

Introducing  
**THE NEW  
PERSPECTIVE**  
in hearing care



# **Less is more** has been the industry's way to treat hearing loss

Due to a one-sided focus on delivering speech understanding alone, conventional hearing care technology has hindered people with hearing loss from experiencing the full perspective of sounds. To preserve speech, the sound scene has been limited by noise reduction, directionality, feedback management, and traditional compression - giving the brain less to work with. But this is not the right way to treat a hearing loss.



# More is more for the brain. It needs the full perspective



Sound scenes are dynamic, complex, and unpredictable, and it is the brain's role to handle this complexity; to hear, and to create meaning from it all.

New independent research\* supporting our BrainHearing™ philosophy, confirms that the brain needs access to more. More information from the surroundings to aid the brain's natural way of working. More of the full perspective of sounds, in order to get more out of life.

\* O'Sullivan, J., Herrero, J., Smith, E., Schevon, C., McKhann, G. M., Sheth, S. A., ... & Mesgarani, N. 2019. Hierarchical Encoding of Attended Auditory Objects in Multi-talker Speech Perception. *Neuron*, 104(6), 1195-1209. Hausfeld, L., Riecke, L., Valente, G., & Formisano, E. 2018. Cortical tracking of multiple streams outside the focus of attention in naturalistic auditory scenes. *NeuroImage*, 181, 617-626. Puvvada, K. C., & Simon, J. Z. 2017. Cortical representations of speech in a multitalker auditory scene. *Journal of Neuroscience*, 37(38), 9189-9196. See also Man, B. & Ng, E. 2020. BrainHearing - The new perspective. Oticon Whitepaper.

# Introducing the world's first hearing aid giving the brain the **full perspective**

A technological breakthrough that gives hearing aid users access to all relevant sounds

Delivering on our unique BrainHearing philosophy, and powered by cutting-edge technology, Oticon More processes the full sound scene in a holistic and balanced way. This gives the brain optimized input from all types of meaningful sounds, not just speech\*.

With this new perspective in hearing care, we break with conventional thinking by supporting the brain's natural ability to make sense of sound.



**Oticon More™**

\*Santurette, S. & Behrens, T. 2020. The audiology of Oticon More. Oticon Whitepaper.

New research shows:

# A complete neural code is the foundation for the brain to work naturally

The journey of sounds begins when they flow into the ear. Once inside the cochlea, they are converted into a neural code of information. This code is transported by the auditory nerve through the brainstem and into the brain's hearing centre.

## Uncovering how the brain's hearing centre works

From new independent research\*, we now know that the hearing centre in the brain consists of two subsystems that work together on the neural code. The two subsystems analyze the neural code and turn it into meaningful sounds, which they can make sense of. The better the neural code, the better the brain performs.

## The brain is always orienting in order to create the full perspective

### Step 1:

#### The orient subsystem scans the full sound scene

In the hearing centre, the orient subsystem scans the surroundings to detect sound input, creates an overview of the sounds, and then decides what is going on.

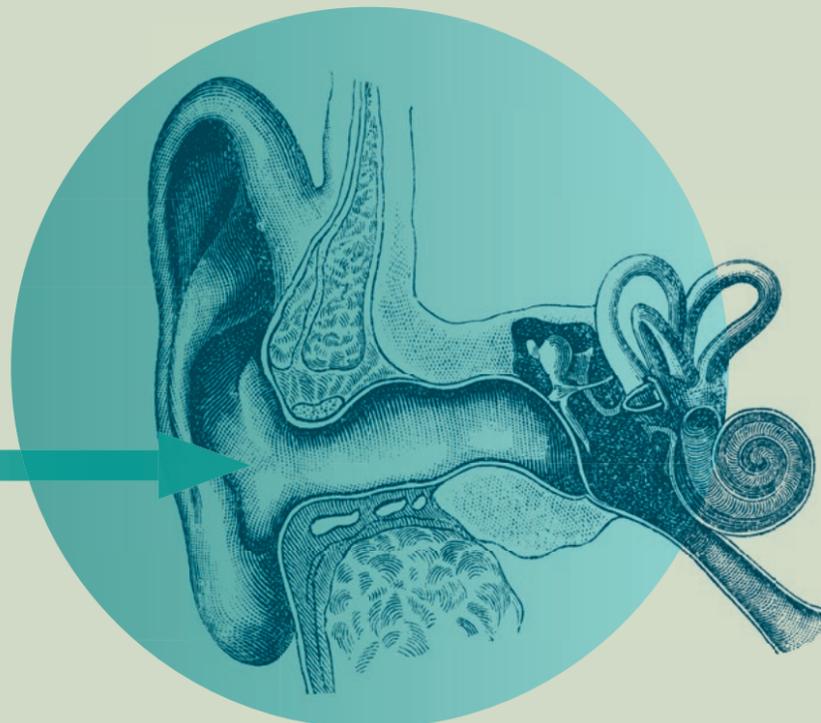
### Step 2:

