Ecodesign Directive and UK market requirements

Aircare ES

Eco-design (ErP declaration)

- AirCare ES is a single room continuous and extract ventilation system with heat recovery
- AirCare ES has been tested according EN 13141-8 by TUV on April 2016
- Technical data are reported according EC 1254/2014 directive (ErP declaration and label)
- Aircare ES is fully DCLG compliant

Domestic Ventilation Compliance Guide - Requirements

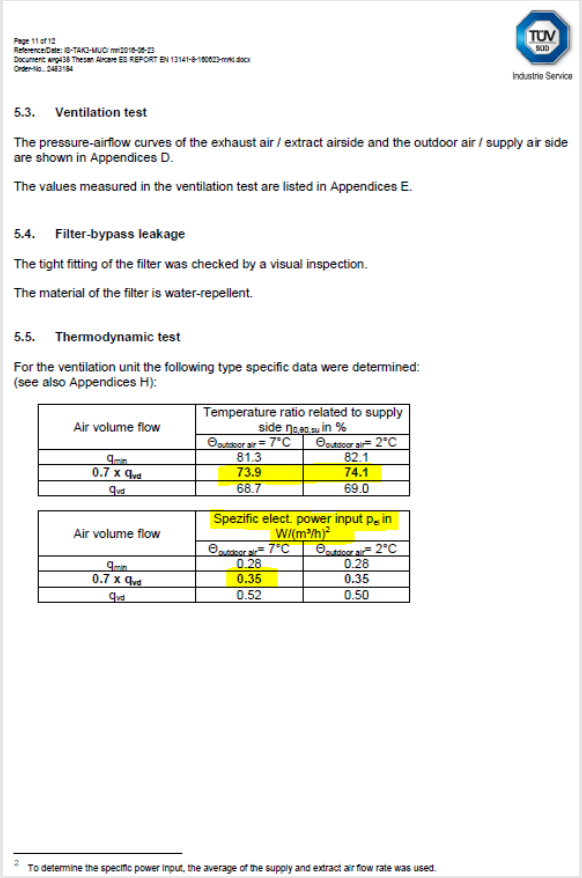
	DCLG Recommended standards	Aircare ES values (TUV report WRG438)
Test standard	BS EN 13141-8 (DCLG, page 30)	EN 13141-8
Fan Power	Maximum 1.5 W/(l.s) for continuous supply and extract with heat recovery	0.35 W/(m³.h) -> 1.26 W/(l.s) At reference flow rate (70% of maximum) (WRG 438, page 11)
Heat Recovery Efficiency	Not worse than 70%	74% at reference flow rate (WRG438, page 11)
Minimum Flow rate	8 l/s	40.6 m³/h (11.3 l/s) with F8+G4 filter)
Control	manual	Manual and Automatic with local demand control based on relative humidity

Non-Domestic Building Service Compliance Guide - Requirements

	N-DBSCG Recommended standards	Aircare ES values (TUV report WRG438)
Test standard	BS EN 13141-8	EN 13141-8
Fan Power	Maximum 1.6 W/(l.s) for continuous supply and extract with heat recovery both for new and old buildings	0.35 W/(m³.h) -> 1.26 W/(l.s) At reference flow rate (70% of maximum) (WRG 438, page 11)
Heat Recovery Efficiency	Minimum 50%	74% at reference flow rate (WRG438, page 11)
Minimum Flow rate	Not specified	40.6 m³/h (11.3 l/s) with F8+G4 filter)
Control	Not specified	Manual and Automatic with local demand control based on relative humidity

TUV Report Data

- Efficiency at reference flow rate 74%
- Specific Power input at reference flow rate ≤0.35 W/m³.h



Industrie Service

5.3. Ventilation test

The pressure-airflow curves of the exhaust air / extract airside and the outdoor air / supply air side are shown in Appendices D.

The values measured in the ventilation test are listed in Appendices E.

5.4. Filter-bypass leakage

The tight fitting of the filter was checked by a visual inspection.

The material of the filter is water-repellent.

