021)

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91.140.30

Prezračevalni in klimatski sistemi

Ventilation and air-conditioning systems

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English Version

**Ventilation for buildings - Performance testing of
components/products for residential ventilation - Part 5:
Cowls and roof outlet terminal devices**

Ventilation des bâtiments - Essais de performance des
composants/produits pour la ventilation des
logements - Partie 5 : Extracteurs statiques et
dispositifs de sortie en toiture

Lüftung von Gebäuden - Leistungsprüfung von
Bauteilen/Produkten für die Lüftung von Wohnungen -
Teil 5: Hauben und Dach-Fortluftdurchlässe

This draft European Standard is submitted to CEN members for second enquiry. It has been drawn up by the Technical Committee CEN/TC 156.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

This draft European Standard was established by CEN in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (prEN 13141-5:2019) has been prepared by Technical Committee CEN/TC 156 “Ventilation for buildings”, the secretariat of which is held by BSI.

This document is currently submitted to the second CEN Enquiry.

This document will supersede EN 13141-5:2004.

A list of all parts in the EN 13141 series, published under the general title *Ventilation for buildings — Performance testing of components/products for residential ventilation* can be found on the CEN website.

In addition to a number of editorial revisions, the following main changes have been made with respect to EN 13141-5:2004:

- modification of the title and scope to add assisted cowls;
- exclusion from the scope of roof exhaust fan which are tested according to EN 13141-4;
- reorganization of the clause concerning the performance testing of aerodynamic characteristics (now Clause 5) in order to have a more homogeneous organization and modification of all the figures to make them more understandable;
- modification of the subclause concerning test installation for aerodynamic characteristics (now 5.1), which includes the modification of all tests installation requirements as well as the distinction between requirements that apply to all the tests and those that apply only to the wind tunnel use;
- modification of the volume flow rate correction (see 5.2 concerning pressure drop);
- modification of the formula used to characterize the suction effect of a cowl (see 5.3.2 concerning the measurements and calculations);
- renaming of “Preliminary test” as “Least favourable horizontal wind approach angle for the suction effect” (see 5.3.3.1);
- replacement of “a wind of sufficient speed to give easily measurable pressure differences” by “a wind of 8 m/s” (see 5.3.3.1);
- removal of the two following measurements points: $V = 0,5 \text{ m/s}$ and $1,5 \text{ m/s}$ (see 5.3.3.2);
- more precise definition of the three series of measurements to carry out (i.e. $v_{\text{duct}} = 0 \text{ m/s}$, $v_{\text{duct}} = 4 \text{ m/s}$ and $0 \text{ m/s} < v_{\text{duct}} < 4 \text{ m/s}$) (see 5.3.3.3);
- for additional testing (e.g. acoustics and aerodynamic) for fan assisted cowls, reference to EN 13141-4 is replaced by reference to EN ISO 5801 and more developed information are given;
- addition of a test method for measuring the combined effect of natural wind and wind from the fan assisted cowl;
- addition of a detailed clause concerning the test report;
- review of the entire document in order to make it more accessible regarding the changes made.

Introduction

The position of this document in the field of standards for the mechanical building services is shown in Figure 1.

