

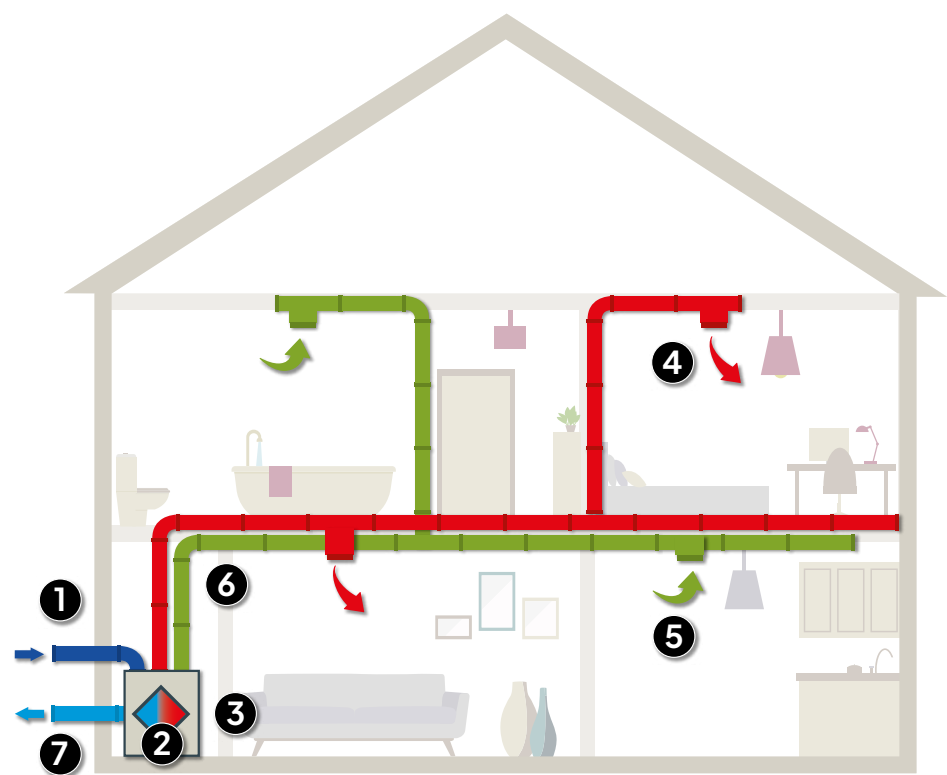
# MVHR Mechanical Ventilation with Heat Recovery

21°

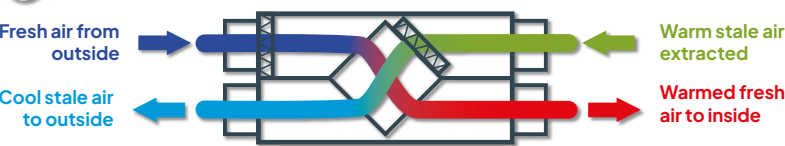
Life changing homes



# How does Mechanical Ventilation with Heat Recovery (MVHR) work?



## 2 Heat Exchanger



- 1 Fresh air intake from outside
- 2 The heat exchanger transfers heat from inside the home to fresh filtered air coming in from the outside
- 3 Fresh air runs through a high grade filter to the heat exchanger
- 4 The clean, warmed air is supplied back in to habitable rooms
- 5 Continuous extract from wet rooms (bathrooms, utility, kitchen etc.)
- 6 Stale air brought back to heat exchanger
- 7 Cool stale air exhausted to outside

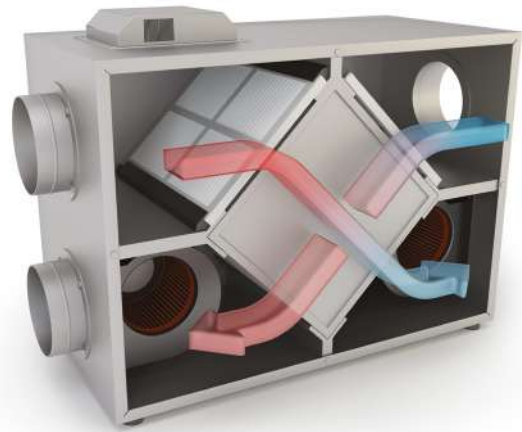


## Breathing life into homes

Mechanical Ventilation with Heat Recovery (MVHR) provides fresh, filtered air that promotes a healthy, comfortable environment for your home and family. It also recovers the heat from the stale, polluted air that is being extracted and uses this heat to pre-warm the fresh air being brought into the home.

