

FEB 14 2019

Attn: Document Control Desk  
Office of Nuclear Security and Incident Response  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

Louisiana Energy Services, LLC  
NRC Docket No. 70-3103

Subject: Request for Approval of Medical Devices in Classified Areas

References: 1. Letter from J Zimmerman to W Padgett regarding approval of medical transmitting devices dated 12/14/2018 (IN-18-161-NRC)  
2. CNSSAM TEMPEST/1-13 RED/BLACK Installation Guidance

Pursuant to Reference 1, Louisiana Energy Services, also dba URENCO USA (UUSA) herewith requests approval of wireless transmitting medical devices to be worn in classified areas.

The devices are Oticon Opn Bluetooth hearing aids. The devices are capable of pairing and communicating with devices such as smartphones, remote volume controls, Bluetooth dongles and remote microphones using low energy Bluetooth technology. Further information is included in Enclosure 1. Reference 2 describes the hearing aids as non-stationary low power RF transmitters.

Upon authorization, UUSA will ensure that only the hearing aids enter the classified areas. Any devices paired with the hearing aids, will remain outside.

UUSA requests rapid review and approval of the Oticon Opn hearing aids. UUSA currently has one employee that has been fitted with these hearing aids. UUSA requirements do not allow the employee to enter the classified area while wearing hearing aids until approval is granted.

Should there be any questions regarding this submittal, please contact Rick Medina, Acting Licensing and Performance Assessment Manager, at 575-394-5846.

Respectfully,



Stephen Cowne  
Chief Nuclear Officer and Compliance Manager

Enclosure: 1.) Oticon Opn Product Guide

NSIRD  
NSIR  
NMSS

LES-19-022-NRC

cc:

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LES-19-022-NRC

**ENCLOSURE 1**  
**Oticon Opn Product Guide**

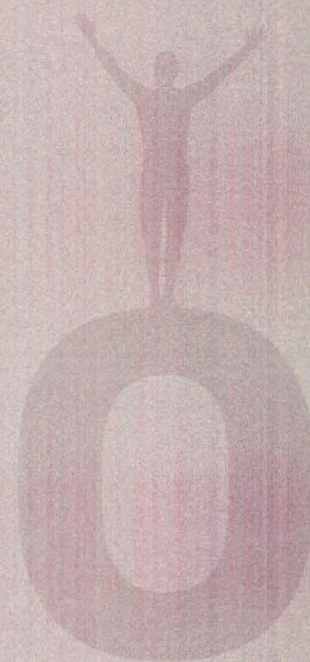




OTICON | Opn

# Product Guide

2017



**oticon**  
PEOPLE FIRST



# Welcome to the Oticon Opn™ product guide

The open sound paradigm is expanding, and Oticon Opn is opening up a world of sound for even more users, including those with more severe hearing loss.

Two new Oticon Opn styles – the small, unique miniRITE-T and the powerful BTE13 PP (Plus Power) give people with mild to severe-to-profound hearing loss access to Oticon Opn's revolutionary open sound experience.

The success of Oticon Opn is built on the groundbreaking BrainHearing™ benefits including less listening effort, capacity to remember more and better speech understanding. All are enabled by the industry-leading, ultra-fast and precise Velox™ platform. Now, we are introducing an array of attractive new features built on this platform.

Tinnitus SoundSupport™ and Speech Rescue™ LX are now available in every Oticon Opn style and performance level. The Feedback shield LX provides you with more tools to manage feedback, and new listening programs support a variety of challenging listening situations.

The expanded Oticon Opn portfolio also gives you the option to fit clients using the DSL v5.0 rationale. You can now fit young adults with an Oticon Opn solution that offers the benefits of both great audiology and a large number of connectivity solutions. With TwinLink™, you can help young adults to stream directly from their iPhone® and stay connected to the Internet.

The Oticon Firmware Updater provides you with a unique opportunity to add these new, high quality features to the Oticon Opn devices of clients who are already enjoying the open sound experience.

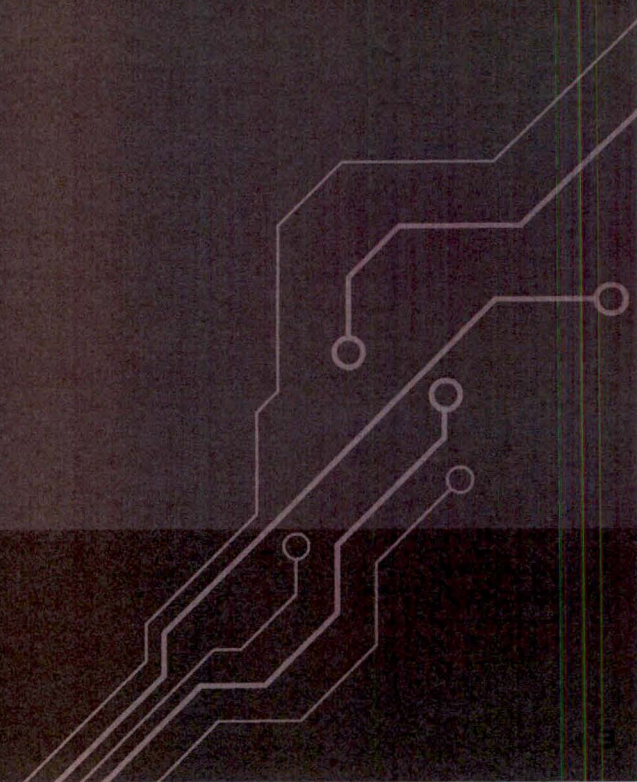
With more styles and exciting new features, Oticon Opn expands your ability to open up a world of sound for your clients. There are more reasons than ever to choose Oticon Opn!





