comfosystems

zehnder

Zehnder ComfoBox
The whole house energy centre

For Eco Home Living

Zehnder ComfoBox – A whole house solution in one box

Home should be a tranquil, comfortable place away from the stresses and strains of everyday life. It is easy to select the furniture and accessories which make a comfortable home but creating a comfortable indoor climate has not traditionally been as straightforward. The Zehnder ComfoBox is a whole house energy centre which is both fully integrated and compact and can be used for the provision of heating, cooling, ventilation and hot water. This helps to create an environment which is quiet, draft-free, has the perfect ambient temperature and an abundance of fresh, filtered air.

Typically if you are considering a system which combines heating, cooling, ventilation and hot water, you will have to work with a variety of manufacturers and suppliers to knit together a suitable solution. Zehnder Comfosystems can offer you a unique solution which is designed and supplied from the same source. This integrated functionality allows for a smoother and more rapid system installation saving time and money for both the installer and the end user.

Also, typically, if you are installing a traditional system to supply heating, cooling, ventilation and hot water, you will need to set aside a considerable area of your valuable living space to accommodate the footprint of these services. The ComfoBox can help you minimize the space needed to devote to the provision of building services making sure that you and your family can make the most of your home.

The ComfoBox offers a simple, integrated services solution which embraces the values of energy efficiency, comfort and health for the benefit of the environment, the building and the homeowner.

For Eco Home Living.

Why install a ComfoBox?

Lots of little savings add up! The ComfoBox can offer savings on a number of levels – to the homeowner and the planet both fiscally and environmentally – meaning that by choosing the ComfoBox solution you can gain in many ways. This sophisticated product, in addition to providing ventilation, can also cater for your heating, cooling and hot water demands in one compact system. A geothermal heat pump is combined with whole house ventilation which can then be integrated with systems such as underfloor heating or solar technology to provide an all year round, energy efficient system for today's air tight homes.

It is an energy efficient solution which utilises renewable and recoverable technologies in order to give a healthy and comfortable indoor environment.

1 Space Saving

The ComfoBox is a Swiss designed, multifunctional unit combining heating, cooling, ventilation and hot water inside one compact shell. This means that it has a smaller footprint than traditional alternatives. The ComfoBox has an imprint equivalent to only half a square metre because all of the necessary components including a whole house heat recovery unit and a geothermal heat pump and corresponding expansion vessels are all integrated into one unit.

2 Cost Saving

The geo-thermal heat pump produces energy using a sustainable source – energy from the ground. This is readily available all year round and is free allowing you to significantly reduce your energy costs.

3 Time Saving

The design of the ComfoBox makes it easier to install as a system than the equivalent components sourced from multiple suppliers. Not only does this make procurement easier as it is from one source, it can also save time and money on site at the point of installation.

4 Eco Friendly

By using the ComfoBox, you will be using the majority of natural energy to heat your home. This means that you do not have to solely rely on traditional, fossil fuel based methods for the provision of heating, cooling, ventilation and hot water thus reducing the carbon footprint of the dwelling year on year.

5 One supplier

The simplicity of the Comfosystems range of products is that there is a range of components available which allows you to buy and install a complete system along with all the ducting and accessories from one source.

6 Simple Maintenance

Having one unit in one location, makes servicing simple. The unit has been designed to allow easy access to consumables such as filters. Typically, these will need changing every six months in order to keep the system running at its optimum. In addition to this, the heat exchanger can be easily cleaned. After isolating the system, it is easy to remove and rinse in hot water. An annual check on the heat pump settings is also recommended.

7 Easy to Control

The ComfoBox is a simple way of supplying heating, cooling, ventilation and hot water into the home. Our interactive range of displays and switches are designed to be effective, intuitive and easy to use in order to optimise the system's performance and your levels of comfort around the clock.


zehnder

ComfoBox

A unique, fully integrated and compact system which can be used for the provision of heating, cooling, ventilation and hot water alongside our full range of tailored accessories.