Well-designed and correctly installed heat recovery ventilation systems should be practically imperceptible and virtually inaudible to the inhabitants while ensuring good air quality throughout the building. Mechanical ventilation with heat recovery is a relatively new technology in the UK, and problems can arise if it is poorly designed or installed. For complete peace of mind, come to the experts on MVHR for Passivhaus and low energy projects for a quiet, efficient and robust heat recovery ventilation.



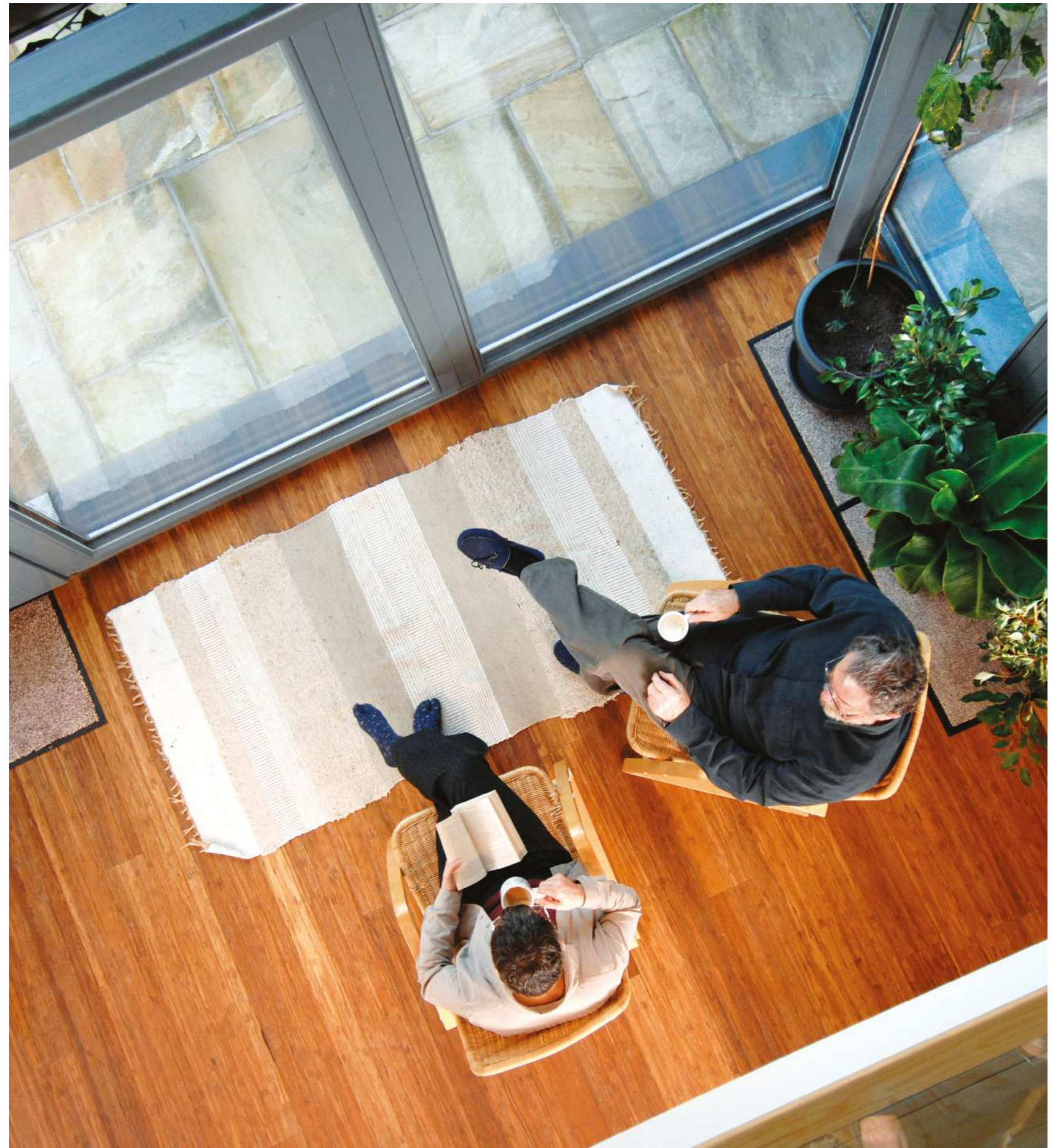


# The best MVHR system is the one you don't know is there...

A correctly installed MVHR system can bring a host of benefits to your home and family.

It will:

- Ensure an even temperature throughout the home and eliminate the need for natural ventilation, therefore, eliminating cold drafts
- Extract excess moisture, stale air and odours
- Extract housebound pollutants such as VOCs (volatile organic compounds) from items such as paints and carpets
- Deliver fresh filtered air, free of pollutants and pollen without the need to open windows
- Solve the problem of heat loss from ventilating your home e.g. opening windows and letting cold air in
- Eradicate the need for trickle vents and bathroom and kitchen extractors which dump heat to the outside
- Be a fully controllable system with a user-friendly interface
- Exceed the current Building Regulation requirements for ventilation, creating a comfortable and healthy internal air quality
- Be designed and installed to PassivHaus standards
- Maintain constant, healthy levels of humidity





# What makes our MVHR systems different?

## Quality MVHR units

We offer a wide range of units for all projects and specifications. We help you choose a quality MVHR unit to suit the ventilation demands of the building and to achieve optimal heat recovery efficiency.

## Commissioning

The system must be correctly commissioned in order to maximise comfort and energy efficiency. 21°'s commissioning service also offers a valuable check on the installation process and performance of the MVHR system.

