Façade ventilation systems for new and refurbished offices, schools and children’s daycare facilities
Façade ventilation systems

**TROX façade ventilation systems** are used for the controlled ventilation of internal spaces. Specifically, they control or limit the outdoor air flow rate. A wide spectrum of functions, such as filtration of the outdoor air, heat recovery and thermal treatment, help to provide maximum comfort, while energy requirements are quite reasonable.

Customers can choose between stand-alone units and integration with a central BMS. The units blend in perfectly with the architecture of each room or building, lending themselves to a plethora of applications for both new builds and refurbishments.

**Ideal solutions for every façade**

Façade ventilation units are available for installation under sills, or above and to the side of windows. Underfloor units are usually installed in a raised floor, ceiling units in false ceilings, but in any case near an external wall. Underfloor units, ceiling units and vertical units for installation next to a window are ideal for rooms with floor to ceiling glazing.
Outstanding comfort, high efficiency, low operating costs

- Acoustically optimised EC fan with low specific fan powers, $\text{SFP} = 1$ according to EN 13779
- Heat exchanger for heating and cooling, as a 2-pipe system, 2-pipe change over system or 4-pipe system
- Reduced fine dust and pollen contamination due to integral filters that conform to VDI 6022; long filter life
- Easy filter change, no tools required
- Motorised shut-off dampers, power off to close
- Self-powered secondary air damper for adding secondary air to increase the thermal output
- Energy efficiency class A to ErP 1254/2014

Optional equipment and accessories

- Modular control system FSL-CONTROL II, specially for decentralised ventilation systems
- Various room control panels in attractive designs
- Various wall and floor fixing systems
- Condensate drip tray with or without condensate drain
- Powder coating in many different colours, e.g. RAL CLASSIC

Save on installation costs:

- Reduced slab to slab height
- Minimal area requirement for technical equipment
- No ducts or shafts required
- Small unit base, hence only small floor area required
- Reduced installation time
- Clear interfaces

Save on operating costs:

- Low energy requirement for air transport
- Demand-based room air quality control
- Ventilation and air conditioning based on occupancy

---

**Horizontal (under sill) units** 4-7

**Vertical units** 8-11

**Ceiling units** 12-15

**Underfloor units** 16-19

**References** 20-23
Curtain wall façade

Multi function façade

Standard concrete or brick façade with casement windows

HORIZONTAL (UNDER SILL) UNITS

SCHOOLAIR-B
FSL-B-ZAB/SEK
PROJECT SOLUTIONS

Curtain wall façade

Multi function façade
Horizontal units are particularly suitable for standard brick or concrete façades with casement windows, but also for non-brick or non-concrete sills

The ready-to-use, decentralised SCHOOLAIR-B and FSL-B units provide comfortable room heating and demand-based ventilation. They create an inducing displacement flow and use pumped hot water and pumped chilled water for heating and cooling.

**SCHOOLAIR-B**

- Large air volumes as particularly required in schools, children's daycare facilities and meeting rooms
- Additional secondary air operation
- F7 secondary air filter
- Highly efficient heat recovery
- Demand-based ventilation
- Different constructions
- Heating and cooling
- Meets the requirements of ErP directive 1253/2014

**FSL-B-ZAB/SEK**

- Ideal for offices
- Additional secondary air operation
- Demand-based ventilation
- Compact size
- Energy efficiency class A to ErP 1254/2014

**Project solutions**

The following variants have already been successfully used for various projects:

- FSL-B-SEK (secondary air only)
- FSL-B-ZUL (supply air only)
- FSL-B-ZUS (supply air + additional secondary air)
- FSL-B-ZAS (supply and extract air + additional secondary air)
### Dimensions

