



CWL Data sheet

Comfort home ventilation system

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Extract air room	The entirety of the rooms from which air is extracted in duct and fan-assisted ventilation: e.g. kitchen, bathroom, WC, shower room, utility room, sauna room and unoccupied cellar rooms
Air extraction system	Central fan ventilation system or home ventilation unit which extracts air with the assistance of fans; the supply air (untreated outdoor air) replacing it flows into the utilised space through external wall vents and any leaks in the building envelope
Occupation zone	Zone in rooms that are intended for continual occupation by people which is defined by a height of 0.1 m to 1.8 m above the floor, a distance of 0.5 m from the external and internal walls and a distance of 1.0 m from external windows, doors and radiators
Stack ventilation	Form of natural ventilation in which the main driving force is thermal buoyancy
Balanced ventilation	Fan-assisted ventilation where the supply and extracted air volume flows are designed to have the same value
Demand-controlled ventilation	Fan-assisted ventilation where the air volume flows are adjusted according to the prevailing requirements (e.g. using sensors)
Design differential pressure	Intended difference in overall pressure between the air inlets and outlets of appliances or across air vents, e.g. external wall vents and air transfer vents
(Air) tightness	Description of the condition of the envelope construction with respect to its (air) permeability; synonym for the lowest possible permeability; antonym: leakiness
(Air) permeability	Air volume flow that, for a given differential pressure, flows into or out of a utilised space through air vents as well as through leaks in the building envelope
Facility for natural ventilation	Openable window, external wall vent, ventilation duct as well as suitably formed (functional) gaps associated with windows and exterior doors
Single fan ventilation system	Air extraction system with single fans for apartment blocks or single-family houses
Exhaust air vent	Device in ventilation ducts, main air ducts or branch air ducts from which the air flows outside in a regulated or unregulated fashion
Total outdoor air volume flow	The overall effective air volume flow resulting from intended natural or fan-

Equivalent diameter	assisted ventilation as well as from unintended infiltration and window ventilation during the period in which the utilised space is in use Diameter of a straight air duct of rectangular cross section which, for the same air volume flow, gives rise to the same pressure drop as a circular air duct
Hydraulic diameter	Diameter of an air duct of non-circular cross section which, for the same flow velocity, gives rise to the same pressure drop as a circular air duct
Basic ventilation	Ventilation necessary both to ensure the preservation of the building and to meet the hygiene and health requirements arising during the intended use of the utilised space (in normal operation)
Main duct	Preferably vertically running section of the air duct network, into which extract air enters directly through multiple extract air vents or via connecting ducts
Hygiene	The entirety of the measures serving to sustain and promote physiological and physical well-being and preserve the health of people
Intensive ventilation	Temporarily increased ventilation necessary to deal with load peaks (load operation)
Ventilation components	Facility for natural ventilation, or component of systems or devices providing fan-assisted ventilation
Air heating	Fan-assisted delivery of thermal energy into a room by supplying heated air (supply air temperature > room air temperature)
Air-handling unit	Assembly for conveying air into or out of a utilised space or single room
Single room air-handling unit	Air-handling unit for a single room
Home air-handling unit	Air-handling unit for a utilised space / residential unit
Ventilation for prevention of dampness	User-independent ventilation (minimum operation) which has the aim of preventing mould and damp damage in the building, subject to the degree of thermal insulation of the building under its typical conditions of use (humidity loading, room temperatures)
Ventilation short circuit	Direct intake of exhaust air at an exterior (wall) air vent, supply air at an extract air vent or extract air via leaks from other utilised spaces
Ventilation duct	Predominantly installed (provided by the customer), vertically running individual

air ducts, which, in the case of fan-assisted ventilation, may comprise a main duct together with the connecting auxiliary ducts from each floor (collecting or network duct)