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# The highlights of Oticon Opn

- **Extremely fast and precise technology** provides users with more accurate information about their 360° soundscape, even in difficult listening environments. This open sound experience gives access to multiple speakers and allows the user to decide what to focus on.
- **Two groundbreaking features** – OpenSound Navigator™ and Spatial Sound™ LX – work together to deliver the open sound experience.
- **This new open sound paradigm** is enabled by the groundbreaking Velox platform. With 50 times faster sound processing\* and market-leading 64 frequency channel resolution, the tiny chip is a technological powerhouse.
- **20/20/30 – BrainHearing** benefits in noisy environments make it easier on the brain: 20% less listening effort, 20% more capacity to remember, 30% better speech understanding.\*\*
- **Now proven. Even in easy listening situations**, Oticon Opn can reduce noise to significantly decrease listening effort. This is possible because of the speed and precision of OpenSound Navigator.\*\*\*
- **TwinLink™ wireless technology** delivers the best possible audiological performance and 2.4 GHz wireless connectivity for the highest sound quality with very low power consumption.
- **World's first Internet-connected** hearing aid connects directly to the Internet via the IFTTT network, giving users the ability to connect to a wide range of Bluetooth® and "smart home" devices that make everyday life easier.

\* Compared to Inium Sense.

\*\* Le Goff et al. 2016, Opn Clinical Evidence, White Paper, Oticon, Inc.

\*\*\* Lunner, Wendt and Hietkamp 2016, "Effect of noise and noise reduction on listening effort in hearing-impaired listeners", IHCON 2016



**Oticon Opn captures two CES 2017 awards**

- Tech for a Better World
- Wearable Technologies



“We’re finally able to offer  
our patients **a truly life-  
changing experience**”

*Paula Schwartz, AuD hearing care professional*

“Rather than just hearing  
what’s right in front, **I can  
now hear everything  
going on around me**”

*Camilla Terkildsen, hearing aid user*

These testimonials represent the opinion of the concerned individual only and may not be representative of the experience of others. The testimonials are not paid and may not be indicative of the future performance or success of any other individuals.



## What's new

The overwhelming response to the global launch of Oticon Opn from both users and hearing care professionals is unprecedented.

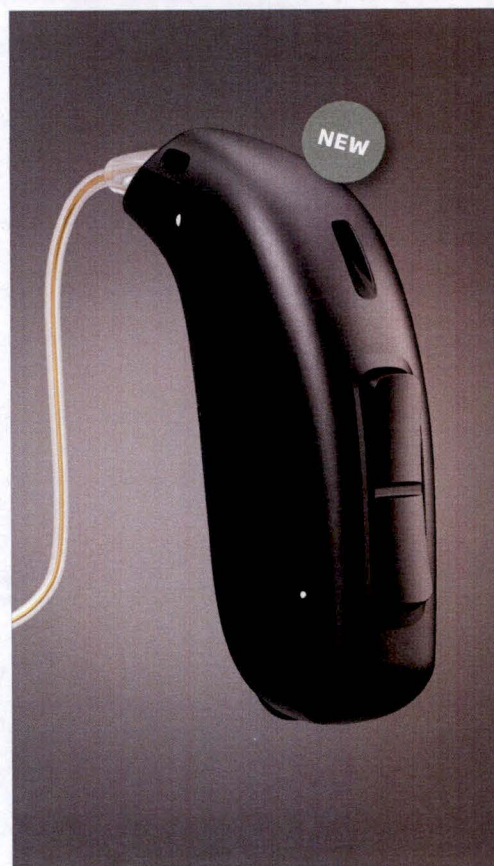
Now, the Oticon Opn portfolio expands with more styles and new features in three performance levels to cover hearing losses from mild to severe-to-profound.



### **Tinnitus SoundSupport: Relief sounds for tinnitus clients**

Provides a range of tinnitus relief sounds that may help decrease the annoyance of tinnitus. The relief sounds can be customized to each client's needs and preferences. The integrated sound generator is available in all Oticon Opn styles and performance levels.

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### **miniRITE-T: Sleek and discreet**

Features a telecoil and double push button for easy volume and program control. The fully featured solution includes Tinnitus SoundSupport, Speech Rescue LX, DSL, and TwinLink for 2.4 GHz wireless technology and Made for iPhone® functionality.

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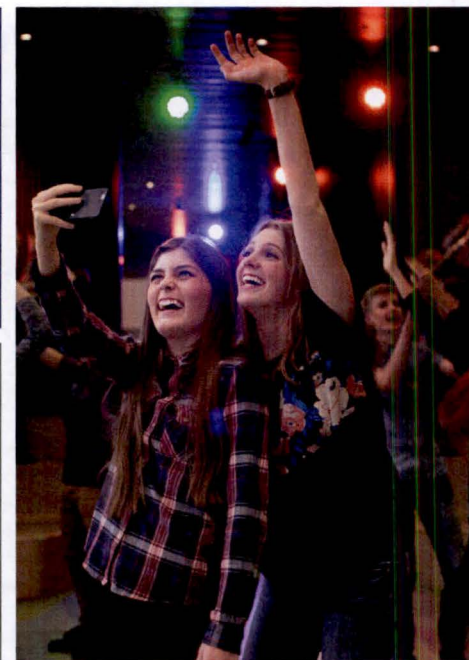




#### **DSL v5.0: Fit young adults with assurance**

Supports best practice guidelines to enable listening in complex listening environments that are common in a teenager's life. Opens up a world of sound and opportunity in increasingly connected school settings with direct streaming from iPad & iPhone, plus connects with IFTTT applications using the compatible Oticon ON App.

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#### **Speech Rescue™ LX:**

##### **Access to inaudible high frequency sounds**

Delivers high frequency audibility when traditional methods have not succeeded. Available in all Oticon Opn styles, Speech Rescue LX may improve speech intelligibility when severe-to-profound hearing loss is present in the high frequencies. Speech Rescue LX is also suitable for clients with asymmetric, progressive and unilateral hearing loss.

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#### **Feedback shield LX:**

##### **Fast and effective feedback management**

Instantly suppresses feedback to protect the listener from unwanted whistling and squealing, without compromising audibility or sound quality. Feedback shield LX can be set to individual needs to optimize sound quality and feedback performance. The system operates in two separate paths – one for each microphone – to improve efficiency and accuracy.

