



HOMEZERO

Innovation for net zero carbon homes

 Monodraught

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Carbon Negative,
Climate Positive,
Zero Bills*

* Carbon Negative / Zero Bills assumes HomeZero PowerPlus with integral electrical storage battery, plus sufficient roof area for optimised solar PV onsite electrical generation



We are Pioneering British Greentech

We are pioneers in the design and manufacture of advanced sustainable ventilation, cooling, heating and lighting solutions for new and refurbished commercial and public buildings. We deliver outstanding temperature control and indoor air quality whilst minimising the consumption of both electricity and refrigerants so as to reduce our carbon footprint. Monodraught have over 45 years' experience and our products have saved the equivalent of over 390,000 tonnes CO₂ over the last two decades, which is equivalent to over 3,534 million miles travelled in a small car*.

Monodraught believe that every business has a responsibility to invest in local communities. We purchase over 85% of our materials from suppliers within a 100-mile radius and recycle where possible. Our team supports many charitable causes and Monodraught are proud partners of the local mental health charity, Buckinghamshire Mind.



DESIGNED &
MANUFACTURED
IN BRITAIN

* Based on 110g CO₂ per mile emitted from a typical a small family car.

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Awards & Accreditations

Trading for over 45 years, we are proud to be recognised with many awards.



The Challenge

The UK has legislated to become “net zero” by 2050 which means a radical re-think about the way we heat our homes. Over 180 local councils have declared a climate emergency and intend to reach net zero before 2030. The ban of new diesel and petrol cars from 2035, is already driving the uptake of Electric Vehicles (EV). Urgent action is required to achieve these national goals.

Revised Building Regulations Part L for new build from June 2022 and further updates planned in 2025, will only address a small part of the housing challenge. Over 80% of the homes already built today will be in-use in 2050. Many homes are fitted with a combi boiler and lack indoor space to retrofit renewable heating.

Integrating the necessary low carbon heating, hot water and ventilation systems is a challenge. To achieve Net Zero, these measures must also be combined with significant insulation upgrades, installation of PV systems and provision of EV charging.

Why HomeZERO?

Monodraught have developed HomeZero to assist Developers, Housing Providers and Contractors to reach Net Zero requirements. HomeZERO provides a simple, single solution that can be quickly and easily fitted with minimal impact on the indoor amenity space of the home, and that brings all controls together, in a factory assembled energy module.



28 million

UK homes



15%

UK carbon
emissions from
homes



600,000

Target to install
heat pumps by
2028



52%

homes are
terraced or
semi-detached



214,000

new homes
completed in 2019



80%

homes in 2050 are
already built

About Home ZERO

HomeZERO is an innovative, robust, custom designed outdoor energy services module for new build and retrofit Net Zero Energy (NZE) homes. It is a single, off-site manufactured energy module which integrates Air Source Heat Pump (ASHP), Mechanical Ventilation with Heat Recovery (MVHR) and Sunamp Phase Change Material (PCM) hot water heat battery store. All associated ducting, pipework, pumps, valves, filters and drains are pre-fitted and factory tested to minimise time and disruption on site. Temperature and air quality monitoring, heat meters, flow sensors and energy meters are all included built-in. The controls system is fully integrated and remote monitoring with 4G/5G connectivity reduces call outs.

- Suitable for New Build and Retrofit
- Complete Net Zero energy module
- Off-site manufactured
- Market leading ASHP, MVHR and DHW solutions
- Sunamp hot water thermal battery
- Remote Monitoring
- Guaranteed supply in 16 weeks

Features

- Single, externally mounted energy module with NZE equipment fully integrated
- Two models to suit specific applications
- Quick and easy to install, typically 1 day
- No indoor space required
- No need for indoor maintenance access
- Clever architectural design
- Tough, insulated, through colour façade
- Welded aluminium frame
- Remote monitoring
- Demand Side Response
- Leading equipment manufacturers
- ASHP with mid-/low-GWP refrigerant
- MCS accredited heat pumps
- Mains pressure hot water without legionella risk
- Dimensions (mm): 2500 (h) x 1200 (l) x 850 (w)
- Designed and assembled in UK
- 10-year guarantee (T&Cs apply)



HomeZERO Power Plus

Our philosophy is to drive towards zero energy bills, ensure that the home is operating as carbon negative thereby creating a positive impact on the environment.