Ventilation heat	Thermal energy flow for heating or cooling a mass flow of outdoor air from outside air temperature to supply air temperature
Air loading	Unfavourable change in air condition due to the uptake of heat and water vapour as well as various kinds of impurities by the indoor air
Air heater	Facility for the transfer of thermal energy from a transmission (heating) medium to a channelled air mass flow
Air conduit	Intended indoor air flow when providing fan-assisted ventilation
Air mass flow	Air mass per unit of time
Air temperature gradient	Vertical air temperature difference per m, measured between the heights of 1.1 m and 0.1 m above the floor
Air volume flow	Air volume per unit of time
Air change	Hourly air volume flow, expressed in units of the volume of a utilised space or room
Minimum ventilation	User-independent degree of ventilation that fulfils the minimum requirements for indoor air quality under typical conditions of use (humidity and pollutant levels)
(Residential) utilised space	Apartment (APT), single-family house (SFH) or other comparable group of rooms
Cross-flow rooms	Rooms in the utilised space which are located in the air flow between supply air and extract air rooms
(Enclosed) space	Section of a utilised space enclosed by an envelope construction
Collecting duct	Collective term for the main duct and collector or network duct (laid out vertically in each case) or horizontally laid out connecting ducting for main ducts
Individual fan	Fan located with the utilised space for extracting air from a room

Central fan	Fan located outside the utilised space for extracting air from or supplying air to multiple utilised spaces or rooms within a utilised space
Heat provision efficiency	Ratio of the enthalpy recovered by the ventilation unit for usage to the enthalpy difference between the two fluid flows of equal mass on entering the appliance, including increases, e.g. through the use of a heat pump, and reductions, e.g. through the use of a frost protection / dew point device
Ground-air heat exchanger	Facility for the transfer of thermal energy from the ground to a channelled air mass flow (in the case of heating) or vice versa (in the case of cooling)
Wind ventilation	Form of natural ventilation in which the wind is the main driving force
Residential unit	Sum of the rooms that make it possible to conduct a household, in the form an apartment, maisonette or single-family house (free-standing, semi-detached house or terraced house), or a housing unit
Central fan ventilation system	Air extraction system or air supply and extraction system with central fan for apartment blocks or single-family houses
(Ventilation) plant	Location of the central installation of air extraction fans or air supply and extraction fans, including the components for heat recovery and outdoor air filtering
Air supply and extraction system	Central fan ventilation system or home ventilation unit where treated supply air and extract air is conveyed with the assistance of fans
Supply air rooms	The entirety of the rooms into which, in duct ventilation and air extraction systems, thermally untreated outdoor replacement air flows and, for air supply and extraction systems, treated supply air is fed: e.g. lounge, bedrooms, guestroom, study and nursery as well as constantly or intermittently used hobby (attic or cellar) rooms.

According to E DIN 1946-6:2006-12 (Chapter 8), ventilation systems are not permitted to interfere with the normal operation of firing installations. The requirements of the state ordinances for combustion equipment apply here with regard to installation and the supply of air for combustion. A fundamental distinction is drawn between “room air-dependent” and “room air-independent” firing installations.

Room air-independent firing installations

Room air-independent firing installations for which the air for combustion is supplied via pipes or ducts from outside and from which no flue gas can escape into the installation area in dangerous amounts are suitable for operation in conjunction with ventilation systems without the need for any further measures. The provision of instructions for use is mandatory, e.g. a general technical approval.

Room air-dependent firing installations

Safety devices are required when using a ventilation system with a room air-dependent firing installation! There are various possibilities open to you when operating the ventilation system in combination with a firing installation, e.g.:

Differential pressure box. Installation of a pressure monitoring unit at the air supply fan or in the air supply duct. The power feed to the air extraction fan is connected only when the air supply fan delivers air.

Electrical safeguard. The air extraction fan is switched off when the air supply fan is not running.

The correct functioning of the safety device is to be verified and documented on commissioning. The provision of instructions for use is also mandatory here, e.g. a general technical approval.