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#### **BTE13 PP:**

##### **Powerful and compact**

An output of 131 dB SPL benefits clients with severe-to-profound hearing loss. A tactile double push button lets users easily control volume and programs and the LED indicator monitors hearing aid status. Includes DSL, Speech Rescue LX, Tinnitus SoundSupport and TwinLink for 2.4 GHz wireless technology and Made for iPhone® functionality.

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#### **LED Indicator:**

##### **Status monitor for caregivers**

Helps users and caregivers, parents and teachers operate the hearing aid and obtain indications on relevant functions and modes. Intuitive, two color LED provides valuable information and is configurable for personal preferences.

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#### **Listening programs:**

##### **For enhanced listening**

Optimizes listening in difficult situations when the user may want programs in addition to the general program, such as when enjoying music or listening in an auditorium with a loop system. Programs include Speech in Noise, Music, Comfort, Lecture and a range of T-coil programs.

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## Technology & Features





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Ultra-fast processing

1,200 MOPS

High resolution

24 bit DSP

11 DSP Cores

High processing power

64

frequency channels

Analyzing more than

100 times/second

113 dB SPL

upper limit input range

#### DID YOU KNOW?

The chipset in Velox includes:

- 76 meters of wiring
- 64 million transistors

## Introducing the Velox platform

### The best in resolution and speed

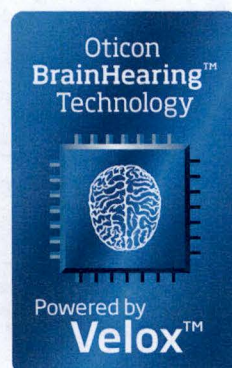
The groundbreaking Velox platform enables a paradigm shift.

Eleven-core processor, 8 cores for processing sound signals and 3 cores for managing wireless communication, give the instrument extremely fast processing capabilities. The high speed Network on Chip (NoC) architecture with finer engraving (65 nM) in 9 layers delivers impressive performance with the capacity to execute 500 million instructions per second (MIPS) and 1,200 million operations per second (MOPS). It all runs at a maximum of 3.3 mA, when all processes and streaming capabilities are in use. With the Velox platform, a tiny instrument powered by a 1.4V battery can deliver 50 times more processing power than the previous generation.

The digital signal processing uses 24 bit block-floating point representation across 64 frequency channels for higher signal and frequency resolution, fundamental to providing superior sound fidelity.

The Velox platform offers extended linear processing of sound levels to an upper input limit of 113 dB SPL thanks to 24 bit A/D converters on each microphone and the auxiliary input.

Fully programmable with updatable firmware, the Velox platform is ready for the future.





# TwinLink

## **Wireless connectivity and binaural processing in a small, energy-efficient solution**

New TwinLink technology uses two dedicated radio systems to meet distinct communication needs.

TwinLink technology supports seamless, energy-efficient communication between two hearing aids and streamer-free connectivity with external electronic and digital devices.

Near-Field Magnetic Induction (NFMI) enables a continuous exchange of data and audio between two hearing aids to provide advanced binaural processing. This communication is done with minimal power consumption.

With NFMI on the Velox platform, data and audio information is exchanged 21 times per second between the two hearing aids, 4 times more compared to previous generations.

Stereo Bluetooth low energy (BLE) 2.4 GHz connects Oticon Opn directly to smartphones and other digital devices for easy, seamless wireless connectivity. This technology also allows for truly wireless fittings.



### **DID YOU KNOW?**

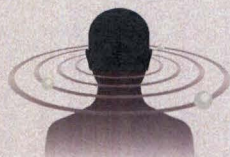
NFMI travels easily around the human body and the head, while 2.4 GHz travels well through air and holds its strength over longer distances.

On Velox, wireless connectivity is fully integrated into the chip for lower power consumption, smaller size and better performance.



## “ TELL YOUR CLIENT

Enjoy 30% better speech understanding in complex listening environments. Enjoy 20% less listening effort and also remember 20% more.



OpenSound Navigator™

## DID YOU KNOW?

Conventional technology switches slowly between a few fixed directional modes. OpenSound Navigator operates fluidly and extremely fast between an infinite number of states which makes it suitable for all acoustical environments.

Rapid, continuous updates ensure that noise is even reduced between words.

\* Le Goff et al. 2016, Opn Clinical Evidence, White Paper, Oticon, Inc.

# OpenSound Navigator



## Less effort. Remember more. Better hearing!

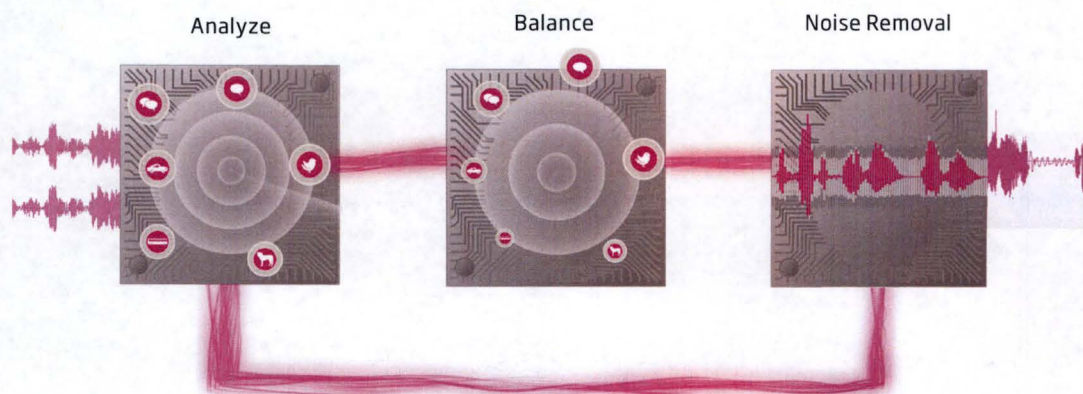
OpenSound Navigator is sound processing that reduces noise while preserving distinct speech from all directions. This is enabled by the new revolutionary Multiple Speaker Access Technology (MSAT), which ensures access to all speakers in a dynamic environment.

