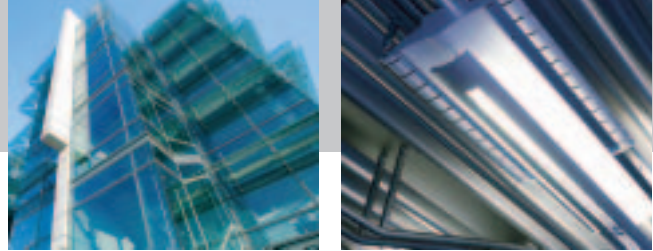


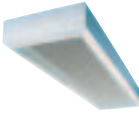

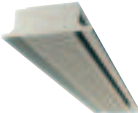
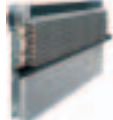
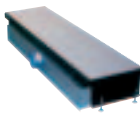


# Air-water systems for efficient air conditioning



**TROX<sup>®</sup> TECHNİK**

The art of handling air



	Passive cooling systems		Induction units			Façade ventilation units	
	Page 4		Page 6			Page 10	
	Passive chilled beams	Chilled ceiling components and elements	Active chilled beams	Undersill induction units	Underfloor induction units	Undersill units	Underfloor units
							
Page	4	5	6 – 8	9	9	10 – 11	12
<b>Type of building</b>							
Hall			•				
Hotel			•	•	•	•	•
School, university			•	•		•	
Office, administration	•	•	•	•	•	•	•
Airport, train station	•	•	•				
<b>Installation location</b>							
Ceiling							
Flush-mounted		•	•				
Freely suspended	•	•	•				
Floor					•		•
Interior wall				•			
External wall/façade				•		•	•
<b>Air distribution</b>							
Mixed flow			•	•	•	•	•
Displacement flow				•	•	•	•
<b>General functions</b>							
Heating		•	•	•	•	•	•
Cooling	•	•	•	•	•	•	•
Supply air			•	•	•	•	•
Extract air			•			•	•
<b>Additional functions</b>							
Lighting	•	•	•				
Safety	•	•	•				
Information	•	•	•				
Sound absorption		•					
Heat recovery						•	•
Latent heat storage						•	•
<b>Performance data</b>							
Typical cooling capacity [W/m <sup>2</sup> ]	30 – 60	30 – 100	50 – 100	40 – 80	40 – 70	30 – 60	30 – 60
Typical fresh air flow rate [(l/s)/m <sup>2</sup> ]			1.4 – 2.2	1.4 – 2.2	1.4 – 2.2	1.4 – 2.2	1.4 – 2.2
			[(m <sup>3</sup> /h)/m <sup>2</sup> ]	5 – 8	5 – 8	5 – 8	5 – 8
Typical sound pressure level in the space [dB(A)]	≤ 20	≤ 20	≤ 35	≤ 35	≤ 35	≤ 35	≤ 35

## Air for the people – water for the loads

Today, air-water systems are used in many modern buildings and, especially in office and administration buildings, offer energy-efficient solutions for the internal space ventilation and air conditioning.

There is a variety of installation possibilities for air-water systems, which means that, for almost every building, variants that meet the most demanding architectural requirements are available.

### What are the architectural advantages

- **Improved efficiency of space utilisation**

Air-water systems require comparatively low air flow rates, this means that the required air supply and extract duct cross sectional areas are significantly reduced.

- **Architectural flexibility**

With the ability to install units in the floor, ceilings or walls/façades there is always an option to meet specific requirements.

- **Ideal flexibility for change of usage**

Thanks to the modular configuration of air-water systems it is possible to change the usage of the building at a later stage without changes to the installation of equipment.

- **Preserving the original building**

Air-water systems are ideally suited for the refurbishment of existing buildings and for retrofit.



*TROX Headquarters, Neukirchen-Vluyn, Germany*

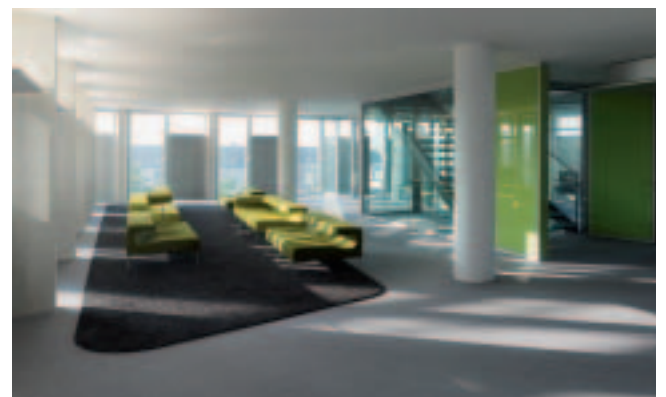
## The art of handling air

TROX understands the art of competently handling air like no other company.