Our recommendation

In order to avoid disputes at a later time, we recommend that contact with the professional chimney sweeps' representative for your district (BZSFM) should already be established at the planning stage.

See also the official statement by the “Federal Association of Chimney Sweeps”

annex: Central air supply and extraction systems with/without heat recovery

ASSESSMENT CRITERIA FOR THE COMBINED OPERATION OF FIRING INSTALLATIONS – RESIDENTIAL BUILDING VENTILATION – EXTRACTOR HOODS



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The following assessment criteria apply up until the release of corresponding regulations

System equipment:

Firing installation: room air-dependent

Residential building ventilation system: central, air supply / extraction, heat recovery

Extractor hood

Measures required:

Room air-dependent firing installation

Separate combustion air feed into the combustion chamber.

Cross section in accordance with the firing installation manufacturer's instructions.

Simply lined chimney or air exhaust chimney.

Connecting piece to be made as leak proof as possible.

Residential building ventilation system

Frost protection by the air-handling unit must not be implemented by switching off the supply air fan, but e.g. by means of:

- outdoor air pre-heating, electric or water heating element
- a ground heat exchanger
- or equivalent technique

The air extraction fan must switch itself off automatically if the supply air fan should fail.

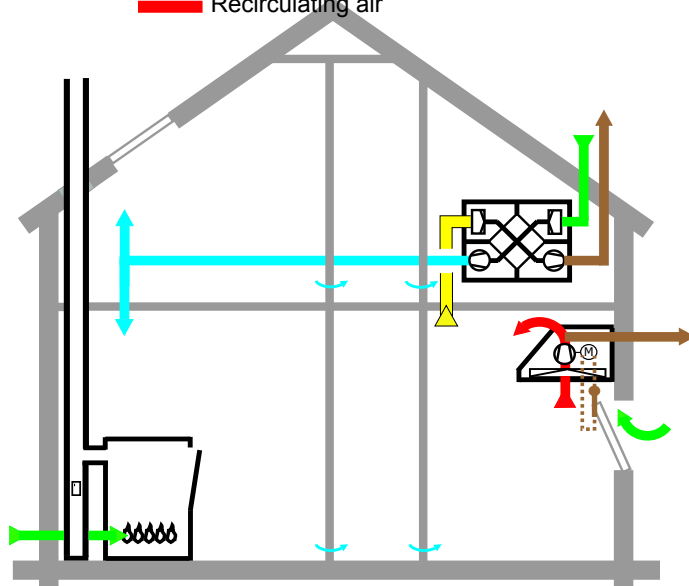
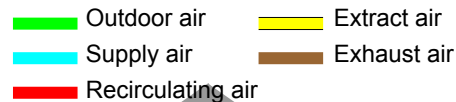
Extractor hood

Is to be operated in recirculating mode.

Can also be operated in exhaust air mode if sufficient provision of supply air ensures that a negative pressure of 4 Pa is not exceeded when the extractor hood is operated at its maximum volume flow.

This condition is considered met by

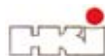
a window that has been opened by a sufficiently large amount or an appropriately dimensioned air supply facility where, in each case, the extractor hood is activated by a contact switch or a sufficiently dimensioned supply air fan that is electrically coupled to the extractor hood, or else switching off the extractor hood as a result of an external malfunction signal (e.g. given by a negative pressure monitor at the firing installation)



An initiative by the Home Ventilation Association in cooperation with the Federal Association of Chimney Sweeps and:



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 Stresemannallee 19
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Bundesverband der Firmen
 im Gas und Wasserfach e. V.
 Marienburger Straße 15
 50968 Köln
 Tel.: (0221) 3764830
 www.figawa.de



Verband für
 Wohnungs-
 lüftung e. V.
 Wittinger Straße 46
 29223 Celle
 Tel.: (05141) 214511
 www.wohnungslueftung-ev.de

