

HEALTHY LEARNING

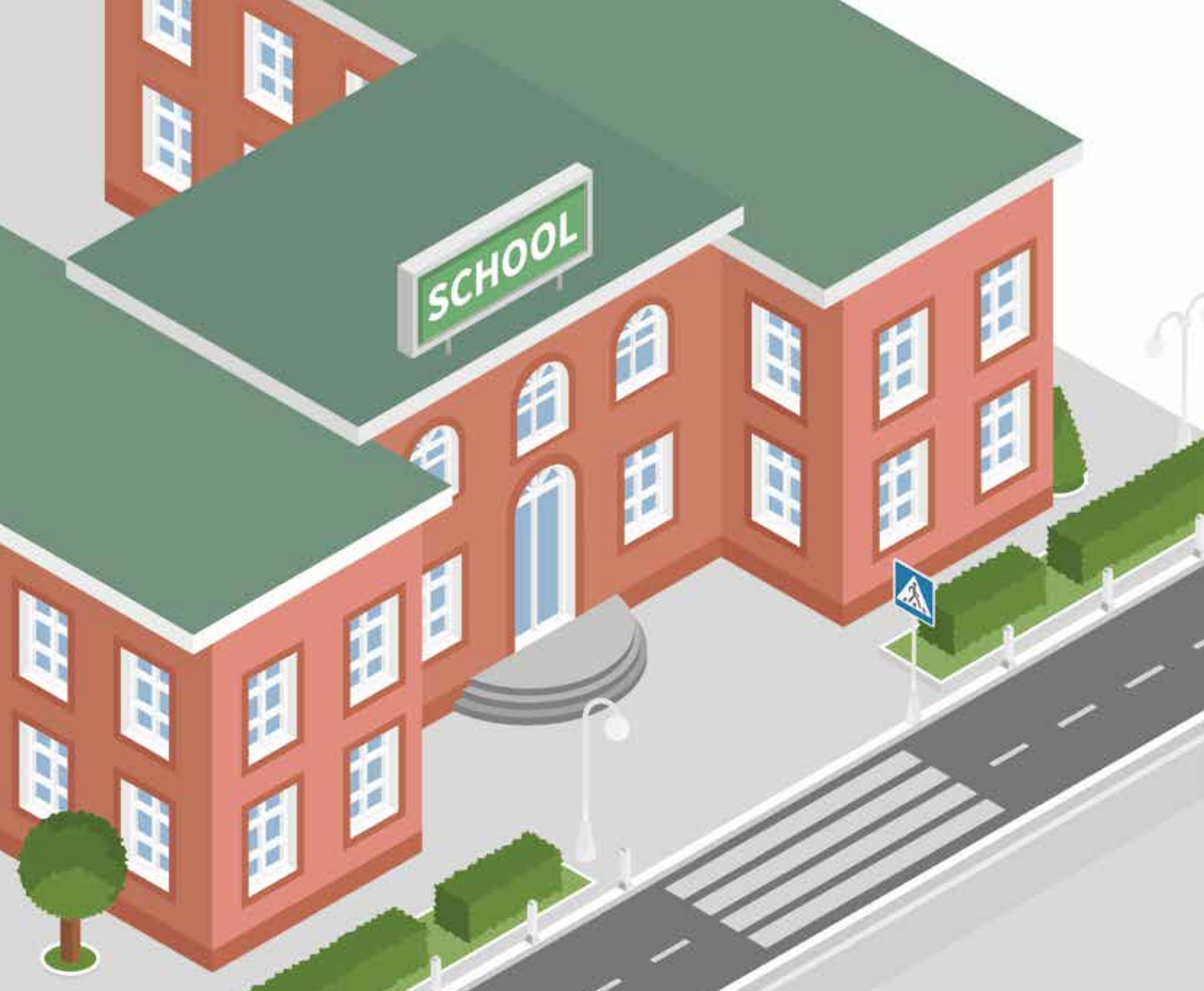
Project proposals for school ventilation

READY-MADE
TOTAL SOLUTIONS
IN THE FORM OF
PROJECT PROPOSALS

PRACTICAL
SUGGESTIONS BASED
ON VARIOUS
VENTILATION SYSTEMS



SIG AIR HANDLING



CONTENTS

HEALTHY LEARNING	4 - 5
Indoor air report	4
Healthy schools	5
PROJECT PROPOSALS CATEGORIES IDA I, II, III	6 - 13
Proposal 1: Category IDA II, decentralised ventilation system	6 - 7
Proposal 2: Category IDA II, central ventilation system	8 - 9
Proposal 3: Category IDA I, central ventilation system	10 - 11
Proposal 4: Category IDA III, natural ventilation system	12 - 13
PRODUCT GROUPS	14 - 15
Overview	14
Contact	16