#### The focus subsystem allows us to focus on a point of interest

Based on sounds detected by the orient subsystem, the focus subsystem forms meaningful sounds that we can choose to listen to or switch attention to when needed. When in focus, the sound becomes clear and easy to recognize.

A well-functioning partnership, where the orient and focus subsystems work together - continuously and simultaneously - is the basis for understanding sound effectively.

Full sound scene



Neural code



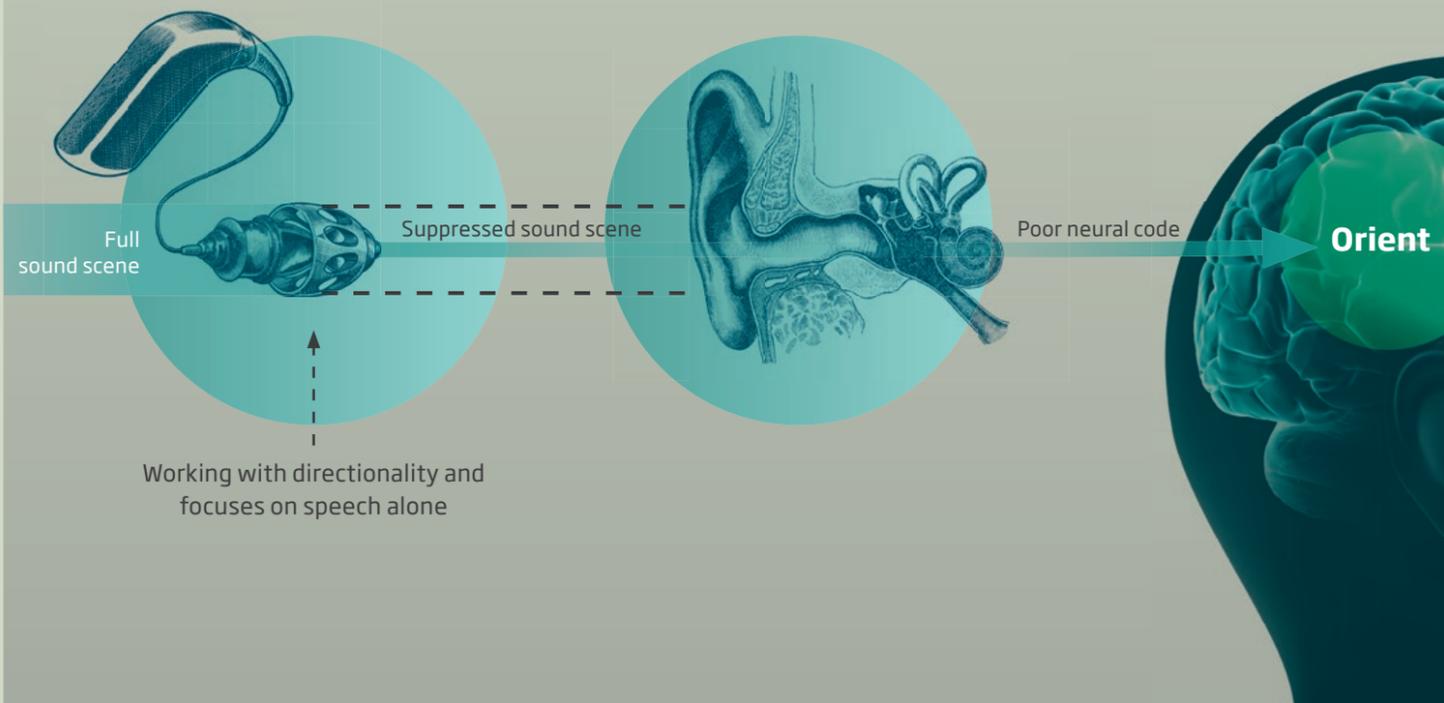
\* O'Sullivan et al. 2019; Hausfeld et al. 2018; Puvvada & Simon. 2017; See also Man & Ng. 2020 for a review of these references.