Working in close partnership with sophisticated customers all over the world, TROX is the leader in the development, manufacturing, and sale of components and systems for the air conditioning and ventilation of internal spaces.

The systematic research and development associated with individual products continues to expand based on project specific requirements.

With its customer-specific solutions, TROX sets a trail-blazing standard and continues to enter new markets and maintain sustainable business opportunities. As a result, TROX, since the introduction of the first ceiling mounted chilled beams in the 80's, has been the leading supplier of these multifaceted products in Europe.



*Capricom building, Düsseldorf, Germany  
Air-water system with façade ventilation units*

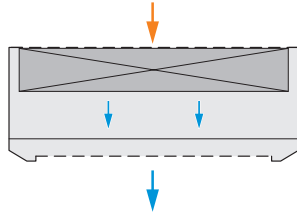
*Further information and more details on these products please refer to the design manual Air-Water Systems and to the selection programme Easy Product Finder.*

Depending on the building function all the systems presented here can create a comfortable indoor climate. Individual system types can provide the ideal solution for particular applications depending on the activity in the building and its proposed layout. The use of air-water systems provides performance that reacts to the specific thermal needs of an internal space.



### Passive chilled beams

#### Type PKV

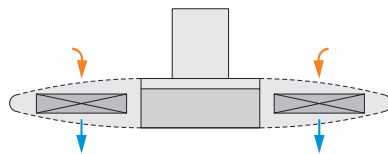


- Design variants with perimeter border and perforated face plate
- Freely suspended and flush ceiling installation

◀▶ L: 900 – 3000 mm · W: 180 – 600 mm  
H: 110 – 300 mm  
❄ Cooling capacity up to 1440 W

### Multi-service chilled beams

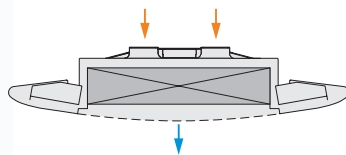
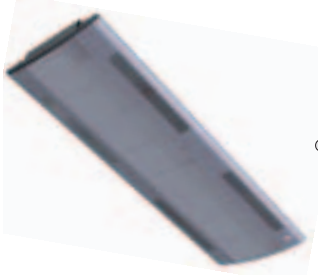
#### Type PKV-B



- Attractive design in low height construction
- Also for heating operation
- Integration of linear light fittings and halogen spotlights
- Freely suspended installation
- Project bespoke multi-service integration

◀▶ L: 3200 mm · W: 525 mm · H: 70 mm  
❄ Cooling capacity up to 255 W  
🔥 Heating capacity up to 530 W

#### Type MSCB



- Attractive design
- Freely suspended installation
- Cooling capacities to meet specific requirements
- Project bespoke multi-service integration

◀▶ L: 1500 – 3000 mm · W: 600 mm · H: 200 mm  
❄ Cooling capacity up to 900 W



### Radiant chilled ceiling components

#### Type WK-D-UG



- Can fit in all ceiling tiles
- Assembly of ceiling tiles and chilled ceiling elements at the factory
- Can be incorporated into a plaster ceiling

◀▶ L: max 2400 mm · W: 750 mm per element  
 ❄️ Cooling capacity up to 80 W/m<sup>2</sup>

#### Type WK-D-UM



#### Type WK-D-UL

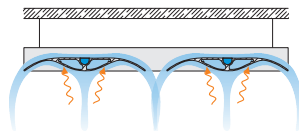


- Can fit in all commercial ceiling tiles
- Can be incorporated into a plaster ceiling
- Easy assembly

◀▶ L: max. 2400 mm · W: 1000 mm per element  
 ❄️ Cooling capacity up to 80 W/m<sup>2</sup>

### Convective chilled ceiling elements

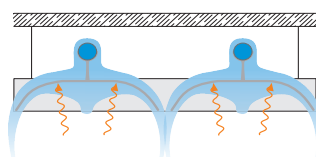
#### Type WK-D-WF



- Attractive curved shaped profiles
- Installed as freely suspended elements (plank style)
- Can be combined with grid ceilings
- Can be installed above open grid ceilings
- Project bespoke design