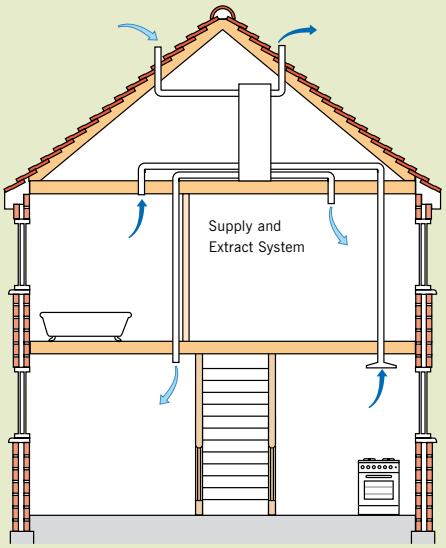
ComfoBox

Whole house heat recovery ventilation

Ventilation is a critical element in the provision of a healthy and comfortable indoor environment which is why it is a core component of the ComfoBox energy centre.

Whole House Heat Recovery Ventilation

Heat recovery units work to extract air from wet rooms (kitchens and bathrooms) running around the clock. They extract up to 90% of the heat energy which would otherwise have been lost during the extract process and transfer this to the fresh, filtered supply air which is being drawn in from the outside. Air is then circulated around the home using our ComfoFresh air distribution system.



In some instances, the environment within an air tight home can become too dry for comfort. It is possible to upgrade the heat exchanger to the Zehnder Enthalpy Heat Exchanger. Not only does this product extract heat from exhaust air, it also extracts water vapour which can then be used to regulate the humidity of supply air to ensure it is optimised for comfort with no loss in performance

Pre-heating and Pre-cooling Options

ComfoFond

Whole house heat recovery ventilation systems can be combined with a ground source heat exchanger (either earth-air or brine-air). These products rely on the relatively constant annual temperature of the earth at a depth of between one and one and a half metres. This ‘passive store’ remains at between 10 and 12°C year round and can be used to cool input air in the summer months and temper it in the winter – further increasing the effectiveness of the heat recovery unit.

ComfoBox

ComfoBox Features

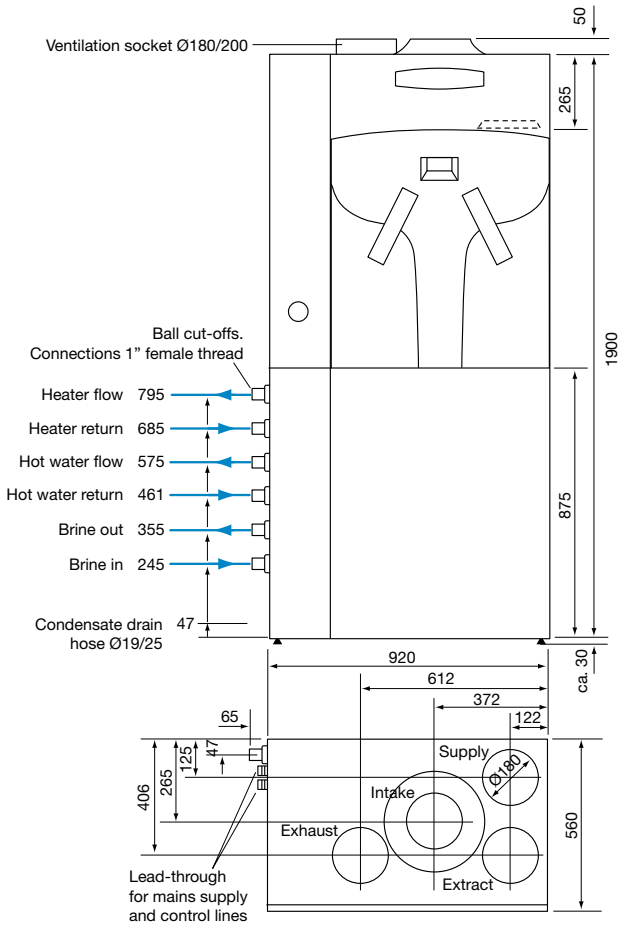
Ground Source Heat Pump

- Closed loop heat pump with complete hydraulic circuits for both heating and the earth collector
- Expansion vessels 12/25 litres
- Domestic hot water storage and production
- COP (0 - 35°C) – 4.3 - 4.7 (depending on model selected)

