Sound surroundings: new energy-efficient homes fit for optimum occupant health

Heating | Cooling | Fresh Air | Clean Air

Introduction

New build and retrofit homes are becoming more insulated to meet energy-efficient standards. Insulated homes decrease the amount of fuel needed to heat the home and also create a better acoustic environment for occupants. With better insulation comes the need for matched ventilation to ensure indoor air is refreshed, moisture levels are controlled and risks of overheating are lowered.

This is especially important in areas where outdoor disturbances such as roads, transport lines or airports may distract homeowners as they go about their daily lives, which was paramount for this particular new build project.

The project

Forge Wood is the newest of 14 new neighbourhoods in Crawley, a large town and borough in West Sussex. The fourth phase of this 1,900 home development consists of 147 plots, including 111 apartments and a mix of 2-4 bedroom homes. The wider Forge Wood development includes a new primary school, community centre, offices, industrial and retail space and parkland.

The Forge Wood development sits South of Gatwick Airport, West of the M23, North of the Crawley Avenue, a main artery to the town centre, and East of the main train line from London to Brighton making it an ideal place for young professionals and families to set up base due to good transport links and connectivity. But, due to the issue of noise pollution from these main travel corridors and a nearby goods yard, there was a specific build requirement to limit noise pollution.

The objective

Due to the noise pollution in the area, the local council's environmental health officer had set guidance for the new homes to be built with a level of sound protection so that occupants can live, work and sleep without disturbance. The developers needed a way to provide ventilation without having to solely rely upon opening of the windows for long periods of time due to the guidance and talks of a potential second runway being built at the nearby Gatwick Airport.

The client

Taylor Wimpey is one of the largest house building companies operating across England, Scotland and Wales - specialising in building new homes effectively at scale. The company has a strong history with Zehnder and are confident in the quality they have received in their projects in the past, so reached out for a specific need for a purge ventilation system.

The challenges

The build has a number of different floor plan and development styles across the site, so - for example - some rooms are larger than others which require more than one fan to achieve optimum air quality. The developers worked with Zehnder to look into multiple options including MVHR units, but the space required for storage of the units and ducts were too large for the development across the board. This led Taylor Wimpey away from a centralised system instead opting for a bespoke design to be flexible to different space and design requirements of each apartment and home.

The solution

The solution Zehnder settled on was uncommonly used in the UK at the time - an acoustic induct fan unit that extracts the air from within, up to a rate of four air changes per hour depending on the home's location and facade. For rapid ventilation occupants can open the window, but under Approved Document F, where there is no option to open a window, purge ventilation is an alternative.

The purge fan can be left on to quietly ventilate the room in the background, keep airflow moving and make the environment healthy to work and live in. Plus, it can be switched on and off in each individual room to adjust the comfort levels.

These AID extract fans run through walls, which in themselves have acoustic hoods on them for added sound insulation.

On average 4 to 5 units were used on each plot – at least one fan for each habitable room. They fit into the roof voids or into ceilings of store cupboards so that they're hidden away but accessible if needed for maintenance purposes. The ability to turn off via a switch is supported. The homeowner or occupant has a choice of whether or not to use the purge ventilation system, but due to the silent nature of the solution occupants won't notice that they are running.

Benefits of purge ventilation

- Assists with air flow and lowers CO2 levels
- Alleviates odours
- Protects against mould and condensation build-up in the home
- Reduces the need for opening windows in noisy environments
- Helps prevent homes from getting too hot in warm summer periods
- Low running noise
- Two speed motors for variable control and airflow requirements
- Ventilation can be adjusted per room rather than on a centralised system

Customer feedback

Neil Freeman,
Senior Technical Co-ordinator at
Taylor Wimpey South Thames:

"I think we can say that Zehnder provides a full package. When they design the system they will detail each and every ancillary piece of kit that is required. So as well as providing the fan, they also detail the ducting, the clips, and the grills - the whole package is designed and detailed for pricing purposes and this approach helped ensure that there were sufficient supplies available at short notice."

Zehnder • Concept House • Watchmoor Point • Camberley • GU15 3AD
T +44 (0) 1276 605800 • info@zehnder.co.uk • www.zehnder.co.uk
Zehnder is a division of Zehnder Group UK Ltd • Registered in England 2296696