OpenSound Navigator employs an extremely fast three-step process:

- Scans the full 360° sound environment more than 100 times per second to identify noise and separate it from speech.
- Rapidly reduces the levels of loud noise coming from specific directions, while preserving speech.
- Rapidly attenuates remaining diffuse noise, even between individual words.

OpenSound Navigator ensures a full, more balanced soundscape and lets users enjoy improved speech understanding even in complex and dynamic environments while, at the same time, preserving mental energy.

OpenSound Navigator is personalized in Genie 2 and can be further fine-tuned in YouMatic™ LX controls.





# Spatial Sound LX



## **Locate, follow and shift focus to the speakers you want to hear**

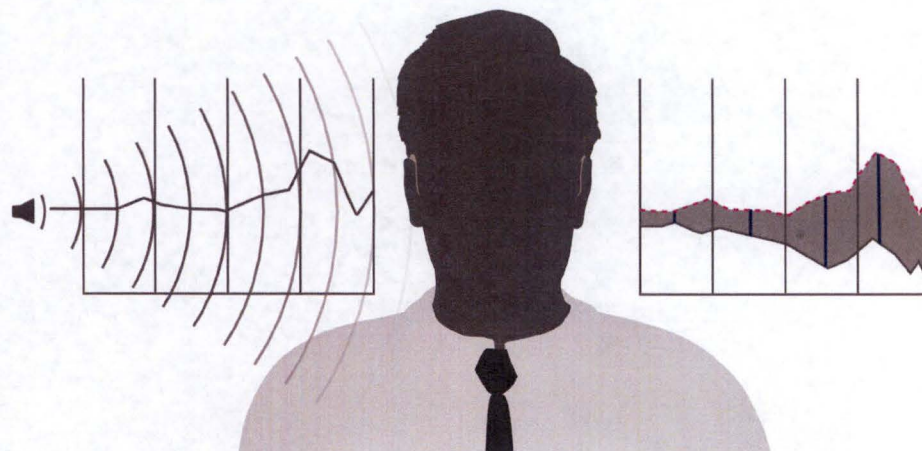
Spatial Sound LX combines a number of advanced technologies to provide a more precise spatial awareness to help users identify where sounds are coming from.

Using the energy efficient and fast binaural communication offered by NFMI, Spatial Sound LX preserves interaural level differences in four frequency bands. This maintains the sense of location and direction naturally provided by the head shadow effect.

The multi-band analysis prevents low frequencies from masking higher frequencies. This ensures that interaural differences are preserved over the entire frequency spectrum.

As part of Spatial Sound LX, Binaural Noise Management emphasizes sounds on the better ear in asymmetrical noise situations.

Head shadow effect



## **“ TELL YOUR CLIENT**

Provides a richer, more realistic sound picture so you perceive the location and direction of sounds with greater ease.

## **DID YOU KNOW?**

Interaural level differences (ILD) are important factors to make speech and noise appear distinctly and separately (and not muddled together) to help improve speech understanding in noise.

Four estimators enable precise, frequency specific ILDs which remain intact across the frequency spectrum. This is important because the head shadow effect is greater at high frequencies.



## “ TELL YOUR CLIENT

Lets you hear sound, personalized to the way you like to hear it.

### DID YOU KNOW?

Research shows that people have different preferences for how much the hearing aid should help in complex situations.

Personalization is an integral part of client centered care. Client-centered care increases satisfaction, adherence to treatment and the feeling of being in control.

# YouMatic LX



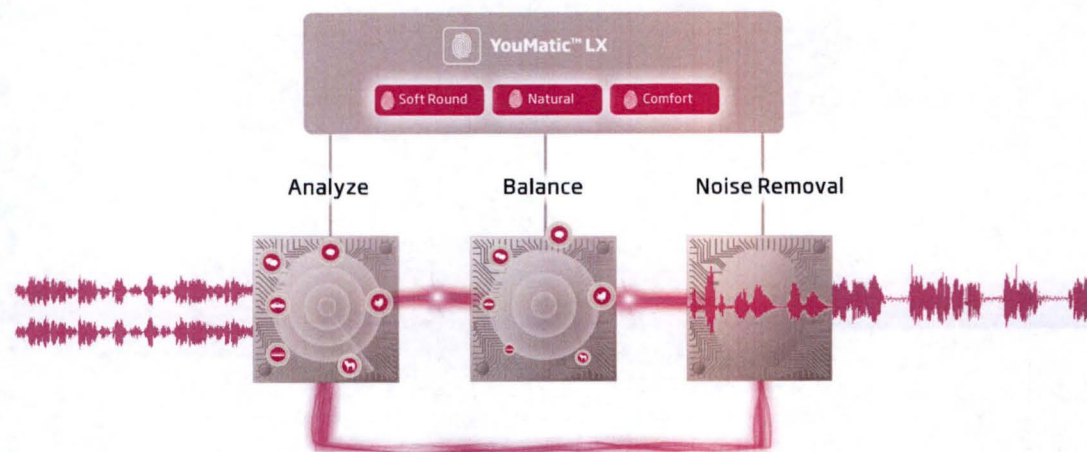
## Tailors OpenSound Navigator to individual needs and preferences

YouMatic LX is the personalization feature in Oticon Opn that intelligently controls the level of performance and response of the OpenSound Navigator across listening environments.

YouMatic LX ensures that the OpenSound Navigator delivers the optimized open sound experience to individual users and, at the same time, provides the best possible speech understanding in difficult, noisy situations.

YouMatic LX is automatically configured during the fitting process based on the users' personal sound and listening preferences.

The YouMatic LX control is an integral part of the OpenSound Navigator screen in Genie 2 and enables you to fine-tune the OpenSound Navigator response to serve individual needs.