HomeZERO Power Plus is our premium design offering complete energy optimisation through inclusion of PV inverter and integral 20kWh Li-ion electrical battery energy storage. Electrical energy generated by the PV array is diverted to maximise usage within the home and ensure lowest possible energy bills to the householder.

Innovation at a glance

1. Unique ASHP/MVHR energy recovery feature
2. Low/natural energy ventilation with demand control – reducing energy consumption
3. Monitoring of VOCs, CO₂ and humidity for high indoor air quality
4. Advanced integrated controls managing ASHP, ventilation, solar PV and battery storage
5. In-home touch screen display controls designed for vulnerable tenants
6. Self-learning room temperature control to improve comfort
7. Demand Side Response controls pre-heats the home and enables future access to lower tariffs
8. Smart 24hr remote monitoring, fault diagnosis and energy optimisation reduces call outs



| The HomeZERO Range | | |
|---|--------------------|----------|
| Feature | HomeZERO PowerPlus | HomeZERO |
| Air Source Heat Pump (ASHP) | ✓ | ✓ |
| Mechanical Ventilation Heat Recovery (MVHR) | ✓ | ✓ |
| Demand Control Natural Ventilation | ✓ | ✓ |
| Hot water heat battery using PCM (Sunamp) | ✓ | ✓ |
| Remote monitoring via Cloud | ✓ | ✓ |
| Solar PV controls | ✓ | - |
| Electrical battery storage and controls | ✓ | - |
| Integrated EV charging point | ✓ | - |

HomeZERO Advantages

Advantages for Developers



Easily incorporated into modern aesthetics



Great for NZE small properties



Easy to coordinate project-specific solutions



NZE performance requirements readily achieved



Products are recognised in SAP

Advantages for Housing Providers



Great for small properties with little available indoor space



Simplifies NZE retrofit adoption



Fewer abortive maintenance visits



Reduces site interventions and tenant disruption



Proven products for peace of mind

Advantages for Contractors



Easier to install and maintain



Single supplier for faster project coordination



NZE performance requirements readily achieved



Reduces site interventions and call out costs



Proven products for quality assurance

Advantages for Occupants



Little impact on indoor storage areas



Minimal hassle and disruption during retrofit and maintenance



Enables future access to cheaper tariffs



Easy to use system controls



Assurance of a comfortable home

Inside HomeZero: Uncovering the Engineering

Air Water Heat Pump

From Valliant, Samsung, Mitsubishi or Daikin

- Market leaders in heat pumps
- Mid/low GWP refrigerants (R32 or R290)
- SAP listed
- MCS accredited
- Warranty up to 10 years



Vaillant

SAMSUNG



mitsubishi
ELECTRIC



DAIKIN



Hot Water Thermal Battery

Sunamp Thermino hp-SG

- Mains pressure instantaneous hot water
- Uses non-toxic non-flammable PCM
- Charged by heat pump or Solar PV
- Heat storage capacity 7kWh
- Equivalent hot water volume 185 litres at 40°C
- Low standby heat loss: 0.68 kWh / 24hr [28 Watts]
- No mandatory annual maintenance
- 10-year warranty (heating element & storage core)



Sunamp Thermino hp-SG

Mechanical Ventilation with Heat Recovery (MVHR)

Zehnder ComfoAir and ComfoAir Q

- A comprehensive range with air volumes from 155m³/h up to 600 m³/h at 200 Pa
- Passivhaus compliant options available (ComfoAir Q)
- Adaptive pre-heater for intelligent temperature control of inlet air
- Enhanced inlet air filters to reduce indoor pollutants
- Low noise operation minimise disturbance even in full operation mode

zehnder



Zehnder ComfoAir Q



Zehnder ComfoAir

Acuity

Remote Monitoring

The iNVent Acuity control system has been developed from Monodraught's considerable in-house controls experience. This class leading control system links seamlessly and securely with the HomeZERO and integrates the Internet of Things (IoT) connectivity. Utilising Autonomous Intelligence (AI) automated monitoring software, the system remotely monitors and diagnoses potential issues before they occur.