# The full perspective is necessary to create a complete neural code

## Old perspective

### Conventional technology suppresses the sound scene

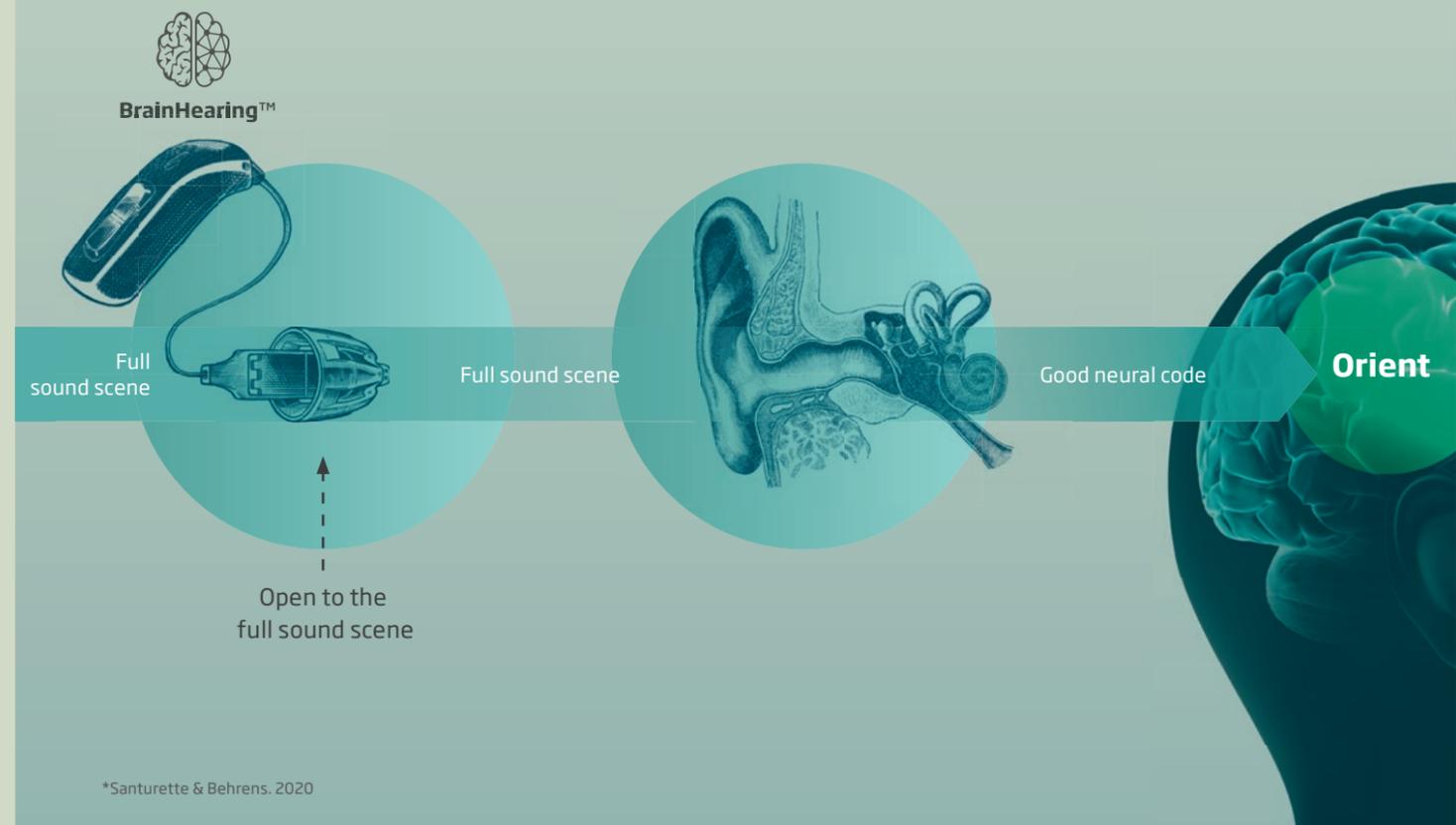
With its noise reduction, directionality, feedback management, and traditional compression, conventional hearing aids suppress the natural sound input and deliver a poor neural code to the brain. Not only does this cut people off from their surroundings, it goes against the brain's natural way of working.



