

# Comfosystems

Systems with heat recovery for  
a comfortable indoor climate

**zehnder**

always  
around you

Heating

Cooling

Fresh Air

Clean Air



# Zehnder – everything you need to create a comfortable, healthy and energy-efficient indoor climate

Heating, cooling, fresh and clean air: at Zehnder, you will find everything you need to create a comfortable, healthy and energy-efficient indoor climate. Zehnder's wide and clearly structured portfolio can offer the right product for any project, be it private, public or commercial, new build or refurbishment. Also as far as service is concerned, you'll find that Zehnder is "always around you".

## Heating

At Zehnder, **Heating** doesn't just come in the form of designer radiators. We offer solutions in all shapes and sizes, from radiant ceiling panels to heat pumps with integrated ventilation devices.

- Designer radiators
- Heating and cooling ceiling systems
- Comfortable indoor ventilation with heat recovery



## Fresh Air

**Fresh Air** – a product range with a long tradition at Zehnder. Zehnder Comfosystems provides products and solutions for comfortable indoor ventilation with heat recovery for houses and apartments, for new builds and for renovation projects.


- Comfortable indoor ventilation



A constant supply of fresh air in the indoor spaces in which we spend more than 70% of our time is vital to our health. Zehnder Comfosystems comfort ventilation systems provide an assurance that equal amounts of stale and fresh air will be exchanged.

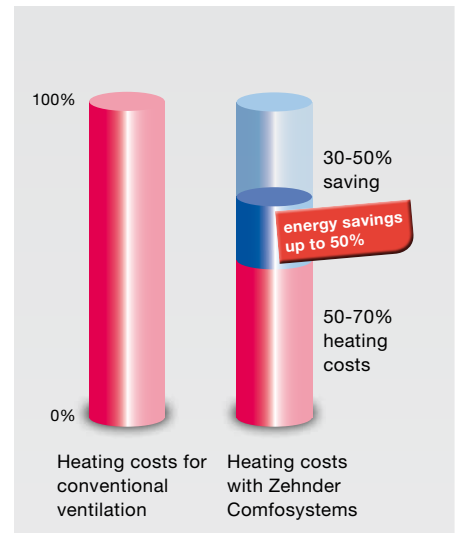
Zehnder Comfosystems provides the ideal solution for air tight buildings in which the windows often remain closed due to noise or dust particles - a situation which is increasingly common in the design and location of modern buildings. Zehnder Comfosystems promotes a sense of well-being among the occupants and helps retain the value of the property. With heat recovery from the extract air, the system provides not only good air quality, but also pre-cooled or pre-heated air, depending on the season.

Zehnder products and systems can provide you with ideal solutions for a comfortable, healthy and energy-efficient indoor climate.



<b>Benefits</b>	<b>4</b>
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Zehnder  
Comfosystems –  
healthy,  
energy-efficient  
and comfortable



## 1 Health

Fresh air promotes well-being, healthy sleep, concentration and productivity. Draft-free air helps to prevent colds and is good for your health. Thanks to optional fine filters, which capture fine dust and pollen, even allergy sufferers can breathe easily. An enthalpy heat exchanger for moisture recovery can prevent the air from getting too dry in winter.

- Optimum oxygen supply and draft-free air promote well-being
- CO<sub>2</sub> content below max. 1000 ppm (Pettenkofer method)
- Hypoallergenic and reduces respiratory disorders. Prevents outdoor pollutants entering rooms thanks to fine filters and extraction of indoor pollutants
- Prevents mildew formation

## 2 Energy savings

Particularly in an airtight building envelope, Zehnder Comfosystems reduce heat loss from ventilation. Given continuously increasing energy costs, real cash can be saved thanks to approx. 95% heat recovery and the utilization of renewable energy.

- Energy savings of up to 50%
- Heat recovery of approx. 95%
- Use of renewable energies for heating, cooling and hot water production



### 3 Comfort

Your home enjoys a continuous supply of fresh, clean air; simultaneously, moist air, kitchen odors or tobacco smoke are automatically vented to the outside. Zehnder Comfosystems is easy to operate – just enjoy the pleasant indoor climate.