# Speech Guard™ LX



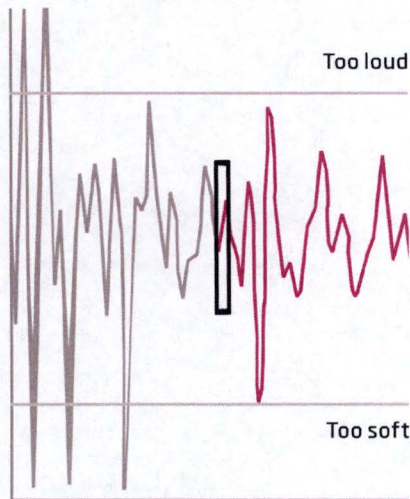
## **Improves speech understanding in noisy environments**

Speech Guard LX preserves clear, transparent sound quality and speech details for better speech understanding with less effort even in complex environments.

Speech Guard LX uses adaptive compression and is the only amplification technology that combines the benefit of linear amplification and fast compression. Linear amplification is applied in a 12dB dynamic range window to preserve amplitude modulation cues in speech signals.

When large changes in level occur, Speech Guard LX quickly adapts gain to maintain audibility and fits all sound in the reduced dynamic range of hearing-impaired listeners.

Speech Guard LX takes advantage of the new extended dynamic input range provided by Clear Dynamics to preserve the clear, transparent quality of loud sounds.



## **TELL YOUR CLIENT**

Improves speech understanding in noise and makes it easier for you to follow conversations in many situations – from soft to loud environments and even those with multiple speakers.

## **DID YOU KNOW?**

The benefits of the adaptive compression in Speech Guard LX have been documented in a number of studies. Amongst those is a study by Pitmann et al. (2014) where Speech Guard LX proved to be superior to fast and slow compression strategies.



## “ TELL YOUR CLIENT

Increases speech understanding by letting you hear more speech sounds like /s/ and /sh/.

## DID YOU KNOW?

Speech Rescue LX uses a multi-layered lowering technique. The inaudible HF source sounds are copied and placed on the border of the clients' usable hearing. The destination is never below 1600 Hz, as a primary aim of Speech Rescue is to protect the information carried by low frequencies as well as providing high frequency audibility.

# Speech Rescue LX

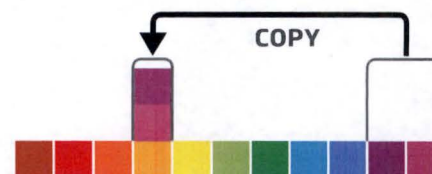
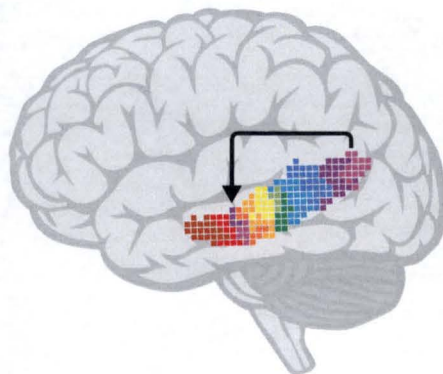


## Making high frequency sounds more audible

Missing high frequency sounds such as /s/ or /sh/ can negatively impact the flow and understanding of conversation. Oticon's methodology of frequency lowering called frequency composition increases speech understanding by 'rescuing' speech cues that might otherwise be lost.

OpenSound Navigator's precise ability to improve SNR makes Speech Rescue LX more effective in two ways: high frequency noise is reduced to clean the inaudible high frequency speech; and is then copied into noise cleaned medium frequencies.

Combined with Speech Guard LX, this gives users with moderate to severe-to-profound hearing loss (in the high frequencies) access to inaudible high frequency sounds. The three step 'copy and keep' methodology copies inaudible high frequency sounds, places them on the edge of the the maximum audible output frequency (MAOF) and ensures that the low frequencies are preserved so that vowel information and sound quality are maintained.





# Soft Speech Booster LX

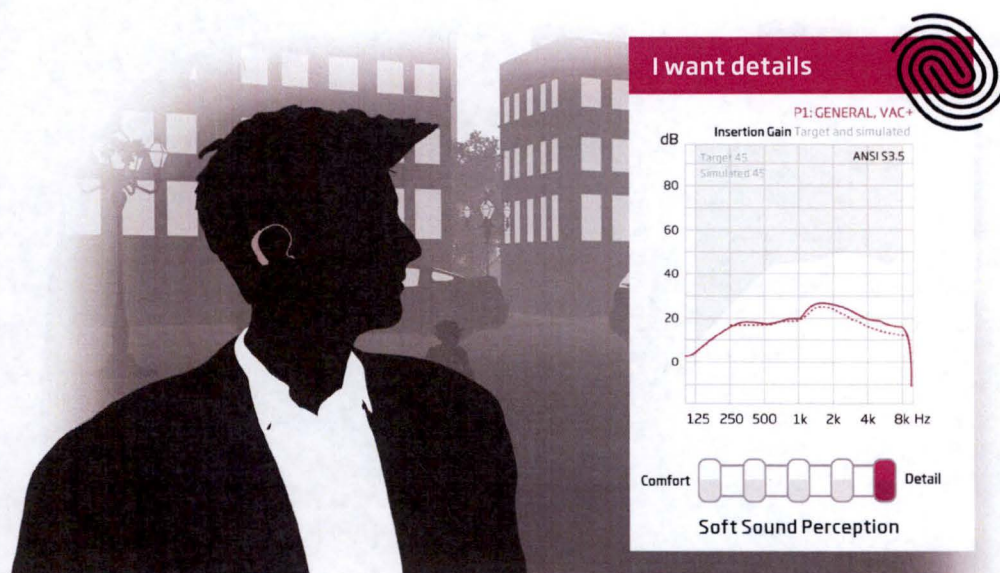


## Improves soft speech understanding up to 20%

Soft Speech Booster LX makes soft sounds audible to people with hearing loss. By increasing access to the soft sounds that occur in most situations and conversations, Soft Speech Booster LX improves soft speech understanding by up to 20%.

