Residential construction

FreeAir project design

FreeAir. plus

FreeAir. 100

Flur

Eltern

Wohnen|Kochen Essen Kind

Bad

Halls of residence

Hotels



Commercial buildings

Concrete construction

Timber construction

Prefabricated construction

Basement dehumidification

Installation

D bluMartin A Swegon Group company





A better quality of life and improved comfort with the freeAir ventilation system

Detached houses

"We have a constant supply of lovely fresh air to our rooms. We don't even need to open the window – it's just not necessary. With heat recovery, our heating energy consumption is noticeably lower. We wouldn't want to live without it."

Dipl.-Ing. Stefan Niesner Architect arché techné néos

- Optimal air quality thanks to sensor control
- Intelligent humidity management
- Healthy air free of fine particles
 and pollen
- Maximum energy efficiency



Ground floor: 1 x freeAir 100 with second room extract air in the utility room

First floor: 1 x freeAir 100 with second room extract air in the bathroom and guest bathroom (ground floor), 2 x freeAir plus in the bedrooms

Optimal air quality thanks to sensor control

The freeAir 100 ventilation unit is equipped with 8 sensors which capture data including CO2 levels, relative humidity and temperature, and automatically control ventilation according to current needs. Summer cooling helps to balance the temperature on warm days. For occupants, demand-dependent control helps to enhance comfort with exceptional air quality and ease of operation.

Intelligent humidity management

Using sensor control, the freeAir 100 prevents the air from becoming too dry or too humid, irrespective of user behaviour, thereby protecting the building against moisture damage. The moisture and temperature sensors integrated in the unit measure relative humidity and temperature, both indoors and out. The ventilation system is then able to determine the absolute humidity and provide demand-dependent ventilation.

Healthy air free of fine particles and pollen

The freeAir ventilation system uses high quality filters of filter class M5 (or F7 as an option) to protect against fine particle pollution, pollen and insects, helping those with allergies to breathe more easily. And with demand-dependent control, filter service lives are extended – typically to one year.

Maximum energy efficiency

By matching the air change rate to current needs, the freeAir 100 requires very little operating energy. A high heat recovery level of more than 90 % helps to achieve heating energy savings of up to 50 %. Thanks to its high energy efficiency, the freeAir 100 has been certified for use in passive houses. Installing the unit can have a positive effect on the building energy certificate.





"When it comes to residential construction, the decision to opt for an apartment-based freeAir system means considerably reduced installation and maintenance costs, as you no longer need to install expensive fire safety equipment. Its excellent sound insulation makes it an ideal choice for town centres and on busy streets."

Dipl.-Ing. Stephan Lutzenberger Lutzenberger engineering consultancy Mindelheim

Residential construction

- Simplified design and installation without expensive fire safety equipment
- Outstanding air quality thanks to demand-dependent control
- Intelligent humidity management
- Maximum energy efficiency



1 x freeAir 100 with second room extract air in the bathroom, 2 x freeAir plus in the bedrooms

Economical construction and renovation

The freeAir ventilation system from bluMartin enables entire residential units – subject to size – to be ventilated via just one exterior wall unit. Thanks to the freeAir plus intelligent active transfer unit, supply air ducts are not necessary. A short duct is usually sufficient for the extract air. This helps to considerably reduce design and installation costs. No expensive fire safety equipment (e.g. ceiling partitions or fire dampers) needs to be installed or maintained, as the ventilation unit does not cross fire compartments. Furthermore, as they are wall mounted, the units do not occupy valuable floor space.

A comfortable climate and moisture protection with intelligent sensor control

The freeAir 100 ventilation unit is equipped with 8 sensors which capture data including CO2 levels, relative humidity and temperature, and automatically control ventilation according to current needs. Intelligent humidity management prevents the air from becoming too dry or too humid, irrespective of user behaviour, thereby protecting against moisture damage. For occupants, demand-dependent control helps to enhance comfort with exceptional air quality and ease of operation.