<table>
<thead>
<tr>
<th></th>
<th>SCHOOLAIR-B</th>
<th>SCHOOLAIR-B-HE</th>
<th>FSL-B-ZAB/SEK</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>B x H x T [mm]</strong></td>
<td>1590 x 646 x 420</td>
<td>2090 x 750 x 420</td>
<td>1085 x 630 x 320</td>
</tr>
<tr>
<td><strong>Volume flow rate range [m³/h]</strong></td>
<td>150 – 320</td>
<td>150 – 400</td>
<td>60 – 150</td>
</tr>
<tr>
<td><strong>Total heating capacity up to [W]</strong></td>
<td>5800</td>
<td>6500</td>
<td>2400</td>
</tr>
<tr>
<td><strong>Heating capacity per room up to [W]</strong></td>
<td>1700</td>
<td>1400</td>
<td>800</td>
</tr>
<tr>
<td><strong>Total cooling capacity up to [W]</strong></td>
<td>1400</td>
<td>1750</td>
<td>700</td>
</tr>
<tr>
<td><strong>Cooling capacity per room up to [W]</strong></td>
<td>800</td>
<td>1000</td>
<td>330</td>
</tr>
<tr>
<td><strong>Outdoor air filter</strong></td>
<td>F7</td>
<td>F7</td>
<td>F7</td>
</tr>
<tr>
<td><strong>Extract air filter</strong></td>
<td>G3</td>
<td>G3</td>
<td>G3</td>
</tr>
</tbody>
</table>

**Horizontal (under sill) unit as seen from outside the building**

- Free area required with nominal volume flow rate
  - ≤ 200 m³/h → 0.025 m²
  - ≤ 400 m³/h → 0.050 m²

- Partitioning panel ≤ 400 mm

- Heat recovery

- Free area required with nominal volume flow rate
  - ≤ 200 m³/h → 0.025 m²
  - ≤ 400 m³/h → 0.050 m²

- Special requirements? Give us a call! We have solutions!
Under sill unit, horizontal section

Partitioning panel

≥ Ø 125 mm or
≥ Ø 200 mm

≥ Ø 125 mm or
≥ Ø 200 mm

≥ 400 mm

Under sill unit, vertical section

Free area required with nominal volume flow rate
≤ 200 m³/h → 0.08 m²
≤ 400 m³/h → 0.16 m²

Free area required with nominal volume flow rate
≤ 200 m³/h → 0.08 m²
≤ 400 m³/h → 0.16 m²

Partitioning panel

≥ 50 mm

≥ 30 mm

Heat recovery

Heat recovery
VERTICAL UNITS

SCHOOLAIR-V
FSL-V-ZAB/SEK
PROJECT SOLUTIONS

Standard concrete or brick façade with casement windows
Curtain wall façade
Floor to ceiling glazing
Multi function façade
Vertical units are suitable for standard brick or concrete walls with casement windows, for non-brick or non-concrete sills, and for curtain walls with floor to ceiling glazing. The ready-to-use, decentralised SCHOOLAIR-V and FSL-V units provide comfortable room heating and demand-based ventilation. They create an inducing displacement flow and use pumped hot water and pumped chilled water for heating and cooling.

**SCHOOLAIR-V**
- Large air volumes as particularly required in schools, children's daycare facilities and meeting rooms
- Additional secondary air operation
- Highly efficient heat recovery
- Available in different sizes
- Heating and cooling
- Meets the requirements of ErP directive 1253/2014

**FSL-V-ZAB/SEK**
- *The* solution for offices
- Additional secondary air operation
- Slim design
- Demand-based ventilation
- Energy efficiency class A to ErP 1254/2014
- Heating and cooling