◀▶ L: max 4000 mm · W: 1400 mm  
 ❄️ Cooling capacity up to 130 W/m<sup>2</sup>

#### Type WK-D-EL



- Attractive elliptically shaped profiles
- Optional integration of air terminal devices and lights
- Also with mineral fibreboard for sound absorption
- Can be installed above open grid ceilings
- Project bespoke design

◀▶ L: max 6000 mm · W: 1500 mm  
 ❄️ Cooling capacity up to 110 W/m<sup>2</sup>

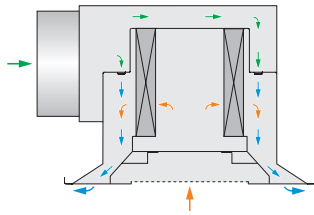
# Induction units

## Active chilled beams



### Nominal width 300 mm

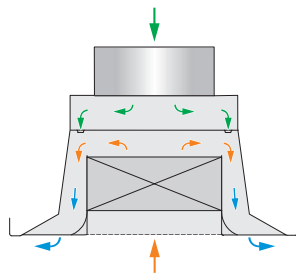
#### Type DID312



- Four options of induced air grille design
- Heat exchanger vertically mounted with condensate drip tray for low chilled water temperatures
- Side entry spigot for fresh air
- Supply-extract-air combination available

◀▶ L: 900 – 3000 mm · H: 210 and 241 mm  
 ↻ 5 – 70 l/s · 18 – 252 m<sup>3</sup>/h fresh air  
 ❄ Cooling capacity up to 1800 W  
 🔥 Heating capacity up to 1250 W

#### Type DID300B

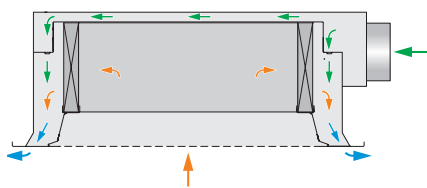


- Side or top entry spigot for fresh air
- Supply-extract-air combination available

◀▶ L: 900 – 3000 mm · H: 210 mm  
 ↻ 3 – 45 l/s · 10 – 160 m<sup>3</sup>/h fresh air  
 ❄ Cooling capacity up to 1600 W  
 🔥 Heating capacity up to 1250 W

### Nominal width/size 600 mm

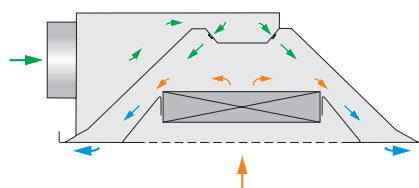
#### Type DID604



- Four-way air discharge
- Adjustable control blades to control the air discharge direction
- Side entry spigot for fresh air
- Heat exchanger vertically mounted with condensate drip tray for low chilled water temperatures

◀▶ L: 600 and 1200 mm · H: 225 mm  
 ↻ 5 – 50 l/s · 18 – 180 m<sup>3</sup>/h outdoor air  
 ❄ Cooling capacity up to 1600 W  
 🔥 Heating capacity up to 1700 W

#### Type DID632



- Large cooling capacity
- Four options of induced air grille design
- Adjustable control blades to control the air discharge direction
- Adjustable induction nozzles
- Side entry spigot for fresh air
- Supply-extract-air combination available

◀▶ L: 900 – 3000 mm · H: 210 mm  
 ↻ 5 – 70 l/s · 18 – 252 m<sup>3</sup>/h fresh air  
 ❄ Cooling capacity up to 2500 W  
 🔥 Heating capacity up to 3000 W

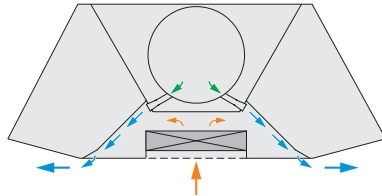
# Induction units

## Active chilled beams



### Freely suspended

Type AKV

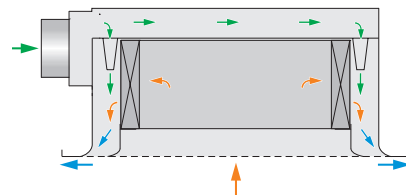


- Low height construction
- End mounted side entry spigot for fresh air
- Heat exchanger horizontal
- Project bespoke design