Maximum energy efficiency

By matching the air change rate to current needs, the freeAir 100 requires very little operating energy. A high heat recovery level of more than 90 % helps to achieve heating energy savings of up to 50 %. With the lower heat load, the heating system is also more compact in its sizing. Thanks to its high energy efficiency, the freeAir 100 has been certified for use in passive houses.





Student accommodation, Riedberg Campus in Frankfurt am Main

Halls of residence

"From an economic perspective, both in terms of construction and maintenance, the freeAir system in our project was superior to a central ventilation system, making it our first choice."

Eric Erdmann Head of Accommodation Student Welfare Services Frankfurt

- Convenient sensor control for each individual residential unit
- Moisture protection, irrespective of user behaviour
- Simplified design and installation without expensive fire safety equipment
- Maximum energy efficiency for reduced operating costs



freeAir 100 with second room extract air in the bathroom

Sensor control for each individual unit

The apartment-based freeAir 100 ventilation unit is equipped with 8 sensors which capture data including CO2 levels, relative humidity and temperature, and automatically control ventilation in the residential unit according to current needs. For occupants, demand-dependent control helps to considerably enhance comfort with an exceptional indoor climate requiring no user intervention.



Moisture protection, irrespective of user behaviour

The intelligent humidity management of the freeAir 100 ventilation unit prevents the air from becoming too dry or too humid, irrespective of user behaviour, thereby protecting against damage to the building structure. The moisture and temperature sensors measure relative humidity and temperature, both indoors and out. The unit is then able to determine the absolute humidity and provide demand-dependent ventilation.

Simplified design and installation

The freeAir ventilation system does not require many ventilation ducts. The second room connection allows the bathroom to be connected to the freeAir 100 exterior wall ventilation unit, with no need for centralised extract air system. No expensive fire safety equipment is necessary as the ventilation unit does not cross fire compartments. The sensor technology is integrated into the unit, which means that no external sensor cables are necessary.

Maximum energy efficiency

By matching the air change rate to current needs, the freeAir 100 requires very little operating energy. A high heat recovery level of more than 90 % helps to achieve savings of up to 50 % on heating energy and, in turn, a considerable reduction in operating costs.





"Das Heimsitz" residence in the Kitzbüheler Alps, Brixen im Thale

"Guests love the fact that even in the winter months, with the windows closed, there's a supply of fresh air to the rooms. It's controlled automatically by the sensors which noticeably adjust the settings according to the number of guests."

Georg Foidl Das Heimsitz

Hotels

- ✤ A comfortable climate, fully automatic
- Fresh outdoor air individually supplied by each unit
- A restful sleep, even in the busy town centre
- Minimal operating costs



freeAir 100 with extract air connection in the bathroom

Greater comfort for satisfied guests

The decentralised freeAir system is equipped with sensors to capture CO2 levels, relative humidity and temperature. These allow rooms and apartments to be individually supplied with the appropriate quantity of fresh, comfortable, temperate air. The units are extremely quiet in operation. Thanks to their high sound insulation value, they keep noise out reliably so that windows can remain closed in busy streets.

Minimal operating costs

Sensor control matches the air change rate to actual demand. This means that the freeAir 100 requires very little operating energy. A high heat recovery level of more than 90 % helps to achieve heating energy savings of up to 50 %. Demand-dependent control also helps to prolong the service life of the filters, typically to one year.



Simplified design and installation

Rooms and apartments are ventilated individually by a freeAir 100 exterior wall unit. Internal bathrooms are connected via the second room extract connection. This means no central extract air system or long ducts. There is no need for expensive fire safety equipment as the ventilation unit does not cross fire compartments.





Patients' room at Klinik Bavaria in Bad Kissingen

"The quality of the air in patients' rooms is noticeably better since we've been using the units. When it comes to hygiene, the system has the advantage of no lengthy ventilation pipework when compared to central systems. For each new patient, we simply replace the filters. From a financial perspective, the greatest benefits are simplified fire safety, and high recovery of heating and cooling energy."