Acuity enables Housing Providers or their appointed contractors to remotely monitor the performance of the heating, hot water and ventilation system. Mounted in the HomeZero module for use by the installation contractor, Acuity has been designed to reduce call out costs arising from tenant queries regarding the operation and performance of the system.

- Touch Screen - 10" display shows relevant information quickly without the need for training.
- Always Safe Operation – Passcode only needed for system changes.
- Software-Over-The-Air (SOTA) – Remote diagnostics and firmware updates happen automatically without user interruption
- Data Analysis – via dedicated 4G/5G connection to cloud-based analysis software.



Modena

Room Controller

HomeZERO is equipped with our latest “Modena” touch screen state-of-the-art user interface that provides occupants with full information and overall control of their heating, hot water and ventilation system.

- A 4" touch screen displays information quickly and intuitively to the householder
- Heating, hot water and Ventilation controls – user easily adjusts key system parameters to maintain comfort
- Information includes room temperature, air quality level, set points, time programme, operating modes and fault indication.
- Calibrated temperature and air quality CO2 sensors optimise performance.



CASE STUDY

BRE Innovation Park - Collida



Carbon negative, zero bills homes at BRE Innovation Park

Home heating accounts for 14% of the UK carbon emissions and to reach the legislated commitment for “net zero” by 2050, the UK must urgently change the way our homes are built. The Future Homes Standard due in 2025 will dramatically change the underlying Building Regulations Part L that guide how new homes are heated and ventilated. Integrating low carbon heat pumps heating plus MVHR and PV will become the norm in new homes, and many housing developers are now urgently preparing for the upcoming changes.

Coupled with a rise in building standards, the government has also set a target of completing 300,000 new homes a year and improvements in on-site efficiencies are required. Many developers are therefore now looking towards off-site manufacturing to address these combined challenges. Tasked with supporting developers in this transformation, Homes England are undertaking a project to analyse the benefits of modern methods of construction (MMC) such as modular homes manufactured offsite.

RESIDENTIAL



NEW BUILD



Location

Hertfordshire

End User

BRE Innovation Park - Collida

Main Contractor

Willmott Dixon

Systems Installed

- HomeZERO ventilation module
- HomeZERO ventilation module with integrated heat pump unit



Their advisor, Paul McGivern says, “MMC is really seen as a way to help the industry improve its productivity, address skills shortages and look at the challenges it faces around sustainability, design quality and building performance”.

Collida Living, a Willmott Dixon company, was recently established with the aim to develop a new generation of sustainable homes that will enable local authorities, registered providers and developers to respond to the climate emergency, to meet Passivhaus Plus standards, and to exceed the London Energy Transformation Initiative (LETI) benchmarks for carbon. Early in the design stages for a new project, Collida identified that off-site manufacturing would require new solutions to efficiently integrate low carbon heating, ventilation and necessary energy systems.

“Upon the realisation that our design needed an different solution I didn’t hesitate to contact Monodraught; through our work with them in schools we recognise their expertise and innovative approach to both ventilation systems and controls. The HomeZero unit has gone miles beyond our expectations and represents a big differentiator for our homes” -

Iain Clark, Head of Design at Collida.

The Monodraught HomeZERO energy module was designed in close collaboration and two models have now been successfully installed in the BRE Innovation Park in the Collida Living’s Passivhaus Plus show homes.

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The Monodraught Net Zero Journey

The impact of global warming is irrefutable. “The future of humanity and indeed all life on earth depends on us”, David Attenborough.

Monodraught has set an exceptionally ambitious target to reduce the impact of our products and their operation on the environment; leading the way in sustainable construction products.

By 2024, we will ensure 90% of our sales revenue is generated from lifetime carbon neutral products.

We have been working hard to become carbon neutral and our analysis is comprehensive. It includes carbon emissions in our supply chain, our business operations and the carbon footprint of our products – from the production of raw materials, the “in-use” operation and the end of product life. To ensure transparency, we are using the internationally recognised Green House Gas Protocol (GHGP) carbon accounting method to record our Scope 1, 2 and 3 emissions. Our objective is to minimise our carbon emissions prior to offsetting any remaining emissions as a last resort.





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