- ◀▶ L: 900 – 3000 mm · W: 300 and 500 mm  
H: 175 and 200 mm
- ⌚ 12 – 80 l/s · 43 – 288 m<sup>3</sup>/h fresh air
- ☀ Cooling capacity up to 1600 W
- 🔥 Heating capacity up to 1530 W

### Circular

Type DID-R

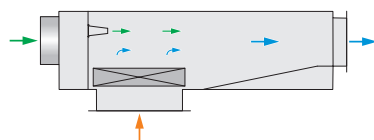


- Many design configurations available
- Circular or square face
- Side entry spigot for fresh air
- Heat exchanger vertically mounted with condensate drip tray for low chilled water temperatures
- Installation into false ceilings

- ◀▶ □: 593, 618, 598 and 623 mm, Ø: 598 mm
- ⌚ 12 – 70 l/s · 43 – 252 m<sup>3</sup>/h fresh air
- ☀ Cooling capacity up to 500 W
- 🔥 Heating capacity up to 1200 W

### One-way air discharge

Type DID-E

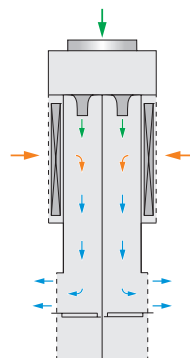


- Ideal for individual rooms in hotels or hospitals
- Induction and supply air grilles in various designs
- Side entry spigot for fresh air
- Heat exchanger horizontal
- Low height construction

- ◀▶ L: 550 and 614 mm · W: 900, 1200 and 1500 mm  
H: 200 mm
- ⌚ 10 – 78 l/s · 36 – 281 m<sup>3</sup>/h fresh air
- ☀ Cooling capacity up to 1000 W
- 🔥 Heating capacity up to 500 W

### For installation in large height spaces

Type IDH



- One or two-way air discharge
- Adjustable discharge
- High capacity for large halls
- Top entry spigot for fresh air
- Heat exchanger vertically mounted with condensate drip tray for low chilled water temperatures
- Freely suspended installation

- ◀▶ L: 1500, 2000 and 2500 mm · W: 305 and 548 mm  
H: 1405 mm
- ⌚ up to 1670 l/s · 6000 m<sup>3</sup>/h fresh air
- ☀ Cooling capacity up to 27 kW
- 🔥 Heating capacity up to 10 kW

# Induction units

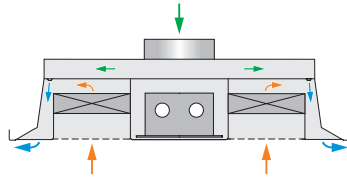
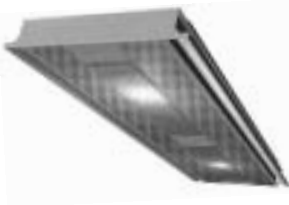
## Active chilled beams



### Multi-service chilled beams

#### Flush-mounted in the ceiling

##### Type DID600B-L

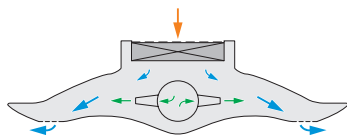


- Integrated linear light fittings
- Low height construction
- Top or side entry spigot for fresh air
- Heat exchanger horizontal
- Project bespoke dimensions

◀▶ L: 1500 – 3000 mm · W: 593 mm · H: 210 mm  
 ↻ 3 – 43 l/s · 11 – 155 m<sup>3</sup>/h fresh air  
 ☀ Cooling capacity up to 1610 W  
 🔥 Heating capacity up to 1730 W

#### Freely suspended

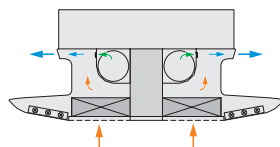
##### Type MFD



- Attractive design
- Heat exchanger horizontal
- Project bespoke multi-service integration
- Linear light fittings

◀▶ L: 1980 mm · W: 800 mm · H: 213 mm  
 ↻ 14 – 22 l/s · 50 – 80 m<sup>3</sup>/h fresh air  
 ☀ Cooling capacity up to 790 W  
 🔥 Heating capacity up to 500 W

##### Type MSCB



- Attractive design
- Cooling capacities to meet specific requirements
- Project bespoke multi-service integration
- Linear light fittings or halogen spotlights

◀▶ L: 1500 – 5000 mm · W: 600 – 1200 mm · H: 440 mm  
 ↻ 3 – 45 l/s · 10 – 160 m<sup>3</sup>/h fresh air  
 ☀ Cooling capacity up to 2750 W  
 🔥 Heating capacity up to 2000 W