Oticon's proprietary fitting rationale, VAC+, uses multiple kneepoints to provide a clear focus on soft to moderate speech information while preserving comfortable perception of louder sounds.

Soft Speech Booster LX can be personalized using questions and sound files in Genie 2 to ensure a fitting matched to each user's unique perception of soft sound for the best possible balance between details and comfort.



## “ TELL YOUR CLIENT

Increases access to soft sounds so that you can enjoy up to 20% improved soft speech understanding without turning up the volume.

## DID YOU KNOW?

More than 75% of normal speech has soft sounds.



## “ TELL YOUR CLIENT

Experience superior sound quality especially when you are enjoying music or engaging in conversations in noisy environments.

## DID YOU KNOW?

Peaks of speech are usually around 12 dB above and 18 dB below the average speech level. In contrast, music is much more dynamic with peaks of up to 30 dB.

Total Harmonic Distortion (THD) is a measure of the distortion within the hearing aid. Clear Dynamics ensures less than 5% distortion up to 113 dB SPL.

# Clear Dynamics

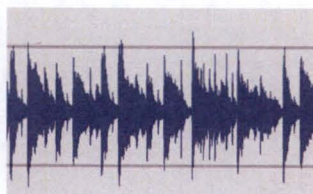


## Better sound quality in the full dynamic range of life

Clear Dynamics expands the input dynamic range, by processing input sounds from 5 to 113 dB SPL. This provides better sound quality without distortion and artifacts at loud input levels, while still keeping the sound quality of soft input levels intact.

With speech cues preserved at high input levels, users enjoy a better listening experience without distortion even in loud environments. Clear Dynamics is especially valuable for users when listening to music or in conversations in busy, dynamic environments, where peaks can often be louder than the available input dynamic range.

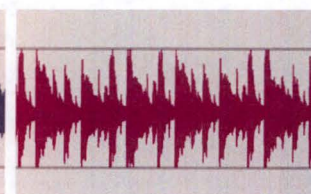
Loud input



Without Clear Dynamics



Clear Dynamics





# Wind Noise Management

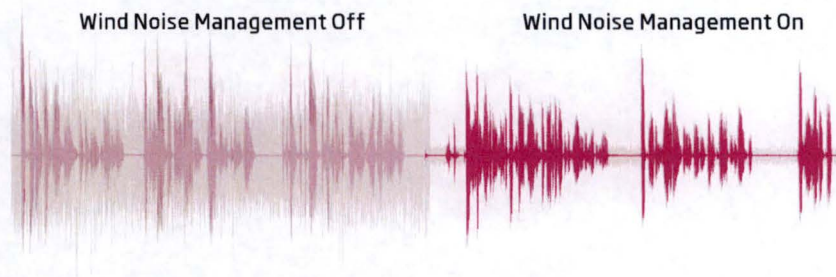


## **Better access to speech in situations with wind noise**

With the powerful Velox platform, Wind Noise Management offers innovative and highly efficient wind noise suppression. High speed estimators analyze the presence of wind noise 500 times per second in 16 frequency channels for fast and precise application of up to 30 dB wind noise reduction. Wind Noise Management attenuates wind bursts in less than 50ms, making it fast enough to precisely attenuate wind between words.

The purpose of Wind Noise Management is to attenuate the wind noise and quickly ensure a stable and comfortable loudness level for the hearing aid user, so they can focus on the speech that's important to them.

When speech is present, the signal-to-noise ratio is preserved because wind noise is suppressed when it is louder than speech. When no speech is present, the system will aggressively suppress wind noise to ensure comfort in windy situations.



## **TELL YOUR CLIENT**

Effectively suppresses annoying wind noise, even between the words in a conversation.

## **DID YOU KNOW?**

Wind fluctuates and is highly modulated, and may result in a very harsh and uncomfortable sound in hearing aids. As a result, many users reject using hearing aids even at moderate wind speed.

Wind Noise Management also suppresses the noise created when brushing against the hearing aid.



## “ TELL YOUR CLIENT

Enjoy clearer sound without worrying about annoying whistling or squealing, even in feedback-prone everyday situations like greeting someone with a hug.

## DID YOU KNOW?

There are two types of feedback. Audible feedback materializes as a whistling sound, while inaudible feedback manifests itself as poor sound quality and occurs when the hearing aid is operating close to the feedback margin.

Feedback shield LX prevents both audible and inaudible feedback.

# Feedback shield LX



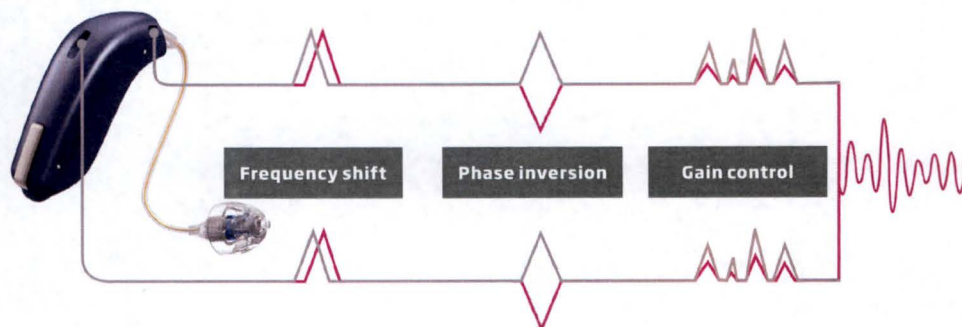
## Dual-microphone feedback system eliminates feedback rapidly and effectively

Feedback is uncomfortable and annoying. With Feedback shield LX, Oticon Opn delivers ultra-fast and effective feedback management without compromising audibility or sound quality. To improve efficiency and accuracy, Feedback shield LX operates in two separate paths – one for each microphone. In each path, three distinct technologies work together to instantly suppress potential feedback. Frequency shift optimizes phase inversion and gain control may be applied if needed.