**Project solutions**
Variant FSL-V-ZUS (supply and secondary air) has already been successfully installed.
<table>
<thead>
<tr>
<th></th>
<th>SCHOOLAIR V-2L</th>
<th>SCHOOLAIR V-4L</th>
<th>SCHOOLAIR V-1800</th>
<th>SCHOOLAIR V-HE</th>
<th>SCHOOLAIR V-HV</th>
<th>FSL-V ZAB/SEK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions [mm]</td>
<td>397 x 2160 x 359</td>
<td>397 x 2350 x 359</td>
<td>600 x 1800 x 359</td>
<td>600 x 2000 x 408</td>
<td>600 x 2200 x 408</td>
<td>400 x 1800 x 320</td>
</tr>
<tr>
<td>Total heating capacity [W] up to</td>
<td>5800</td>
<td>5760</td>
<td>5630</td>
<td>6020</td>
<td>4780</td>
<td>2860</td>
</tr>
<tr>
<td>Room heating capacity [W] up to</td>
<td>1422</td>
<td>1680</td>
<td>1005</td>
<td>900</td>
<td>3300</td>
<td>880</td>
</tr>
<tr>
<td>Total cooling capacity [W] up to</td>
<td>-</td>
<td>1440</td>
<td>1590</td>
<td>1685</td>
<td>1750</td>
<td>720</td>
</tr>
<tr>
<td>Room cooling capacity [W] up to</td>
<td>-</td>
<td>850</td>
<td>935</td>
<td>965</td>
<td>1470</td>
<td>450</td>
</tr>
<tr>
<td>Outdoor air filter</td>
<td>F7</td>
<td>F7</td>
<td>F7</td>
<td>F7</td>
<td>F7</td>
<td>F7</td>
</tr>
<tr>
<td>Extract air filter</td>
<td>G3</td>
<td>G3</td>
<td>G3</td>
<td>G3</td>
<td>G3</td>
<td>G3</td>
</tr>
</tbody>
</table>

Vertical unit as seen from outside the building

**Free area required with nominal volume flow rate**

- \( \leq 200 \text{ m}^3/\text{h} \rightarrow 0.025 \text{ m}^2 \)
- \( \leq 400 \text{ m}^3/\text{h} \rightarrow 0.050 \text{ m}^2 \)

**Partitioning panel**

\( \geq 500 \text{ mm} \)

**Free area required with nominal volume flow rate**

- \( \leq 200 \text{ m}^3/\text{h} \rightarrow 0.025 \text{ m}^2 \)
- \( \leq 400 \text{ m}^3/\text{h} \rightarrow 0.050 \text{ m}^2 \)

Special requirements? Give us a call! We have solutions!
Free area required with nominal volume flow rate

- ≤ 200 m³/h → 0.08 m²
- ≤ 400 m³/h → 0.16 m²

Partitioning panel

- ≥ 500 mm

Heat recovery
CEILING UNITS

SCHOOLAIR-D

Floor to ceiling glazing

Standard concrete or brick façade with casement windows
Ceiling units are suitable for standard brick or concrete façades with proper sills as well as for curtain wall façades with floor to ceiling glazing.

The SCHOOLAIR-D units use water for heating and cooling, which is an energy-efficient solution; they are suitable for new buildings, refurbishment projects and revitalisation projects. Installation is below the ceiling slab and near an external wall. These units are specially recommended for rooms that require many air changes, such as classrooms, playrooms in children’s daycare facilities or smaller meeting rooms in office buildings.

SCHOOLAIR-D

- Large air volumes as particularly required in schools, children’s daycare facilities and meeting rooms
- Additional secondary air operation
- F7 secondary air filter
- Demand-based ventilation
- More architectural flexibility with regard to façades
- Heating and cooling
- Meets the requirements of ErP directive 1253/2014
### Ceiling unit as seen from outside the building