ComfoAir Whole House Heat Recovery Ventilation Unit*

- Heat recovery efficiency of up to 90%
- Summer bypass feature
- Integrated filtration of supply and exhaust air

*Full details available in the ComfoUnit brochure



ComfoBox – Single Phase

	Product Specification
Case Size in mm (W x D x H)	920 x 560 x 1900 (+ 30 for product feet and + 50 for connection sockets)
Weight	220 – 250kg (depending on model selected)
Airflow in free air (l/s)	48 –175
Tank Size (7 – 10kW)	400 litres
Electric Element in Tank	2kW

	Electrical Specification
	1P/N/PE/230V ~ 50Hz
Heat Power/Consumption (COP) (without circulation pump)	1.5/2.2kW (7 model), 1.8/2.8kW (8 model) 2.4/3.5kW (10 model)
Wiring	Must comply with IEE or local wiring regulations
Fuse	20 amp (7 & 8 models), 25 amp (10 model)

1 Heating

The geothermal heat exchanger uses the ground's constant temperature of 10 to 12°C (at between one and one and a half metres depth) as an energy store. A brine/water loop (brine is a mixture of water and glycol) is buried in the ground and transfers this free energy to the heat pump system. The resultant heat is then distributed around the property – normally via an underfloor heating system.

2 Cooling

In the summer, the building can be cooled through the air distribution network using the optional passive cooling feature of the ComfoBox. This feature allows heat to be extracted from the supply air and returned to the soil and can be used to lower the temperature and optimise the level of comfort in the warmer summer months.

3 Ventilating

The ComfoBox unit incorporates a system which provides whole house ventilation with heat recovery. The system works by simultaneously extracting air from wet rooms (kitchens and bathrooms) and supplying fresh, filtered air to habitable rooms. The fresh air (drawn in from the outside) is tempered using heat recovered from the warmer extracted air. The technology used ensures that extract and supply airflows never mix and only fresh, tempered air is supplied to the building. Not only is this methodology energy efficient (up to 90% of heat which would otherwise have been lost through ventilation can now be recovered) but it also conveys the twin benefits of health and comfort to the end user.

4 Hot Water

A hot water storage tank is installed which has been sized dependant on dwelling and occupant requirements. This stores the hot water which the system produces, ready for it to be drawn off on demand. With minimal energy input, this water typically has a temperature of 54°C.
An integrated 2kW heater easily brings this temperature up to 60°C.

5 Control

All Zehnder Comfosystems solutions can be simply and effectively controller by the homeowner to ensure optimal performance and comfort around the clock. These easy to use controls range from standard switches to fully integrated LCD displays.