## New perspective

### Oticon More gives access to the full sound scene

To support the way the brain naturally processes sound, and help people with hearing loss, Oticon More provides access to the full sound scene\*. This ensures the creation of a good neural code and gives the brain the best conditions to work optimally.



\*Santurette & Behrens. 2020

# A full and precisely balanced sound scene makes it easier for the brain to perform optimally



Our new BrainHearing insights\* tell us that people with hearing loss need access to all meaningful objects in the sound scene in a precise and well-balanced way. With this information, the brain is then able to focus quickly on what is most important, while still being able to access and handle other meaningful sounds.

Oticon More is designed with the new BrainHearing insights in mind, to improve the perception of sound and help users experience a richer auditory world. A world where perceiving sound uses less of the brain's resources, so users can enjoy the full sound scene and dive into a specific aspect of the sound scene when desired.

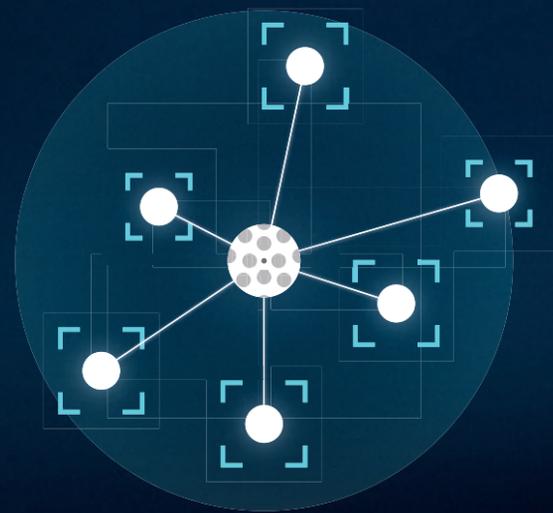
\*Man & Ng, 2020

# A fundamentally new approach to sound processing

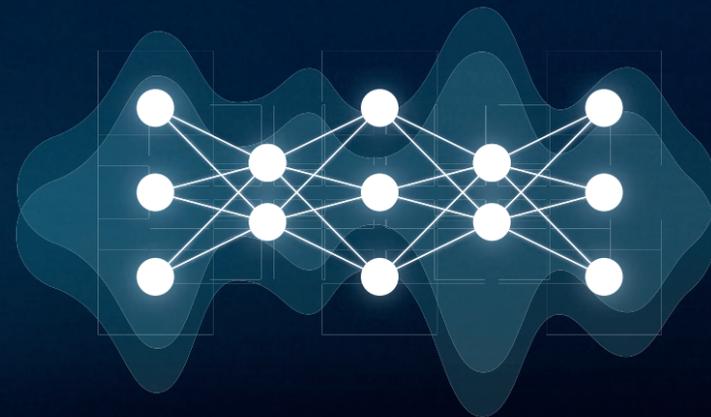
To deliver the full sound scene, we have completely redefined the way we process sounds. We have recorded sounds from real life and used them to train a highly intelligent Deep Neural Network (DNN) that is the foundation for the sound processing technology in Oticon More\*.

This approach enables us to launch two new groundbreaking features that ensure the full sound scene is processed and amplified precisely: More Sound Intelligence™ and More Sound Amplifier™.

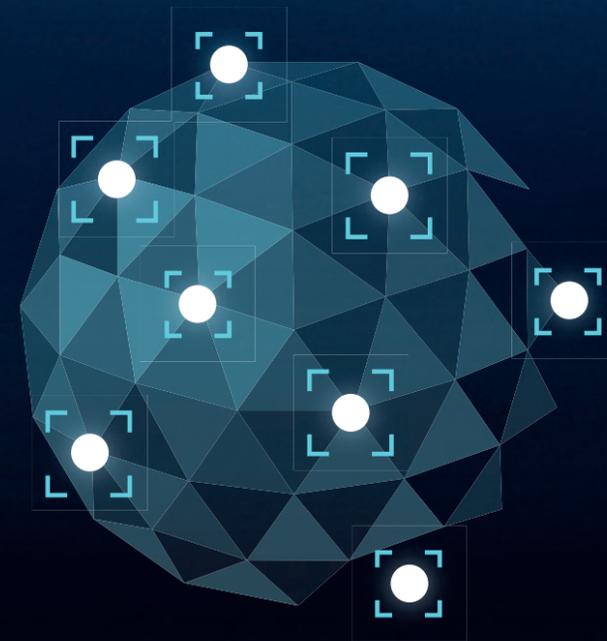
**This is - quite simply - a leap into the future.**