Particle size	Particle examples	Filter class	Examples of use
Coarse dust filter for particles > 10 µm	<ul style="list-style-type: none"> - Insects - Textile fibres and hairs - Sand - Flue ash - Flower dust - Spores, Pollen - Cement dust 	G1 G2	<ul style="list-style-type: none"> - For simple applications (e.g. as insect guard in compact devices)
		G3 G4	<ul style="list-style-type: none"> - Prefilters and recirculated air filters for civilian shelters - Extract air from paint spray booths and kitchens, etc. - Protection against contamination for air conditioners and compact devices and compact devices (e.g. window air conditioners, fans) - Prefilter for filter classes F 6 to F 8
Fine dust filter for particles 1 ... 10 µm	<ul style="list-style-type: none"> - Flower dust - Spores, Pollen - Cement dust - Particles that cause marks and dust deposits - Bacteria and germs on host particles 	F5	<ul style="list-style-type: none"> - Outdoor air filter for room with undemanding requirements (e.g. workshops, storage rooms, garages)
		F5 F6 F7	<ul style="list-style-type: none"> - Prefiltering and recirculated air filtering in ventilation plants - Final filter in an air-conditioning plant for salerooms, department stores, offices and certain production areas - Prefilter for filter classes F 9 to H 11

Size range for fractional filtration efficiencies depending on the filter classes G 1 to F 9 according to DIN EN 779
Filter in clean condition, not dusty

Fine dust (PM10) particulates are particles with a diameter of less than 10 µm

Filtration efficiencies in %							
Filter class	Particle size (µm)						
	0.1	0.3	0.5	1	3	5	10
G 1	-	-	-	-	0 - 5	5 - 15	40 - 50
G 2	-	-	-	0 - 5	5 - 15	15 - 35	50 - 70
G 3	-	-	0 - 5	5 - 15	15 - 35	35 - 70	70 - 85
G 4	-	0 - 5	5 - 15	15 - 35	30 - 55	60 - 90	85 - 98
F 5	0 - 10	5 - 15	15 - 30	30 - 50	70 - 90	90 - 99	> 98
F 6	5 - 15	10 - 25	20 - 40	50 - 65	85 - 95	95 - 99	> 99
F 7	25 - 35	45 - 60	60 - 75	85 - 95	> 98	> 99	> 99
F 8	35 - 45	65 - 75	80 - 90	95 - 98	> 99	> 99	> 99
F 9	45 - 60	75 - 85	90 - 95	> 98	> 99	> 99	> 99

Note:

This table gives guide values for the various filter classes. Specific values for different filter types must be measured while taking into consideration the flow rate of interest.

It is hygienically sensible to have air flowing from the living rooms and bedrooms to the functional rooms, bathroom, kitchen, WC, with the hallway being used as a cross-flow area (mechanical cross-ventilation). The interior door serves as an air vent (for a door gap of at least 1 cm) to ensure that air flows from the supply air areas to the extract air areas.

Air inlet and outlet vents differ in size, form and colour. At this juncture we are concerned with establishing the appropriate elements with regard to noise level, volume flow and flow propagation. The standard size of the Wolf system design is DN 125. When designing the layout, a maximum air velocity of 3 m/s is assumed.

Instructions for positioning air supply elements:

Air supply elements can be placed in the ceiling, wall and floor. The flow propagation from the air supply elements is of importance here. Air supply valves should be positioned as far away from the through-flow openings (doors) as possible. Good through flow of the room is achieved in this way. Furthermore, care is to be taken that sitting or lying facilities (beds) are free from draughts. A distance of at least 1 m should be maintained. Pay attention that the air supply elements are not covered (e.g. by curtains or cupboards). Care is to be taken that supply valves are sufficiently far away from the corners of the room; this distance should be at least 60 cm.

Instructions for positioning air extraction elements:

Air extraction elements can be positioned in the wall or, preferably, in the ceiling. When mounting in the wall, the distance to the ceiling should not be more than 20 cm.

