

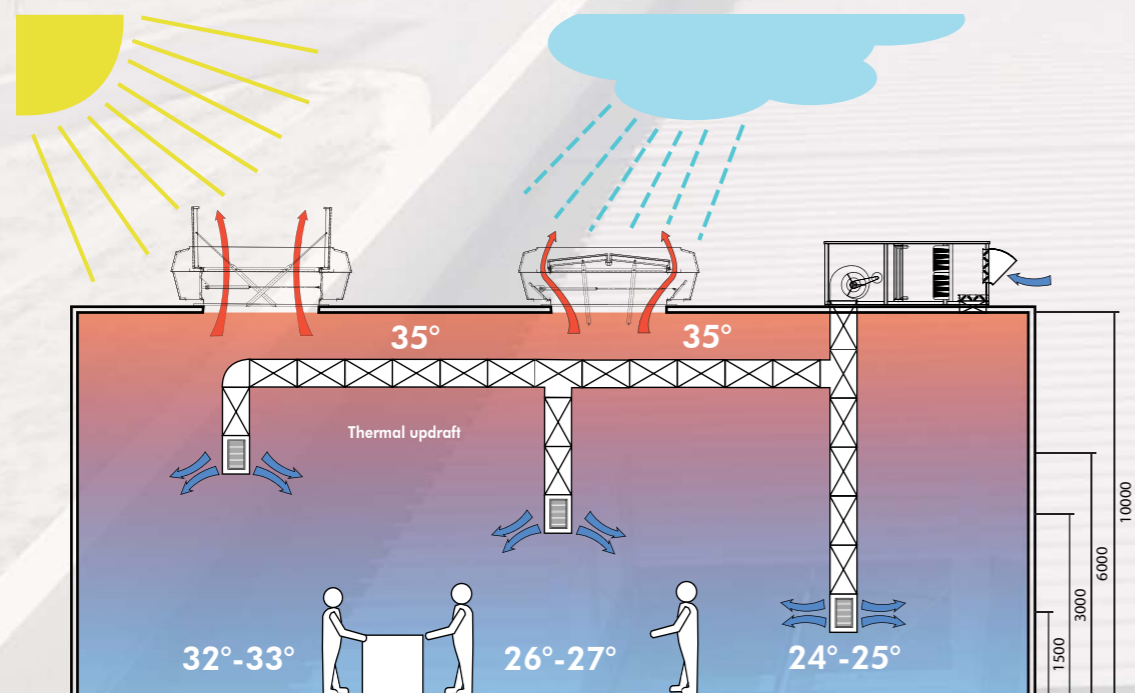


Industrial ventilation



Industrial ventilation

Mechanical ventilation in combination with natural ventilation is one of the most effective and also economical forms of aeration and ventilation system available on the market today. Mechanical ventilation systems can take the form of either decentralised plants or as central aeration plants for the ventilation and heating of buildings. In both cases, the type of airflow can be decisive for optimum operating performance. An important factor is the air exchange rate in the working area. It is important that the incoming air should reach the workers while it is still fresh and clean. Thus, it should enter the working area as low as possible. Moreover, this has the major advantage that a controlled air exchange with relatively small air volumes guarantees maximum ventilation in the working area. Due to the thermal updraft caused by natural ventilation systems, the stale air can be removed from the building. With a ventilation area of 2 m² and an exhaust air velocity of 2 m/s, an exhaust airflow rate of approximately 14,000–15,000 m³/h can be achieved. This corresponds to the ventilation capacity of an exhaust fan with a power rating of approx. 2 kW. The energy-saving potential is thus huge. Even in very hot factories it is possible to ventilate using natural air supply units.



The operating principle of mechanical ventilation combined with natural ventilation. The illustration explains the relationship between input height and temperature in the working area.





Natural ventilation units

PHOENIX:

The PHOENIX flap-type ventilator is a natural ventilator, which, in addition, has been tested and approved as a natural smoke and heat extractor (NSHEV) according to EN 12101-2. Single- and double-flap versions are available. Endurance tests with 10,000 opening and closing cycles have proven its robust, functional design as well as the high quality of the materials used. It has been designed to withstand even severe weather conditions. Depending on customers' wishes, the PHOENIX can be supplied in both insulated and non-insulated versions. The flaps are available in two versions: 16 mm multiwall polycarbonate panels and an aluminium sandwich construction. Depending on the choice of flap, a sound insulation value up to 33 dB Rw is possible.

Depending on the design, the top flaps are opened and closed by either pneumatic cylinders with end-position locking at both ends or by electric servomotors. Weathertightness is achieved by means of EPDM profile seals. On request, the PHOENIX can be supplied with fall-through-safety grids, thus helping to guarantee the required fall-through protection. We manufacture PHOENIX according to customer specification up to a roof opening of 2,500 x 3,000 mm.

