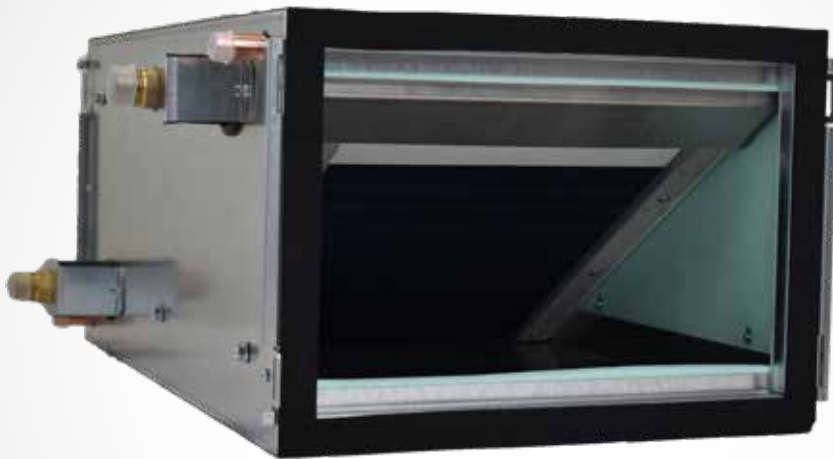


Designing ComfoPost

Tackling the issue of overheating requires an integrated solution, incorporating a suite of innovative products that each play their part in ensuring that indoor air quality and comfort levels are delivered during the warmer summer months, whilst also complementing heating requirements during the winter. In Passive House and Net Zero energy properties, these integrated products are likely to provide the sole source of heating.

Considering the expected increase in external temperatures predicted across the globe, being able to deliver forward thinking solutions can help mitigate the issue of overheating.



What is ComfoPost

The Zehnder ComfoPost is a range of air to water exchangers for use with ComfoWell air distribution connections. The ComfoPost helps to reduce the supply air temperature of the ComfoAir MVHR unit in the summer months and if required increase it in the winter months. Chilled water is fed into the ComfoPost during the summer months typically by a chiller or reversible heat pump to help reduce the supply air to all habitable rooms in the property resulting in comfortable supply air during warmer periods. In the winter warm water can be supplied to it to compliment any heating system, especially when using district heating to assist in reducing the return water flow temperature thus increasing efficiency.

The ComfoWell air distribution connections to the ComfoPost allows for ducting selection flexibility, offering a range of rigid circular ductwork or Zehnder ComfoTube semi-rigid ductwork to be attached. The ComfoPost units are also suitable for a wide range of airflows up to 166l/s (600m³/hr). The units are made of steel with aluminium and copper pipe forming the heating and cooling coils and are maintenance free.

The ComfoPost can be controlled by the heating/cooling system controls and thermostats. Multiple ComfoPost units could also be used in the same property to enable zonal control.

The ComfoAir Q range of MVHR units can be used with the ComfoPost. These MVHR units are ideal for use with the ComfoPost due to the automatic cold recovery function when the internal temperature is lower than the external temperature. The ComfoAir Q350 has been the first unit to be independently certified by the Passivhaus Institute for its cold recovery efficiency of 87%. The ComfoAir Q range also have a unique modulating summer bypass. If the external temperature is lower than that of the internal temperature then it will activate to bring the cooler air into the property without the need for activating the ComfoPost. This can activate down to much lower temperatures than a standard summer bypass whilst avoiding hitting the dew point due to it being able to partially recover some of the heat. The ComfoAir Q also has 3 temperature profiles which react to the average external temperature. This means during spikes in external temperature the unit is more inclined to react to these sudden changes by opening the bypass or activating the ComfoPost accordingly.

The ComfoConnect KNX C or LAN C enable the end user to control and monitor the unit using the KNX building automation infrastructure or the ComfoControl free app (available on iOS and Android). These can be used to enable remote activation and support via the ComfoControl app.

The ComfoPost cannot be compared to air conditioning since air conditioning recirculates the stale cooled air, whilst the ComfoPost delivers fresh filtered air. This helps to meet ADF ventilation rates whilst having the added benefit of air temperation.

