



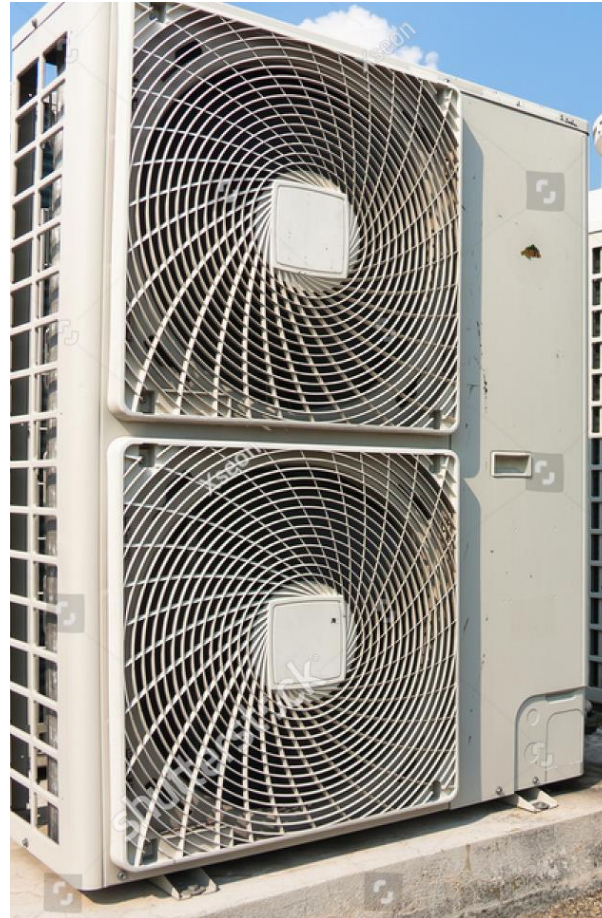
# HOW TO MAKE A HEAT PUMP AS EFFICIENT AS POSSIBLE

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# What is an Air Source Heat Pump?



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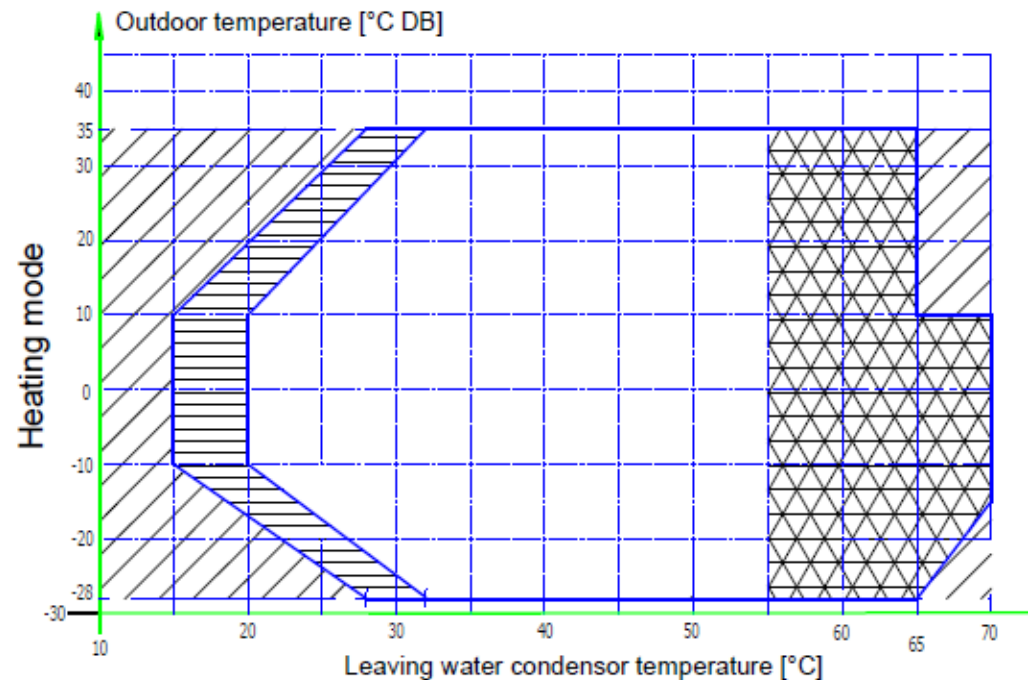
# How efficient are ASHPs?

- COP – Coefficient of Performance is the standard value of how ASHP efficiency is measured
- As the external temperature changes through out the year the COP will vary
- SCOP – Seasonal Coefficient of Performance is the average efficiency of an ASHP over the year
- Typical SCOP is generally between 3 and 4



# Do you need an immersion?

- Typically an electric Immersion is used in your hot water cylinder to elevate the temperature
- The chart shows even at  $-28^{\circ}\text{C}$  ASHP can output  $55^{\circ}\text{C}$  water
- The immersion is only needed to boost the water to  $60^{\circ}\text{C}$  for legionella purging. This only needs to be done a few times a week



# How much will it cost?

- For an average house an ASHP installation will cost between £8,000 and £16,000 but a gas boiler would be around 50% of this
- The average cost of gas is £0.04/kWhr and electricity is £0.144/kWhr.
- A modern, condensing highly efficient gas boiler has an efficiency, at best, of 97% - for 10kW of heating the cost would be £0.41
- Lower end ASHP is 3 times more efficient than a new gas fired boiler but electricity is 3.6 times more expensive therefore, at current, an ASHP is more expensive - for 10kW of heating the cost would be £0.48

# How can we reduce cost?



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- Insulate Homes
- Double or even triple glazing
- Under Floor Heating or large radiators to keep the output temperature down
- Smart controls such as temperature regulating valves
- Install solar cells to generate a portion of the electrical power required for the ASHP
- Apply to a government backed schemes such as the RHI for payments made for using a renewable heating source (until March 2022)



# The future



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- CO2 emission factor for grid supplied electricity is outdated as our grid is a lot cleaner, therefore the carbon tax on electricity can be removed
- Add gas carbon tax could come in to play – currently banned on larger developments
- More efficient ASHP
- From 2025 no new build will be able to use a gas fired boiler
- 2030 – government could possibly force people to replace gas fired boilers to ASHP





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QUESTIONS?