

Contents

Page

European foreword.....	6
Introduction	9
1 Scope	11
Table 1 — Position of this standard (in casu M5-1, M5-5, M5-6, M5-8) within the modular structure of the set of EPB standards.....	12
2 Normative references	13
3 Terms and definitions	14
4 Symbols and subscripts	15
4.1 Symbols.....	15
Table 2 — Symbols and units	15
4.2 Subscripts.....	17
Table 3 — Subscripts.....	17
5 Brief description of the methods.....	18
5.1 Output of the methods.....	18
5.2 General description of the methods.....	18
5.3 Selection criteria between the methods	19
6 Calculation method, method 1 — Determination of air flow rates based on detailed building characteristics	19
6.1 Output data.....	19
Table 4 — Output data of method 1	19
6.2 Calculation intervals	20
6.3 Input data.....	20
6.3.1 General.....	20
6.3.2 Product data.....	21
Table 5 — Product technical input data list.....	21
6.3.3 System design data	22
Table 6 — Identifiers for VENT_SYS_OP.....	22
Table 7 — Process design input data list	22
Table 8 — Identifiers for SUP_AIR_TEMP_CTRL	24
Table 9 — Identifiers for SUP_AIR_FLW_CTRL	24
6.3.4 Operating conditions	24
Table 10 — Operating conditions data list.....	24
6.3.5 Constants and physical data.....	26
Table 11 — Constants and physical data	26
6.3.6 Input data from Annex A (Annex B).....	26
6.4 Calculation procedure, method 1	26
6.4.1 Applicable time intervals and states of operation	26
6.4.2 Operating conditions calculation	26

6.4.3	Calculation of air flow rates	28
7	Method 2 — Determination of air flow rates based on statistical approach	38
7.1	Output data	38
Table 12 — Output data of method 2		39
7.2	Calculation intervals.....	39
7.3	Input data	39
7.4	Calculation procedure, method 2.....	39
7.4.1	General	39
7.4.2	Description of the statistically based simplified method.....	40
7.4.3	Justification of the method	40
8	Quality control.....	40
9	Compliance check	41
Annex A (normative) Input and method selection data sheet – Template.....		42
A.1	General	42
A.2	References.....	43
Table A.1 —References.....		43
A.3	Input data method 1	43
A.3.1	Product description data	43
A.3.2	Product technical data	43
A.3.2.1	Discharge coefficient for vents, air terminal devices, windows	43
A.3.2.2	Airflow exponent for vents, air terminal devices, windows	43
A.3.2.3	Combustion air flows factors.....	44
Table A.2 — Data for appliance system factor.....		44
Table A.3 — Data for fuel flow factor		44
A.3.2.4	Mechanical ventilation	44
Table A.4 —Values for f_{ctrl}		45
Table A.5 — Values for f_{sys}		45
A.3.3	System design data.....	45
A.3.3.1	Supply air temperature control.....	45
A.3.3.2	Exposure to wind	45
Table A.6 — Identifiers for SHIELD_CLASS.....		45
A.3.3.3	Pressure coefficients associated to an air flow path.....	45
Table A.7 — Dimensionless wind pressures coefficients.....		46
Table A.8 — Dimensionless wind pressures coefficients for ventilation zone that cannot be cross-ventilated ($f_{cross} = 0$)		46
A.3.3.4	Difference of wind pressure coefficients	46
A.3.3.5	Pressure coefficient of the cowl at roof height.....	46
A.3.3.6	Correction coefficient for accounting for height of cowl above roof level	46
Table A.9 — Examples of $\Delta C_{cowl; height}$ values		47

A.3.3.7 Ventilation effectiveness	47
A.3.3.8 Airing factor	47
A.3.3.9 Cross-ventilation factor	47
Table A.10 — Cross-ventilation factor	47
A.3.3.10 Number of window divisions.....	48
A.3.3.11 Stack effect in passive and hybrid duct.....	48
A.3.3.12 Distribution of vents.....	48
Table A.11 — Distribution of vents.....	48
A.3.3.13 Reference pressure for the envelope airtightness index	48
A.3.3.14 Flow exponent through leaks.....	48
A.3.3.15 Leakage coefficient of the ventilation zone	48
A.3.3.16 Envelope leakage distribution	48
Table A.12 — Envelope leakage distribution	48
A.3.3.17 Typical internal doorway area.....	49
A.3.4 Operating conditions data	49
A.3.4.1 Maximum wind speed for cross-ventilation calculation.....	49
A.3.4.2 Wind speed correction factors	49
Table A.13 — Correction factor $C_{rgh;10;site}$	49
A.3.4.3 Ventilation system operation	49
Table A.14 — Identifiers for VENT_SYS_OP	49
A.4 Input data method 2	49
Annex B (informative) Input and method selection data sheet – Default choices.....	50
B.1 General.....	50
B.2 References	51
Table B.1 —References.....	51
B.3 Input data method 1	51
B.3.1 Product description data.....	51
B.3.2 Product technical data	51
B.3.2.1 Discharge coefficient for vents, air terminal devices, windows.....	51
B.3.2.2 Airflow exponent for vents, air terminal devices, windows.....	52
B.3.2.3 Combustion air flows factors	52
Table B.2 — Data for appliance system factor	52
Table B.3 — Data for fuel flow factor	52
B.3.2.4 Mechanical ventilation.....	53
Table B.4 — Values for f_{ctrl}	53
Table B.5 — Values for f_{sys}	53

B.3.3 System design data.....	53
B.3.3.1 Supply air temperature control.....	53
B.3.3.2 Exposure to wind	54
Table B.6 — Identifiers for SHIELD_CLASS.....	54
B.3.3.3 Pressure coefficients associated to an air flow path.....	54
Table B.7 — Dimensionless wind pressures coefficients.....	54
Table B.8 — Dimensionless wind pressures for ventilation zone that cannot be cross-ventilated ($f_{\text{cross}} = 0$)	54
B.3.3.4 Difference of wind pressure coefficients	54
B.3.3.5 Pressure coefficient of the cowl at roof height.....	55
B.3.3.6 Correction coefficient for accounting for height of cowl above roof level	55
Table B.9 — Examples of $\Delta C_{\text{cowl; height}}$ values	55
B.3.3.7 Ventilation effectiveness.....	55
B.3.3.8 Airing factor	55
B.3.3.9 Cross-ventilation factor	55
Table B.10 — Cross-ventilation factor	56
B.3.3.10 Number of window divisions	56
B.3.3.11 Stack effect in passive and hybrid duct	56
B.3.3.12 Distribution of vents	56
Table B.11 — Distribution of vents	56
B.3.3.13 Reference pressure for the envelope airtightness index.....	57
B.3.3.14 Flow exponent through leaks.....	57
B.3.3.15 Leakage coefficient of the ventilation zone	57
B.3.3.16 Envelope leakage distribution.....	57
Table B.12 — Envelope leakage distribution.....	57
B.3.3.17 Typical internal doorway area	58
B.3.4 Operating conditions data.....	58
B.3.4.1 Maximum wind speed for cross-ventilation calculation	58
B.3.4.2 Wind speed correction factors.....	58
Table B.13 — Correction factor $C_{\text{rgh;10;site}}$	58
B.3.4.3 Ventilation system operation.....	58
Table B.14 — Identifiers for VENT_SYS_OP.....	58
B.4 Input data method 2	58
Bibliography	59