- Continuous supply of fresh, clean air
- Damp air, kitchen odors and tobacco smoke are automatically exchanged for fresh air
- Optional pre-tempered air in winter and summer
- Operation is easy



### 4 Value

For homeowners, Zehnder Comfosystems is an investment that pays off. Mildew formation caused by a lack of ventilation is prevented by reducing excessive humidity. Zehnder Comfosystems makes a vital contribution to retaining and increasing the value of your property: With a modern, balanced supply and extract air system with heat recovery the property is upgraded to tomorrow's standards, today.

- Protection against mildew
- Protection of the building against moisture damage caused by a lack of ventilation
- Comfort ventilation systems already meet the requirements of future building standards (energy performance certificate)



### 5 Appearance

Country house? Or PassivHaus? Zehnder Comfosystems suits any style. The only visible components are the supply and extract air inlets and outlets, and they are hidden discretely by designer grilles.

- Designer grilles discretely conceal the outlets for supply air and extract air
- Suits any style
- Various wall, ceiling and floor outlets

# How ventilation works

**1.** Fresh air is fed into the system via an external wall vent. With an optional air/ground source geothermal heat exchanger, the heat exchangers use geothermal energy to pre-temper outside air before it enters the system.

**2.** The Zehnder ComfoAir ventilation device recovers up to 95% of the energy from the extract air and returns it to the fresh air. This can be humidified, dehumidified, heated and cooled using optional components.

**3.** The Zehnder ComfoFresh air distribution system channels optimally tempered fresh air to individual rooms as needed and vents extract air to the outside. The air volume can be adjusted individually for each room.

## Benefits

- Continuous supply of fresh air
- Saves energy through heat recovery
- Retains property value by preventing mildew
- Promotes good health
- Protects against outside noise
- Government subsidized (In select markets)



- Outside air
- Supply air
- Extract air
- Outgoing air



## How the optional Zehnder ComfoFond-L geothermal heat exchanger works

The Zehnder ComfoFond-L geothermal heat exchanger utilizes the constant temperature of the earth for heat recovery and tempering the supply air by means of a pipe installed in the ground. Geothermal energy is collected by a ground source collector and used to pre-heat or cool the supply air. The energy it contains is transferred to the fresh supply air via a heat exchanger upstream of the ventilation device.

In the spring and fall, when the outside air and ground are at similar temperatures, it is often more economical not to temper the outside air. The Zehnder ComfoAir ventilation device ground source pumps are therefore only activated as required. Thanks to the easy installation of the ground collector, the Zehnder ComfoFond-L is the ideal alternative for single- and two-family houses.

# The right system for every application

For houses and apartments, for private households and commercial premises, for new builds and renovation projects, for ventilation, pre-tempering or complete energy stations, Zehnder Comfosystems can offer the right solution for every project and every application with a wide and varied portfolio of products catering to any budget and for all levels of comfort. The system components are perfectly matched so that ventilation devices and air distribution systems can be combined with all kinds of designer grilles.

Comfort

## Ventilation

### Ventilation devices with heat recovery

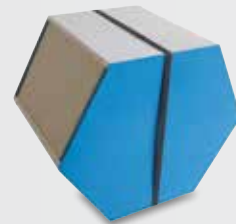


Zehnder ComfoAir 350

Comfort Plus

## Ventilation, pre-heating and pre-cooling

### Ventilation devices with heat recovery and geothermal heat exchanger



Zehnder Enthalpy Exchanger for moisture recovery



Ventilation unit Zehnder ComfoAir 350 with geothermal heat exchanger Zehnder ComfoFond-L



### Air Distribution

Flexible round tube with  
Clinside smooth internal walls



### Designer grille



Zehnder Roma



Supply Diffuser



Return Diffuser

Great air quality that  
even looks good

The only visible components in living areas are the openings for supply and extract air. The Zehnder designer grilles are as elegant as they are discreet and match up perfectly with your living style.