Comfobox Benefits

Energy Efficiency

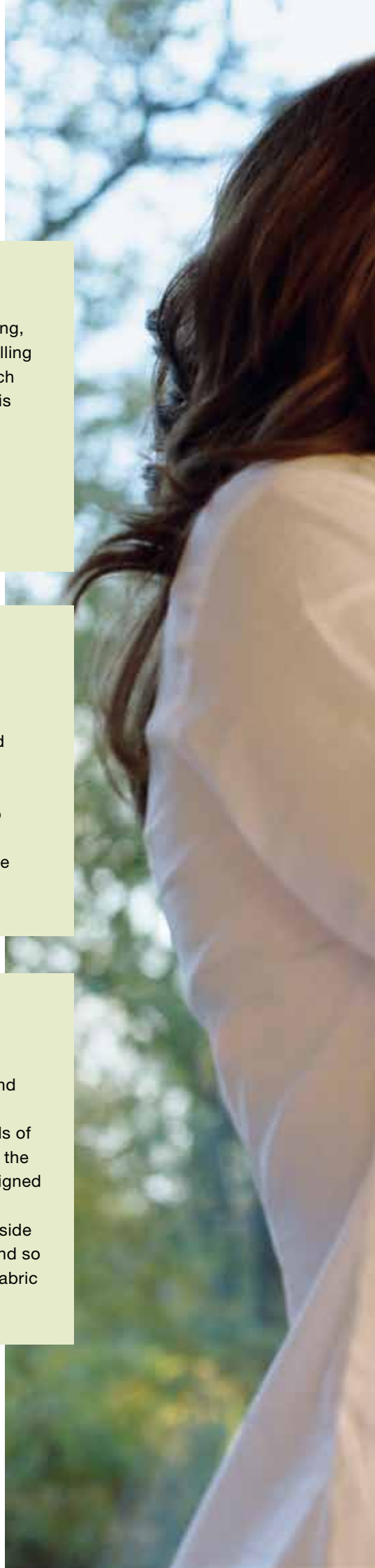
The ComfoBox uses energy derived from a renewable source to provide heating, cooling and hot water for your dwelling. In addition, energy loss from the dwelling is further minimised by the whole house heat recovery ventilation system which can recover up to 90% of heat, which would otherwise have been wasted. This heat is reused in the fresh supply air to habitable rooms. By using Zehnder Comfosystems products instead of more traditional approaches to heating, cooling, hot water and ventilation, you can make a valuable contribution to reducing your home's carbon emissions.

Health

Advances in construction materials and methods to make our homes more energy efficient and reduce their running costs, mean that we potentially pay the penalty with health related issues. Poor ventilation and air quality can lead to an increased incidence of asthma and allergic symptoms due to sensitivity to allergens such as dust mites, VOCs, pollen and mould. By improving ventilation the concentration of these allergens can be reduced. In addition to improving air quality, our products also contain replaceable filters which are designed to remove airborne particles such as pollen to further ensure that the home is a more comfortable and allergen free environment.

Comfort

On average, we spend approximately 70% of our time indoors therefore the provision of a comfortable environment is very important to both our health and our sense of well-being. The ComfoBox can provide a good supply of fresh, filtered air which has been pre-cooled or tempered depending on the demands of the season. These products are also installed away from the visible interior of the house so the only noticeable components of the system are aesthetically designed air inlets or exhaust grilles. As well as minimizing noise associated with the systems' operation, this can also help to reduce ingress of noise from the outside of your dwelling. Zehnder Comfosystems' ventilation systems are balanced and so do not require any background ventilation which puts additional holes in the fabric of the building and further allows exterior noise to pollute your home.



OnFloor air distribution

InFloor air distribution

ComfoFresh

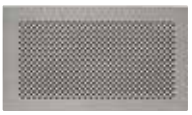
The ComfoFresh air distribution system can be installed **InFloor** (installed in the concrete) or **OnFloor** (installed on the concrete in the insulating layer or can also be installed in the traditional way, suspended from ceilings). The unique components have a smooth inner surface making them hygienic and easy to clean as well as reducing any pressure losses associated with turbulent airflow. The intelligent design of the components allows for improved performance and faster installation and commissioning.
In addition to these design features, the range also contains a number of aesthetically styled internal grilles which are used to introduce supply air to your habitable rooms. ComfoFresh is a technical and a stylish solution designed because you shouldn't have to compromise.