MORE INFORMATION

Please complete the contact form on our website for more information about school ventilation. You can use the inquiry form to quickly and easily request a project proposal designed to your specific wishes and requirements.

www.sigairhandling.com

HEALTHY LEARNING

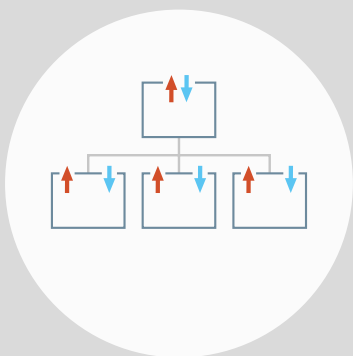
Ready-made total solutions

A TOTAL SOLUTION FOR EVERY PROJECT

Almost all schools suffer from it: a poor indoor environment. The Indoor Air Quality is often so poor that they're unhealthy for students and teachers. SIG Air Handling provides several ready-made total solutions for school building ventilation in this folder. A distinction is made between the following systems:

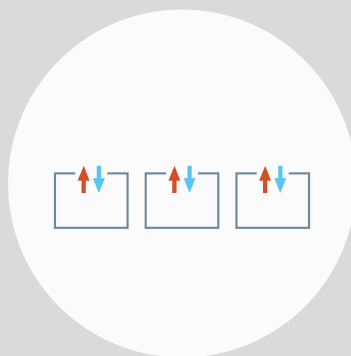
SOLUTION 1

Central
ventilation system



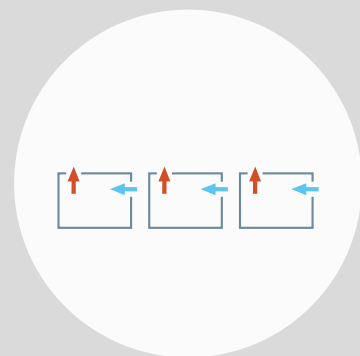
SOLUTION 2

Decentralised
ventilation system



SOLUTION 3

Natural
ventilation system



HEALTHY LEARNING

HEALTHY INDOOR AIR: DO YOU HAVE A GOOD REPORT?

Healthy indoor air is important, especially in schools. Students learn better, teachers prefer to work there, and it benefits the quality and reputation of your school.

HOW HEALTHY IS THE AIR IN YOUR CLASSROOMS AND SCHOOL?

Let an independent agency take measurements for you. This will give you a clear picture of how many (harmful) substances there are in your air at certain times and in particular locations.

WHAT CAUSES POOR AIR QUALITY?

People are at the heart of unhealthy indoor air: they exhale carbon dioxide (CO₂) and water vapour, and spread scents, bodily substances and micro-organisms such as bacteria. Other materials – such as chalk, carpet, plants and paint – also pollute the air with dust, dust mites, allergens and volatile organic compounds (VOCs).

HOW DO YOU IMPROVE AIR QUALITY?

With good ventilation. An efficient ventilation system can be fully automatic, with the installation supplying a constant flow of fresh air and guaranteeing a steady interior temperature – as well as a lower energy bill.

WHICH VENTILATION SOLUTION DO YOU WANT FOR YOUR SCHOOL?

The best way to keep a specific room ventilated depends on various factors such as its size and function, the number of people using it, and the ventilation possibilities. It's always important to keep it ventilated at all times, which is made possible with ventilation systems or grates.

WHO CAN YOU GO TO FOR PROFESSIONAL ADVICE?

HVAC (Heating, Ventilation & Air Conditioning) expert SIG Air Handling strives for healthier indoor air for everyone with the motto: 'Improving air because we care'. After a thorough scan of your existing situation, our experts work out the most efficient solution for your school.

HEALTHY SCHOOLS

DID YOU KNOW?

Healthy indoor air in schools and classrooms equals:

- more oxygen and so more energy;
- less air pollution and so less illness;
- better concentration and so better study results.

So choose a healthy, oxygen-rich school environment – and an efficient ventilation system.

The categories below comply with the general European standards for air quality EN 15251 and EN 7730. Note that these can be overruled by local air quality requirements, if any – depending on the EU country where you reside.

