

How OpenEar Acoustics™ works

Once you've experienced the advantages of hearing aids, you won't want to live without them. But, as with many good things, there can be side effects. The most common in hearing aids are occlusion and acoustic feedback (whistling).

What is occlusion?

When a hearing aid is placed in the ear, the body's natural sounds – such as your own voice or chewing – may sound unnatural and unpleasantly loud as if you were speaking from inside a barrel. This is called occlusion. The

only effective remedy for this is to keep the ear canals as open as possible.

The world's most effective system for overcoming occlusion is OpenEar Acoustics™. Developed by Oticon, this three-part system is built into the new Gaia hearing aids. Let's take a closer look at how this unique technology works:

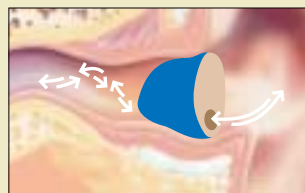
A system to fight feedback

Traditionally, if the ear canals are not completely plugged up, feedback can result. This is when amplified sound leaks out of the ear and reenters the microphone; the result is loud and unpleasant whistling. Gaia has a highly sophisticated system for combating this problem. The Dynamic Feedback Cancellation System (DFC) constantly monitors whether feedback is about to occur, and actually cancels it out – before it is ever heard.

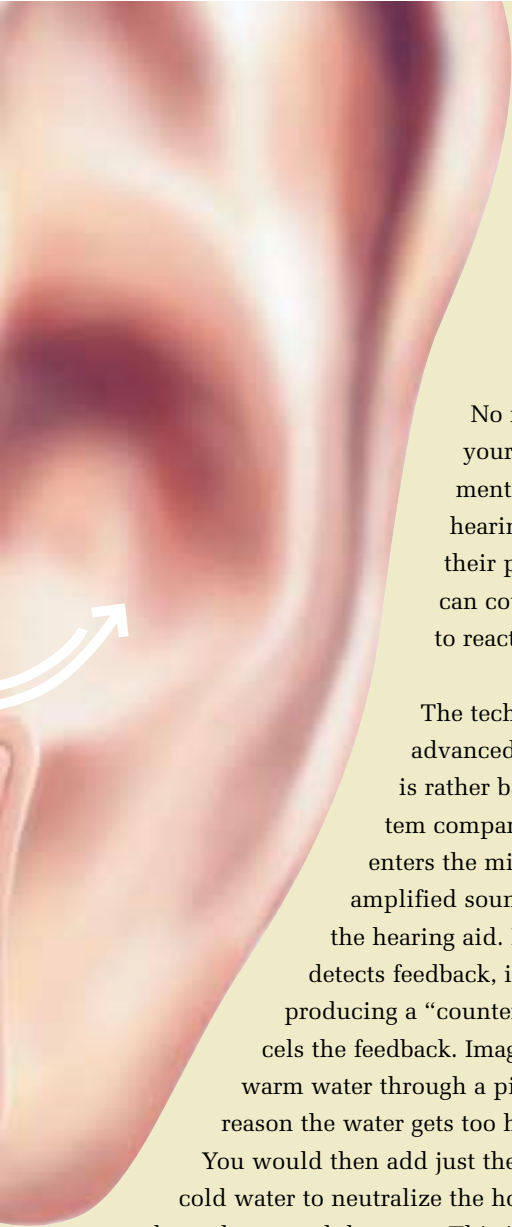
A more natural sound



When a hearing aid is placed in the ear, sound is channeled into the ear canal. The body's natural sounds (chewing, your own voice) become trapped. This makes them sound very loud and unnatural, and can also make you feel very plugged up.



With OpenEar Acoustics, the ear canal can remain open. Sounds from the outside can enter the ear, and the body's natural sounds can escape freely. This reduces the plugged up feeling and makes listening more comfortable and more natural.



No matter how quickly your sound environment changes or your hearing aids move out of their proper position, you can count on this system to react promptly.

The technique is very advanced, but the principle is rather basic. The DFC system compares the signal that enters the microphone with the amplified sound coming out of the hearing aid. If the system detects feedback, it eliminates it by producing a “counter signal” that cancels the feedback. Imagine sending lukewarm water through a pipe, and for some reason the water gets too hot along the way. You would then add just the right amount of cold water to neutralize the hot water, in order to keep the water lukewarm. This is exactly how the DFC system functions.

You cannot hear the system at work, but you can certainly experience the benefits. Gaia promises a more comfortable listening experience. Conventional anti-feedback systems tend to reduce the hearing aid’s volume in order to prevent feedback from occurring. However, Gaia keeps the volume at the desired level, so you don’t have to miss out on what is important – speech.

“Open-Ear” ventilation channels

The extremely effective DFC system in Gaia allows for substantially larger ventilation channels in the hearing aids. These ventilation channels allow sound to enter directly from outside the ear and combine with the amplified sound from the hearing aid – significantly improving the sound quality.

The larger ventilation channels also provide an escape route for loud sounds such as chewing or your own voice. The result, is your own voice and other sounds seem more natural and more balanced.

Super-fast sound processing

When the Gaia microphone picks up sound, it is treated digitally to provide you maximum benefit. This process takes time – not minutes...not even seconds! If it did process for minutes or even seconds, you wouldn’t be able to carry on a normal conversation. The words you heard would not correspond to the speaker’s lip movements. As a result, you would hear an echo because the natural sound would arrive earlier than the processed sound from the hearing aid.

With Gaia, we’re talking thousandths of a second! For the engineers at Oticon, the challenge has been to make the processing time fit the time it actually takes for sound to pass through the open vent. We are proud to say we have succeeded!



Did you know that with eyeglasses, it will always be you who discovers a need for them, whereas, it will almost always be other people that discover your need for hearing aids?