FIREFIGHTER:

The FIREFIGHTER, like the PHOENIX, is a natural ventilation unit and is also officially approved as an NSHEV. The FIREFIGHTER is also available in single- and double-flap versions. In contrast to PHOENIX, the FIREFIGHTER is (optionally) available in a thermally broken version according to DIN 4108. The thermal separation is achieved using rolled-in polyamide bars. Moreover, the flaps can be made of either aluminium, polycarbonate multiwall panels (optionally filled with Lumira™) or insulated glass. A sound insulation value of up to 56 dB Rw can be achieved. We manufacture FIREFIGHTER according to customer specification up to a roof opening of 1,900 x 2,500 mm (Duo version) or 1,500 x 2,500 mm (Delta version).

SMOKEJET:

The SMOKEJET is a louvred ventilator for natural ventilation. Furthermore, it can be used as an officially approved NSHEV. Basically, it consists of an aluminium frame and a given number of pivoting aerodynamic louvre blades depending on the frame size, which are equipped with seals. A choice of aluminium, glass and polycarbonate louvre blades is available. The louvres are opened and closed by a pneumatic cylinder or a servomotor. Besides a wide range of roof installation options, the SMOKEJET can be installed in every type of wall construction as an air inlet system. The units can be produced in all widths and defined lengths up to 2,226 x 2,966 mm. The length results from the width of the individual louvre blades: 133 mm (length = number of louvre blades x 133 mm + 40 mm for the frame).

The devices listed above comply with DIN EN 12101-2 and VdS 2159 (depending on the specification). The EC declaration of conformity is delivered with the product.



Large illustration: PHOENIX ventilator on a factory roof.



PHOENIX as a single-flap version



PHOENIX as a wall-mounted air-supply unit



FIREFIGHTER mounted on a sloped plinth



SMOKEJET mounted vertically

All our natural ventilators, which can also be used for smoke and heat extraction, are described in detail in the „Natural Smoke and Heat Extraction System“ brochure.

MEGAPHOENIX

The MEGAPHOENIX offers a threefold benefit. It provides for all-weather ventilation, allows daylight to enter the building due to its polycarbonate flaps, and furthermore, it can be used as a natural smoke and heat extraction unit. It is equipped with lateral inner flaps to enable weather-protected ventilation. As soon as the outer flaps close due to rain, the inner flaps open. The flaps are closed by a spring mechanism. The changeover from fair-weather ventilation to weather-protected ventilation is controlled by a rain-sensor system.

The MEGAPHOENIX meets the requirements of DIN EN 12101-2 and VdS 2159 (depending on the specification). The EC declaration of conformity is delivered with the product.

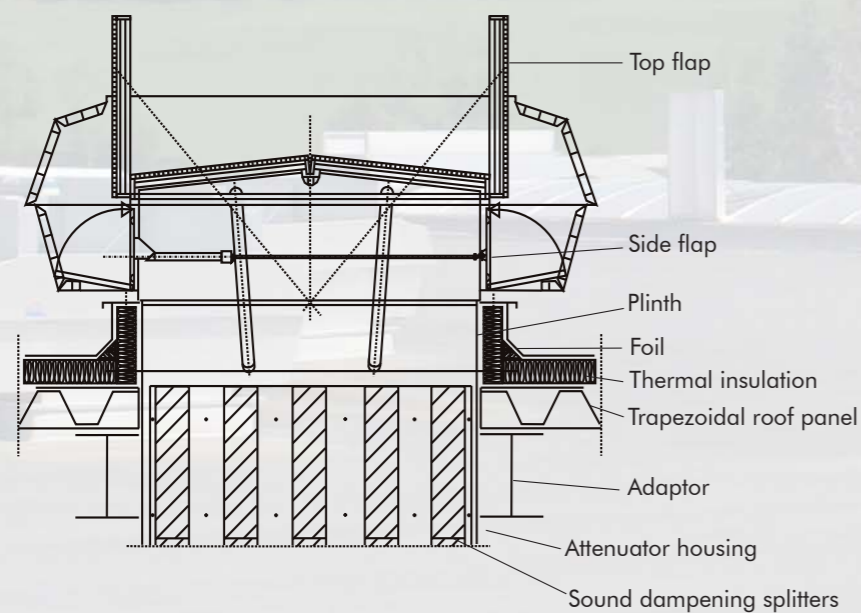


Field of application:

- Flat roof
- Skylight
- Northlight roof

Flap versions:

- 16 mm polycarbonate clear/opal (with Lumira™-infill on request)
- A1 – single-wall aluminium
- A2 – double-wall aluminium (insulated)



MEGAPHOENIX with splitter attenuators and roof mounting

Sizes:

The MEGAPHOENIX can be produced in all lengths and widths up to 1,900 x 3,000 mm.