New is a fully customizable feedback option where Feedback shield LX can be set to Off, Medium (default) or High. The Medium setting is the

option associated with Oticon's world-known sound quality whereas the High setting reduces the risk of feedback in challenging fittings.

With Feedback shield LX, more gain can be added before any intervention is necessary. This gives you greater flexibility in the fitting process. Feedback shield LX can also be customized individually for different programs within the hearing aid. You can easily optimize customization by running a quick and precise feedback analysis beforehand.





# Tinnitus SoundSupport



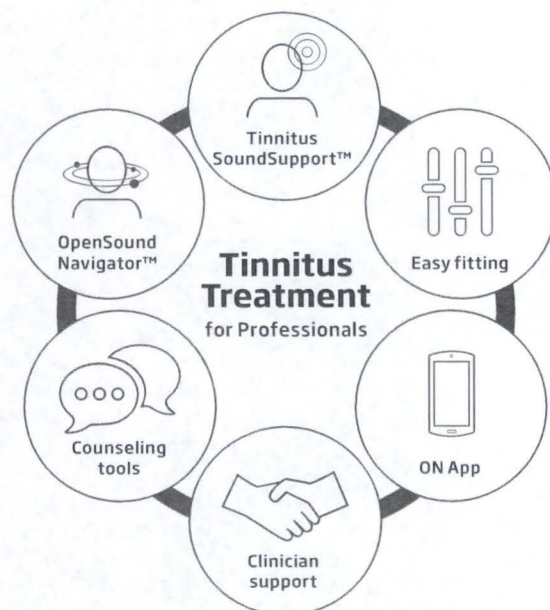
## A variety of relief sounds to meet the unique needs of each person with tinnitus

You can enable Tinnitus SoundSupport in all Oticon Opn styles and performance levels. The integrated sound generator offers a wide range of sound options including broadband sounds (shaped to audiogram, white, pink & red) and three ocean-like sounds. These nature sounds are dynamic, yet soothing, and show great promise in decreasing the annoyance of tinnitus.

No brain works the same and some clients require sounds that are more dynamic or have a unique quality. Tinnitus SoundSupport aims

to make fitting as simple and quick as possible while giving clients a fully personalized treatment. You can apply four modulation options to any of the broadband sounds to create more possibilities for relief sounds that meet clients' individual needs and preferences.

Clients can adjust the volume level of relief sounds directly on the hearing aid or via the Oticon ON App. For the client, it means easy and discreet handling and adjustment of relief sounds whenever needed.



## TELL YOUR CLIENT

Tinnitus SoundSupport and OpenSound Navigator give you the combined benefit of a balanced and rich sound experience that doesn't overload the brain and a powerful solution for tinnitus relief. The goal is to affect your perception of your tinnitus in a positive way.

## DID YOU KNOW?

No tinnitus treatment package is complete without appropriate client counseling and education. Oticon offers a comprehensive toolbox as part of our tinnitus treatment solution to help you guide your clients through their journey towards tinnitus relief.