THREE CATEGORIES FOR A HEALTHY INDOOR ENVIRONMENT

Five factors determine the quality of the interior climate: energy, air, temperature, light and noise. These factors are used as a basis to draw up three levels of ambition:

- Category IDA III (acceptable)
- Category IDA II (good)
- Category IDA I (very good)

CATEGORY IDA III (ACCEPTABLE)	CATEGORY IDA II (GOOD)	CATEGORY IDA I (VERY GOOD)
<p>Applicable for refurbishment of existing buildings</p> <p>CO₂ CONCENTRATION 800 ppm above outdoor level</p> <p>AIR SPEED IN THE OCCUPIED AREA Draught rate: < 30%</p> <p>FRESH AIR SUPPLY PER PERSON Minimum: 4 l/sec (15 m³/h)</p> <p>SOUND LEVEL LI RELATED TO THE HVAC SYSTEM < 35 dB(A)</p>	<p>Applicable for new buildings or existing buildings</p> <p>CO₂ CONCENTRATION 500 ppm above outdoor level</p> <p>AIR SPEED IN THE OCCUPIED AREA Draught rate: < 20%</p> <p>FRESH AIR SUPPLY PER PERSON Minimum: 7 l/sec (25 m³/h)</p> <p>SOUND LEVEL LI RELATED TO THE HVAC SYSTEM < 35 dB(A)</p>	<p>Applicable for new buildings or existing buildings</p> <p>CO₂ CONCENTRATION 350 ppm above outdoor level</p> <p>AIR SPEED IN THE OCCUPIED AREA Draught rate: < 10%</p> <p>FRESH AIR SUPPLY PER PERSON Minimum: 10 l/sec (36 m³/h)</p> <p>SOUND LEVEL LI RELATED TO THE HVAC SYSTEM < 35 dB(A)</p>
RECOMMENDATIONS (BUT NOT GOVERNED BY EU NORMS)		
<p>Heat recovery system</p> <p>QUALITY OF THE AIR SUPPLY ISO Coarse > 85% filtration (equivalent to class M5)</p>	<p>Heat recovery system Counter flow or wheel with purge section to reduce internal leakage</p> <p>QUALITY OF THE AIR SUPPLY ISO ePM10 > 60% filtration (equivalent to class M6)</p>	<p>Heat recovery system Counter flow or twin-coil system to reduce internal leakage</p> <p>QUALITY OF THE AIR SUPPLY ISO ePM1 > 50% filtration (equivalent to class F7)</p>

PROJECT PROPOSAL 1: CATEGORY IDA II

Decentralised ventilation system

BASIC PRINCIPLES

10 classrooms - 31 people per room

$25 \text{ m}^3/\text{h}$ per person \times 31 people = $775 \text{ m}^3/\text{h}$ per room

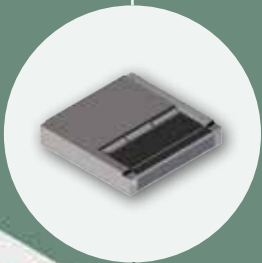
CO₂ level: +500 ppm compared to outdoor

Room dimensions: 8 x 8 x 3 m

Installation noise: Maximum 35 dB(A)

DECENTRALISED HRU (1 PER ROOM)

Easy-to-install energy-recovery unit
with air supply and exhaust system.



OUTSIDE AIR GRILL (1 SUPPLY, 1 EXTRACTION)

Magnelis IT690 air intake and exhaust grilles.

PROJECT PROPOSAL 2: CATEGORY IDA II

Central ventilation system



BASIC PRINCIPLES

15 classrooms - 31 people per room
25 m³/h per person x 31 people = 775 m³/h
15 x 775 m³/h per room - 11,625 m³/h total
CO₂ level: + 500 ppm compared to outdoor
Room dimensions: 8 x 8 x 3 m
Installation noise: Maximum 35 dB(A)



ROOM CONTROLLER

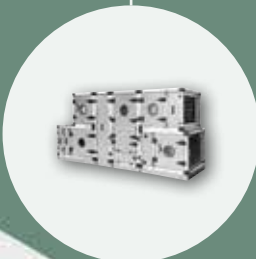
Demand Controlled Ventilation: the CO₂ controller ensures a high IAQ and reduces energy loss by excessive ventilation.

MODULAR HRU/AHU

Energy-saving heat recovery Air Handling Unit to supply several classrooms with fresh and purified air and extract polluted air.