Large illustration: MEGAPHOENIX as a stand-alone unit on a factory roof.



MEGAPHOENIX in a glass skylight



Combined with an arched skylight



Mounted on an arched skylight



The inside of a MEGAPHOENIX



MEGASTAR

The MEGASTAR also offers a threefold benefit, combining all-weather ventilation with smoke and heat extraction, and allowing daylight to enter the building via the flaps. The MEGASTAR, like the MEGAPHOENIX, has lateral inner flaps which allow bad-weather ventilation. It has the advantage that it can be not only equipped with polycarbonate and aluminium flaps, but also with insulated glass flaps. The MEGASTAR has the same control unit as the MEGAPHOENIX.

The MEGASTAR meets the requirements of DIN EN 12101-2 and VdS 2159 (depending on the specification). The EC declaration of conformity is delivered with the product.



Field of application:

- Flat roof
- Arched skylight strip
- Northlight roof

Flap versions:

- 16 mm multiwall polycarbonate panel clear/opal (with Lumira™-infill on request)
- Laminated insulated glass (fire-resistance rating A1)
- A2 – double-wall aluminium (50 mm insulated)

Sizes:

The MEGASTAR can be produced in all lengths and widths up to 1,900 x 2,500 mm.

Large illustration: MEGASTAR multi-purpose ventilator on a factory building.



Mounted on a sloped plinth



Stand-alone unit on a factory roof



Combined with a EUROLIGHT



Ventilation even when it is raining

MULTIJET

The MULTIJET is the all-weather version of the SMOKEJET as a louvred ventilator. It has a frame design with lateral flaps, allowing good ventilation even in bad weather conditions. THE SMOKEJET is mounted on the MULTIJET's substructure. The MULTIJET can also be used as a NSHEV, and thus offers a threefold benefit. This multi-purpose ventilator is a sensible solution for installation on Northlight roofs with slopes up to 90°.

The MULTIJET meets the requirements of DIN EN 12101-2 and VdS 2159 (depending on the specification). The EC declaration of conformity is delivered with the product.

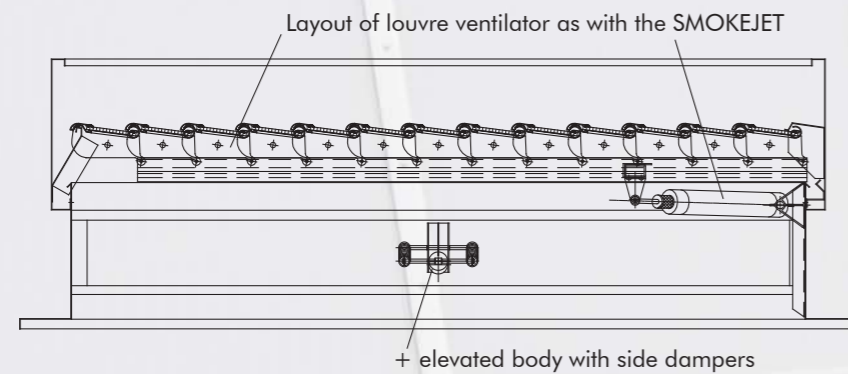


Field of application:

- Flat roof
- Skylight strip
- Northlight roof

Louvre-blade versions:

- A1 – single-wall aluminium
- A2 – double-wall aluminium
- GL – single-wall laminated glass
- PC – polycarbonate



Sizes:

The MULTIJET can be produced in all widths and defined lengths up to 1,926 x 2,966 mm. As is the case for the SMOKEJET, the lengths are determined by the louvre width of 133 mm (length = number of louvre blades x 133 mm + 40 mm for the frame).



Large illustration: MULTIJET with polycarbonate louvre blades mounted in a DELTALIGHT.



Stand-alone unit on a factory roof



Mounted on a EUROLIGHT



MULTIJETs in a Northlight roof



On a gable roof ridge



AIRSTAR

The AIRSTAR labyrinth ventilation system is used as a high-performance ventilator in hot and noisy heavy-industry applications when high-volume, rainproof and energy-free ventilation is required, and which, if necessary, is also able to comply with additional noise-insulation regulations. AIRSTAR uses the pressure and temperature difference caused by the thermal load within a building to produce natural ventilation.