Zehnder Roma

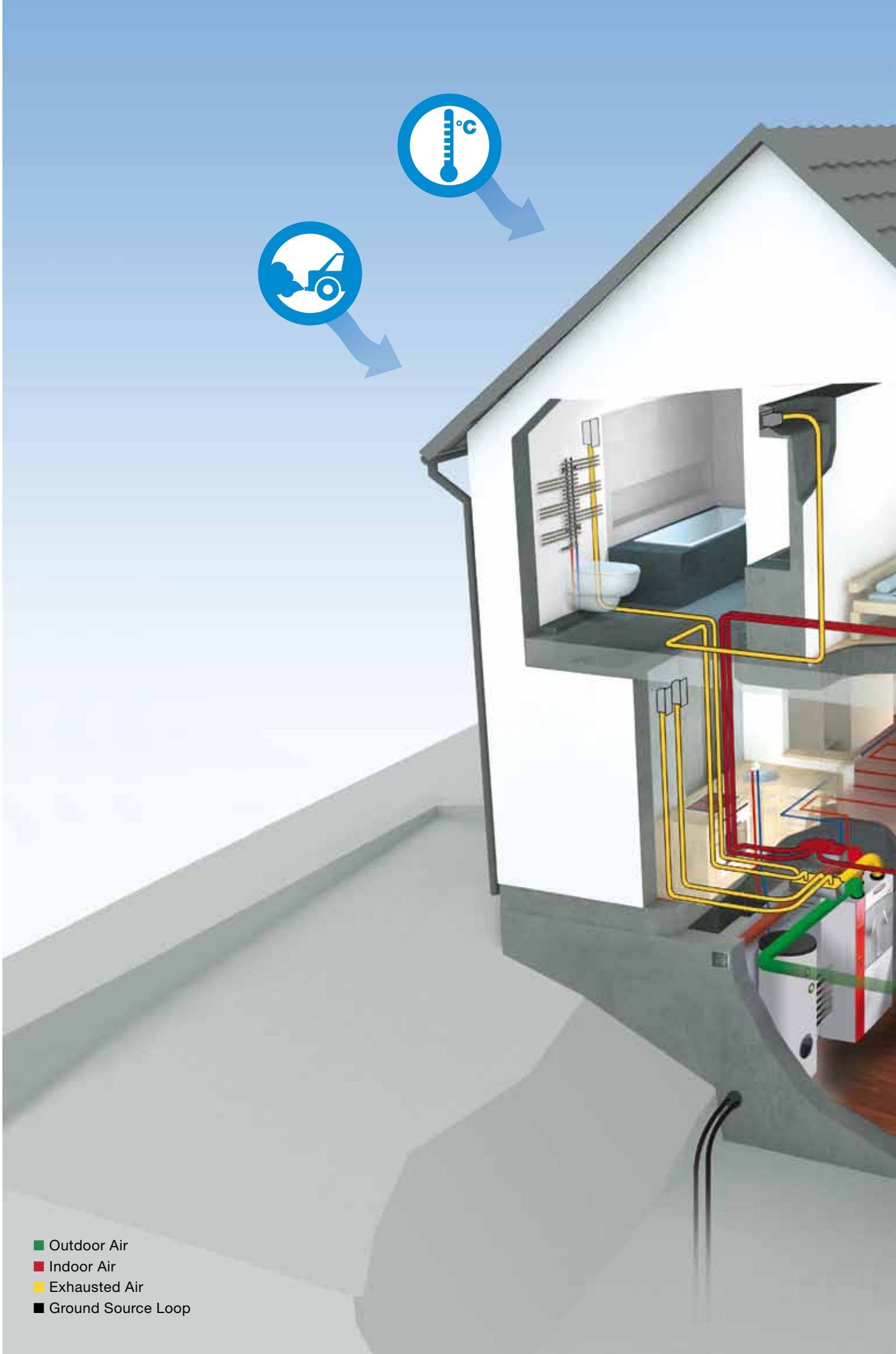

Zehnder Pisa

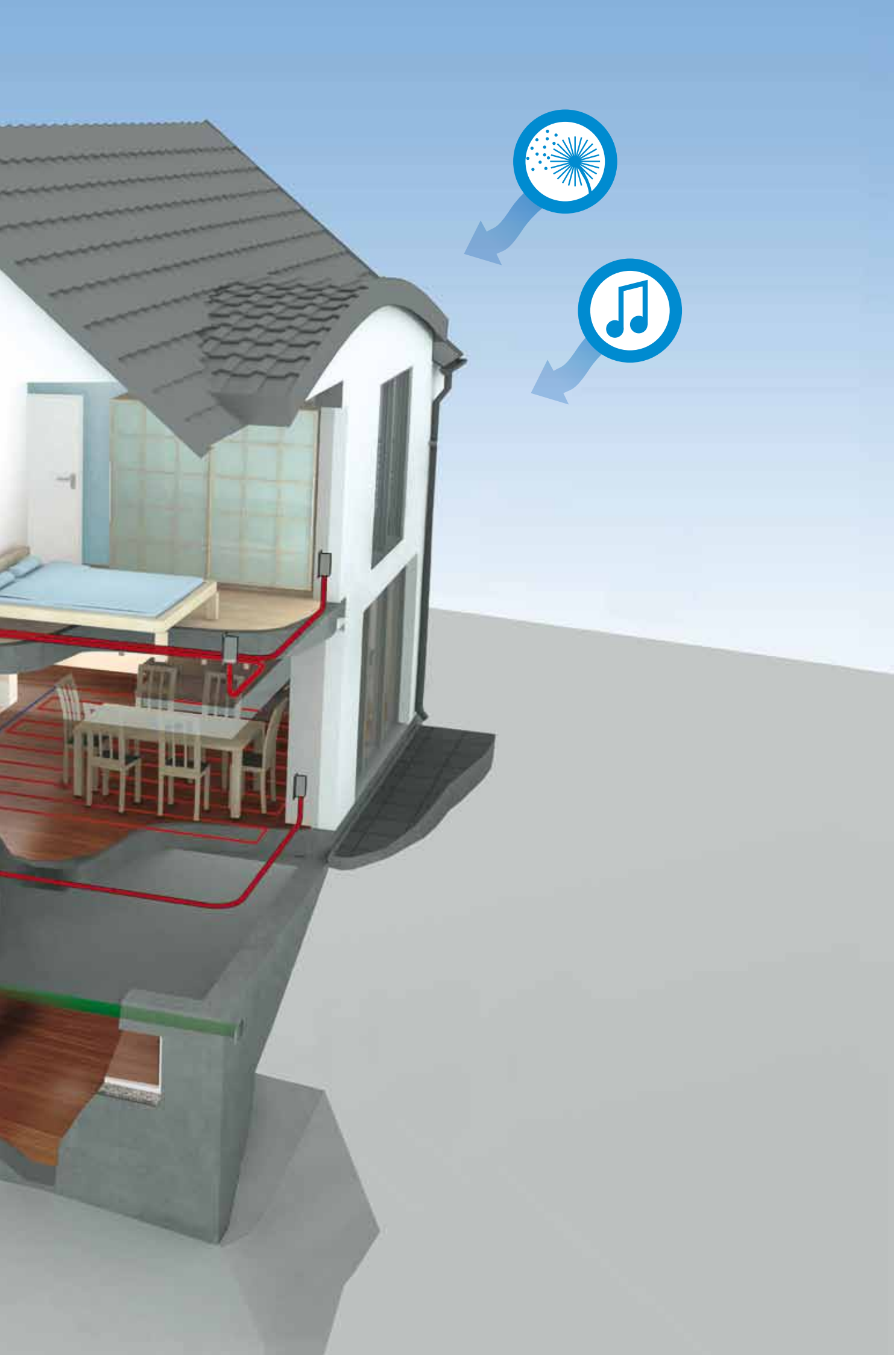

Zehnder Genua


Zehnder Torino


Zehnder Venezia


Zehnder Verona


°C
Outdoor Air
Indoor Air
Exhausted Air
Ground Source Loop



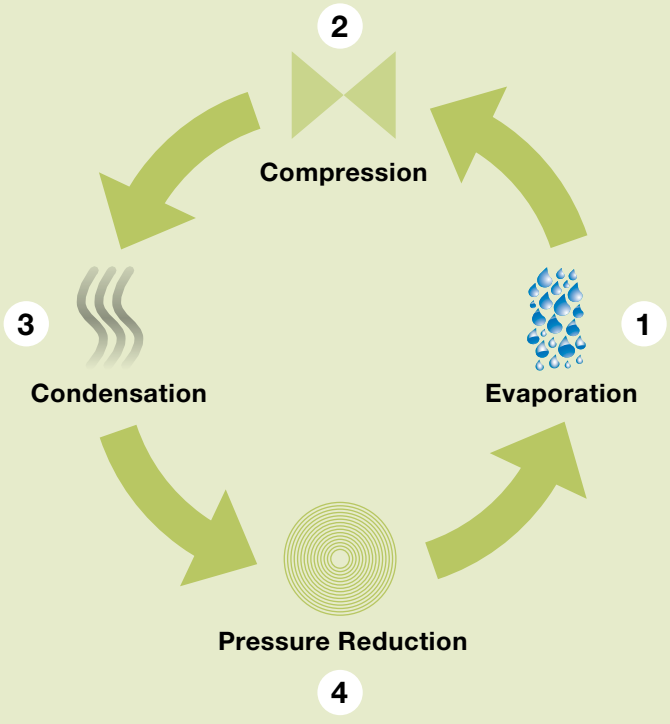
ComfoBox Heating and Hot Water

Energy surrounds us all of the time. The sun transfers its energy to us through the mediums of light and radiant heat. It is this radiant heat which we are interested in as it is absorbed by matter exposed to it. Things which absorb this energy include air, water and soil. Energy can be extracted from this matter and amplified by means of a heat pump which can then transfer this energy to systems in the home. The ComfoBox unit incorporates a ground source heat pump using a closed loop system.

How a Heat Pump Functions:

The closed loop of the ground source heat pump contains water/glycol mix referred to as brine. This mix circulates through tubing and the glycol absorbs this heat energy.