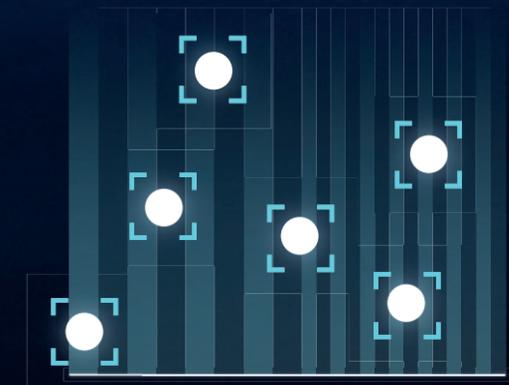
**1** Recording sounds from real life



**2** Training of a highly intelligent Deep Neural Network



**3** Precise analysis and balancing of the full sound scene



**4** Rapid high-resolution amplification that naturally follows changes in the sound scene



MoreSound Intelligence™



MoreSound Amplifier™

\*Brændgaard, M. 2020a. MoreSound Intelligence. Oticon tech paper.

# Recording sound scenes from the real world

## We are breaking out of the lab

Until now, sound processing systems have been designed using theoretical models and man-made hypotheses of how to best enhance speech and reduce background noise. Oticon More is different.

To revolutionize the sound processing technology in Oticon More, we went out into the real world with a 360° spherical microphone to collect sounds from real-life situations. This serves as the foundation for how Oticon More is able to process the full sound scene with unparalleled precision and clarity.



The spherical microphone is built from a number of advanced, individual microphones that are evenly distributed across the sphere. The output from each microphone is combined using advanced signal processing to capture a given sound scene with detail and accuracy.

# Oticon More is trained with **12 million real-life sound scenes**

A Deep Neural Network enables the sounds of the world to be handled precisely and automatically



Oticon More utilizes the intelligent capabilities of a Deep Neural Network to mimic the way the brain functions. It handles sounds based on the experience and training it has received. The DNN in Oticon More is so much more than a standard Artificial Intelligence software. It's a unique and dedicated hearing aid solution, developed for real-time operation in everyday life.

Based on our vast sound processing experience, we have trained the DNN with 12 million sound scenes from real life. This optimizes the way Oticon More makes sounds more distinct, working seamlessly across varying listening environments. With this integrated intelligence, Oticon More has learned to recognize all types of sounds, their details, and how they should ideally sound - all in order to optimally support the brain.

# A quantum leap in sound scene processing

Giving access to the full sound scene with clear contrast and balance

Oticon More features the groundbreaking MoreSound Intelligence that captures and optimizes sounds. This provides access to a complete sound scene, where individual sounds stand out in clear contrast to each other.



## Scanning and analysis of the sound scene

MoreSound Intelligence scans the full sound scene 500 times per second, resulting in a precise analysis of all sounds and the complexity of the surroundings. It then applies the user's personal listening preferences to establish a clear target for how to handle all varying sound scenes.



## Processing and contrast enhancement

Once the sound scene is analyzed, MoreSound Intelligence precisely organizes the sounds around the user, and then utilizes the DNN's vast training from real life to process and create contrast between the identified sounds\*. The result is a more natural representation of all sounds in a clear, complete and balanced sound scene\*\*.

\*Brændgaard. 2020a. \*\* Santurette & Behrens. 2020.





## New MoreSound Amplifier

# Precisely balanced amplification of every sound

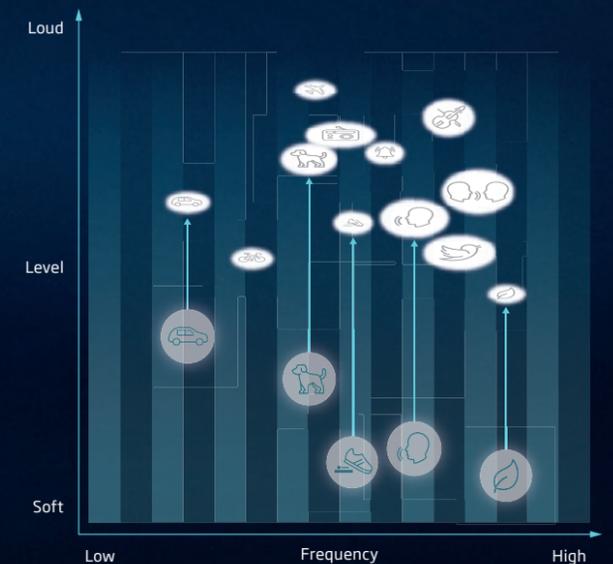
## Leaving conventional compression behind

MoreSound Amplifier in Oticon More is a trailblazing balanced amplification system. It works precisely and quickly enough to ensure that important details and dynamics are made audible and available for people with hearing loss.