Advantages:

- Individually adaptable to all types of building
- Mountable on all common roof designs
- Aerodynamically efficient louvre-blade shape with raised edges in the middle and on the upstream side allows for continuous weatherproof ventilation. The water that accumulates in the louvres is conducted into two drainage channels on the longitudinal edge of the unit and drained off onto the roof.
- The rain-drainage channels consist of wind deflector plates, considerably improving ventilation in inflowing-wind conditions.
- To save energy during shutdown periods, the louvres (optional) can be shut by means of a locking mechanism.
- Additional nylon brushes (optional) on the locking mechanism increase the sealing effect.
- By removing the wind deflector plates, the louvres are easily accessible and can be easily cleaned.
- Due to the flat design and the resulting low windage area, the substructures on the building can be reduced to a minimum.
- Can be fitted with splitter attenuators either on or under the roof
- Good aerodynamic efficiency
- Powder coating allows individual choice of colours
- Plinth mounting using tension locks – no drill holes needed (optional)
- Low maintenance due to simple and robust design

Design characteristics:

The AIRSTAR is made of aluminium (AlMg3) as standard. An additional locking mechanism (optionally available with sealing brushes) prevents unnecessary energy loss during shutdown periods. The locking mechanism with rollers sliding in guide rails can be controlled electrically or pneumatically. Additional splitter attenuators can be fitted in a raised base if this is necessary due to high noise levels caused by the production processes. The splitters are located underneath the labyrinth construction. The splitter frames are made of galvanized steel sheet. The absorption material is moisture-repellent and abrasion-resistant. The ventilator can be delivered with an empty housing and equipped with splitter attenuators at a later date.

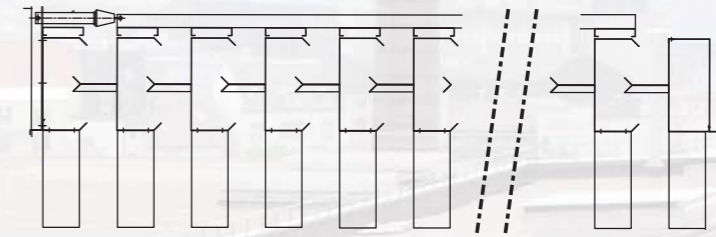
The AIRSTAR is available in two versions: AIRSTAR A1 and AIRSTAR A2.

Illustration: AIRSTAR labyrinth ventilator with a servomotor-actuated locking mechanism.



AIRSTAR A1

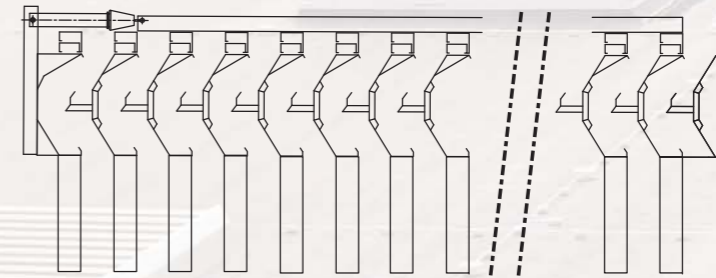
The AIRSTAR A1 allows the required airflow when combined with a sufficiently large roof opening. The ratio between the splitter-attenuator housings and the width of the air openings is 1:1, allowing a high sound-insulation value.



AIRSTAR A1 with splitter attenuator and locking mechanism (optional).

AIRSTAR A2

In the case of the A2 version, the labyrinth has a more aerodynamic design, which, having an improved flow-rate coefficient (CV), allows increased airflow with a smaller roof opening. The ratio between the splitter-attenuator housings and the width of the air openings is 1:1.5.



AIRSTAR A2 with splitter attenuator and double slider (optional).

Locking mechanism:

To prevent heat loss during shutdown periods, an additional locking mechanism is necessary, which can be ordered optionally. This allows the ventilator to be closed or the air volume to be regulated. The sliding louvres are combined in groups, which are laterally supported by polyamide rollers.

For additional sealing, the locking louvres can be fitted with nylon brushes. The locking-mechanism actuator is either

- a double-acting maintenance-free pneumatic cylinder with a bellow
- or a low-maintenance electric motor.



AIRSTAR

Sizes:

The maximum width of the AIRSTAR is limited to 3,800 mm. The unit can be built in any length as required; drive units must, however, be fitted at specified intervals when a locking mechanism is used. Apart from the two versions A1 and A2 with the optional locking mechanism there are four different unit heights.