## Robust ducting

MVHR ductwork is embedded into the fabric of the building and would be very disruptive to replace, so it is worth investing in a high quality system from the outset. We recommend galvanised steel spiral wound rigid ducting or semi rigid radial ducting for our systems, designed to last the lifetime of the building.

## Preventing condensation

Condensation within an MVHR system could cause damage to ductwork, the unit or the building fabric. We design out potential problems by paying attention to the ductwork detailing and insulation requirements where temperature and humidity differences will cause condensation inside or outside the duct.



## Constant air flows

We carefully calculate the air flow rates of our systems to each room and select MVHR units which use constant volume fans. Ductwork airtightness is essential to ensure that the designed airflow is delivered to the rooms. Air leakage is designed out through the specification of a high quality ducting system with good airtight seals. By minimising air leakage we reduce air speeds in the system, helping ensure lower energy consumption and noise levels.

## Tried & trusted

21° has a national reputation for designing high quality MVHR systems for Passivhaus and low energy builds, from one-off houses to large social housing schemes and community centres.

## Virtually inaudible

MVHR systems must run quietly, especially within already quieter well-insulated buildings. Unlike most competitors, we model the acoustics of our systems so that we choose the right size of sound silencer for each duct run. We specify primary attenuators (silencers) to reduce noise generated by the MVHR unit fans and secondary 'cross talk' attenuators to reduce voice transmission between rooms. The cross-talk attenuators also offer further sound suppression for duct generated noise. Duct sizes in our designs are typically larger than those specified by other companies, helping to keep air speeds low, thus minimising duct generated noise. As a result, we design our MVHR systems to have noise levels of no more than 30 dB(A) at the extract valves and no more than 25 dB(A) at the supply valves.

## Support & guidance

We offer telephone support for installers and supply clearly labelled ducting drawings to facilitate step by step installation.