### OLD Conventional compression

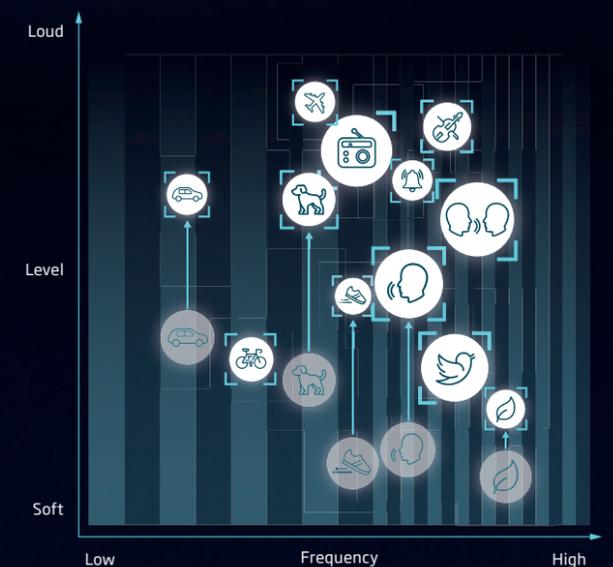
In order to make the sound scene audible, conventional compression technology has applied a "one size fits all" approach. It handles all sounds in the same way, in fixed resolution. This has led to some sounds being over-amplified, others under-amplified, and some even overly compressed, creating an unbalanced sound experience.

Not only does this deprive the listener of important details in the sound scene, it also makes it harder for the brain to make sense of what is going on around it.



### NEW Balanced amplification

In contrast, MoreSound Amplifier is a dynamic and balanced amplification system that seamlessly adapts its resolution and speed to the nature of the sound scene at hand. With a sixfold increase in resolution and an adaptive speed pilot, MoreSound Amplifier makes the full sound scene audible while maintaining the fine contrast and balance between sounds\*. This ensures the brain has access to the important information it needs to make sense of sound\*\*.



\*Brændgaard, M. 2020b. The Polaris Platform. \*\* Santurette & Behrens. 2020.

New Polaris™ platform

# Delivering the full perspective demands our most intelligent platform ever

The world's first purpose-built platform featuring a Deep Neural Network

The Polaris platform is the backbone of Oticon More. It is purpose-built for hearing aids. This focused approach allows it to constantly run a trained DNN, while powering all the technologies in Oticon More with more speed, precision and capacity than was ever possible before\*.

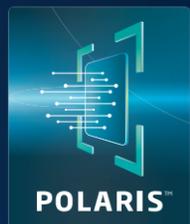
16 times more capacity to execute advanced algorithms\*\*

Intelligent use of industry-leading 64-channel processing

Twice as much computation capacity and speed\*\*

Deep Neural Network processing

Double the precision in 1.5-5kHz frequency bands\*\*



\*Brændgaard, 2020b. \*\*Compared to Velox S platform.

New evidence shows:

# Oticon More delivers more sound to the brain that's much clearer

All while improving speech understanding and reducing listening effort



“ I was suddenly able to **converse with everyone** [at the table].”  
*Ketty, Oticon More user*

“ It was **easier** to jump into a new sound environment.”  
*Ole, Oticon More user*

“ It was **easier to participate in a conversation** around the table, without losing sense of the sound coming from the background.”  
*Berit, Oticon More user*