<table>
<thead>
<tr>
<th></th>
<th>SCHOOLAIR-D-2L</th>
<th>SCHOOLAIR-D-4L</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dimensions</strong> B x H x T</td>
<td>[mm] 1690 x 400 x 800</td>
<td>1690 x 400 x 800</td>
</tr>
<tr>
<td><strong>Volume flow rate range</strong> [m³/h]</td>
<td>150 – 300</td>
<td>150 – 300</td>
</tr>
<tr>
<td><strong>Total heating capacity up to</strong> [W]</td>
<td>5720</td>
<td>5720</td>
</tr>
<tr>
<td><strong>Heating capacity per room up to</strong> [W]</td>
<td>1530</td>
<td>1530</td>
</tr>
<tr>
<td><strong>Total cooling capacity up to</strong> [W]</td>
<td>-</td>
<td>1350</td>
</tr>
<tr>
<td><strong>Cooling capacity per room up to</strong> [W]</td>
<td>-</td>
<td>800</td>
</tr>
<tr>
<td><strong>Outdoor air filter</strong></td>
<td>F7</td>
<td>F7</td>
</tr>
<tr>
<td><strong>Extract air filter</strong></td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

Free area required with nominal volume flow rate
- ≤ 200 m³/h → 0.025 m²
- ≤ 400 m³/h → 0.050 m²

Free area required with nominal volume flow rate
- ≤ 200 m³/h → 0.025 m²
- ≤ 400 m³/h → 0.050 m²
Ceiling unit, horizontal section

≥ Ø 200 mm

Ceiling unit, vertical section

≥ Ø 200 mm

Special requirements? Give us a call! We have solutions!
UNDERFLOOR UNITS

FSL-U-ZAS

Floor to ceiling glazing
Underfloor units are ideal for rooms with floor to ceiling glazing and for rooms with a low ceiling.

Supply air discharge near an external wall prevents a drop in the room air temperature near that wall when outdoor temperatures are low; similarly, it minimises the effect of solar gain in summer. Underfloor units are unobtrusive components. Air is supplied to and extracted from rooms through single grilles or roll down grilles.

**FSL-U-ZAS**

- Ideal for offices
- More architectural flexibility with regard to façades
- Heating and cooling
- Additional secondary air operation for the dissipation of increased thermal loads
- Heat recovery all year round
- Condensation-free operation
- Easy and quick inspection and maintenance through the grille (no inspection access panels required)
### FSL-U-ZAS

<table>
<thead>
<tr>
<th><strong>Dimensions</strong></th>
<th>[mm]</th>
<th><strong>B: 1100 – 1500</strong>&lt;br&gt;H: 150 (floor void)&lt;br&gt;H: 196 – 300 (visible part with grille)&lt;br&gt;T: 830</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Volume flow rate range</strong></td>
<td>[m³/h]</td>
<td>60 – 120</td>
</tr>
<tr>
<td><strong>Total heating capacity up to</strong></td>
<td>[W]</td>
<td>1100</td>
</tr>
<tr>
<td><strong>Heating capacity per room up to</strong></td>
<td>[W]</td>
<td>525</td>
</tr>
<tr>
<td><strong>Total cooling capacity up to</strong></td>
<td>[W]</td>
<td>377</td>
</tr>
<tr>
<td><strong>Cooling capacity per room up to</strong></td>
<td>[W]</td>
<td>280</td>
</tr>
<tr>
<td><strong>Outdoor air filter</strong></td>
<td></td>
<td>F7</td>
</tr>
<tr>
<td><strong>Extract air filter</strong></td>
<td></td>
<td>G3</td>
</tr>
</tbody>
</table>

**Underfloor unit as seen from outside the building**

---

**Free area required with nominal volume flow rate ≤ 200 m³/h → 0.025 m²**

**Partitioning panel ≥ 400 mm**

---

**Heat recovery**

---

**Free area required with nominal volume flow rate ≤ 200 m³/h → 0.025 m²**
Underfloor unit, vertical section

Free area required with nominal volume flow rate \( \leq 150 \text{ m}^3/\text{h} \rightarrow 0.06 \text{ m}^2 \)

Free grille area at least 55%

180/101 mm (B x H)  
Partitioning panel \( \geq 400 \text{ mm} \)  
180/101 mm (B x H)

Special requirements? Give us a call! We have solutions!
Thuringia Insurance, Munich

E.ON Energy Research Centre at RWTH University, Aachen

Laimer Würfel building, Munich

DEG head office, Cologne