1. The energy that the glycol has absorbed from the earth is transferred to the refrigerant circulating in the heat pump. The heat that the refrigerant absorbs causes it to boil and evaporate to a gaseous state.
2. It then passes into the compressor which increases the pressure of the gas and hence the temperature rises.
3. At this stage, the heat from the refrigerant is transferred to systems within the home. Once the heat (energy) has been released, the temperature of the refrigerant reduces resulting in the vapour beginning to condense.
4. This high pressure liquid refrigerant passes through to the expansion vessel to allow the pressure and temperature to be reduced. The refrigerant passes back to the evaporator where it is able to absorb energy from the earth, via the ground loop, to evaporate and begin the cycle again.



ComfoBox – Single Phase

	Performance		
Model	**7**	**8**	**10**
Heating output with brine 0°C/water temperature of the heating system 35°C, kW*	6.4	8.1	10.1
Cooling output with brine 0°C/water temperature of the heating system 35°C, kW*	4.9	6.3	7.8
Dwelling Size m² ** 35W/m²	170	195	245
25W/m²	240	275	345
Power factor COP (0/35°C)	4.3	4.4	4.3

*dependent on building design, size, build quality and usage.

**Based on heating and hot water generation for two occupants.

ComfoBox – Three Phase

	Product Specification
Case Size in mm (W x D x H)	920 x 560 x 1900 (+ 30 for product feet and + 50 for connection sockets)
Weight	220 – 250kg (depending on model selected)
Airflow in free air (l/s)	48 –175
Tank Size (5 – 13kW)	400 litres (500 litres optional)
Electric Element in Tank	2kW

	Electrical Specification
	3P/N/PE/400V ~ 50Hz
Heat Power/Consumption (COP) (without circulation pump)	1.2/1.7kW (5 model), 1.3/1.9kW (6 model), 1.7/2.6kW (8 model), 2.2/3.1kW (10 model), 2.9/4.3kW (13 model)
Wiring	Must comply with IEE or local wiring regulations
Fuse	13 amp (5, 6, 8 & 10 models), 16 amp (13 model)