### Air Distribution

Flexible round tube with  
Clinside smooth internal walls



### Designer grille



Zehnder Roma



Supply Diffuser



Return Diffuser

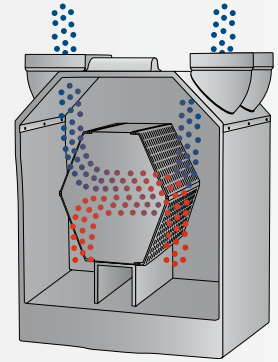
Zehnder ComfoAir  
ventilation devices.

The ventilation system's air intake and outlet are controlled by the Zehnder ComfoAir ventilation devices. Thanks to a user-friendly control unit, the air flow can be easily adjusted to suit requirements. All devices are fitted with a filter as standard and fine dust and pollen filters can be retrofitted.



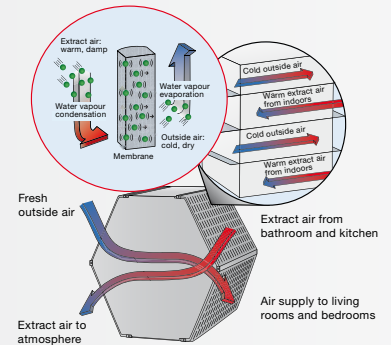
## Heat recovery

Equipped with counter flow heat exchangers as standard, Zehnder ventilation devices can transfer the heat energy of the stale extract air to the fresh air. This heat transfer takes place via thin plastic plates using the counter flow principle. Heat recovery of up to 95% is possible, representing an energy saving of up to 50%.



## Moisture recovery

The relative humidity in the building is optimized via the enthalpy exchanger, ideal for excessively dry air in winter. Water vapor is condensed out of the moist extract air and is absorbed by a membrane. The moisture and heat recovered are transferred to the fresh supply air, with no transfer of odor or microbes.



## Pre-Cooling/ Pre-Heating

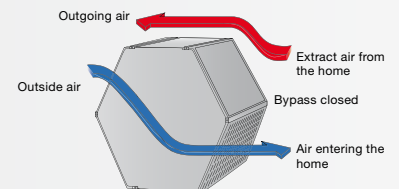
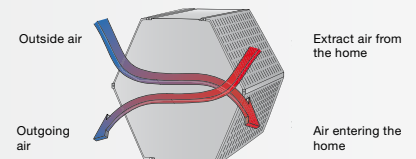
Pre-cooled outside air is perceived as particularly pleasant, especially on hot and humid summer days. The ComfoFond-L geothermal heat exchangers utilize the temperature of the ground to temper the air.



Ventilation unit Zehnder ComfoAir 350 with geothermal heat exchanger Zehnder ComfoFond-L

## Summer bypass

Most Zehnder ventilation devices are equipped with a 100% summer bypass which bypasses the extract air at the heat exchanger. This prevents the supply air that has been pre-cooled by the geothermal heat exchanger in summer from being heated by the warm extract air. This function can also be used on cooler summer nights.



# Products and systems full of advantages

More than 40 years of Zehnder's experience in the development and production of ventilation devices is the basis for well-conceived products and systems with numerous positive aspects: energy-efficient, comfortable, healthy, user-friendly, and with individual components that are perfectly matched to each other. From planning to maintenance: Zehnder Comfosystems – always the right decision.



## 1 Planning

Zehnder supports building professionals in the planning of ventilation systems. The air volumes required for the building are determined on the basis of the latest energy-saving ordinances and code requirements and the right devices recommended. Geothermal heat exchangers, pre-heaters, moisture recovery and source or mixed ventilation are also taken into consideration, depending on requirements. This provides the building owner with a tailor-made offer for a complete ventilation system.

- Planning support for the installer
- Training of partners
- Compliance with rules and regulations
- Individual offers tailored to customer requirements

## 2 Installation

Coordinated, simple-to-use system components enable quick installation. The Zehnder air distribution system can be installed easily without the need for special tools, saving you time and money. Zehnder also instructs installers on the use and installation of individual components. Prompt technical advice is available from our advisers during commissioning and servicing.