5.5. Thermodynamic test

For the ventilation unit the following type specific data were determined:
(see also Appendices H):

Air volume flow	Temperature ratio related to supply side $\eta_{t,e0,su}$ in %	
	$\Theta_{outdoor\ air}$ = 7°C	$\Theta_{outdoor\ air}$= 2°C
q_{min}	81.3	82.1
0.7 x q_{vd}	73.9	74.1
q_{vd}	68.7	69.0

Air volume flow	Spezific elect. power input p_e in W/(m³/h)[2]	
	$\Theta_{outdoor\ air}$= 7°C	$\Theta_{outdoor\ air}$= 2°C
q_{min}	0.28	0.28
0.7 x q_{vd}	0.35	0.35
q_{vd}	0.52	0.50

[2] To determine the specific power input, the average of the supply and extract air flow rate was used.

TUV Report Data

Maximum flow rate: 40.6 m³/h
Reference flow rate: 28.4 m³/h

Industrie Service

4.2. Tightness test

The results of the tightness test are listed in Appendices C.

The indoor/outdoor air tightness of the complete ventilation unit according the standard DIN EN 13141-8:2014-09 is:

test pressure	- 20 Pa	+ 20 Pa
indoor/outdoor air tightness	1.6 m³/h	1.6 m³/h

The maximum declared air volume flow (q_{vd}) of the ventilation unit was 40.6 m³/h.
The reference air volume flow (q_{vref}) of the ventilation unit was 28.4 m³/h.

The internal and external leakage related to the **maximum declared air volume flow** was:

	-50 Pa	**+50 Pa**
external leakage	3.3 %	3.1 %

	-20 Pa	**+20 Pa**
internal leakage	1.9 %	2.1 %

The internal and external leakage related to the **reference air volume flow** was:

	-50 Pa	**+50 Pa**
external leakage	4.6 %	4.4 %

	-20 Pa	**+20 Pa**
internal leakage	2.6 %	3.1 %

The outdoor mixing according the EN 13141-8:2014-09 at maximum air volume flow was 0.3 %

The indoor mixing according the EN 13141-8:2014-09 maximum air volume flow was 0.5 %

Table 34 Recommended minimum standards for mechanical ventilation systems

	Minimum standard
1.0 Fan power	a. Mechanical ventilation systems should be designed to minimise electric fan power. The specific fan power (SFP) should be not worse than: i. 0.5 W/(l·s) for intermittent extract ventilation systems ii. 0.7 W/(l·s) for continuous extract ventilation systems iii. 0.5 W/(l·s) for continuous supply ventilation systems iv. 1.5 W/(l·s) for continuous supply and extract with heat recovery ventilation systems.
2.0 Heat recovery efficiency	a. The heat recovery efficiency of balanced mechanical ventilation systems incorporating heat recovery should be not worse than 70%.
3.0 Controls	a. Controls may be manual (i.e. operated by the occupant) or automatic.

Supplementary information

GPG 268 *Energy efficient ventilation in dwellings – a guide for specifiers.*

British Standards

BS EN 15232:2012 *Energy performance of buildings. Impact of building automation, controls and building management.*

BS EN 13141-7 clause 6 *Test methods*. Also see Note 2 below.

Single room heat recovery ventilators

BS EN 13141-8 clause 6 *Test methods*. Only the following sub-clauses are relevant:

6.1 *General*; and

6.2 *Performance testing of aerodynamic characteristics* sub-clauses 6.2.1 *Leakage and mixing* and 6.2.2 *Air flow*.

For internal and external leakage and for mixing, the unit should meet at least Class U4 as given in clause 3.2 *Classification*.

Note 1. For all ventilation devices (e.g. extract fan, cooker hood), fitting ducting, intake/exhaust terminals, filters, etc. will impose an additional resistance to the air flow. Where appropriate this should be allowed for when specifying ventilation system components because, for example, a fan that meets the appropriate requirements when tested on its own may fail to meet the requirement when it is installed and fitted with ducting etc. In such cases, the performance of the separate components should be measured according to the relevant parts of BS EN 13141 and other relevant standards. The complete assembly, as installed, should be designed to meet the performance requirement by following good practice such as is given in the *Domestic ventilation compliance guide*, available from: www.planningportal.gov.uk/approveddocuments.