Type:	Base height:	Unit height:
200*	200 mm*	700 mm*
500	490 mm	990 mm
750	735 mm	1,235 mm
1000	980 mm	1,480 mm

* not suitable for the installation of splitter attenuators

Insertion loss of the units:

AIRSTAR A1	Insertion loss in dB/octave octave center frequency (Hz)									
	63	125	250	500	1000	2000	4000	8000	Rm	R'w
Without splitters	0.9	5.7	4.3	7.4	9.9	11.1	11.1	11.0	8.3	10.4
With splitters 500 mm	1.9	7.7	10.2	17.1	23.8	22.3	18.4	16.5	17.0	20.9
With splitters 750 mm	2.2	8.6	13.0	21.2	29.1	26.0	20.2	17.3	20.6	24.6
With splitters 1000 mm	2.4	9.5	15.7	25.3	34.3	29.4	21.9	18.0	24.1	27.4

AIRSTAR A2	Insertion loss in dB/octave octave center frequency (Hz)									
	63	125	250	500	1000	2000	4000	8000	Rm	R'w
Without splitters	1.9	5.7	5.0	3.7	5.9	7.6	7.0	7.0	5.9	6.6
With splitters 500 mm	2.8	7.2	8.3	11.4	21.9	22.4	18.3	15.8	14.8	18.2
With splitters 750 mm	2.7	7.5	10.3	14.6	27.5	26.6	21.1	18.0	17.9	21.0
With splitters 1000 mm	2.6	7.7	12.3	17.8	33.1	30.7	23.8	20.3	21.1	23.7

RM = mean sound reduction index R'w = apparent weighted sound reduction index

Large illustration: AIRSTAR labyrinth ventilator spread along the whole ridge of a factory building.



AIRSTAR with a closed slider



AIRSTAR on a power station



Labyrinth design of the AIRSTAR A2



AIRSTAR with a more compact design

AIRJET

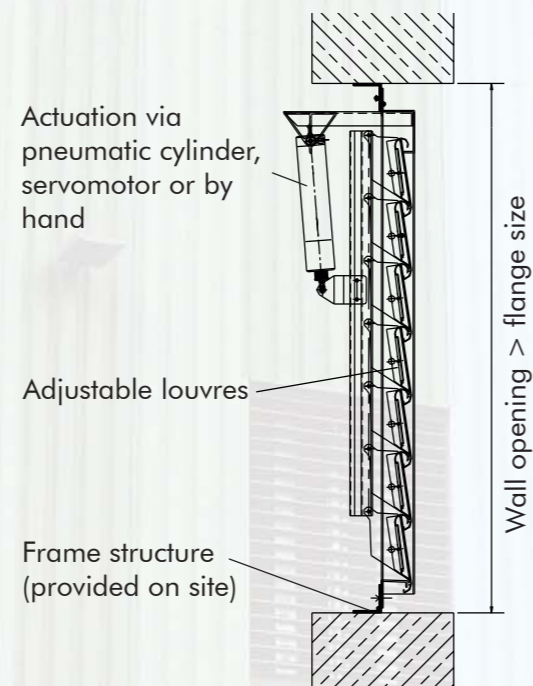
The AIRJET is an air inlet louvre for natural ventilation. It can be installed in all common wall types. It may, however, only be installed in vertical walls with the louvres arranged horizontally.

Advantages:

- Individually adaptable to any building for wall openings up to 5.46 m²
- Robust pivot-point design (tested with 30,000 load cycles)
- Good aerodynamic efficiency
- Suitable for day-to-day ventilation as well as for air supply in smoke-and-heat-extraction applications (full ventilation at a louvre position of 85°)
- Can be fitted with splitter attenuators
- Powder coating allows individual choice of colours
- Low maintenance due to simple and robust design

Design characteristics:

The AIRJET frame is made of aluminium alloy (AlMg3). The louvre blades are made of extruded aluminium profiles (AlMg Si05 F22). The AIRJET can be installed in front of or in the façade. The drawing opposite shows the installation in a wall.



Drive & actuation:

The unit can be opened either by a pneumatic cylinder, an electric motor or by hand. In the case of pneumatic actuation, a pneumatic cylinder opens the louvres (working pressure = min. 6 bar), and two tension springs close them automatically when the pressure drops. The electric motor works in both directions to open and close the louvres. In the case of manual and electric operation, the louvres can be set to any position.

Sizes:

The AIRJET can be manufactured in all widths from 500 to 2,000 mm. The unit length results from the number of individual louvre blades with a length of 133 mm. It is limited to 20 louvre blades = 2,732 mm roof opening.



Large illustration: AIRJET air inlet unit with splitter attenuators mounted behind it.



AIRJET as an air inlet unit



Overlapping louvres in an AIRJET



AIRJET closes by strong winds



AIRJET mounted in a wall



ISOVENT

The ISOVENT air inlet and circulation system is a central unit that filters and heats the ambient and circulating air as required and depending on the specification. The air is channelled into the working area by modules from the AIRSYSTEM modular system. The unit is manufactured according to the monoblock principal and can be combined according to the most varied requirements. The self-supporting modular system can be roof-mounted on a plinth, or, when installed inside the building, be mounted on a supporting structure.

