Delivering homes with heat pumps

Hints & tips for homebuilders – advice for successful heat pump deployment

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Future Homes Hub

Introduction

Feedback from homebuilders who have moved early to heat pump deployment highlights several key factors that significantly reduce delivery risk and improve outcomes — both commercially and for customers.

Conventional gas boiler systems are inherently more tolerant. Should there be instances of poor installation, weak commissioning or underperforming building fabric, a gas boiler's higher flow temperature may make these shortcomings less obvious to householders. They would, however, still pay more to heat their homes, whether they realise it or not.

By contrast, heat pump schemes operate with lower flow temperatures and tighter design margins. As a result, where there are higher-than-expected heat loads or an underperforming heating system this becomes more immediately apparent to the householder – typically through cold homes or noticeably increased running costs.

This is not because of a decline in construction quality; rather, it reflects that any issues, should they occur, are no longer concealed.

In short, low-temperature heating from lower-capacity heat sources demands well-coordinated heating and fabric design, backed up by accurate installation, construction and commissioning.

Experience from multiple homebuilders shows that delivering warm, energy efficient homes that delight customers — while minimising build costs, rework, and warranty claims — depends on getting the following elements right.

1 Heat pump systems are different to gas boilers

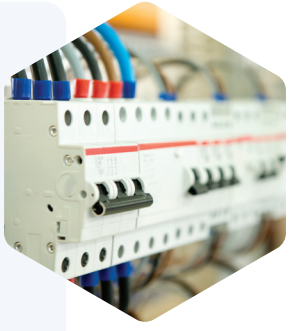
'Shoehorning' heat pumps into schemes designed for gas boilers must be avoided. Successful delivery of homes with heat pumps requires an adapted approach to design, procurement, build and handover. The Hub has created a suite of guidance to assist.

Access guidance ↗ Or search 'heat pumps' on the Knowledge Centre

2 Think about power earlier

The shift to electric heating and other low carbon technologies means early engagement with your IDNO/DNO is critical. Discussions should be started even before land purchase via a pre-app surgery, with the formal point of connection application made prior to appointment of trades.

Read the grid connections hints & tips ↗ Or search 'grid connections' on the Knowledge Centre



3 Get the design right, early

A collaborative design team including the architect, energy assessor, heating designer and the developer should be set up early in the project. The design team is responsible for making sure the heating, plumbing, controls and building fabric designs work together as a complete system and satisfy the performance and cost requirements.

The heating designer should be a single entity appointed with full responsibility for the final heating design through to customer handover.

Read the architect's hints & tips to integrating heat pumps

Read the site manager's hints & tips to heat pumps

Or search 'architects' and 'site managers' on the Knowledge Centre

4 Tightly control heating system procurement

Even apparently trivial material, component or equipment substitutions break the coordinated design, risking underperformance, customer complaints, claims and rework. Where heating component substitution is unavoidable, approval by the responsible heating designer is essential.

Read the heat pump procurement hints & tips

Or search 'procurement' on the Knowledge Centre

5 Procure a competent supply chain and develop partnerships

Heat pump system installation requires additional skills to those for fitting and plumbing gas boiler systems. It is essential that heating engineer competence, and experience with the chosen heat pump system is confirmed before appointment. While it is impractical for all engineers to be fully heat pump trained, individuals must be qualified for their allocated tasks. The installer must ensure close supervision by a competent individual where less experienced engineers are used.

Forming relationships with a roster of trusted heat pump system installers, and actively supporting their cross-skilling from gas heating systems in advance of the mass scale switch over to heat pumps, is essential.

Read the heat pump procurement hints & tips

Or search 'procurement' on the Knowledge Centre

6 Build to the design

Installation of the heat pump system must be strictly to the approved design, with no deviations unless formally authorised by the responsible heating designer. Design conflicts should be escalated rather than resolved through site-level workarounds.

7 Put in place adequate site supervision

Even with heating engineer supervision in place, site manager oversight is vital. Site mangers should be confident with heat pump system installation principles and know what good, and bad, looks like. Ideally, they should have attended the specific heat pump manufacturer training too.

Site managers should shadow the heat pump engineer closely, with regular inspections confirming the design is being strictly followed and ensuring correct commissioning procedures, especially at the start of a new development phase or with new installation teams.

Read the architect's hints & tips to integrating heat pumps ↗ Read the site manager's hints & tips to heat pumps ↗

Or search 'architects' and 'site managers' on the Knowledge Centre

8 Focus on commissioning

Commissioning is a critical step in the delivery of heat pump systems. If not carried out diligently, this almost inevitably leads to problems in operation, costly return visits and customer dissatisfaction. Commissioning is also the last opportunity to pick up any residual design or installation errors.

The heating engineer responsible for the commissioning must be competent, experienced and trained on the product to be commissioned. The commissioning engineer must be named on the commissioning sheet (in addition to the installation company's Technical Supervisor if installed under MCS) and take responsibility for confirming the system is installed and commissioned as designed.

Read the heat pump commissioning hints & tips ↗ Or search 'commissioning' on the Knowledge Centre

9 High quality handovers avert future pain

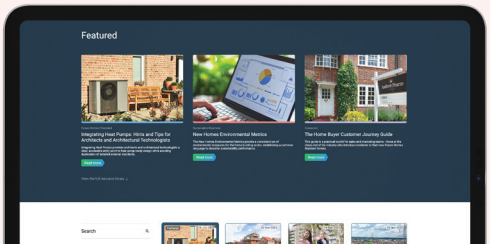
To ensure customers are delighted with their new home — and to minimise complaints and return visits — it is essential they understand what to expect from a low-energy home with a heat pump, how it differs from gas-heating, and how to live comfortably and efficiently in their new home.

This guidance should be provided progressively throughout the customer journey rather than left until handover and include follow up visits. It should cover typical heating patterns, maintenance needs, and details of competent local service providers.

Read the homebuyer customer journey guide ↗ Read the guide to selling a new low energy home ↗

Or search 'homebuyer' and 'selling' on the Knowledge Centre

Explore the Knowledge Centre



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Explore the Knowledge Centre ↗ Or visit: https://knowledge.futurehomes.org.uk/

Acknowledgements

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