# Our services

## Design

### Our MVHR design service includes:

- A MVHR designer assigned to work with you and your project team
- Specialist knowledge of Passivhaus and low energy construction
- Advice on the most suitable MVHR unit and ducting system for your specific needs and budget
- Noise minimisation through careful positioning | of attenuation
- Considered positioning of ducting within the building structure modelling for pressure loss and sound levels
- Airflow calculations provided for building control
- 2D and 3D plans, fully labelled products and parts list for ease of installation
- Technical support, including telephone support to installers and end users throughout the project

## Supply

We can supply a wide range of quality MVHR units and components to suit the needs of your project to achieve optimal heat recovery efficiency for your home. Your ducting specification is bespoke to you and your project and we provide you with everything from a fully designed system to spare parts and filters.

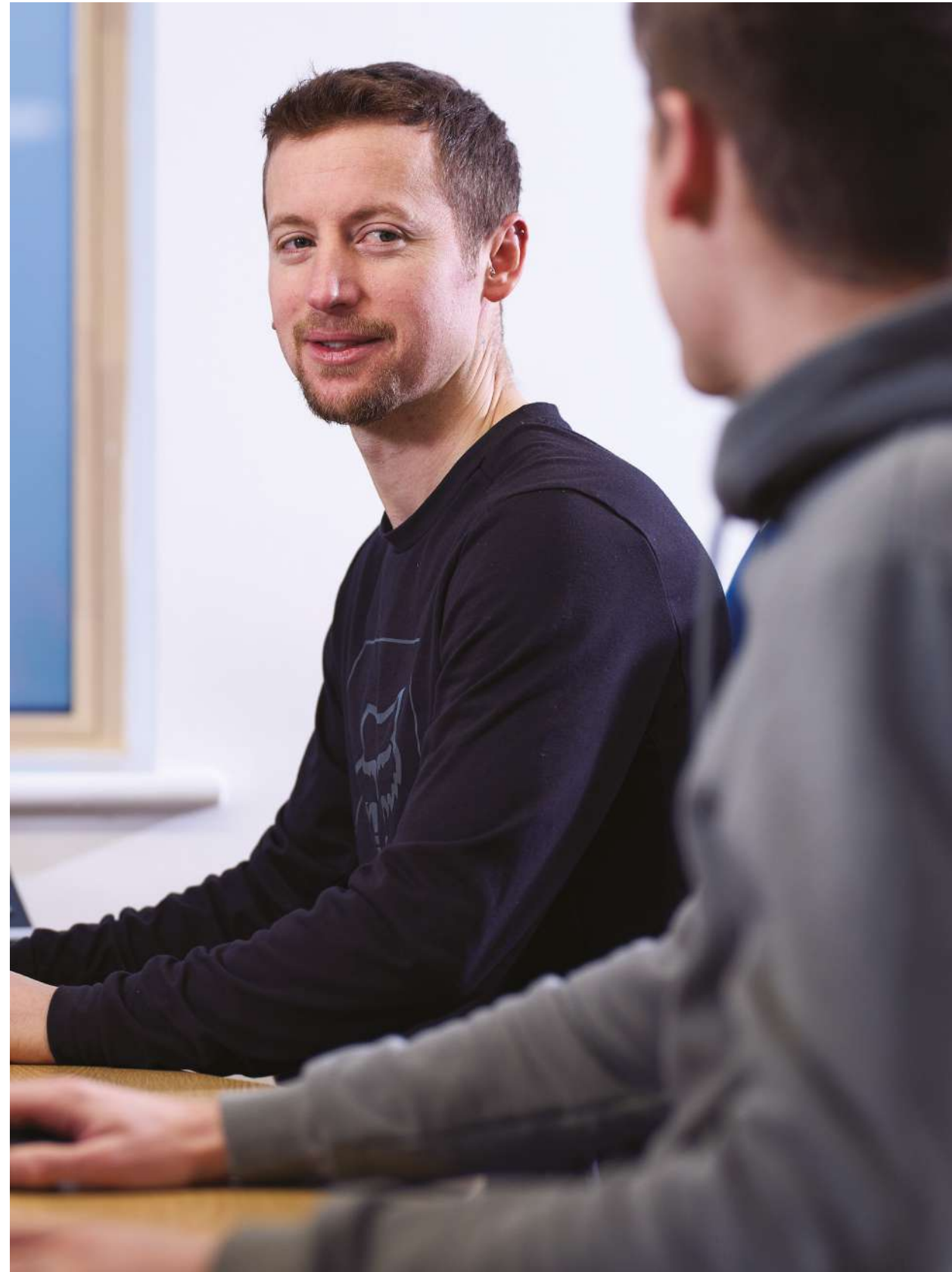
## Commissioning

### Commissioning matters for your MVHR system.

Commissioning plays a pivotal role in ensuring the optimal performance and efficiency of your MVHR system and is required by law as “notifiable work” as part of the UK’s building regulations.