Advantages:

- Modular design, which can be individually planned and easily modified if the application changes
- Fan section with high-performance dual-inlet radial fan rotor, dynamically and statically balanced, with a repair switch at the front
- Intake and circulated air are regulated by means of two flaps and a servomotor depending on the specification or by a duct sensor
- Insulated and soundproofed versions are available on request
- In roof-mounted systems, the heating element (copper-aluminium) can be fitted inside the duct, further saving energy costs
- A frost-guard thermostat protects the heating element at low temperatures
- The filter medium is made of synthetic fibres in U-channel frames made of sendzimir-galvanised sheet steel. The frame and the inlay can be disposed of separately
- Where filters are used, a differential-pressure switch can be fitted optionally to monitor them
- A suction hood with a stainless steel grid prevents rain being sucked in with the ambient air
- Low energy costs and environmentally friendly

Design characteristics:

The ISOVENT has an aluminium frame design clad with sheet-metal panels. The housing has hinged inspection doors on one side, thus enabling simple maintenance. The system is available in an insulated or a non-insulated version. The ventilator is individually designed according to the airflow rate and pressure requirements. Generally, dual-inlet fan rotors with forward-curved blades, V-belt drives and rocker-mounted electric motors are used.

Large illustration: An ISOVENT mechanical ventilation unit integrated in a EUROLIGHT.



ISOVENT mounted transversely ...



... or longitudinally



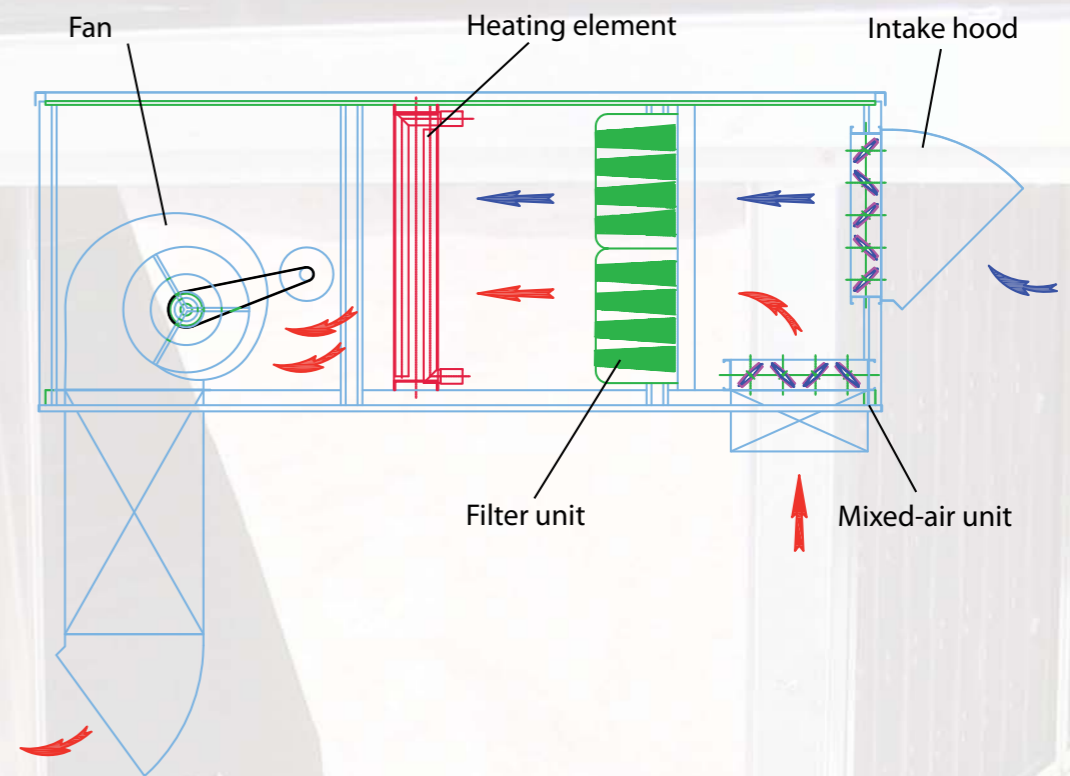
Mixed-air unit and bag filter



Ventilator module with a radial fan

ISOVENT

Modular design:



The unit has a modular design and every individual module is available as an option. The mixed-air unit is located behind the intake hood. The ambient air and the warm air in the building are mixed using servomotors and either manually controlled or regulated using a duct sensor depending on the specification. The air is cleaned by a bag filter. If necessary, the air can be heated using an air-heater battery. This can be installed in the AIRSTREAM duct system. If necessary, the ISOVENT can be supplied with empty modules, allowing options to be retrofitted at a later date.