ComfoPost in
conjunction
with the
ComfoWell
320



Design out overheating

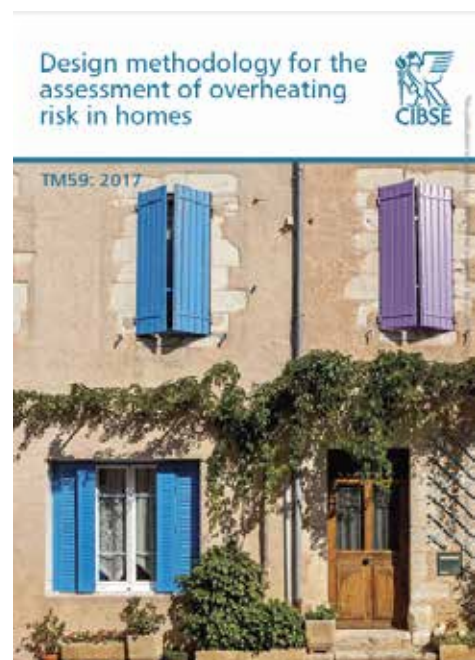
The ComfoPost range can help to temper the supply air. However if the gains exceed the cooling capacity of the unit then the property will still overheat. Things to consider to combat overheating would be as follows:

- Improve thermal mass
- Options to cool thermal mass such as false ceiling or hollow core concrete flooring
- Reduce the size of windows and avoid too much south-facing glazing
- Solar shading through overhangs or external shutters
- Window glass type such as reflective, photochromic, thermochromic or electrochromic
- Insulate hot water pipes and tanks
- Reduce electrical appliances
- Use higher efficiency appliances that emit lower heat levels such as LED lighting
- Openable windows for purge ventilation without a security risk

Thermal modelling

It's important that thermal modelling is carried out to ensure the appropriate ComfoPost is selected and that it is sufficient to meet the cooling demands of the property. Thermal modelling is entirely reliant on the model inputs; we recommend modelling to the new TM59 guidance which draws from TM52 and CIBSE Guide A. Modelling should be based on the units running at the required ventilation rate, using the relevant ComfoPost output data found within the Performance Data table. The output will vary dependent on the conditions and water flow rate/temperature, the Performance Data table should be used as a guide for the units cooling/heating capacity.

When modelling the property it's important that any solar shading requiring user intervention, such as blinds, is modelled with and without them. Window opening modelling should also include any restrictions and take into account noise, security and air quality issues which would reduce the opening area. The windows should also only be modelled as open when rooms are scheduled to be occupied unless security isn't an issue.





ComfoAir Q600

Additional notes

All equipment should be installed by a competent person; poor or incorrect installation could result in the unit not achieving its desired cooling capacity. The ISO ePM1 >55% (F7) filters within the ComfoAir Q range of units help to reduce fine pollen and carbon black particles in the supply air, however additional filtration such as NOx filters may be required. These need to be factored into the design pressure drop and are available from Zehnder.

Selecting an appropriate ComfoAir unit relevant to the air flow required can be done by simply using our product selector www.zehnderproductselector.co.uk



Filters

Key design considerations

- Minimum and maximum air flow design rates for the ComfoPost can be found within the Performance Data Table, ventilation pipework velocity must be < 3m/s.
- Ductwork should be sized accordingly to equate to the ComfoAir units spigot size.
- Thermal modelling to achieve the cooling/heating capacity for the specified ComfoPost relevant to the design flow temperatures within the appropriate Performance Data table. The recommended operating water temperature range is between 7 and 55°C.
- Maximum operating water pressure 6 bar.
- The ComfoPost can be installed horizontally or vertically but the condensate drain must always be in the lower position with the water connection on the side and not on the top or bottom. When installing vertically the airflow must NOT be directed downwards.
- Insulate intake/exhaust ductwork to a minimum of 25mm of insulating material, with a thermal conductivity of 0.04W/Mk.
- Insulate supply ductwork to a minimum of 9mm of insulating material, with a thermal conductivity of 0.033W/Mk.
- Insulate the water IN and water OUT pipework with the appropriate thickness and material.
- Enthalpy cube for the relevant ComfoAir Q or ComfoAir 160/180/200/350 unit used as standard.
- A buffer tank can be used to reduce the peak phases and ensure a quicker reaction time, requirement to be confirmed by thermal modeller.
- Ensure adequate attenuation is factored in at the higher flow rate.
- Ensure the intake/exhaust terminations are separated by a minimum of 2m and terminate to the external façade.
- Locate the MVHR unit on an external wall if possible.
- If a switch live boost is desired, then a relay linked to the Option Box is required when using the ComfoAir Q.
- The ComfoPost can be used in conjunction with corresponding ComfoWell, which can only be installed directly to it.
- Intake air from north facing orientation if possible.
- Don't intake air from south facing orientation.
- Don't intake air from underneath roof tiles or solar panels.
- Use a water filled siphon with a water lock of at least 100mm for the ComfoPost condensate drain.
- Use a dry trap on the ComfoAir MVHR units capable of achieving 500Pa of pressure.

TO DOWNLOAD OUR COMFOPOST DATASHEET

CLICK HERE

TO DOWNLOAD OUR COMFOWELL DATASHEET

CLICK HERE

TO DOWNLOAD OUR COMFOAIR DATASHEET

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