- Coordinated system components
- Simple, fast and economical installation
- Support for installers thanks to technical instruction
- Commissioning of ventilation systems



Remote Control Timer



ComfoSense Controller



### 3 Operation

All Zehnder controls are noted for user-friendliness: The stored ventilation data can be easily activated using the three-stage switch. A control unit with program timer and status messages is also available and can be integrated into a switch box.

- Simple use
- Air exchange setting to meet requirements
- Stage switch
- Control unit with status messages and timer

### 4 Cleaning

The air distribution tubes can be cleaned as required, although no dirt generally settles on the smooth internal walls. The device filters and dust filters in the exhaust vents protect against soiling. Pollen filters can be optionally installed in the device. However, these are only effective in the long term if they are regularly replaced. The heat exchanger should also be regularly cleaned to comply with all hygienic requirements.

- Smooth internal walls prevent dirt from settling
- Simple replacement of filters in the device and the air vents
- Simple heat exchanger cleaning

### 5 Maintenance

Zehnder ventilation devices require very little maintenance. They should nevertheless be regularly checked by a skilled tradesman, similar to all electronic and mechanical products. In addition, the device should be examined for contamination and the heat exchanger cleaned. This inspection is mainly intended to keep the devices operating optimally and to ensure the long-term effectiveness and efficiency of the system.

- Low-maintenance devices
- Long-lasting effectiveness and efficiency
- Inspections/servicing by specialists

## Zehnder ComfoFond geothermal heat exchanger.

Energy efficiency can be guaranteed even in frosty weather with the Zehnder ComfoFond air-geothermal heat exchanger. The ground, with its relatively constant annual temperature, is utilized as a passive storage. The warm ground releases energy to the outside air and the heated air flows into the ventilation device. In summer, the ground is cooler than the ambient air temperature. Now the effect can be utilized in the opposite direction: The outside air is cooled before reaching the house.



# 1

## Comfort

- Continuous fresh air supply
- Pre-heated outside air in winter, cooled outside air in summer
- Frost-free operation, even at external temperatures of less than 23 Degrees F



Ventilation unit Zehnder ComfoAir 350 with geothermal heat exchanger Zehnder ComfoFond-L

# 2

## Flexibility

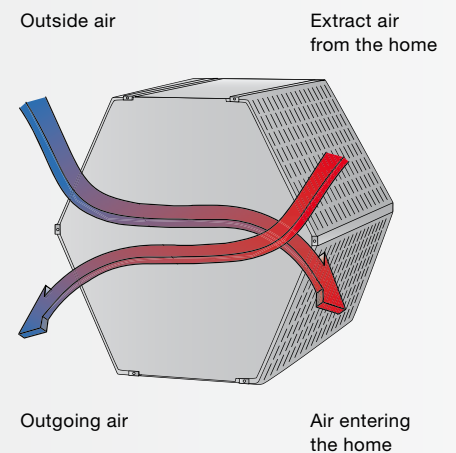
- Space-saving, adaptable system
- Short pipe trenches thanks to parallel pipe installation



# 3

## Energy efficiency

- Utilization of renewable energy from the ground
- Frost-free heat exchanger maintains heat output



Zehnder ComfoFresh air distribution system.

The Zehnder ComfoFresh air distribution system brings fresh air to all rooms and simultaneously removes extracted, moist or stale air and odors. Air is exchanged without drafts and bothersome noises, at the highest possible efficiency, thanks to cross-ventilating. The air quantity can be individually adjusted. Fresh air flows through round ducts with smooth internal walls.





## Air Distribution (in wall)



- Flexible round tube – easy to install
- High-quality food-grade plastic (HDPE)
- Clinside smooth internal walls
- Centrally and peripherally adjustable air volumes
- Low pressure drop
- Easy to clean

### System

The air distribution system ensures that the fresh air reaches the individual rooms and the extract air is simultaneously transported away. This is done by means of ventilation ducts that can be controlled separately. The only visible elements of the system are the designer grilles, which hide the supply and extract air outlets.