Sizes:

The ISOVENT is available with an airflow rate of 1,200 to 22,000 m³/h. For precise sizing of the complete system, please contact our qualified personnel.

Illustration: The fan, air-heater battery and the filter elements are accessible via hinged side panels.

AIRSYSTEM

AIRSYSTEM is a duct system for mechanical ventilation and heating. It is made up of various modules to transport the air. A distinction is made between an air intake system, which transports fresh air to the workplace, and an air extraction system, which sucks stale air out of the workplace. Whilst the air intake system offers the option to warm the intake air, the air extraction system is used to extract toxic vapours from a welding station for example.

A choice of heat exchangers (cross-flow heat exchangers or rotary heat exchangers) is available for heat recovery depending on the requirements.

DIGOVENT:

The AIRSYSTEM can be configured in two different ways. Whilst the ISOVENT combines a mixed-air unit, a fan, a filter and possibly an air-heater battery, all of these functions can be achieved decentrally using individual modules. The DIGOVENT ventilator module used in this case fulfils only the ventilator function, and with a capacity of 2,000 to 9,000 m³/h has a considerably lower airflow rate than the ISOVENT.

DIGOVENT model	06						07					
Air capacity m ³ /h*1000	2	3	4	5	6	7	4	5	6	7	8	9
Channel cross section (mm)	600 x 600						700 x 700					

Further modules:

In addition to simple straight or arched duct elements, there are a large number of other functional modules, which can also be integrated as individual modules in the duct system of smaller plants. These include a roof- or wall-mounted suction hood, a mixed-air unit, an air-heater battery and a filter module. In heat-recovery systems a heat exchanger is integrated in the system.

Air outlet:

Depending on the requirements, there are three different air-outlet versions available: manually adjustable ventilation grilles, displacement diffusers or textile channels. In areas where drafts caused by the system are not a problem, or where air is only extracted, normal ventilation grilles are sufficient. These are available in a single-row louver design for adjustable vertical air deflection, or in a double-row louver design for adjustable horizontal and vertical air deflection. In contrast, displacement diffusers alter the airflow's characteristics so that it is no longer perceived as a draft. Textile channels have a similar effect in that the air flows through an air-permeable fabric and is thus uniformly distributed in the surrounding area.