As a basic principle, these elements should be positioned in the immediate vicinity of sources of smells and humidity, although not directly above showers or baths since this could lead to the occurrence of draughts (source ventilation principle). Also not advisable is positioning directly above any source of heat (radiators). Air extraction elements with filters are to be used for the kitchen area. Warning: do not position directly above the cooker.



Air flow setting

CWL - Measurement report (Annex to commissioning)	Construction project/ Operator
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Volume setting according to E DIN 1946-6			
Builder Road Post code / Location Phone: Fax:	Minimum ventilation = Basic ventilation = Intensive ventilation =	stage 1 = _____ m ³ /h stage 2 = _____ m ³ /h stage 3 = _____ m ³ /h	

1 Air flow setting		
2 Air volumes set at the central unit in accordance with requirements?	<input type="checkbox"/> yes	<input type="checkbox"/> no
3 Valve setting performed in accordance with volume calculations	<input type="checkbox"/> yes	<input type="checkbox"/> no
4 Valve setting performed with measuring instrument	<input type="checkbox"/> yes	<input type="checkbox"/> no

Type: _____

Pay attention to calibration!

Measured values				
Supply air rooms	Floor	Actual in m ³ /h	Nominal in m ³ /h	
Living	_____	_____	_____	<input type="checkbox"/> set
Dining	_____	_____	_____	<input type="checkbox"/> set
Child 1	_____	_____	_____	<input type="checkbox"/> set
Child 2	_____	_____	_____	<input type="checkbox"/> set
Bed	_____	_____	_____	<input type="checkbox"/> set
Office	_____	_____	_____	<input type="checkbox"/> set
Guestroom	_____	_____	_____	<input type="checkbox"/> set
_____	_____	_____	_____	<input type="checkbox"/> set
_____	_____	_____	_____	<input type="checkbox"/> set
_____	_____	_____	_____	<input type="checkbox"/> set
_____	_____	_____	_____	<input type="checkbox"/> set
_____	_____	_____	_____	<input type="checkbox"/> set
_____	_____	_____	_____	<input type="checkbox"/> set
Extract air room	Floor	Actual in m ³ /h	Nominal in m ³ /h	
Kitchen (with filter)	_____	_____	_____	<input type="checkbox"/> set
WC	_____	_____	_____	<input type="checkbox"/> set
Bath	_____	_____	_____	<input type="checkbox"/> set
Storeroom	_____	_____	_____	<input type="checkbox"/> set
_____	_____	_____	_____	<input type="checkbox"/> set
_____	_____	_____	_____	<input type="checkbox"/> set
_____	_____	_____	_____	<input type="checkbox"/> set
_____	_____	_____	_____	<input type="checkbox"/> set
_____	_____	_____	_____	<input type="checkbox"/> set
_____	_____	_____	_____	<input type="checkbox"/> set
_____	_____	_____	_____	<input type="checkbox"/> set
_____	_____	_____	_____	<input type="checkbox"/> set

Date, Signature of fitter

Date, Signature of builder / operator

CWL Commissioning report		
Manufacturer:	Fitter:	Construction project / Operator
Wolf GmbH Industriestraße 1 84048 Mainburg Phone: 08751/74-0 Fax: 08751/74-1600	Company Road Post code / Location Phone: Fax.	Builder Road Post code / Location Phone: Fax.
System structure:	<input type="checkbox"/> CWL 180 <input type="checkbox"/> CWL 300 <input type="checkbox"/> CWL 400	<input type="checkbox"/> Insulated pipe system CWL <input type="checkbox"/> Flexible hose system CWL <input type="checkbox"/> Bypass (CWL 300/400)
Accompanying documents:	<input type="checkbox"/> Planning documentation <input type="checkbox"/> Air flow calculation for minimum, basic and intensive ventilation <input type="checkbox"/> Operating instructions with service notes <input type="checkbox"/> Measurement report (air flow setting)	

