

Delta Research Brief

The Retrofit Heat Pump Market Remains Challenging, but if it can be Tapped into, Represents a Massive Prize

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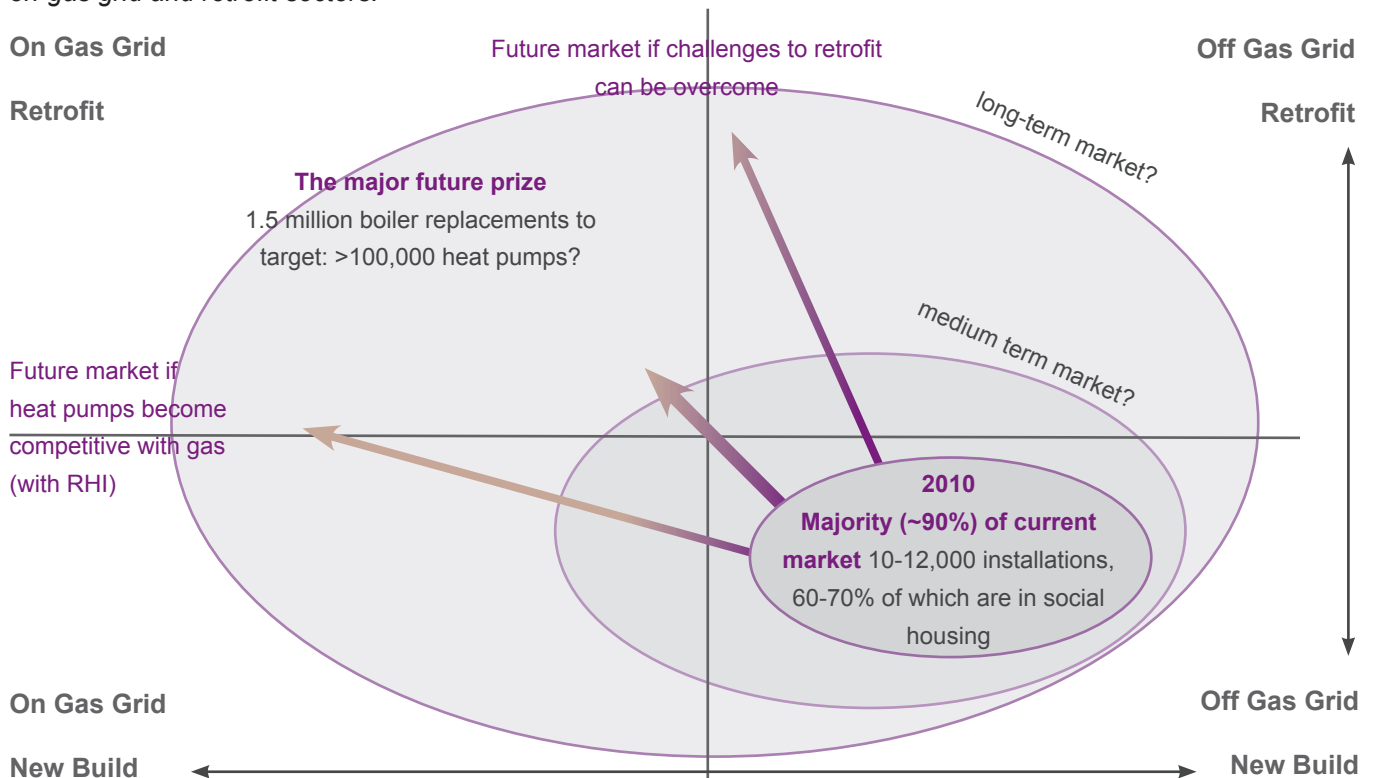
The UK retrofit heat pump market remains challenging, but if it can be tapped into, represents a massive prize

The next decade could see the UK heat pump market transform from embryonic to mass market. 10-15,000 heat pumps were installed in 2009 (doubling the installed base) - most of which were in off-gas grid new builds and refurbishments. Given sufficient policy support - and if barriers to uptake can be overcome - the industry believes that annual installations could reach 2-300,000 by 2020, implying that heat pumps will be (i) taking market share from gas boilers and (ii) penetrating the retrofit market.

Delta sees the level of growth anticipated by the industry as very optimistic, but believes that more conservative scenarios, projecting a 2020 market size of around 100,000 / year could be achievable. Figure 1 below illustrates the growth trajectories possible for the market.

FIGURE 1: TRANSFORMATION OF UK THE UK HEAT PUMP MARKET

The current residential heat pump market is focused on the off-gas grid, new build sector. Around two thirds of the installed heat pumps are in social housing (new build and refurbishments). There is very little penetration of the retrofit or on-gas grid sectors (<10% of current heat pump market). Future market growth will drive further into the on-gas grid and retrofit sectors.



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There is still low-hanging fruit in the off gas grid and new build sector, but to reach beyond this niche and achieve mass market penetration, heat pumps must:

- Compete with gas: Just 10% of the UK (~2.5 million homes) is off the gas grid. This is a core target market for heat pumps – but a mass market product must reach beyond this.
- Tap into the retrofit market: There are around 100-120,000 new homes built per year, as compared with 27 million existing homes – heat pumps sold only in the new-build sector would have a very limited market size.

In Delta's view, policy will largely determine whether / when heat pumps will be competitive with gas – when the RHI is launched in April 2011 it will likely drive exponential growth in the market. However, the challenges of penetrating the retrofit market will be more difficult to overcome, as has already been seen in established markets such as Germany and Switzerland. Figure 2 illustrates factors influencing how these challenges will be overcome.

