Hydrogen-ready boilers. More misinformation?

By Dave Green

I keep hearing from the fossil fuel industry that heat pumps for domestic heating and hot water are not needed as hydrogen boilers are coming.

The problem is they are very much less efficient than a heat pump. Basic physics shows you that a unit of green electricity produced by renewables and transmitted by the grid to a heat pump will deliver around 2.7 units of energy at the home with 300% efficiency of the heat pump and allowing some losses transmitting the electricity across the grid.

However, 1 unit of green electricity used to produce 'green hydrogen' by electrolysis of water will deliver around 0.5 units of energy to your house with losses due to the electrolysis process, leakage in the gas grid (hydrogen is a smaller molecule than methane so more leakage) and 90% efficiency burning it in a hydrogen boiler in the home. This is around 5 times less efficient than a heat pump and it is difficult to see how it could compete on price even with heat pump installations being more expensive than a gas boiler (at the moment; the gap is narrowing)!

If we are serious about tackling climate change, then hydrogen is not the answer for most homes.

Hydrogen is, however, key to decarbonising things like concrete and steel production and powering back up power stations, large ships and the like.