	Performance				
Model	**5**	**6**	**8**	**10**	**13**
Heating output with brine 0°C/water temperature of the heating system 35°C, kW*	5.3	5.9	8.2	10.1	13.2
Cooling output with brine 0°C/water temperature of the heating system 35°C, kW*	4.1	4.7	6.5	7.9	10.3
Dwelling Size m² 35W/m²**	115	145	195	245	340
25W/m²	165	200	275	345	455
Power factor COP (0/35°C)	4.4	4.7	4.7	4.7	4.6

*dependent on building design, size, build quality and usage.

**Based on heating and hot water generation for two occupants.

ComfoBox Options

The ComfoBox has been designed to fit with a number of optional components to further increase the scope of its functionality in your home.

Air Pre-heating

The ComfoFond L is attached to the heat pump ground loop and uses the temperature of the earth to temper or cool supply air for the whole house heat recovery ventilation unit. The most noticeable benefits are experienced at the times of the year when the difference between the earth temperature and the air temperature are at their greatest. It also serves to provide a degree of frost protection to the unit.

Moisture Recovery

This option further maximises the quality of your indoor environment. A Zehnder Enthalpy Heat Exchanger replaces the standard heat exchanger in the ventilation unit. As well as recovering heat, it can recover up to 65% of moisture from exhaust air and transfer it to supply air. This serves to maintain the optimal level of humidity and counteracts over-dry winter air.

Solar Panels

The ComfoBox can be used in conjunction with solar collectors – this can provide additional hot water collection or supplemental heating.

Swimming Pool Heating

A heat pump can also be used to heat swimming pools. The pool water is warmed up over an additional heat exchanger.

Passive Cooling

Thanks to the direct exchange between the ground loop and the home's distribution system, Zehnder ComfoBox can be used in the summer for cooling. The heat which is removed from the house is transferred to the ground and stored so it can be recovered during the cold months.

Supplemental Heating

In very cold climates it is recommended to provide a supplementary electric heat source for the coldest of days.

Hot Water Heater

When the consumption of domestic hot water increases, a water heater of greater capacity can be adapted to meet individual needs. The 400 litre water heater is standard.

400 litre
Water Heater

Zehnder Comfosystems – Services and Support

Like our products, our support package is also fully integrated. We aim to weave together the requirements of both the homeowner and the installer throughout all elements of design, installation and after sales support to give you a service which exceeds your expectations.

Consultation, Design and Support

Our network of accredited partners undergo comprehensive training. This allows them to design effective and economical solutions in line with the Best Practice requirements for your build standard. By working with an accredited partner, you can be confident that you are dealing with people who understand the scope of the range and the technology and can give you added value.

Supply

Once your order has been placed, we will orchestrate the safe and timely supply of both your systems and ancillaries to site taking into account the needs of both the build plan and the installer.

Approved Installer Scheme

Our network of installers undergo rigorous training in order to attain their 'Approved Installer' status. By using someone with this status, you can be confident in the quality of the installation, ensuring that performance is optimised and as per the specification.

Onsite Support for Installers

As well as developing comprehensive and easy to follow instructions, we are available to come to site to support installers and ensure that it gets done right first time. This can extend to commissioning the systems so we can ensure that they deliver on both performance and comfort.

Post Installation Support

If, for any reason, you encounter a problem with your installation, we are available to offer advice and support whether this is over the telephone or face to face.

There is no 'one size fits all' solution. We treat everything as an individual project and make sure that it is fully tailored to a suit a household's requirements. It is not our aim to just be a supplier of parts, but a provider of integrated systems... For Eco Home Living.

Zehnder Group

Based in Switzerland and with over 100 years experience in the production of radiators and 40 years in ventilation technology, Zehnder is a complete solution provider for heating cooling and fresh air around Europe. Today, Zehnder has factories on three continents and manufactures to the highest standards to ensure quality, comfort and satisfaction for all of its customers.

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