# Induction units

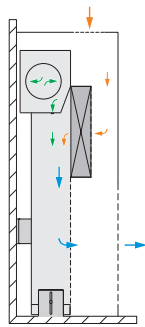
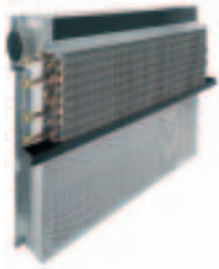
## Undersill and underfloor induction units



### Undersill induction units

#### Displacement flow

##### Type QLI

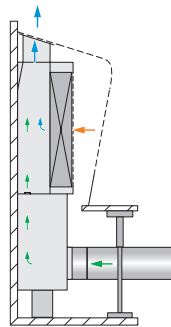


- End mounted side entry spigot for fresh air
- Heat exchanger vertically mounted with condensate drip tray for low chilled water temperatures

- ◀▶ W: 900, 1200 and 1500 mm · H: 730 mm · D: 200 mm
- 4 – 50 l/s · 14 – 180 m<sup>3</sup>/h fresh air
- ❄ Cooling capacity up to 1100 W
- ☀ Heating capacity up to 1730 W

### Special mixed and displacement flow

##### Type IDB

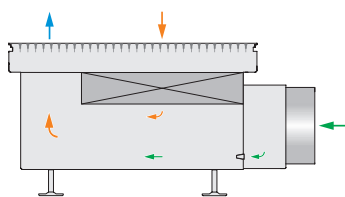
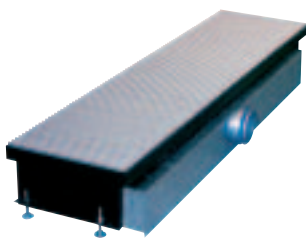


- Side entry spigot for fresh air in false floor
- With regenerative coarse dust filter
- Project bespoke dimensions

- ◀▶ W: 1200 mm · H: 567 mm · D: 134 mm
- 4 – 40 l/s · 14 – 144 m<sup>3</sup>/h fresh air
- ❄ Cooling capacity up to 800 W
- ☀ Heating capacity up to 1000 W

### Underfloor induction units

##### Type BID



- Rectangular underfloor induction unit in various configurations and materials
- Low construction height
- Project bespoke dimensions

- ◀▶ W: 1100 – 1849 mm · H: 191 mm · D: 404 mm
- 4 – 40 l/s · 14 – 144 m<sup>3</sup>/h fresh air
- ❄ Cooling capacity up to 1030 W
- ☀ Heating capacity up to 1225 W

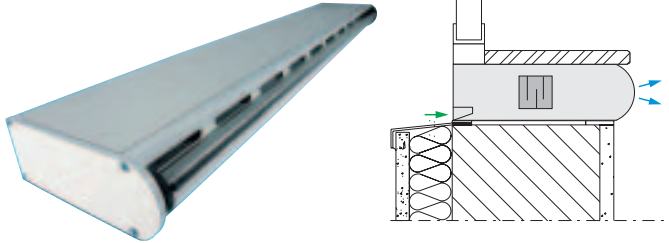
# Façade ventilation units

## Undersill units



### In-flow or out-flow units

Type FSL-B-60



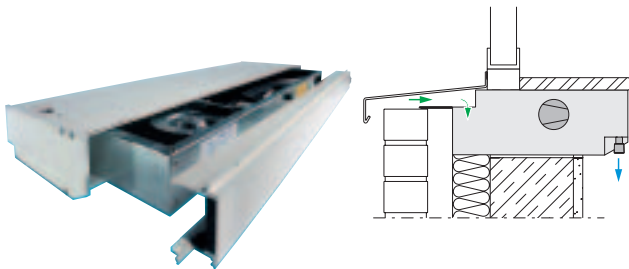
- Natural ventilation with good acoustic performance
- Installation below or above a window or in walls
- Uncontrolled ventilation
- Manually operated air discharge control cylinder
- Lined with thermal/acoustic material

◀▶ W: 200 – 3000 mm · H: 60 mm · D: 140 – 600 mm  
 ↻ 3 – 42 l/s · 10 – 150 m³/h at 12 Pa differential pressure