Note 2. Detailed guidance on the tests to be undertaken has been prepared by the Energy Saving Trust (EST) and the Building Research Establishment (BRE) in conjunction with The Electric Heating and Ventilation Association (TEHVA) and the Residential Ventilation Association (RVA). This guidance, entitled *Performance testing of products for residential ventilation*, should be read in conjunction with the appropriate parts of BS EN 13141 and is available at the SAP Appendix Q website: www.sap-appendixq.org.uk/page.jsp?id=5

DCLG

Table 38 Recommended minimum dry heat recovery efficiency for heat exchangers in new and existing buildings

Heat exchanger type	Dry heat recovery efficiency (%)
Plate heat exchanger	50
Heat pipes	60
Thermal wheel	65
Run around coil	45

Air distribution systems	Specific fan power (SFP)[10] (W/(l·s)) New buildings	Existing buildings
Central balanced mechanical ventilation system with heating and cooling	1.6	2.2
Central balanced mechanical ventilation system with heating only	1.5	1.8
All other central balanced mechanical ventilation systems	1.1	1.6
Zonal supply system where fan is remote from zone, such as ceiling void or roof-mounted units	1.1	1.4
Zonal extract system where fan is remote from zone	0.5	0.5
Zonal supply and extract ventilation units, such as ceiling void or roof units serving a single room or zone with heating and heat recovery	1.9	1.9
Local balanced supply and extract ventilation system, such as wall/roof units serving single area with heating and heat recovery	1.6	1.6
Local supply or extract ventilation units such as window/wall/roof units serving single area (e.g. toilet extract)	0.3	0.4
Other local ventilation supply or extract units	0.5	0.5
Fan-assisted terminal VAV unit	1.1	1.1
Fan coil units (rating weighted average)	0.5	0.5
Kitchen extract, fan remote from zone with grease filter	1.0	1.0

N-DBSCG

Heavy internal air is removed

The filtering system cleans the air

New clean air is brought in

pininfarina

Aircare ES has a clean design, thanks to the unmistakeable Pininfarina style. This is why it can easily fit into any architectural design.

Thermal efficiency up to 82%

Aircare

Technical informations

Speed	Capacity [m³/h]	Sound Power LwA [dB]	Sound Pressure Lp (a 3m) [dB]	Thermal efficiency %	Power consumption [W]
1	15	37	19	82	4,6
2	20	40	22	-	5,8
3	30	45	27	74	10,3
4	35	48	30	-	14,6
5	43	51	33	69	20,6

Heat recovered as % efficiency depends on T, HR and air capacity	up to 82%
Connection to the network	230V / 50 Hz

Operating temperature range	Min -15°C Max 50°C
Ratio	U= 0,30 W/m3K
	Dn,e,w= 53 dB with shutters opened

ErP Declaration

a	Supplier's name				THESAN	
b	Supplier (code)	model	1 AIRCARE ES			
c	SEC-Class - Specific energy consumption SEC		cold A+ -77	average A -37	warm E -14	kWh/(m2*a)
d	Typology		☑ RVU	☐ NRVU	☑ BVU	☐ UVU
e	Type of drive installed/ intended to be installed		☐ single speed	☐ 2-speed	☑ multi-speed	☐ VSD ☐ installed ☐ intended to be instal.
f	Type of heat recovery system		☐ recuperative	☑ regenerative	☐ none	
g	Thermal efficiency of heat recovery corr.				74 / 70	%
h	Maximum flow rate				40.6	m³/h
i	Electric power input of the fan drive				20.8	W
j	Sound power level decorate installation LWA, ref. flow				45	dB[A]
k	Reference flow rate				28.4	m³/h
l	Reference pressure difference, Pa				0	Pa
m	Specific power input				0,35	W/(m³/h)
n	Control factor and control typology		CTRL 0.65	MSC 1,21	X-Value 2	-
o	Max. internal leakage rate Max. external leakage rate		2.1%	internal	3.3%	external
p	Mixing rate		0.5%	indoor	0.3%	outdoor
q	Position, description of visual/acoustically filter warning		*Front cover LED*			
r	Instructions to install regulated supply/exhaust grilles				Not applicable	is cancelled
s	Internet address for pre-/dis-assembly instructions				http://www.thesan.com/download.php	
t	Airflow sensitivity to pressure variations at -20 Pa and +20 Pa				6.0%	%
u	Indoor / outdoor air tightness				1,6	m³/h
v	The annual electricity consumption per 100 m² floor area AEC		cold 1.1	average 1.1	warm 1.1	kWh/a
w	The annual heating saved AHS		cold 82.5	average 42.2	warm 19.1	kWh/a