FIGURE 2: TWO CORNERSTONES OF MASS MARKET GROWTH - WHAT WILL DRIVE HEAT PUMPS' ABILITY TO COMPETE IN THE ON-GAS GRID AND RETROFIT SECTORS?

Policy will drive heat pumps' competitiveness with gas: The Renewable Heat Incentive (RHI) – when introduced in April 2011 - may make heat pumps price-competitive with gas. However, uncertainties over the details of the RHI will actually be introduced are dampening the industry at present.

Even with the RHI, there is still the challenge of the high up-front cost of a heat pump. Companies offering financing options to customers, using the RHI incentive, could help to overcome this barrier.

Emergence of new technologies will aid penetration of the retrofit market: The emergence of several strong air-source heat pump (ASHP) products - which are cheaper and less disruptive than ground-source (GSHPs) – will be a boost for the retrofit market, increasingly driving the shift away from GSHPs.

The performance of heat pumps is affected significantly by the way it is installed, the heat distribution system used, and how well the customer is educated. If any of these is not done well, it can potentially damage the reputation of the product:

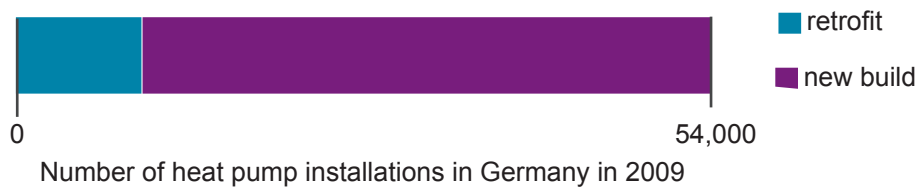
- Over-sizing and under-sizing can lead to very high electricity bills or extensive use of supplementary heating
- Heat distribution is best via underfloor heating or over-sized radiators – which infers additional cost and disruption (though some companies are developing new radiator designs to overcome this).
- End-user education is essential – using a heat pump like a traditional boiler results in poor performance and high bills.

Targeting the housing stock which is suitable for heat pumps will be a challenge. Many existing homes are not well enough insulated (resulting in the need for a much bigger heat pump consuming more electricity), or do not have the space necessary for a heat pump.

Lessons from abroad: The retrofit challenge

Policy will largely determine whether / when heat pumps will be competitive with gas – when the RHI is launched in April 2011 it will likely drive exponential growth in the market. The challenge of tackling retrofit homes is more difficult to overcome. It is telling that even in more mature heat pump markets such as Germany and Switzerland, new builds still dominate the heat pump market. For example, in Germany, despite the growth in market share for heat pumps from 1% of the heating market in 2000, to over 10% in 2009, the majority (>80%) of installed heat pumps in 2009 were in new build. In the smaller retrofit market, heat pumps primarily compete with oil rather than gas.

FIGURE 3: GERMANY – AN ESTABLISHED HEAT PUMP MARKET DOMINATED BY THE NEW BUILD



Outlook: Key success factors for the heat pump market

The RHI alone will not be sufficient to drive the market. If the market is restricted to new build in the UK, every new build home would have to install a heat pump to reach 100,000 heat pumps / year in 2020 – and to reach more optimistic projected levels, there will also have to be 10s to 100s of thousands of boilers being replaced with heat pumps. Tapping into the 1.5 million annual UK boiler replacements is the first step towards reaching mass market for heat pumps, but the industry will have to be prepared to overcome the associated challenges. Four key success factors – and examples of where these have been proposed or employed successfully - are highlighted below:

FIGURE 4: SUCCESS FACTORS FOR HEAT PUMP MARKET GROWTH

Success factor	Case-studies and examples
Well-trained installers are critical - who can correctly size the heat pump, install the correct heating system, and offer advice and end-user education.	A handful of UK market players are investing in training centres for installers – for example Stiebel Eltron, British Gas, and Mitsubishi. Some manufacturers are going out of their way to ensure high quality installations - Mitsubishi reportedly check every installation by every partner installer. Ultimately this model may not be sustainable, but it could be necessary in the early stages of market development, to build confidence in the technology.
Technology innovation from manufacturers can make the retrofit process easier	The emergence of 'high temperature' heat pumps (e.g. Daikin's high temperature ASHP) which can more efficiently reach temperatures comparable to a traditional boiler could have a significant impact on the retrofit market. Innovation around heating system design – e.g. Glen Dimplex's under-sized fan coil radiator, which removes the need for installing much larger over-sized radiators - removes hassle at the customer end.
Innovative and attractive customer propositions including financing options to overcome the up-front cost	Examples include Ownergy – who are in discussion with partners to offer financing options covering up-front installed cost, gaining the RHI/FiT payments in return; and EAGA, Geothermal International and Mitsubishi who have – or plan – financing options for social housing.
Strong marketing and awareness-raising from suppliers and installers will be necessary to drive demand growth.	The manufacturer Mitsubishi have gone one step further than most manufacturers in marketing direct to customers, through development of relationships with Local Authorities. The major UK utility EDF Energy is using its partnership with the supermarket chain Sainsbury's to market its offerings - it is trialing home energy centres in three stores, with offerings including PV and heat pumps being advertised.

The forthcoming Delta Air-Source Heat Pump Innovation Monitor tracks developments and case-studies in ASHP technology, policy drivers and market status and potential across key European markets. It is designed to help utilities, the heat pump industry and other stake-holders access innovation to enable them to best capture value in the growing European heat pump sector.

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