1. Visual inspection		
1.1 Installation location - frost free	<input type="checkbox"/> cellar <input type="checkbox"/> wall <input type="checkbox"/> wall <input type="checkbox"/> outdoor air <input type="checkbox"/> preheating elem. <input type="checkbox"/> yes <input type="checkbox"/> yes <input type="checkbox"/> 3-position switch with filter display <input type="checkbox"/> yes	<input type="checkbox"/> ground floor <input type="checkbox"/> roof <input type="checkbox"/> roof <input type="checkbox"/> exhaust air <input type="checkbox"/> postheating element <input type="checkbox"/> no <input type="checkbox"/> no <input type="checkbox"/> 4-key remote control <input type="checkbox"/> no
1.2 Outdoor air via	<input type="checkbox"/> upper floor	<input type="checkbox"/> loft
1.3 Exhaust air via	<input type="checkbox"/> extract air	<input type="checkbox"/> supply air
1.4 Fitted silencer	Type: _____	
1.5 Fitted heating elements		
1.6 Condensate connection - frost free - OK		
1.7 Ground heat exchanger present		
1.8 Operation via		
1.9 Electrical installation completed		

2. Connection inspection		
2.1 Piping securely and neatly fitted to the unit?	<input type="checkbox"/> yes	<input type="checkbox"/> no
2.2 Wall hood and/or roof lead through securely and neatly fitted?	<input type="checkbox"/> yes	<input type="checkbox"/> no
2.3 Air-handling unit filter neatly and correctly installed?	<input type="checkbox"/> yes	<input type="checkbox"/> no
2.4 Supply and extracted air distributors securely and neatly fitted?	<input type="checkbox"/> yes	<input type="checkbox"/> no
2.5 CWL hoses securely fitted to the distributor?	<input type="checkbox"/> yes	<input type="checkbox"/> no
2.6 CWL hoses labelled by room?	<input type="checkbox"/> yes	<input type="checkbox"/> no
2.7 Air supply and extraction hoses laid only the inside thermal wrap?	<input type="checkbox"/> yes	<input type="checkbox"/> no
2.8 Air supply and extraction valves fitted in accordance with the air flow calculation?	<input type="checkbox"/> yes	<input type="checkbox"/> no
2.9 Sufficient potential for cross flow between supply and extracted air rooms as well as cross flow regions e.g. via gaps around doors of approx. 1.5 cm	<input type="checkbox"/> yes	<input type="checkbox"/> no

3. Functional testing		
3.1 Functional testing of the ventilation system using the control unit	<input type="checkbox"/> yes	<input type="checkbox"/> no
3.2 Functional testing of auxiliary fittings		
- preheating element	<input type="checkbox"/> yes	<input type="checkbox"/> no
- postheating element	<input type="checkbox"/> yes	<input type="checkbox"/> no
- switch or remote control allows all settings to be selected	<input type="checkbox"/> yes	<input type="checkbox"/> no
3.3 Valves set and functional testing completed (with measurement report)	<input type="checkbox"/> yes	<input type="checkbox"/> no

4. Instruction		
4.1 Functions of the unit explained and, if necessary, demonstrated?	<input type="checkbox"/> yes	<input type="checkbox"/> no
4.2 Control unit explained and demonstrated?	<input type="checkbox"/> yes	<input type="checkbox"/> no
4.3 Filter changing explained and demonstrated?	<input type="checkbox"/> yes	<input type="checkbox"/> no

5. Miscellaneous		
5.1 Are the regulations on safeguarding the combustion air supply satisfied? (Required for: e.g. tiled stoves, fireplaces, gas appliances; consultation with the chimney sweeps' district representative may be necessary)	<input type="checkbox"/> yes	<input type="checkbox"/> no

Date, Signature of fitter

Date, Signature of builder / operator