

# Heat Pumping Technologies

**MAGAZINE**

## Heat Pumps Revolutionizing Retrofits: Scaling Up Deployment with Innovative Solutions and Overcoming Barriers

Vol.42 Issue.3/2024  
A HEAT PUMP CENTER PRODUCT



### Foreword

## Scaling up Heat Pump Retrofit: What Do We Need to Do?

*By Dr. Peter Mallaburn, Energy Institute, University College London and Operating Agent, IEA HPT TCP Annex 60.*

The IEA<sup>1</sup> estimates that 85% of our buildings at home and work will need to be net zero by 2050. With heating accounting for over 50% of carbon emissions, heat pumps are expected to make a very significant contribution to this. Many governments are developing policies to accelerate heat pump deployment, and this policy pressure can only get more intense as more and more countries adopt net zero targets.

New buildings can be decarbonised relatively easily by banning fossil fuelled heating in the building codes. But 80-95% of the buildings we use today will still be around in 2050, and only 0.2% of these go through a “deep” renovation each year<sup>2</sup> which is when the heating system is most likely to get changed. This is nowhere near fast enough. So why is there such a mismatch between aspiration and actuality?

A large part of the answer is that retrofitting complex technologies like HVAC systems is really, really hard. Unfortunately, policymakers tend to frame the problem in cost terms: heat pumps are more expensive, so overcome this barrier with a grant and problem solved. Policy is littered with examples of this misguided neoclassical thinking.

There are parallels to the domestic condensing boiler story<sup>3</sup> in the late 1990s. Policymakers at the time focused on demand-side cost barriers, mainly using grants. But the key barrier was on the supply-side, with installers struggling to cope with a (slightly) more complex installation

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<sup>1</sup> IEA (2023): Net Zero by 2050: a roadmap for the global energy sector.

<sup>2</sup> EC (2020): A renovation wave for Europe – greening our buildings, creating jobs, improving lives. COM/2020/662 final. European Commission, Brussels.

<sup>3</sup> CREDS (2020): The story of condensing boiler market transformation – a briefing note for BEIS.

procedure. Once this was recognised, installers were retrained, and the problem was solved. It took 5 years, from 2001 to 2006, to ban conventional boilers in the UK.

But heat pump retrofit is an order of magnitude more complex, with barriers across the technology chain<sup>4</sup>. The situation is particularly difficult in commercial and public buildings, where each site is essentially a bespoke retrofit project.

So what's the answer?

- First, I think it is important, particularly for policymakers, to accept that different parts of the market will need different solutions rather than a one-size-fits-all approach.
- Second, look for retrofit projects that are easier than others and start there. Prestige offices, the public sector, and richer householders all seem to have stronger value drivers.
- Finally, design programmes to exploit and amplify this value, creating success stories, and at the same time build capacity and confidence on both the demand and supply-sides.

If we get this demand-led approach right, the ideal outcome is that the supply-side of the market will start to chase the value of heat pumps without government subsidy and do the heavy lifting on the more intractable sectors. Policy measures will still be needed, but these will change as the market transforms.

My own HPT TCP Annex 60 is applying this approach to large non-domestic heat pumps. Here a key part of the problem is that organisations simply don't have the guidance they need on the best heat pump system for their building. Annex 60 is basically building a web app for key decision-makers that walks them through the various system options, how they might perform and where to go for some real-world case studies. Roger Hitchin goes into a lot more detail on Annex 60 in the article below.

IEA TCPs are designed to tackle this sort of technology deployment challenge, and I am pleased to see the articles in this Magazine each taking a valuable perspective. I look forward to seeing how the conversation develops.



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<sup>4</sup> IEA (2022): The future of heat pumps.