

What does the MCS.020(a) mean and how much sound does a Heat Pump actually make?

The **MCS.020(a)** is the calculation used to measure the impact an Air Source Heat Pump has on neighbours by looking at how much sound they might hear. It takes into account the maximum sound output of the heat pump, the distance to the assessment point, any surfaces that might reflect the sound and any barriers between the heat pump and the neighbours. If the outcome is under **37db** it's deemed acceptable under permitted development.

One thing that's often misunderstood with the MCS.020(a) is that this represents the **maximum sound level** produced by the heat pump when, for example, it runs its weekly disinfectant cycle and heats up to 60° to kill off any bacteria in the system. Operations like this can be scheduled for more convenient times. Most of the time a heat pump is running **way below** this sound level.

The simplest way to think about the sound made by a heat pump is to imagine a domestic **fridge**. These are heat pumps too, they just work in the opposite direction and they produce the same sound levels. They sit almost silently in the kitchen and you don't notice any sound coming from it aside from the occasional time its compressor turns on. It's not intrusive and in the case of a heat pump it's outside too.

How noisy is 37dB?

This isn't an easy question to give a written answer to! The best explanation is to look at a range of sounds. Here are some typical examples from 30dB(A) up to 40dB(A). As you can see, it's really not very loud!

30 dB:

- **Very Quiet Library:** You might hear the turning of pages or a very faint whisper.
- **Soft Whisper (at 5 feet):** Only someone very close would likely hear you clearly.

35 dB:

- **Quiet Bedroom at Night:** With minimal activity inside or outside.
- **Computer Fan:** You'd have to be relatively close to hear it.

40 dB:

- **Quiet Office:** With little conversation or equipment noise.
- **Refrigerator Hum:** As it's also a heat pump!

As a general rule of thumb:

- A change of **1 dB** is often considered the smallest change in sound level that a human ear can detect **under ideal laboratory conditions**. In everyday situations, this small of a difference is very difficult, if not impossible, to notice.
- A change of **3 dB** is generally considered to be a **just noticeable difference** under most normal listening conditions. You'd likely perceive this as a slight but definite change in loudness.

What does this mean for planning then?

While we understand the need to be mindful of the risk of sound pollution, the **latest NPPF** says that local planning authorities should give **significant weight** to the need to support energy efficiency and low carbon heating improvements (...) including through installation of **heat pumps** and recognise that **small-scale** projects provide a **valuable contribution** to cutting greenhouse gas emissions

As the **final decision makers** you need to decide whether putting a **marginal increase** in noise over the growing urgency of addressing climate change is not only the right thing to do, but also in line with the **NPPF** and the countries need to **decarbonise** as defined by local and national policy.

In the words of the Institute of Acoustics *"We as an industry need to encourage good practice, celebrate good design engineering and embrace the low level 'purr' of low carbon heating systems. The sound of ASHPs is part of the future, let's make sure we don't confuse the positive low-level sound of an essential appliance with an annoying source of noise"*