Checks are undertaken by our qualified technicians and involves meticulously balancing ventilation terminals to precisely match the design’s intended airflow rates into and out of rooms. Additionally, it serves as a crucial quality control checkpoint, assessing the installation process and the system’s functionality.

Following the commissioning process, our technician will talk you through using the system and ongoing maintenance and care designed to prolong the lifespan of your MVHR system while ensuring continued top-notch performance.



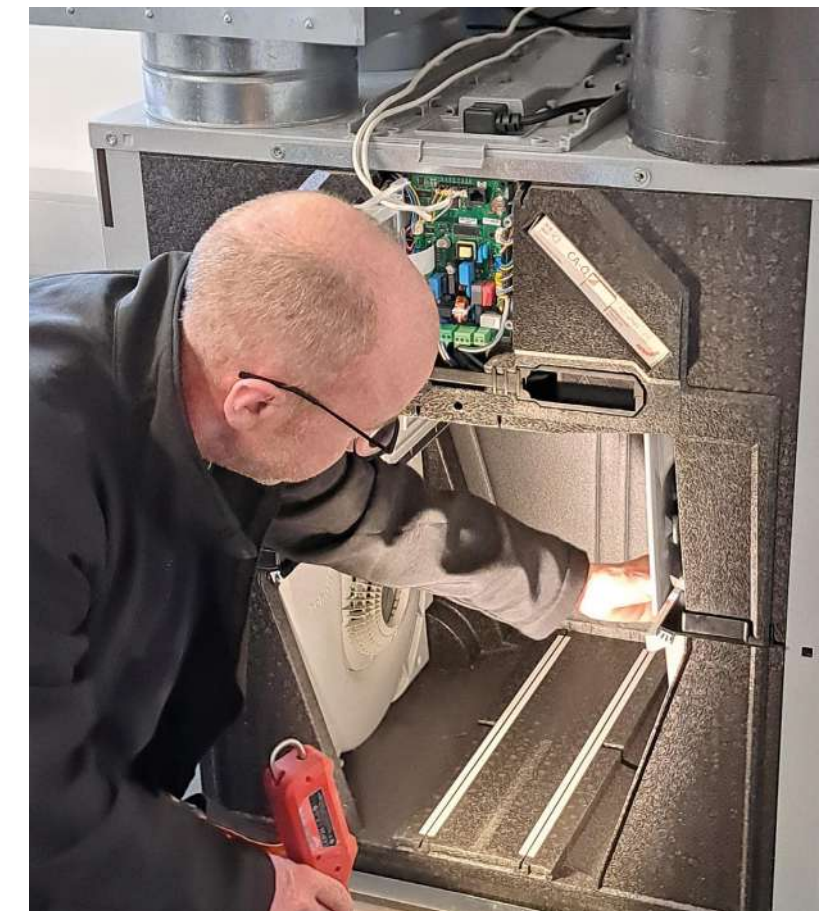
## Servicing

### Let us service your MVHR system.

We recommend regular servicing to not only increase the life span of the system and ensure effective running but to also ensure the best health benefits for the building and its occupants.