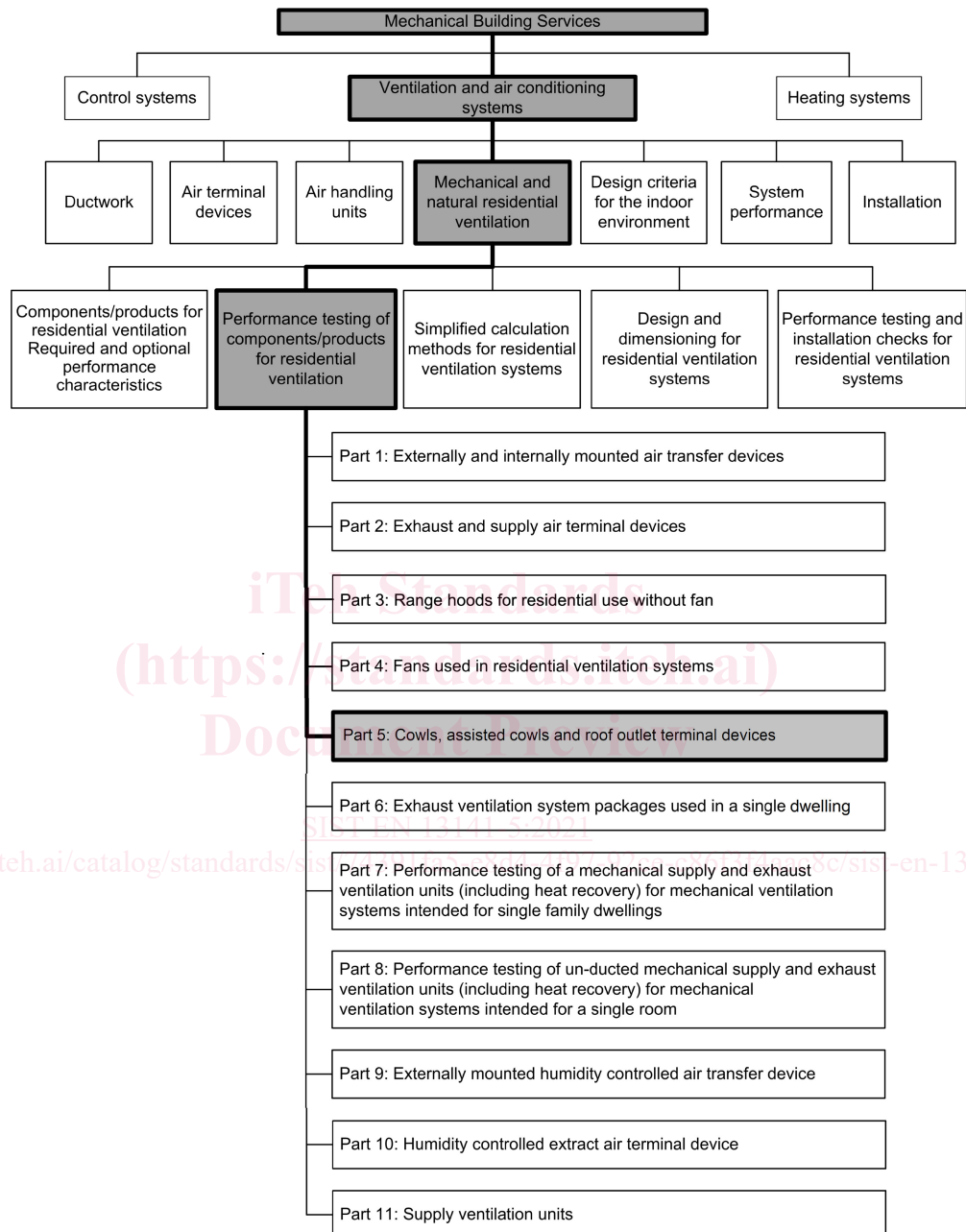


Figure 1 — Position of EN 13141-5 in the field of the mechanical building services

prEN 13141-5:2019 (E)

1 Scope

This document specifies methods for measuring:

- the aerodynamic characteristics of cowls, fan assisted cowls and roof outlets;
- the electrical and acoustic characteristics of fan assisted cowls.

This document is applicable to cowls, assisted cowls and roof outlets used in natural, hybrid or mechanical ventilation and that are meant to be fitted onto ducts which project above the roof surface.

This document does not apply to:

- assisted cowls assisted by a device other than a fan (e.g. injection assisted cowls);
- roof exhaust fans (see EN 13141-4).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 1506:2007, *Ventilation for buildings — Sheet metal air ducts and fittings with circular cross-section — Dimensions*

EN 12792, *Ventilation for buildings — Symbols, terminology and graphical symbols*

EN ISO 5136, *Acoustics — Determination of sound power radiated into a duct by fans and other air-moving devices — In-duct method (ISO 5136)*

EN ISO 5801:2017, *Industrial fans — Performance testing using standardized airways (ISO 5801)*

EN ISO 7235, *Acoustics — Laboratory measurement procedures for ducted silencers and air-terminal units — Insertion loss, flow noise and total pressure loss (ISO 7235)*

ISO 13347-2, *Industrial fans — Determination of fan sound power levels under standardized laboratory conditions — Part 2: Reverberant room method*

ISO 13347-3, *Industrial fans — Determination of fan sound power levels under standardized laboratory conditions — Part 3: Enveloping surface methods*

ISO 13347-4, *Industrial fans — Determination of fan sound power levels under standardized laboratory conditions — Part 4: Sound intensity method*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 12792 and the following apply. ISO and IEC maintain terminological databases for the use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO online browsing platform: available at <http://www.iso.org/obp>

3.1

cowl

air terminal device with or without moving component, intended to be fitted on top of an exhaust duct, with aim, by creating negative pressure depending of the wind speed, to avoid reverse flow and to increase the extracted flow rate in presence of wind

[SOURCE: EN 12792:2003, 92, modified – reformulation of the definition in a single sentence]

3.2

assisted cowl

cowl fitted with an auxiliary device using an energy source other than wind to compensate for lack of suction effect

[SOURCE: EN 12792:2003, 46, modified – removal of “such as a fan and” and replacement of “pressure difference” by “suction effect”]

3.3

fan assisted cowl

assisted cowl where the auxiliary device is a fan

3.4

roof outlet

air terminal device without moving component, intended to be fitted on top of an exhaust duct

4 Symbols and abbreviations

For the purposes of this document, symbols listed in Table 1 apply.

Table 1 — Symbols and abbreviated terms

Symbol	Quantity	Unit
$C(\alpha, v_{\text{tunnel}}, v_{\text{duct}})$	pressure factor	—
D	duct diameter	m
L	duct length	m
L_W	sound power level	dB
L_{WA}	A-weighted sound power level	dB(A)
L_{wo}	radiated sound power in the outdoor space (including casing)	dB
p_a	atmospheric pressure	Pa

prEN 13141-5:2019 (E)

Symbol	Quantity	Unit
$p_{d,duct}$	dynamic pressure in the test duct	Pa
$p_{d,tunnel}$	dynamic pressure in the wind tunnel	Pa
$p_{s,duct}$	static gauge pressure in the test duct	Pa
$p_{s,tunnel}$	average static gauge pressure in the wind tunnel	Pa
P_E	electrical power input	W
$q_{v,cor}$	corrected volume flow rate	m ³ /s
$q_{v,meas}$	measured volume flow rate	m ³ /s
r	coefficient of determination of the regression line	—
v_{duct}	mean air speed in the test duct	m/s
v_{tunnel}	air speed in the wind tunnel (wind speed)	m/s
α	vertical wind approach angle	degree
β	horizontal wind approach angle	degree
Δp	pressure drop	Pa
Δp_{cowl}	difference between the total pressure in the test duct approaching the cowl under test and the static pressure in the tunnel	Pa
$\Delta p_{f,duct}$	pressure drop due to friction in the test duct between the pressure tapping and the bottom of the cowl	Pa
ζ	pressure drop coefficient	—
θ_a	temperature of the air in the test duct	°C
ρ_{ref}	density of 1 204 kg/m ³ corresponding to the air under standard conditions (20 °C, 101 325 Pa)	kg/m ³
ρ_{tunnel}	air density in the wind tunnel	kg/m ³