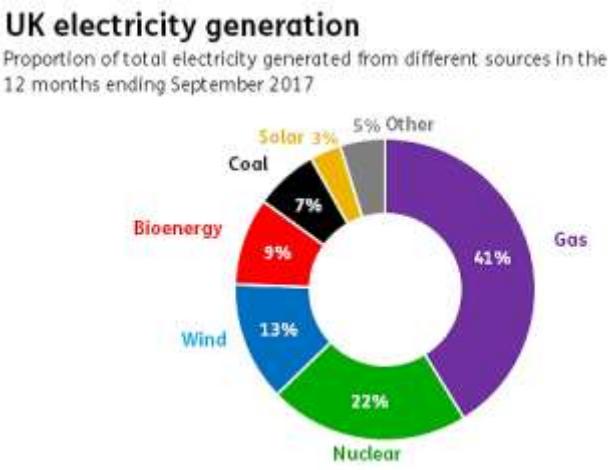
Any suggestion that we should lower energy costs and reduce carbon emissions is a positive call to action. The question is, Are Air Source Heat Pumps (ASHP) really the way to achieve that? It can certainly be argued that as we implement more renewable ways to generate electricity, that we are naturally reducing our carbon output.

The UK now produces 52% of its electricity via renewable means, but that would suggest that it's not necessarily the Air Source Heat Pump that's saving the day, but our commitment to generating greener energy.
Source: Department for Business& Industrial Strategy. Energy Trends: electricity, tables 5.1 and 6.1

With all new technologies there are pros and cons. Air Source Heat Pumps in the right conditions and correct installation and sizing are very efficient. However, as temperatures drop, notably below 0°C, they become considerably less efficient. Clearly this is a significant issue given that this is when most demand is placed upon it. There are some concerns that in colder areas they may consume almost twice as much energy as in warmer months and still struggle to maintain comfortable temperatures.

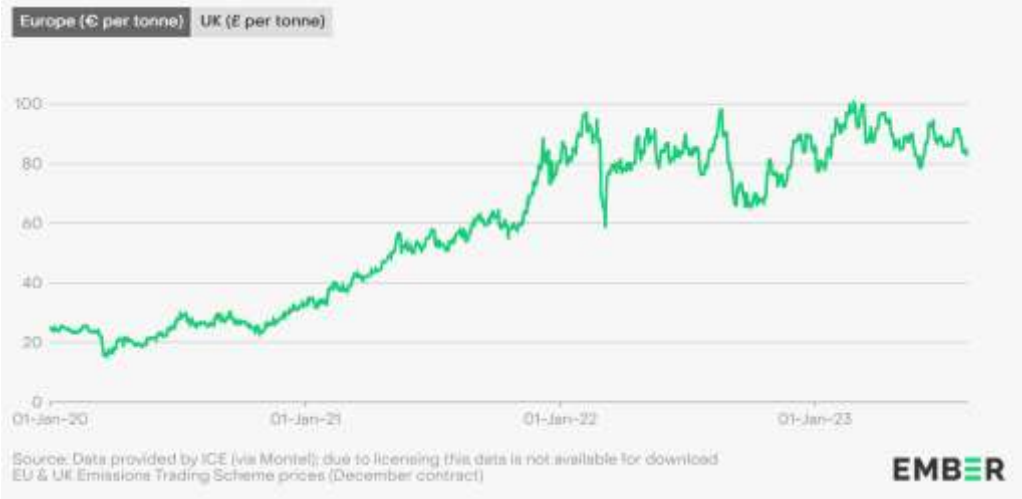


The cost saving argument is also somewhat controversial. Given the differential between gas costs and electricity costs, an Air Source Heat Pump requires a COP (coefficient of performance) of 3.7 to equalise energy usage vs cost per kW/h. ASHP systems that operate at this level are generally the most expensive to buy and install. There are of course additional variables that need to be considered, such as location, and the cost of energy which constantly changes. Gas prices have risen more quickly than electricity prices, and according to Ofgem, the equalisation point at which running an ASHP is the same as a gas boiler is expected to now require an ASHP with a COP of 3.0 by October 2023.

We also need to consider the cost of installation together with the burden on the UK taxpayer. According to EDF Energy, An ASHP can cost between £3,000 and £10,000, this is inclusive of both installation costs and a government grant of £ £7,500 which is made available through Home Energy Scotland. You can also apply for an interest-free loan of up to £7,500 to cover the remaining heat pump installation costs.

Even with a grant of £5,000 in England and Wales, or £7,500 in Scotland, the cost of a typical ASHP costs around £12,000, and can be much higher if you need to change pipework and radiators to a larger format. The latter is often necessary to compensate for the lower running temperature of ASHP. Until the gap between gas and electricity prices narrows, it doesn't appear that the difference that the consumer has to find, typically £7,000 in England and Wales, or £4,500 in Scotland, is ever going to find its way back to your pocket.

So, who is going to pay for all these grants? This is particularly contentious when we consider the cost of carbon offsetting. The cost per Metric Tonne of CO_2 offset in Europe is €89.98 as of August 2023. In GBP that's £78.26. As can be seen from the graph below, carbon credit prices have increased considerably over the past three years.



At current pricing, the £5,000 grant = 63.87MT of CO2 credits. According to Ofgem, the average 3-bedroom home produces 2.4MT CO_2 annually from gas central heating, that's over 26 years' worth of carbon credits if they keep their gas boiler. In Scotland the grant is £7,500, which would be equivalent to 39 years of carbon credits.

The maths doesn't lie.

According to Parliament UK. Around 23 million homes in the UK still have gas boilers, and the strategy itself acknowledges that by 2028 we will need to replace at least 600,000 every year to reach the target of net zero by 2050. The strategy sets 2035 as the end date for any gas boiler to be installed, whether new or replacement.

Replacing all of these boilers with ASHP would cost the government at £5,000 each £115bn. Their target of 30% means grants of just under £40bn being handed over.

So, are we better off offsetting rather than changing? Environmentally, Air Source Heat Pump benefits from being able to use renewable electricity sources, and the UK now produces 52% of its electricity this way, which is a fantastic achievement and continues to increase.

A quick calculation indicates that a gas boiler in a 3-bedroom semi-detached house produces around 2.4MT of carbon per year, where an ASHP will only produce around 0.7MT assuming that half of the electricity drawn is carbon neutral. This is the most significant positive for Air Source Heat Pumps. Ironically, if we consider the value in terms of return-on-investment vs carbon credits, it increases the payback time on the £5,000 grant to 37.5 years*

A Cost Effective and Green Alternative

There is however, one method of reducing energy bills and carbon emissions that beats all comers in terms of value; Airgon costs £249 and reduces heating energy costs and carbon emissions by around 20%. On a gas based heating system, saving just 0.5MT of CO2 annually (and in some cases Airgon can save double this figure), Airgon pays for itself in CARBON SAVINGS ALONE* *6 times faster* than the government grant would be paid for from carbon savings generated by swapping from a Gas boiler to an Air Source Heat Pump*.

Whether you have a gas boiler or an Air Source Heat Pump, Airgon will save around 20% on both energy bills and carbon emissions, and that's backed up by a minimum performance guarantee, or your money back

*if we take the value of carbon credits at £78.26 per Metric Tonne. www.airgon.co.uk for details.

Flipbook brochure:

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