A typical service involves the following:

- Check system air flow rates are still being achieved in accordance with the design
- Cleaning of key MVHR unit components, fans, heat exchanger and sensors
- Cleaning of key ducting components such as supply and extract air valves
- Filter replacement if necessary
- MVHR diagnostic check
- A quick refresh for you on the MVHR functions and a ‘how to use’ the controller
- Replace any outdated/damaged insulation







MVHR

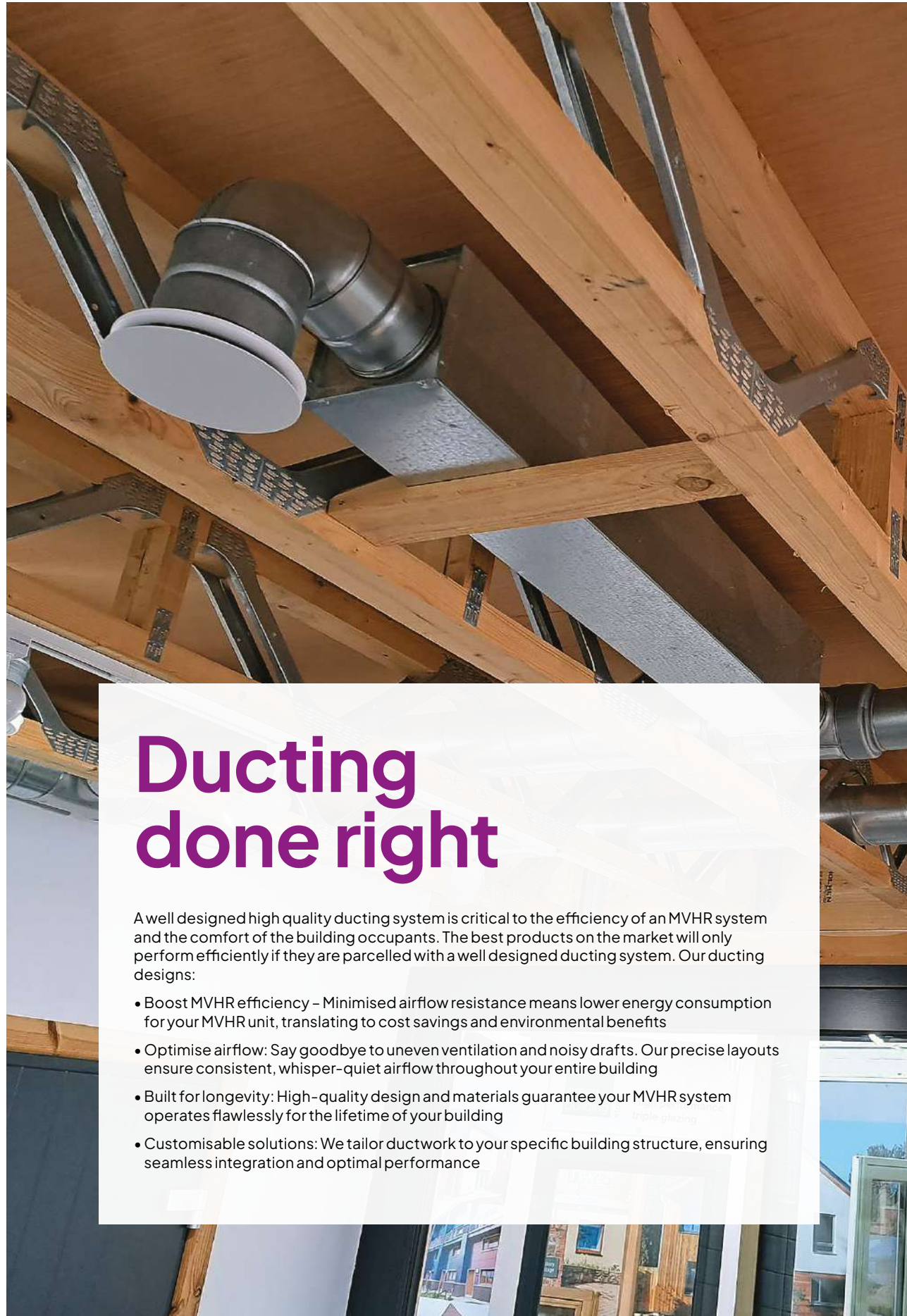


## Tailored MVHR solutions for every project

As an independent MVHR specialist, we are not tied to specific manufacturers. By assessing your project requirements and specific needs, we'll recommend the optimal MVHR solution to deliver exceptional ventilation, comfort and energy efficiency. The high-end range of units we choose from typically include:

- MVHR units with up to 93% heat recovery
- Automatic summer bypass
- Constant volume fans
- Integrated frost protection
- Range of capacities to suit all building sizes
- Flexible mounting/installation options for ease of installation
- Performance guaranteed as designed, supplied and commissioned by 21°





# Ducting done right

A well designed high quality ducting system is critical to the efficiency of an MVHR system and the comfort of the building occupants. The best products on the market will only perform efficiently if they are parcelled with a well designed ducting system. Our ducting designs:

- Boost MVHR efficiency – Minimised airflow resistance means lower energy consumption for your MVHR unit, translating to cost savings and environmental benefits
- Optimise airflow: Say goodbye to uneven ventilation and noisy drafts. Our precise layouts ensure consistent, whisper-quiet airflow throughout your entire building
- Built for longevity: High-quality design and materials guarantee your MVHR system operates flawlessly for the lifetime of your building
- Customisable solutions: We tailor ductwork to your specific building structure, ensuring seamless integration and optimal performance



## Rigid ducting system

A rigid galvanized steel ducting system is often considered the premium product, providing an efficient, robust and long lasting ducting system.

21° prides itself in the design and supply of these high-end systems.

## Semi-rigid ducting system

Typically used where space is at a premium as the ducts are typically smaller in diameter. This can mean that more ducting is required resulting in a bigger plant space.

When well designed, a semi rigid system should be as efficient as a rigid ducting system.







## Air valves

Air valves are an important part of the MVHR system. Placed in rooms where the ducting meets the ceilings or walls, the air is extracted or supplied through them. We offer a comprehensive range of air valves to complement our MVHR systems. These are selected carefully to reduce noise, prevent drafts and ensure good air flow throughout the room.

**Please contact our MVHR team for more information.**



## Filtration

We stock a wide range of MVHR filters to ensure the smooth running of the MVHR system. Filters are required for the MVHR units, frost protection units and kitchen extract valves. We recommend replacing these 2–4 times yearly (depending on local air quality factors etc.) It is important to change filters regularly to optimise energy efficiency and comfort levels.

Where a project is in an Air Quality Management Zone (AQM) or where building occupiers have specific concerns relating to air quality, higher grade, specially designed filters can be specified to remove specific particulates from the air, such as Nitrous Oxide.





# Tried and tested

We have a national reputation for designing high-quality MVHR systems for passive houses and low energy builds, from one-off houses, to sizeable social housing schemes and community centres. But don't just take our word for it:

***“The MVHR design process was very smooth, with the 21° team working alongside the architects. The MVHR system is working very quietly and well.”***

*Graham and Sally, Halifax Passivhaus*

***“MVHR designed, Paul, has held our hands throughout the design process going above and beyond to make sure we get the design right – despite numerous iterations he has been nothing but professional, patient and VERY supportive. Everything we need when we haven't got a clue how to get the best out of a high quality MVHR system. Highly recommended.”***