Michael Klawonn Technical consultant Klinik Bavaria

Hospitals and clinics

- Short air routes for maximum hygiene
- Automatic sensor controlled comfortable indoor climate
- Simplified design and installation without expensive fire safety equipment
- Maximum energy efficiency for reduced operating costs



freeAir 100 with second room extract air in the bathroom

Short air routes for maximum hygiene

The freeAir 100 ventilation unit offers the option of connecting additional rooms to the supply air or extract air. In a hospital or clinic environment, a layout with one exterior wall unit per patient room with extract air in the bathroom is ideal. The supply air flows into the rooms directly, without ventilation ducts, and is extracted in the bathroom. High quality filter technology helps to keep fine particles and pollen out. The units can be easily removed from the wall cabinets for filter replacement when a new patient arrives, or for disinfection purposes.

Automatic sensor controlled comfortable indoor climate

The freeAir 100 ventilation unit is equipped with 8 sensors which capture data including CO2 levels, relative humidity and temperature, and automatically control ventilation according to current needs. Intelligent humidity management prevents the air from becoming too dry or too humid, irrespective of user behaviour. For patients, demand-dependent control helps to enhance comfort thanks to high air quality, with no draughts and no transfer of odours between rooms.

Simplified design and installation

The freeAir system does not require many ventilation ducts. The second room connection allows the bathroom to be connected to the ventilation system, with no central extract air system needed. No expensive fire safety equipment is necessary as the ventilation unit does not cross fire compartments. The sensor technology is integrated inside the unit, which means that no external sensor cables are necessary.

Maximum energy efficiency

By matching the air change rate to current needs, the freeAir 100 requires very little operating energy. A high heat recovery level of more than 90 % helps to achieve savings of up to 50 % on heating energy and, in turn, a considerable reduction in operating costs. With convenient recovery of cooling energy, the freeAir is also suitable for use in combination with air conditioning technology.







Hummel Systemhaus GmbH & Co. KG company buildings in Frickenhausen

Commercial buildings

"The freeAir 100 is an absolute centrepiece in our ,Plus Energy' concept. The ventilation system has enabled us to reduce our annual energy requirements by around 30 % and the indoor climate has been praised by every one of our employees."

Frank Hummel Managing director, Hummel Systemhaus GmbH & Co. KG

- Simplified design and installation
- High air quality thanks to automatic sensor control
- Maximum energy efficiency for reduced operating costs
- Minimal maintenance



1 x freeAir 100 with second room extract air in the bathroom and kitchen, 1 x freeAir plus for ventilation of the server room

Simplified design and installation

The freeAir ventilation system requires only a fraction of the ventilation ducts used in central systems. When compared to a purely decentralised system, far fewer exterior wall openings and units are needed. This helps to considerably simplify design and installation. There is no need for expensive fire safety equipment as the ventilation unit does not cross fire compartments. No sensor cables are needed as the sensor technology is integrated inside the units.

Sensor control, irrespective of user behaviour

The freeAir 100 ventilation unit is equipped with 8 sensors which capture data including CO2 levels, relative humidity and temperature, and automatically control ventilation according to current needs. Intelligent humidity management prevents the air from becoming too dry or too humid, irrespective of user behaviour, thereby protecting against damage to the building structure. For employees, demand-dependent control helps to enhance comfort with exceptional air quality and ease of operation.

Maximum energy efficiency

By matching the air change rate to current needs, the freeAir 100 requires very little operating energy. A high heat recovery level of more than 90 % helps to achieve heating energy savings of up to 50 %. Thanks to its high energy efficiency, the freeAir 100 has been certified for use in passive houses. Using the system can have a positive effect on the building energy certificate.

