

**Breathing Buildings' NVHRe Provides Ventilation to Carbon Negative Offices**

Breathing Buildings, a leading provider of controlled hybrid ventilation systems, has supplied ventilation to ECO MEP's carbon negative offices in Ashford, Kent.



<b>PROJECT</b>	ECO MEP
<b>LOCATION</b>	New Build Industrial Estate
<b>SECTOR</b>	Commercial Premises
<b>PRODUCTS</b>	Natural Ventilation with Heat Recycling and Heat Recovery - NVHRe C+ 1100



**“Our NVHRe takes all the benefits of energy efficient hybrid ventilation one step further by providing natural ventilation with heat recycling and heat recovery.”**

ECO MEP are mechanical and electrical contractors who focus on delivering lean, sustainable solutions safely, to the highest standards, every time. In line with these values, ECO MEP's objective was to ensure its own new offices were a beacon of sustainability and so specified Breathing Building's innovative NVHRe Natural Ventilation with Heat Recycling and Heat Recovery to provide energy efficient ventilation. The building's owners are committed to creating a carbon negative operational workplace. The offices are located in a new build industrial unit with the fit out requiring specification of the most efficient products. NVHRe comprises both natural and mechanical ventilation, as well as heat recovery. Two NVHRe C+ 1100 units were therefore installed in the first-floor open plan office above the acoustic rafts, as an exposed installation. The NVHRe C+ 1100 units additionally feature a coil with the ability to provide heating or cooling for year-round comfort and full temperature control. The heating and cooling coils meant air conditioning and radiators were not required for the office, offering a more sustainable solution for the project.

Natural Ventilation with Heat Recycling and Heat Recovery (NVHRe) is an addition of a low resistance heat exchanger cell within the unit. This allows the unit to benefit from both heat recycling and heat recovery, reclaiming even more heat than previous models, saving more energy, providing greater occupant comfort, and allowing users to include the heat recovery efficiency within the building energy assessments (SBEM).

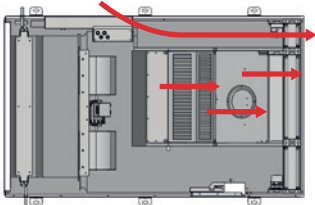
Boasting the lowest energy consumption for a hybrid heat recovery ventilation unit in the industry, the NVHRe combines 46% heat recovery efficiency with low Specific Fan Power (SFP) of 0.075 W/l/s to help maximise a building's energy savings. In addition, the NVHRe has several different operating modes to minimise energy use, enhance indoor air quality (IAQ) and improve occupant comfort. An intelligent hybrid system, the unit automatically decides when and if mechanical operation is required, ensuring it only operates when absolutely necessary.

Providing excellent thermal comfort and enhanced IAQ, the NVHRe is designed to suit a diverse range of commercial and public buildings with high heat gains, such as schools, colleges, leisure centres, offices, theatres and even churches. The inclusion

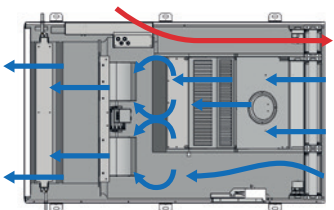
The key difference between Breathing Building's original NVHR® range and the new

## Air Flow Strategies

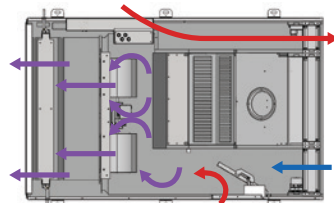
### Summer Natural Mode



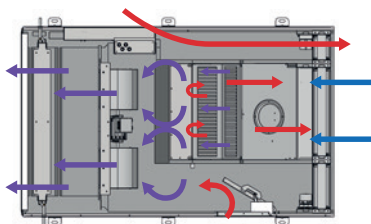
### Summer Mechanical Mode



### Winter Mode: Mixing



### Winter Mode: Mixing with Heat Recovery



of the low resistant aluminium cross plate heat exchanger to the unit lowers energy costs by reducing the reliance on space heating to maintain thermal comfort in a room. It operates during colder external temperatures, typically below 7°C when mixing recycled air alone is not enough to maintain the desired temperature for occupants.

The range also includes units that can be the primary source of heat; needing no radiators, as well as a system that can offer further cooling, such as the units used at ECO MEP's offices. The British designed and manufactured units come in three models with product variations to suit every need with the standard NVHRe 1100 an NVHRe+ 1100 which includes a heating coil and is ideal for buildings in cooler areas; and an NVHRe C+ 1100 which features a heating and cooling coil for year-round comfort and full temperature control.

The NVHRe hybrid ventilation system's ultra-efficient facade-based mixing ventilation allows single-sided, enhanced natural and hybrid ventilation in deep plan spaces whilst making the most of internal heat gains, with the addition of heat recovery to deliver superb thermal comfort and IAQ. Hybrid ventilation focuses on the vital balance of IAQ, thermal comfort, and efficiency by choosing the most appropriate mode of ventilation based on the internal and external conditions, allowing the NVHRe to be in the most energy efficient mode possible at all stages.

Allowing low-energy hybrid natural ventilation, even in buildings with limited facade and roof space, highly efficient mixing fans mitigate cold draughts in winter and provide a ventilation boost in summer, with the addition of heat recovery to bolster winter thermal comfort, minimising the need for a primary source of heating for the space, in return reducing energy costs and the buildings associated embodied carbon. Supplied with an external temperature sensor, and an internal temperature and CO<sub>2</sub> sensor, as well as an intelligent controller the system monitors conditions to create an ideal indoor environment, boosting both productivity and wellbeing.

NVHRe optimises IAQ, comfort and efficiency by automatically switching between natural, hybrid and mechanical ventilation, maximising benefits. The unit

has four modes: **Summer Natural Mode, Summer Mechanical Mode, Winter Mode: Mixing and Winter Mode: Mixing with Heat Recovery.**

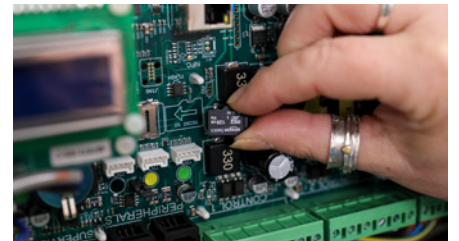
### Summer Mode

The Summer Natural Mode enables the unit to maximise the benefits of passive ventilation by opening the high-quality motorised damper and ventilating with zero cost. The Summer Mechanical Mode enables the hybrid technology to maximise ventilation by working in conjunction with other openings and providing cooler air.

### Winter Mode

In Winter the Mixing Mode and Mixing with Heat Recovery strategies offer huge heating-bill savings as they recycle and recover heat while providing ventilation to ensure excellent IAQ and thermal comfort that enhance occupant comfort, health and productivity.

In addition, the NVHRe features a dedicated control panel mounted on the side of the unit for easy access on-site. This is pre-configured and the PCB board for each unit records operational data for up to 15 years on the Micro-SD card that is included free of charge. The data can easily be exported for analysis.



Manufactured using high quality components, the unit is easy to install and maintain. All core components are easily accessible with access gained from beneath the unit. Each component can be serviced in-situ to ensure it operates efficiently and for as long as possible enhancing the overall longevity of the unit, rather than needing to replace a whole unit. Breathing Buildings has given careful thought to the entire lifespan of the NVHRe, ensuring that all key components are recyclable at the end of use.

**For more information on NVHR® and E-Stack ventilation, as well as other products and services contact Breathing Buildings at:**

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