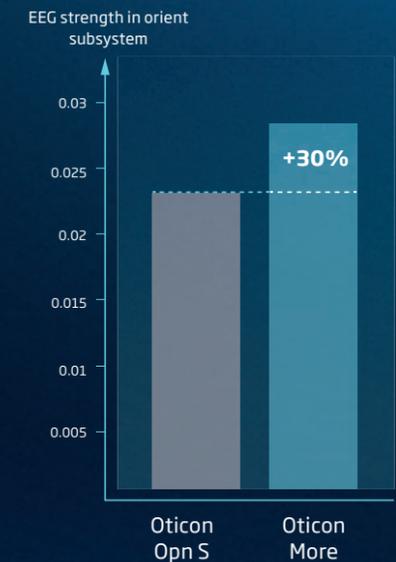
“ I found the sound to be markedly different - **it was clearer**”  
*Helge, Oticon More user*

## Oticon More delivers 30% more sound to the brain compared to Oticon Opn S™

New independent research has shown that the brain needs access to all sounds. And now, new and innovative research methods prove how Oticon More delivers just that.

From testing of brain activity, using EEG, the strength of the EEG signal shows that MoreSound Intelligence, in Oticon More makes the full sound scene 60% clearer.\* This ensures the creation of a good neural code for the brain, which gives the orient and focus subsystems the best conditions to work optimally. This ability to represent all relevant sounds in the brain is crucial for the user's ability to navigate in the varying listening environments of life.

When compared to our best hearing aid until now, Oticon Opn S, we see that Oticon More delivers 30% more sound to the brain.\* For the user, this means getting access to a full and precisely balanced sound scene.



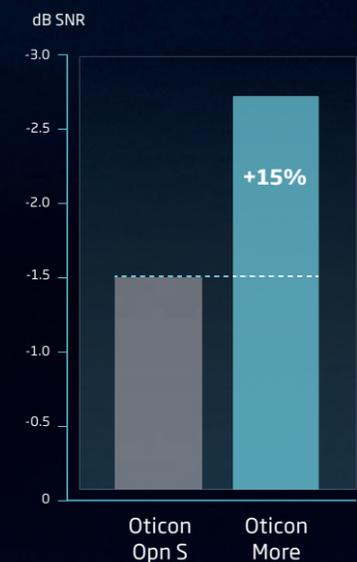
MoreSound Intelligence is proven to make the full sound scene **60% clearer\*\***

## For even better speech understanding with even less effort

Even as Oticon More gives the brain access to more sound, it makes it easier for the brain to understand speech. Tests show Oticon More increases speech understanding by 15% when compared to Oticon Opn S.\*

At the same time, Oticon More is also proven to reduce listening effort, enabling people to remember even more of what's being said.\* This is a significant advance along our path of continuous improvement. And it's only possible with the technological innovation of the Deep Neural Network (DNN).

In fact, this is the first time a sound processing system powered by a DNN has been proven to outperform a traditional noise reduction system.



Bar graph corresponds to SNR of 70% intelligibility

# Next-generation connectivity to smartphones

## Direct streaming from iPhone® and Android™ devices

### Oticon More

- Features Bluetooth® Low Energy technology and offers an extensive range of connectivity options to support a high-quality listening experience in everyday situations
- Is a Made for iPhone hearing aid and compatible with the new Android protocol for Audio Streaming for Hearing Aids (ASHA) - making it possible to stream directly from iPhone, iPad®, iPod touch® and Android devices\*
- Can be combined with Oticon ConnectClip to stream from any other Bluetooth device



Made for iPhone | iPad | iPod

Works with android



### Oticon ON - Easy and discreet control over the hearing aids

The Oticon ON app lets users personalize their listening experience via the new streaming equalizer that enables them to fine-tune the sound when streaming music or a movie. It also allows them to adjust volume, switch programmes, check battery level, control other connectivity products and multiple TV Adapters, or locate their hearing aid if they lose it - all from the palm of their hand. Oticon ON is frequently updated with new features that help your clients make the most out of their hearing aids.

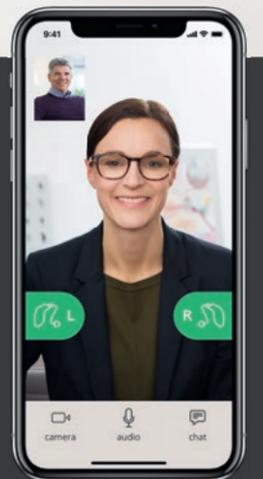


### Oticon RemoteCare - Convenient online appointments with your clients

With Oticon RemoteCare you can connect remotely with your clients to conduct follow-up appointments and routine adjustments. It saves them time by allowing hearing aid adjustments to be conducted from the comfort of their own home.