Minimal maintenance

By matching the air change rate to current needs, filters typically only need to be replaced once a year. The freeAir Connect software, available free of charge, offers a comprehensive overview of sensor data, consumption values and recovered energy as required.





Construction of the Münchner Förderzentrum Giesing resource centre from precast concrete sections with integrated freeAir ventilation system

Concrete construction

"The ready-to-use bluMartin flush mounting boxes were integrated into the precast concrete sections in our concrete factory to streamline processes on the construction site. Everything went without a hitch thanks to the accurate installation instructions from bluMartin and the support of the SystemVent team."

Dipl.-Ing. (FH) Stefan Varkuti Laumer Bautechnik GmbH Massing

- Simplified design without complex fire protection
- + Flush mounting kit for airtight integration into factory-cast and in-situ concrete
- Efficient construction process for time and cost savings
- Ideal for busy city centre residential areas thanks to noise insulation and fine particle filter



1 x freeAir 100 with second room extract air in the bathroom, 1 x freeAir plus in the bedroom

Simplified design without complex fire protection

The apartment-based freeAir 100 ventilation system does not require many ventilation ducts. Bathrooms without windows to the outside and additional extract air areas can be connected directly to the freeAir 100 exterior wall ventilation unit. The freeAir plus intelligent active transfer unit supplies additional rooms with fresh air as required, with no need for supply air ducts. No expensive fire safety equipment (e.g. ceiling partitions or fire dampers) needs to be installed or maintained, as the ventilation unit does not cross fire compartments.

Efficient construction process

The flush mounting kit for precast concrete enables simple and precise integration of the freeAir 100 ventilation unit into factory-cast and in-situ concrete. When incorporated into factory-cast concrete, the freeAir ventilation system, including sealed second room connections, is cast into the precast concrete sections and installed directly on the construction site. After positioning the prefabricated ceiling, the ventilation ducts are fitted into the ceiling and inserted into the ceiling diffusers. At a later stage, it only remains to fit the outside hoods and insert the ventilation units into the flush mounting boxes. This solution guarantees maximum airtightness of the building, combined with ease of installation on site..

Ideal for central residential areas

With a noise insulation value of up to 60 dB, the freeAir helps to guarantee a peaceful night's sleep even in busy central locations. High quality filters of filter class M5 (or F7 as an option) reliably protect against fine particles, pollen and insects.







Semi-detached house with wooden construction in Untermaiselstein, architect Helmut Rapp

"The freeAir is easy to integrate - as early as the construction planning phase and we are always able to accommodate the few extract air ducts. The floor structure can be simpler and more streamlined than with central ventilation units. Our clients are very happy with the system and get to grips with the ventilation system quickly - they don't really have to do anything; the unit takes care of everything itself."

Georg Rietzler Rietzler Holzbau GmbH

Timber construction

- Unchanged wall and floor structure
- Intelligent humidity management
- Healthy air free of fine particles and pollen
- Maximum energy efficiency



Ground floor: 3 x freeAir 100 with second room extract air (ground floor and first floor)

First floor: 2 x freeAir plus

Efficient engineering and installation

The semi-central freeAir ventilation system requires no supply air ducts and only a few short extract air ducts, thanks to the freeAir plus intelligent active transfer unit. The wall and floor structure remain unchanged. The high degree of prefabrication at the factory ensures that the build stays on schedule and can proceed quickly without any need to coordinate work with other trades.

Intelligent humidity management

The freeAir 100 ventilation unit is equipped with a total of 8 sensors to capture data including CO2 levels, relative humidity and temperature. Sensor control prevents both excessively dry and excessively humid air, thereby protecting against damage to the building structure. The moisture and temperature sensors measure relative humidity and temperature, both indoors and out. The ventilation <u>unit is then able to determine the</u> absolute humidity and provide demand-dependent ventilation.

