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Twilight Talk

Is 'fabric first' the best strategy for heat pumps?

Stephanie Willis

17th April 2023



Welcome

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Using **zoom**



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WELCOME

Is 'fabric first' the best strategy for heat pumps?

Speaker: Stephanie Willis, Data Scientist, Sero
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Twilight Talk – Monday 17th April 2023
Supported by [ECOMERCHANT](#)



FABRIC FIRST APPROACH

- Shorthand in low energy design and retrofit for 'fabric first, technology second'
- Fabric = physical elements of the building envelope
- Maximise the performance of the permanent materials and components first, before considering the use of mechanical and electrical building services systems

Quick recap – Principles of the Fabric First Approach

Why?

In low energy building design and retrofit, we seek to

- reduce carbon emissions and energy consumption created by the heating, hot water and cooling systems required for human comfort
- create high indoor air quality for health and wellbeing
- improve long term affordability and reduce maintenance
- reduce the need and size of mechanical and electrical systems

How?

- holistic strategy where fabric and low carbon/ renewable technologies are interlinked from the start
- drive heat loss and overheating down as far as possible with highly-insulated external envelope and fenestration = very low u-values and well-designed shading
- buildable airtightness to reduce heating demand, with energy efficient ventilation and moisture management – ‘build tight, ventilate right’

Government drive for heat pumps

- de-carbonisation to meet legal obligations of the Climate Change Act 2008 to reduce CO₂ emissions by at least 80% from 1990 levels by 2050
- = remove reliance on fossil fuels
- growth and technology are good for GDP
- off-the-shelf technology available now
- energy security

Why not ?

- Government is 'pushing' heat pumps **without fabric first measures** so the size and cost of the kit is not optimal
- up front capital cost is high, even with £5K grants
- running costs can be significantly higher than natural gas if installation is not right
- technology needs maintenance and eventually needs replacement

Why not ?

- net zero benefits rely on a de-carbonised national electricity supply
- pace towards that is not fast enough
- heat pumps do not protect people from the winter black-outs/
power rationing that government has already admitted planning for
- technology needs maintenance and eventually needs replacement
- lack of long term, whole system thinking

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Tonight's question –
Is 'fabric first' the best strategy
for heat pumps?

NEW — starting 18th May 23

5-Part Building Services Series

BSS1 - Mechanical Ventilation and Heat Recovery MVHR: 18th May 2023, 16.00 - 18.00

BSS2 - Designing Sustainable Water Systems: 24th May 2023, 16.00 - 18.00

BSS3 - Demand Controlled Ventilation DCV: 8th June 2023, 16.00 - 18.00

BSS4 - Update on net zero technologies for heating and hot water: 22nd June 2023, 16.00 - 18.00

BSS5 - Tour and Talk - Live from the Showroom with Installers' Tales: 13th July 2023, 16.00 - 18.00

Thank you for coming
Have a good evening