Large illustration: AIRSYSTEM textile channel



Manually adjustable ventilation grille



Displacement diffuser



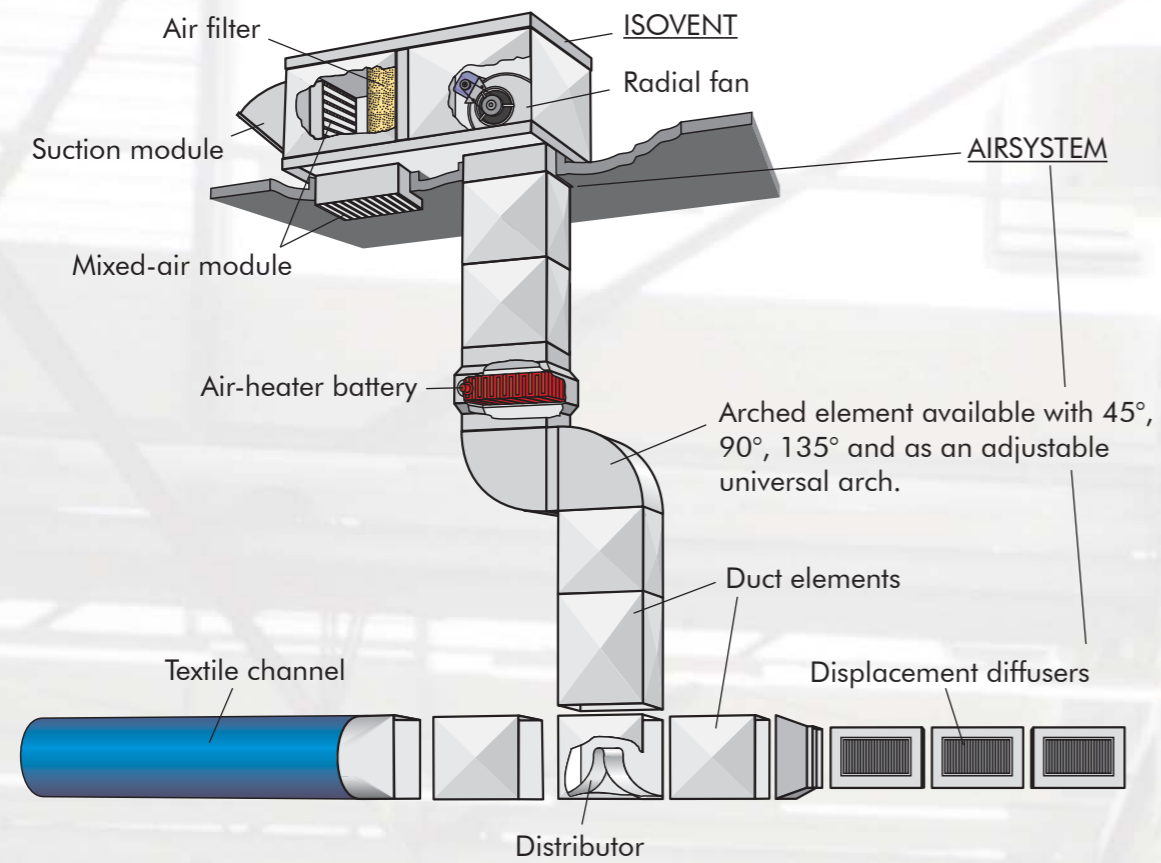
Textile channel



Roof-mounted suction hood

AIRSYSTEM

Example of a roof-mounted ISOVENT with a flanged-on AIRSYSTEM:



Example of a DIGOVENT with the AIRSYSTEM duct system:

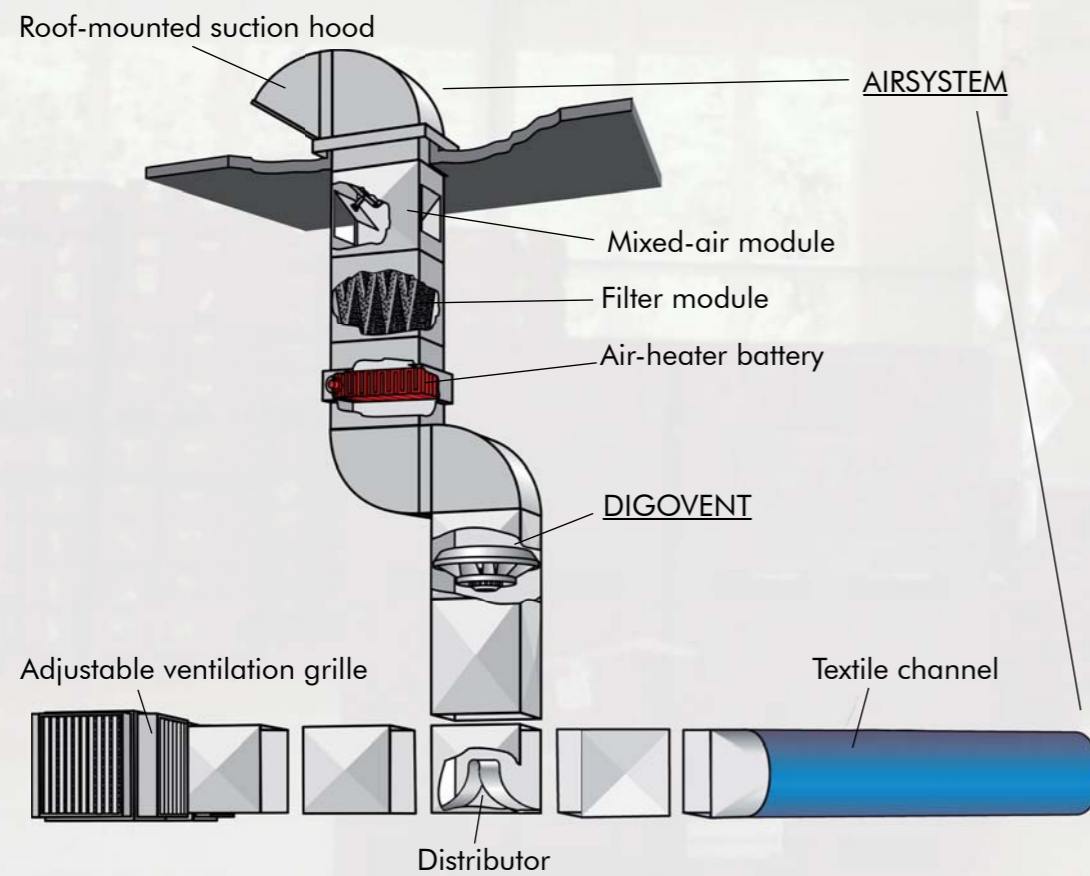


Illustration: Duct system type AIRSYSTEM with displacement diffusers.





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