Healthy air free of fine particles and pollen

The freeAir 100 ventilation unit is equipped with a total of 8 sensors that capture data including CO_2 levels, relative humidity and temperature for the appropriate quantity of fresh air at all times. The demand-dependent control of the freeAir 100 ventilation unit ensures that the appropriate quantity of fresh air is supplied to living spaces at all times. High quality filters of filter class M5 (or F7 as an option) protect against fine particles, pollen and insects, helping those with allergies to breathe more easily. And with demand-dependent control, filter service lives are extended – typically to one year.

Maximum energy efficiency

By matching the air change rate to current needs, the freeAir 100 requires very little operating energy. A high heat recovery level of more than 90 % helps to achieve heating energy savings of up to 50 %. Thanks to its high energy efficiency, the freeAir 100 has been certified for use in passive houses and fits perfectly with ecological timber construction. Installing the unit can have a positive effect on the building energy certificate.







Social housing in the Schöppingen district, modular construction project by Solid.box

Prefabricated construction

"The freeAir system has a heat recovery level of more than 90 percent, there are no draughts and no irritating noises. It's extremely easy to maintain and integrates extremely well with our overall system and our self-learning building services control."

Hermann Stegink Solid.box developer

- Modular layout of the ventilation system
- Installation during prefabrication at the factory
- Moisture protection, irrespective of user behaviour
- Maximum energy efficiency



1 x freeAir 100 with second room extract air in the bathroom, 2 x freeAir plus in the bedrooms

Modular layout of the ventilation system

The freeAir system allows independent ventilation areas to be flexibly combined. It is ideal for modular construction and prefabricated housing. Additional rooms can be optionally connected to the freeAir 100 exterior wall ventilation unit with supply air or extract air ducts. The freeAir intelligent active transfer unit allows supply air rooms to be connected to the mechanical ventilation unit without the need for ducts. Consequently, no ducts are required between the modules. The ventilation system can be installed during prefabrication at the factory.

Intelligent sensor control

The freeAir 100 ventilation unit is equipped with 8 sensors which capture data including CO2 levels, relative humidity and temperature, and automatically control ventilation according to current needs. Intelligent humidity management prevents the air from becoming too dry or too humid, irrespective of user behaviour, thereby protecting against damage to the building structure. For occupants, demand-dependent control helps to enhance comfort with exceptional air quality and ease of operation.

Maximum energy efficiency

By matching the air change rate to current needs, the freeAir 100 requires very little operating energy. A high heat recovery level of more than 90 % helps to achieve heating energy savings of up to 50 %. Thanks to its high energy efficiency, the freeAir 100 has been certified for use in passive houses. Using the system can have a positive effect on the building energy certificate.





Dry basements with a comfortable indoor climate thanks to freeAir ventilation

Basement dehumidification

"We're very happy. The system runs very well, we have comfortable air in the basement, even when no one has been in there for two weeks and the windows have been firmly shut. The mould problems have disappeared completely."

Markus P. Karlsruhe

- A consistently comfortable indoor climate thanks to control via 8 sensors
- Automatic moisture protection
- Straightforward engineering and installation
- Maximum energy efficiency for reduced costs



1 x freeAir 100 with second room extract air in the bathroom and storage rooms, 1 x freeAir plus in the rear bedroom

A consistently comfortable indoor climate

The freeAir 100 ventilation unit is equipped with 8 sensors which capture data including CO₂ levels, relative humidity and temperature, and automatically control ventilation according to current needs. The high heat recovery level ensures that incoming fresh air is preheated. The comfort level of basement areas is enhanced thanks to the consistently comfortable indoor climate.

Automatic moisture protection

The intelligent humidity management of the freeAir 100 ventilation unit prevents the air from becoming too humid, thereby protecting against damage to the building structure. The moisture and temperature sensors measure relative humidity and temperature, both indoors and out. This helps to ensure optimal dehumidification control and prevents the ingress of moisture. In dehumidification mode, the freeAir increases the air change rate at as low as 45 percent relative indoor humidity as soon as the absolute humidity indoors rises above the outdoor level, ensuring the removal of moisture through air exchange.

