

HOW DOES THAT WORK?

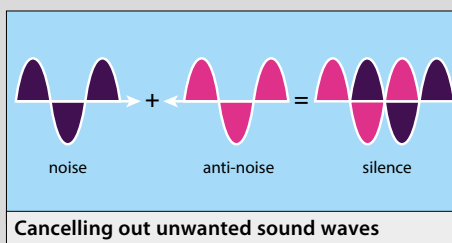
NOISE-CANCELLING HEADPHONES

Active Noise-Cancelling (ANC) headphones are used mainly by train and plane passengers wanting to listen to radio, music or film without hearing background low-frequency engine and travel noises.

ANC headphones usually incorporate two microphones near each ear piece – one outside and one inside. The signal from the outside microphone is reversed and then amplified (or reduced) to the level of the noise that leaks through to the inside of the headphones. If perfectly reversed and exactly the same amplitude as the signal that leaks through, then silence results. The microphone inside the headphones checks that this happens correctly and alters the gain of the amplifier if needs be, while at the same time removing any wanted music generated by the headphones themselves.

Although not perfect, these headphones allow the user to hear their music free from distractions or create quiet space so that the wearer can sleep peacefully or work at their PC in a busy open plan environment.

Sharp sounds and voices pose a greater challenge to the designer. The latest digital ANC headphones employ a signal processor equipped with sound mapping software to analyse the noisy environment. When first switched on, the listener hears the normal level of noise reduction followed a moment later by an even quieter ambience as the system maps the environment and responds accordingly.



Cancelling out unwanted sound waves