SOUND ATTENUATORS BEHIND HRU/AHU (1 SUPPLY, 1 EXTRACTION)

Minimise outdoor noise and sound emissions by the air system.



CEILING VENTS (AIR SUPPLY)

Air supply terminal with high induction rate to disperse the air into the classroom at a comfortable temperature.

CEILING VENTS (AIR EXTRACTION)

Air terminal device to extract polluted indoor air.

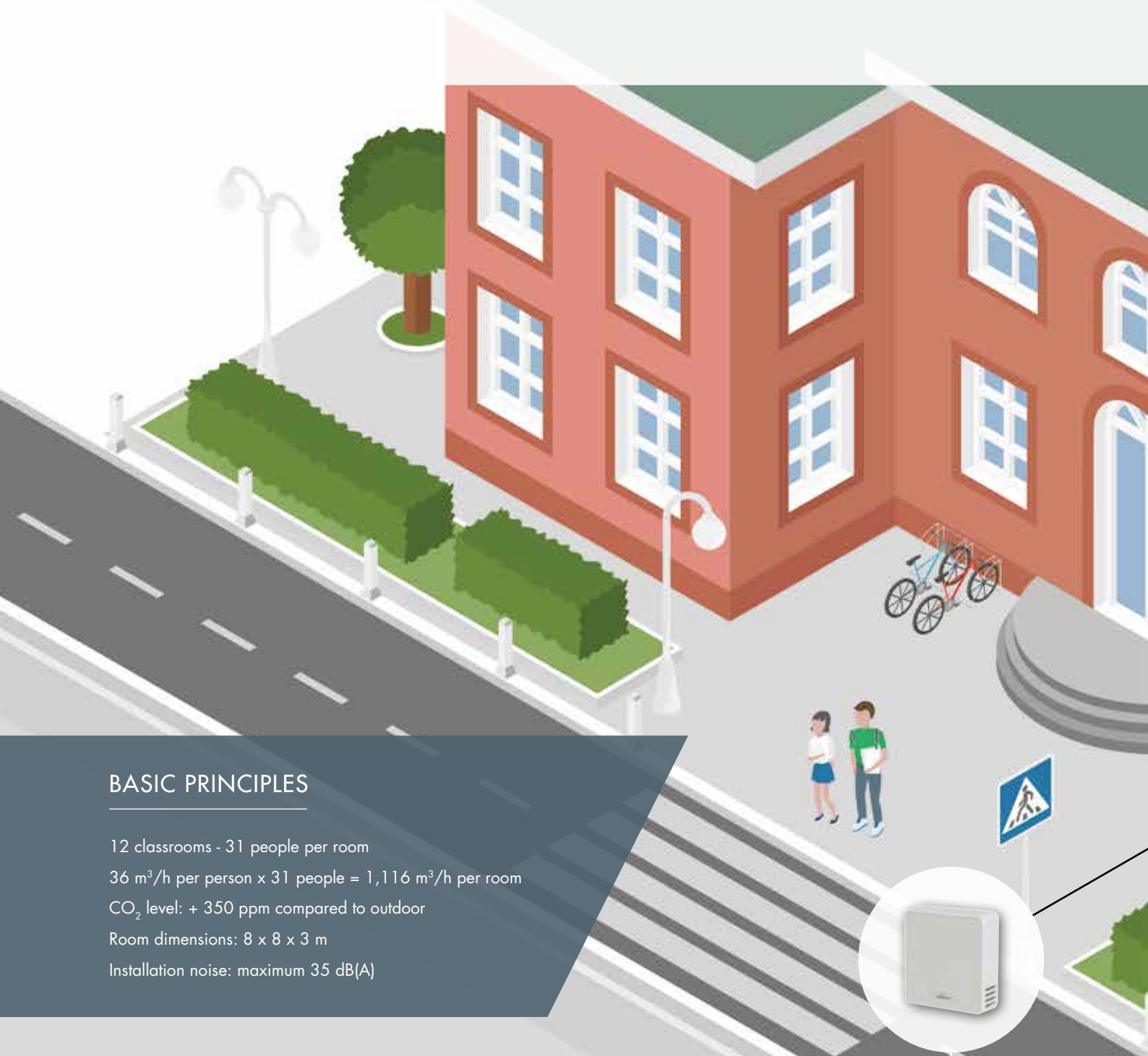
VAV CONTROLLERS (1 SUPPLY, 1 EXTRACTION)

Connected to CO₂ sensors to enable the DCV feature.