Simplified design and installation

The freeAir 100 exterior wall ventilation unit offers the option of connecting additional rooms. Depending on the size of the basement, this typically requires only one exterior wall opening. Thanks to the freeAir plus intelligent active transfer unit, supply air ducts are unnecessary.

Maximum energy efficiency

By matching the air change rate to current needs, the freeAir 100 requires very little operating energy. A high heat recovery level of more than 90 % helps to achieve heating energy savings of up to 50 %.





freeAir installation during modernisation work

Installation

"I particularly like the compact design of the flush mounting kit. It makes installing the freeAir 100 a breeze. Commissioning with the freeAir Connect software is also perfectly straightforward. We have installed more than 30 units and I'm looking forward to the next construction project involving a further 20 freeAir units."

Maik Schulz Elektro Frank Mainburg

- A minimum of ventilation ducts and exterior wall openings
- Robust flush mounting kit with protection
 against dirt on the construction site
- No sensor cables or external controls
- Plug & play operation without the need for calibration



A minimum of ventilation ducts and exterior wall openings

The freeAir ventilation system from bluMartin enables entire residential units – subject to size – to be ventilated via just one exterior wall unit. Thanks to the freeAir plus intelligent active transfer unit, supply air ducts are unnecessary. A short duct is usually sufficient for the extract air. This reduces installation effort considerably.

Robust flush mounting kit with electrical connection

The freeAir ventilation system is designed for ease of installation. For the freeAir 100 exterior wall ventilation unit, all that's needed during the construction phase is the robust flush mounting kit with optional second room connections. This wall cabinet is protected from dust on both sides by PE inserts, and can be connected by an electrician using a single power cable. For installation of the freeAir plus transfer unit, you only need a 160 mm diameter or the functional flush mounting block and an electrical connection.

No sensor cables or external controls

The complex sensor technology of the freeAir 100 is fully integrated into the unit. No sensor cables are therefore necessary. No external controls are needed thanks to automatic sensor control. The freeAir plus intelligent active transfer unit is also equipped with integrated sensor control, making additional cables and separate switches unnecessary.

Plug & play operation without the need for calibration

The final phase of construction involves mounting the outside hood and sliding the freeAir 100 into the wall insert. No calibration or adjustment work is needed. It's simply a case of setting the room size and the cross-section of the extract air duct using the DIP switch on the front of the unit (behind the front plate). Automatic constant flow rate control removes the need for calibration at the air intake and discharge vents. With the automatic dehumidification function, the freeAir ensures a pleasant indoor climate as soon as the new build is complete. In many cases, the ventilation system therefore allows the occupants to move in sooner.

CERTIFICATE

Certified Passive House Component Component-ID 0641s03 valid until 31st December 2021 Passive House Institute Dr. Wolfgang Feist 64283 Darmstadt Germany



Category: Manufacturer:	Air handling unit with heat recovery bluMartin GmbH Germany
Product name:	freeAir 100 with second room connection
Specification:	Single room ventilation system with optional second room connection
Heat exchanger:	Recuperative

This certificate was awarded based on the product meeting the following main criteria

Heat recovery rate	η_{HR}	≥	75 %
Specific electric power	$P_{el,spec}$	≤	0.45 Wh/m³
Leakage		<	3 % ¹⁾
Comfort	Supply air temperature \ge 16.5 °C at outdoor air temperature of -10 °C ²⁾		

Airflow range

20-30 m³/h (continuous operation)

20-50 m³/h (on-demand operation for elimination of increased loads)

Heat recovery rate

 η_{HR} = 87 %

Specific electric power

 $P_{\rm el,spec} = 0.26 \, \rm Wh/m^3$



¹⁾ Proved with the tracer-gas method.

 $^{2)}$ Because of the unit specific frost protection strategy the supply air temperature could be temporary below 16.5 °C at extreme winter temperatures.