### Supply and extract air

Supply and extract air rooms are differentiated when ventilating homes. Rooms such as living rooms, bedrooms and children's rooms are known as supply air rooms. Extract air rooms are rooms from which water vapor and odors are removed, such as the kitchen and bathroom.

### Sound insulation

Supply and extract air ducts are fitted with silencers to keep air distribution as quiet as possible. Because each air vent is individually connected to the manifold, noise transmission from room to room is eliminated. This guarantees almost silent air distribution to the separate rooms.

# Simple cleaning and installation of the air distribution system

The Zehnder ComfoFresh air distribution system supplies indoor spaces with fresh air – Clinside ensures this is done cleanly and hygienically. Clinside, the smooth internal walls in Zehnder ventilation pipes and filters not only reduces the build-up of dust, but also guarantees easy cleaning. Certification by a recognized hygiene institute confirms this.



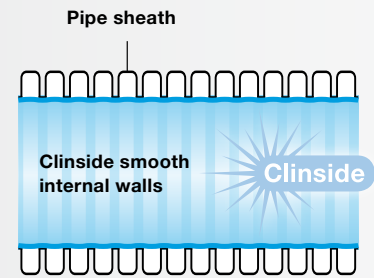
**Clean thanks to Clinside:** The smooth internal walls prevent dust from building up. Cleaning is simple.



Certificates issued by a recognized hygiene institute.

## Cleanliness thanks to Clinside

The smooth Clinside internal walls makes it difficult for dust to settle inside the ventilation pipes and makes cleaning so much easier.



## Health & well-being

It's good to know that the Clinside smooth internal walls prevent dust settling. Allergy sufferers can also breathe deep, thanks to appropriate filtering of the fresh air.



## Easy to clean

The Clinside smooth internal walls and the accessibility of all ventilation components allow easy and thorough cleaning. Zehnder provides vacuum cleaners with rotating brushes specially designed for this purpose.



## Easy to install

Thanks to the enormous flexibility and small bending diameters of the Zehnder ventilation pipes, they can be installed with a minimum space requirement and with only a few connectors, to suit the space situation.



## Zehnder ComfoFresh components

Developed in close cooperation with our customers, the Zehnder ComfoFresh air distribution system consists of only a few, optimally coordinated components, making the system particularly flexible, efficient and cost-effective.



## Zehnder ComfoFresh components



1

**1 Zehnder ComfoTube** Ribbed outside, robust, round ventilation pipe with smooth internal walls, for installation in concrete floors. Supplied on a roll.



5

**2 Coupling Sleeve** For air-tight connection of two Zehnder ComfoTubes. The flow cross-section is kept constant.



2



6

**3 Register Box** Incl. installation bracket, identical for all cover grilles. Allows connection to the Zehnder ComfoTubes by means of locking slide.



3

**4 ComfoWell Silencer** Acts as a sound attenuator and prevents noise transmission from room to room.



4

**5 Mounting Plate** Zehnder ComfoTube is connected using locking slides.









7

**6 ComfoDuct** Sound attenuating transfer grill for air connection between supply and extract air rooms.

**7 Diffuser Box** Provides single or double ComfoTube connections, with Supply or Return Diffusers.

# Comfort ventilation units, summary matrix of small devices between 62 and 325 cfm

Criteria		Air volume in cfm										TS no.	Applications						Assembly	
		62 cfm	96 cfm	125 cfm	160 cfm	190 cfm	225 cfm	255 cfm	285 cfm	320 cfm	350 cfm		Flat	SFH	MFH	Office/commercial	Indoor	Outdoor	Floor installation	Wall installation
Model																				
ComfoAir 160		160*/m³/h 95 cfm										TS123	•		•		•			•
ComfoAir 200		200*/m³/h 125 cfm										TS106	•		•		•			•
ComfoAir 350		350*/m³/h 215 cfm										TS105		•	•		•		•	•
ComfoAir 550		550*/m³/h 325 cfm										TS108		•	•	•	•		•	•
Focus 200		200*/m³/h 125 cfm										TS250		•	•		•		•	•
Novus 300		300*/m³/h 175 cfm										TS251		•	•	•	•		•	•