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## A wide range of connectivity options



### ConnectClip

Use ConnectClip as a remote microphone, as a remote control, or to turn the hearing aids into a wireless headset. ConnectClip enables streaming from any Bluetooth device and enables comfortable hands-free calls.



### TV Adapter

Use TV Adapter to stream sound from the TV directly to Oticon More hearing aids



### Remote Control

Adjust volume, switch programme, or mute the hearing aids with the touch of a button



### Music

Stream high-quality audio directly from iPhone, iPad, iPod touch and Android devices, or use ConnectClip with any Bluetooth device



### Computer

Pair with ConnectClip to use the hearing aids as a wireless headset for video calls or audio streaming



### EduMic

Use EduMic as a remote microphone or to stream audio from computer, tablets, and more

# A rechargeable style full of options

## A full day's power. Every day.

The new Oticon More miniRITE R is a discreet lithium-ion based rechargeable style that offers a full day of battery life, including streaming, after just three hours of charging. It is available in three price points, comes with a t-coil, and covers hearing loss ranging from slight to profound.

In addition to its groundbreaking set of features, Oticon More comes in eight attractive colours. These will blend naturally with the user's hair or skin, or stand out like other modern wearable technology.



Oticon More miniRITE R is compatible with miniRITE Charger 1.0

**NEW miniFit OpenBass dome**  
Easier open fittings with improved sound in low and mid frequencies



## Powered by groundbreaking features



**MoreSound Intelligence™**  
Access to all relevant sounds in a clear, complete and balanced sound scene



**Speech Rescue™**  
Makes high frequency sounds more audible



**MoreSound Amplifier™**  
Rapid high-resolution amplification that follows changes in the sound scene



**Soft Speech Booster**  
Improves soft speech understanding without turning up the volume



**MoreSound Optimizer™**  
Optimal gain and open fittings, without feedback risk



**Clear Dynamics**  
Better sound quality with less distortion in loud environments



**Virtual Outer Ear**  
Three realistic models of the ear pinna to provide better spatial balance



**Wind Noise Management**  
Improves access to speech in situations with wind noise



**Sound Enhancer**  
Dynamic gain primarily for speech, given in complex environments

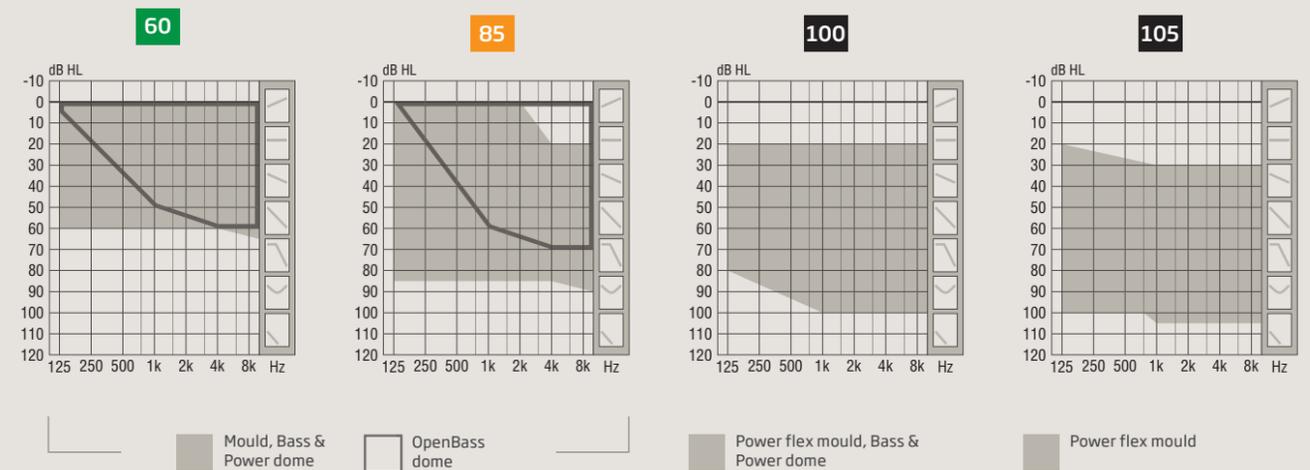


**Tinnitus SoundSupport™**  
Relief sounds for tinnitus patients



**Spatial Sound™**  
Improves ability to locate the most interesting sounds

## Covering a wide range of hearing loss



life-changing  
**technology**

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