PROJECT PROPOSAL 3: CATEGORY IDA I

Central ventilation system



BASIC PRINCIPLES

12 classrooms - 31 people per room
36 m³/h per person x 31 people = 1,116 m³/h per room
CO₂ level: + 350 ppm compared to outdoor
Room dimensions: 8 x 8 x 3 m
Installation noise: maximum 35 dB(A)

ROOM CONTROLLER

Demand Controlled Ventilation: the CO₂ controller ensures a high IAQ and reduces energy loss by excessive ventilation.

**SOUND ATTENUATORS
BEHIND HRU
(1 SUPPLY, 1 EXTRACTION)**

Minimise outdoor noise and sound emissions by the air system.

**COMPACT HRU /
BALANCE VENTILATION WITH
ENERGY RECOVERY**

Compact and silent HRU for installation in false ceilings.



HYBRIDAIR CLIMATE ISLAND

3 x HYBRIDAIR climate island

- Low air speeds in the occupied area
- High temperature cooling and low temperature heating

**WALL VENT IN COVING
(EXTRACTION)**



**VAV CONTROLLERS
(1 SUPPLY, 1 EXTRACTION))**

Connected to CO₂ sensors to enable the DCV feature.

PROJECT PROPOSAL 4: CATEGORY IDA III

Natural ventilation system



BASIC PRINCIPLES

8 classrooms - 31 people per room

$15 \text{ m}^3/\text{h}$ per person \times 31 people = $465 \text{ m}^3/\text{h}$ per room

$8 \times 465 \text{ m}^3/\text{h}$ per room - $3,720 \text{ m}^3/\text{h}$ total

CO₂ level: + 800 ppm above outdoor level

Room dimensions: 8 x 8 x 3 m

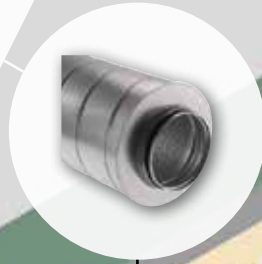
Installation noise: maximum 35 dB(A)

**ROOF FAN WITH
SOUND-ABSORBENT
ROOF CURB (EXTRACTION)**

EC motorised extraction fan for minimum energy consumption.

**SOUND ATTENUATORS
IN DUCT**

Minimise outdoor noise as well as sound emissions by the air system.



**OUTSIDE AIR GRILL
(SUPPLY)**

CO₂ INDICATOR
Indicates the current indoor
air quality of a classroom.

**WALL VENT
(AIR EXTRACTION)**

**VAV VALVE WITH
BUILT-IN CO₂ SENSOR**

PRODUCT GROUPS

System choice for school ventilation

COMBINED EXPERTISE

The collaboration between various divisions within SIG Air Handling means we always deliver a suitable total solution for your project.

We specialise in the following product groups:



FANS

- Roof fans
- Duct fans
- Axial fans
- Centrifugal fans
- ATEX fans
- Residential fans
- Flue fans



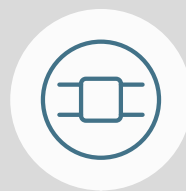
AIR TREATMENT

- Modular
- Compact
- Residential
- Fan coil units



HUMIDITY CONTROL

- Humidification isotherm
- Humidification adiabatic
- Dehumidification condensation drying
- Dehumidification adsorption drying



AIR VALVES

- Constant volume regulators
- Variable volume regulators
- Constant pressure regulators
- Valve registers
- Control valves
- IRIS control valves



FIRE SAFETY

- Fire dampers
- Butterfly valves
- Fire safety valves
- Fire-resistant vents



TEMPERATURE CONTROL

- Duct heaters
- Duct coolers
- Radiant panels
- Air heaters
- Heat diffusers
- Air curtains



AIR DISTRIBUTION

- Induction units
- Outside air vents
- Roof cowls
- Ceiling vents
- Wall and duct vents
- Floor vents
- Displacement ventilation
- Textile air distribution systems
- Tailor-made solutions



FILTRATION

- Filter boxes
- Pocket filters
- Panel filters
- Compact filters



SOUND ATTENUATION

- Circular silencers
- Rectangular silencers
- Baffles

CONTACT

Excelsiorlaan 7 box 3
1930 Zaventem
Belgium

Tel.: +32 (0)2 828 01 36
Email: info@sigairhandling.com
Web: www.sigairhandling.com