\*Maximum device air volume/recommended air volume approx. 60% at medium speed to allow for boost capacity

Connection							Connection size/ Dia. in Inches/ mm	Filter class		Thermal efficiency In %	Enthalpy	Frost protection	Bypass summer cassette	Open and closed loop controls										Device dimensions in "/lb				
Ceiling installation	With base	Left	Right	Top	Bottom	Side		Supply air	Extract air					Stage switch	Comfort control	CO2 sensor	Moisture function	Constant pressure	Constant volume	Pre-heating	Re-heating	Re-cooling	Filter signalling	Fire function	Length	Height	Depth	Weight from
•		•	•	•	•		5.0"/ 125	MERV 7/8 G4 opt MERV 13 F7	MERV 7/8 G4	>90%	•	•	•	•	•	•	•	•	•	•	•	optional	•		26.3	34.1	10.6	61.8
•		•	•	•	•		5.0"/ 125 6.0"/ 150 6.3"/ 160	MERV 7/8 G4 opt MERV 13 F7	MERV 7/8 G4	~90%	•	•	•	•	•	•	•								12.8	47.2	21.4	66.1
	•	•	•	•			6.3"/ 160	MERV 7/8 G4 opt MERV 13 F7	MERV 7/8 G4	>90%	•	•	•	•	•	•	•	•	•	•					27.6	33.3	22.5	77.2
	•	•	•	•			7.0"/ 180	MERV 7/8 G4 opt MERV 13 F7	MERV 7/8 G4	>90%	•	•	•	•	•	•	•	•	•	•					28.5	31.5	22.2	103.6
	•			•			5.0"/ 125	MERV 7/8 G4 opt MERV 13 F7	MERV 7/8 G4	91%	•	•			•	•	•	•	•						29.6	21.3	14.0	55.1
	•	•	•	•		•	6.3"/ 160	MERV 7/8 G4 opt MERV 13 F7	MERV 7/8 G4	94,4%	•	•	•		•	•	•	•	•						31.2	38.5	23.7	110.2

# Zehnder Comfosystems – Frequently asked questions

## **1. Why should I install a ventilation system at all?**

A user-independent supply of fresh air is necessary as buildings become increasingly air-tight. Today's new builds and refurbishments demand ventilation concepts for protection against moisture, which prevents mildew formation and helps retain the value of the property. Advantages include energy savings of up to 50%, pollen-free air for allergy sufferers and generally improved comfort.

## **2. May the windows be opened if I have a ventilation system?**

You can open the windows at any time. However, this is not necessary for ventilating. A comfort ventilation system does this much more effectively. It ensures fresh air and optimum indoor air quality at any time of the day or night, in all weather and all seasons, without you needing to intervene.

## **3. Does a ventilation system increase energy consumption?**

A ventilation system with heat recovery considerably reduces your energy consumption. The energy won from the extract air is approx. 15–20 times greater than the energy consumed by the highly efficient DC motors of the ventilation device. This is a hard cash saving.

## **4. Can the air in a ventilation system become too dry in winter?**

When cold outside air is heated to room temperature its relative humidity drops and the air feels dry. The same applies to window ventilation. Zehnder has the enthalpy heat exchanger for this application. It provides heat recovery and recovers moisture from the extract air.

## **5. Can I hear noises from neighbouring rooms through my ventilation system?**

Zehnder air distributors are designed such that there is no direct connection between rooms. All air ducts lead directly from the manifold to the respective rooms. Noise transmission via the air distribution network does not occur.

## **6. How can dust and dirt in the ventilation tubes be prevented?**

Dirt particles in the outside air are removed by the filter in the ventilation device. In addition, extract air filters and the special, smooth internal walls in the tubes prevent dirt deposits. The distribution system is designed to allow easy cleaning of the tubes.

## **More questions?**

[www.zehnderamerica.com](http://www.zehnderamerica.com)