### In-flow or out-flow units

### Supply or extract air units

Type FSL-B-100

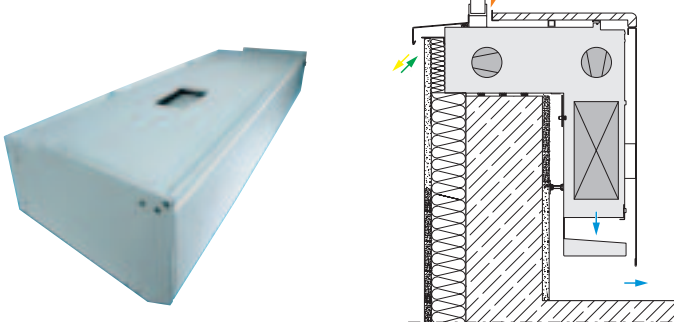


- Natural or mechanical ventilation with good acoustic performance
- Project bespoke construction
- Installation below or above a window or in the wall
- Modular design:  
Base casing for installation during construction phase  
Modular inserts for subsequent fitting
- Lined with thermal/acoustic material
- Fine dust filter available

◀▶ W: 1000 – 3000 mm · H: 100 mm · D: 270 – 600 mm  
 ↻ 8 – 22 l/s · 30 – 80 m³/h fresh air

### Supply and extract air units (ZAB)

Type FSL-B-190

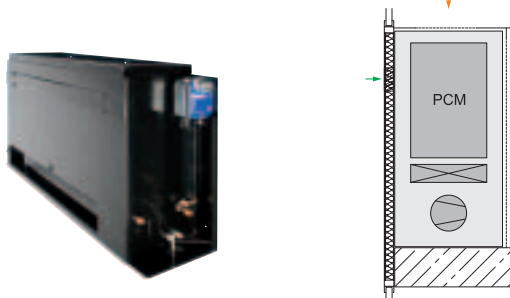


- Mechanical ventilation with good acoustic performance
- With heat recovery
- Optional with air heater/cooler unit
- Undersill installation or installation under a window
- Modular design:  
Base case for installation during construction phase  
Modular inserts for subsequent fitting
- For static heating also

◀▶ W: 744 and 1200 mm · H: 190 mm · D: 500 and 450 mm  
 ↻ 17 – 33 l/s · 60 – 120 m³/h fresh air  
 ❄ Cooling capacity up to 560 W  
 🔥 Heating capacity up to 1735 W

### Supply air units with phase change material

Type FSL-B-PCM



- Supply air and recirculated secondary air modes possible
- CO<sub>2</sub>-neutral cooling without refrigerants
- With air heater
- Project bespoke dimensions
- Ideal for refurbishment

◀▶ W: 1200 mm · H: 600 mm · D: 300 mm  
 ↻ up to 42 l/s · up to 150 m³/h fresh air  
 ❄ Cooling capacity approx. 280 W when used for 5 hours  
 🔥 Heating capacity up to 2000 W

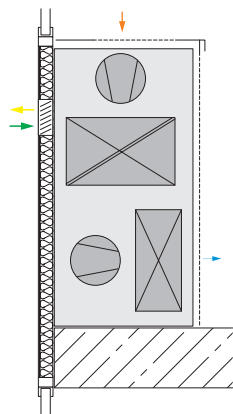
# Façade ventilation units

## Undersill units



### Supply and extract air units (ZAB) and secondary air unit (SEK)

Traungasse, Vienna



- Mechanical ventilation with heat recovery
- Secondary air unit (SEK) for dealing with thermal loads
- Undersill installation
- Quasi displacement flow
- Energy efficient radial flow fans
- Controlled/limited fresh air flow rate independent of wind pressure
- Low sound power level

◀▶ W: 1200 mm · H: 630 mm · D: 320 mm

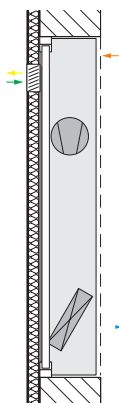
🌀 28 – 33 l/s · 100 – 120 m<sup>3</sup>/h fresh air (ZAB)

❄️ Cooling capacity up to 780 W, SEK: 580 W

🔥 Heating capacity up to 1780 W, SEK: 790 W

### Supply air units with secondary air function (ZUS)

Feldbergstraße, Frankfurt/Main (D)



- Mechanical ventilation
- Installation above the sill beside the window
- Quasi displacement flow with two-way air discharge
- Energy efficient radial flow fan
- Variable speed fan with three set points
- Controlled/limited fresh air flow rate independent of wind pressure
- Low sound power level