*Mike Johnson, Culvertcroft*



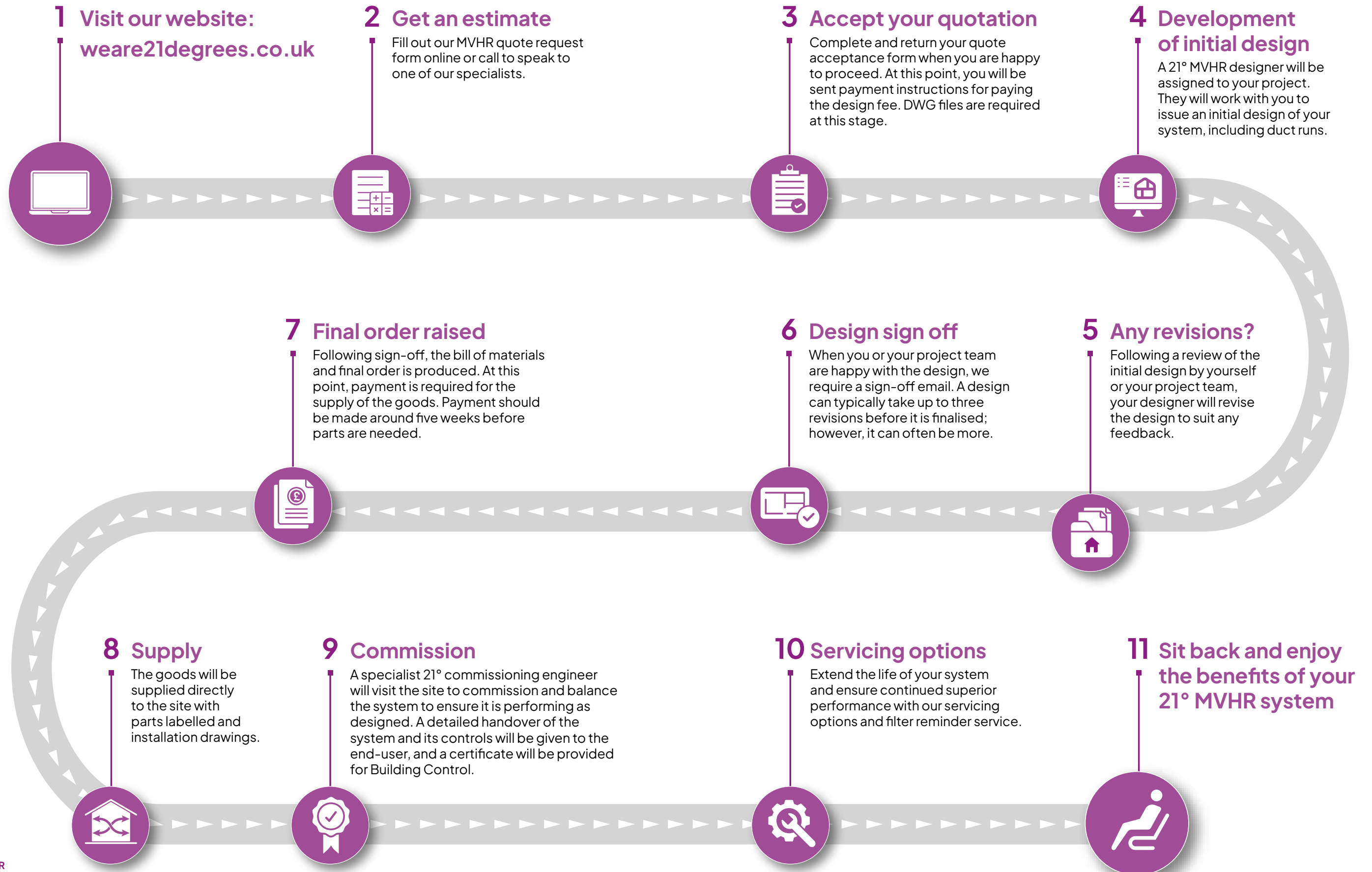
## Why you can trust us

Our MVHR systems are virtually inaudible, energy efficient and physically robust. All of these are provided to you by our friendly technical support and aftercare team.

Choosing 21° means choosing an MVHR system you can trust from a company with a nationwide reputation for quality and expertise. Since 2008, we have worked on over 1500 MVHR new build & retrofit projects.



# Our MVHR step by step guide







# Life changing homes

**Delivering a low energy or Passivhaus building is complex and you need a whole solution rather than a single product.**

At 21° we are committed to using a whole house approach to provide better performing buildings from a comfort, cost and carbon perspective. We supply a range of specialist products and services including triple glazed timber windows and doors, MVHR heat recovery ventilation, insulation and airtightness products.

We've worked hard to build a reputation for customer service, integrity and responsibility. We are committed to ensuring that our products are of the highest quality, backed by industry accreditations and specified by companies at the forefront of energy efficient construction. By choosing us you can rely on expert consultation at every step of your project.

## Seeing our MVHR units in action

Visit us at our showrooms in Huddersfield and Swindon where we can show you working MVHR units. Alternatively, you can find us at exhibitions around the UK.

Check out our website for details.

**Tel: 01484 463334**

**Email: [mvhrenquiries@weare21degrees.co.uk](mailto:mvhrenquiries@weare21degrees.co.uk)**

## Visit our website



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