◀▶ W: 352 mm · H: 1880 mm · D: 301 mm

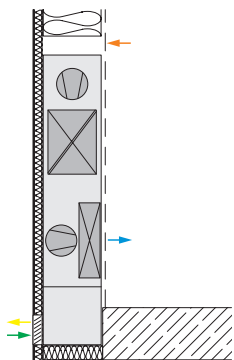
🌀 21 – 58 l/s · 75 – 210 m<sup>3</sup>/h fresh air

❄️ Cooling capacity up to 835 W

🔥 Heating capacity up to 2150 W

### Supply and extract air units with secondary air function (ZAS)

CAPRICORN Haus, Düsseldorf (D)



- Mechanical ventilation with heat recovery
- Façade integrated modular design: Base casing for installation during construction phase. Modular inserts for subsequent fitting
- Quasi displacement flow
- Supply and extract air mode, mixing with secondary (induced) air, and full secondary (recirculated) air modes are possible
- Energy efficient radial flow fans
- Variable speed fan with three set points
- Controlled/limited fresh air flow rate independent of wind pressure

◀▶ W: 1065 mm · H: 1065 mm · D: 195 mm

🌀 16 – 33 l/s · 60 – 120 m<sup>3</sup>/h fresh air

❄️ Cooling capacity up to 460 W

🔥 Heating capacity up to 800 W

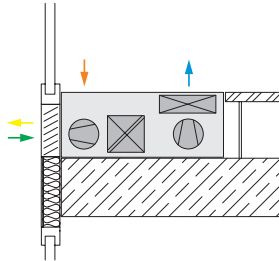
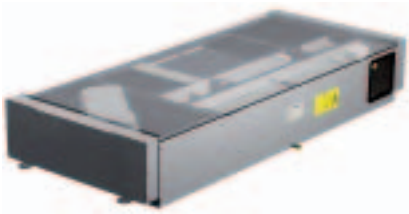
# Façade ventilation units

## Underfloor units



### Supply and extract air units

Type FSL-U-ZAB



- Mechanical ventilation with heat recovery
- Heat exchanger unit for heating and cooling
- Static heating possible
- Quasi displacement flow
- Controlled/limited fresh air flow rate independent of wind pressure

◀▶ W: 1200 mm · H: 200 mm · D: 500 mm

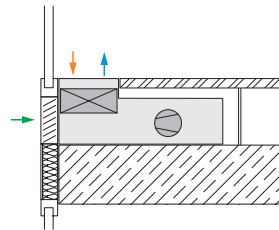
↻ 16 – 33 l/s · 60 – 120 m<sup>3</sup>/h fresh air

❄ Cooling capacity up to 560 W

🔥 Heating capacity up to 800 W

### Supply air units with secondary air function

Type FSL-U-ZUS



- Mechanical ventilation
- Heat exchanger unit for heating and cooling
- Quasi displacement flow
- Energy efficient radial flow fan
- Variable speed fan with three set points
- Controlled/limited fresh air flow rate independent of wind pressure

◀▶ W: from 1100 mm · H: 180 – 230 mm · D: 550 – 640 mm

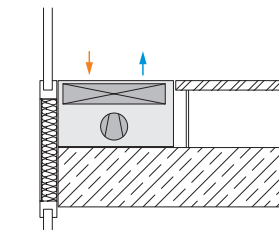
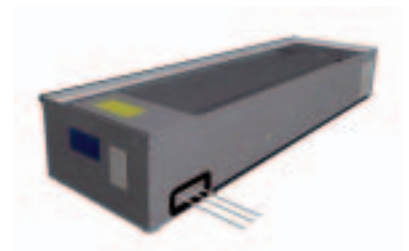
↻ 22 – 56 l/s · 80 – 200 m<sup>3</sup>/h fresh air

❄ Cooling capacity up to 930 W

🔥 Heating capacity up to 1330 W

### Secondary air units

Type FSL-U-SEK



- For dealing with thermal loads
- Heat exchanger unit for heating and cooling
- Quasi displacement flow
- Energy efficient radial flow fan
- Low sound power level

◀▶ W: from 1200 mm · H: 212 mm · D: 340 mm

↻ 22 – 83 l/s · 80 – 300 m<sup>3</sup>/h supply air

❄ Cooling capacity up to 792 W

🔥 Heating capacity up to 1613 W

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