# Feature overview

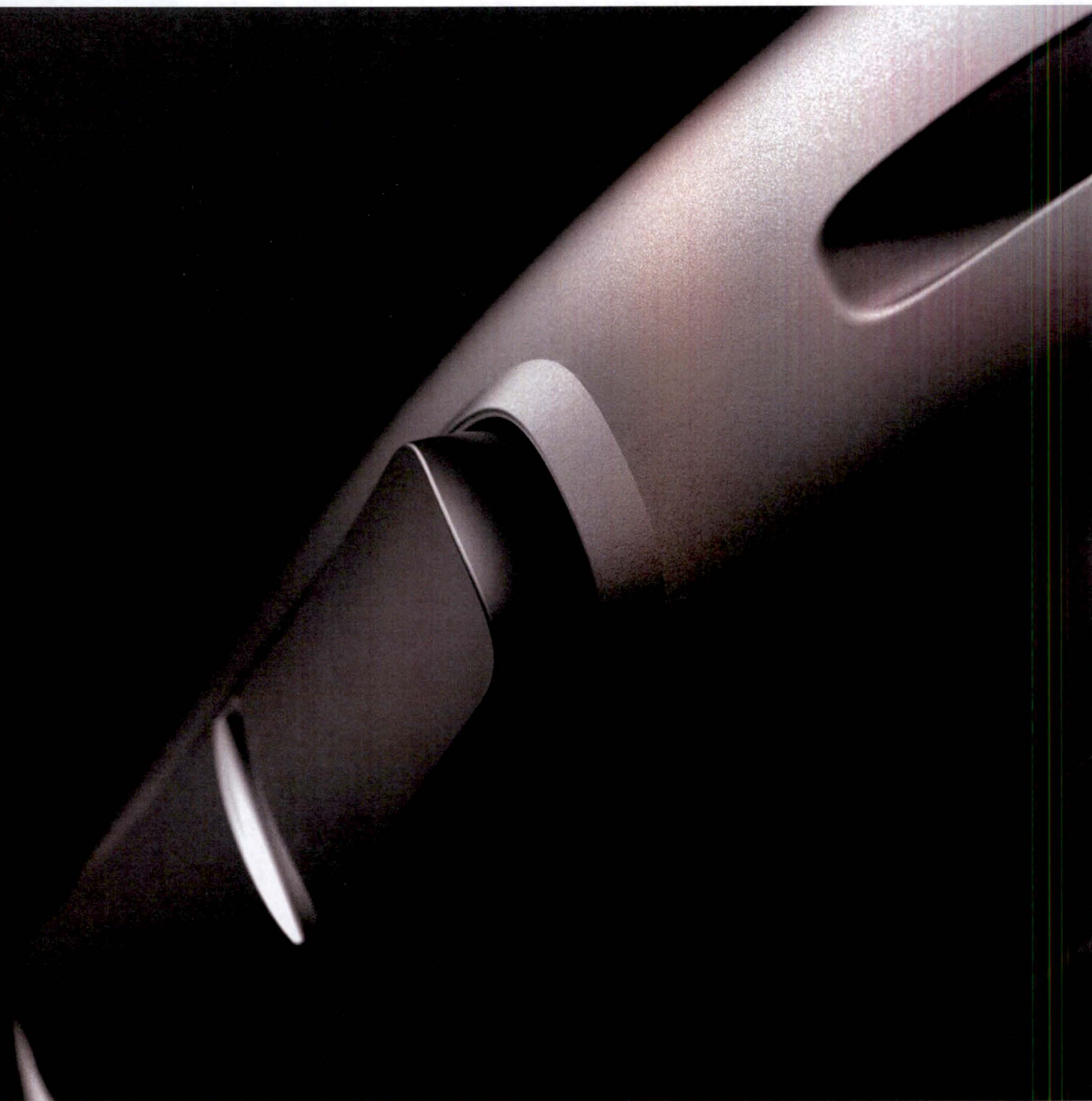
|  |   |                    |
|--|---|--------------------|
| <b>Acoustic Notifications</b>          | Provides notifications and warnings to assist and support confidence in daily use, e.g., start-up jingle, low battery warnings, etc.  |                    |
| <b>Automatic Adaptation Manager</b>    | Adapts in 3 steps for gradual user acclimatization to a new hearing aid   |                    |
| <b>App &amp; Remote Control</b>        | Discreetly adjusts volume, switches between programs or controls connectivity sources with Remote Control 3.0 or the Oticon ON App  | Page 40<br>Page 41 |
| <b>AutoPhone</b>                       | Automatically activates a phone program in the hearing aid for telephones with a dedicated magnet   |                    |
| <b>Bass Boost</b>                      | Controls compensation for bass leakage in open fittings when streaming audio  |                    |
| <b>Binaural Coordination</b>           | Coordinates program and volume settings between the two hearing aids  |                    |
| <b>Binaural Processing</b>             | Continuous data exchange between two hearing aids about the sound level in each ear to maintain the difference in input between the ears  |                    |
| <b>Clear Dynamics</b>                  | Expands the dynamic input range, processing sounds up to 113dB SPL, to preserve sound quality even at loud input levels   | Page 18            |
| <b>Data Logging</b>                    | Logs volume control usage, program usage and total use time   |                    |
| <b>Feedback Analyzer</b>               | Analyzes the risk of feedback with the prescribed gain and chosen acoustics in Genie 2  |                    |
| <b>Feedback shield LX</b>              | Employs an ultra-fast and effective feedback management system that prevents feedback without compromising sound quality or audibility  | Page 20            |
| <b>Fitting Bands</b>                   | 16 fitting bands for a precise fit and more fine-tuning options for client fittings   |                    |
| <b>Fitting Formulas</b>                | Include VAC+, NAL-NL1, NAL-NL2, and DSL v5.0  | Page 48            |
| <b>Listening Programs</b>              | Supports listening in difficult situations when the client may want extra support from e.g. a loop system   | Page 49            |
| <b>Made for iPhone®</b>                | Indicates compatibility. 'Made for iPhone' means that the hearing aid and accessories have been designed to connect to iPhone, and have been certified by the developer to meet Apple™ performance standards. | Page 40            |
| <b>Multiple Directionality Options</b> | Enables conventional directionality settings in addition to OpenSound Navigator transition settings   |                    |
| <b>NFMI</b>                            | Near-Field Magnetic Induction – Improves speed of communication and bandwidth between two hearing aids with very low power consumption  | Page 11            |



|                                   |   |         |
|-----------------------------------|---|---------|
| <b>OpenSound Navigator</b>        | Provides listening support by continuously analyzing the environment, balancing sound sources so focused sound is clear and competing sounds are not too disturbing. Finally, it attenuates remaining noise to provide a more accessible sound environment  | Page 12 |
| <b>Oticon Firmware Updater</b>    | Enables you to update Velox based hearing aids and connectivity solutions, adding new and improved features with just one click   | Page 48 |
| <b>Phone Program</b>              | Optimizes hearing aid for telephone conversations using the hearing aid microphone and/or telecoil  |         |
| <b>Processing Channels</b>        | Data is analyzed and processed in 64 channels, more than 100 times per second   | Page 10 |
| <b>REM AutoFit</b>                | Enables you to personalize fittings to individual ear acoustics   |         |
| <b>Soft Speech Booster LX</b>     | Applies an individual amount of soft gain to increase soft speech understanding   | Page 17 |
| <b>Binaural Noise Management</b>  | Optimizes listening in asymmetrical, noisy situations   |         |
| <b>Sound Studio</b>               | Offers a large selection of soundscapes to simulate different listening environments in the process of providing a better first fit   | Page 46 |
| <b>Spatial Sound LX</b>           | Uses binaural compression to provide precise spatial awareness that helps users identify where sounds are coming from   | Page 13 |
| <b>Speech Guard LX</b>            | Preserves the dynamics of speech by combining the benefits of linear and non-linear compression   | Page 15 |
| <b>Speech Rescue LX</b>           | Makes high frequency speech sounds like /s/ and /sh/ more audible using frequency composition   | Page 16 |
| <b>Stereo Streaming</b>           | Streams audio input in stereo   | Page 40 |
| <b>Tinnitus SoundSupport</b>      | Provides a variety of relief sounds, including soothing ocean sounds, to meet the individual needs of people with tinnitus  | Page 21 |
| <b>Transient Noise Management</b> | Protects against sudden loud sounds with fast recovery to preserve audibility. Offers four different levels for fine tuning, including 'Off'  |         |
| <b>TwinLink</b>                   | Combines two distinct radio technologies in an innovative wireless communication system. Features one technology to support seamless, energy-efficient binaural communication between two hearing aids (NFMI) and one to support communication with external electronic and digital devices (2.4 GHz) | Page 11 |
| <b>Wind Noise Management</b>      | Protects against the discomfort of wind noise   | Page 19 |
| <b>YouMatic LX</b>                | Accommodates personal listening preferences and sound perceptions in the prescription of gain and automatics  | Page 14 |



## Instruments





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FITTING 44





# The audiological difference between Oticon Opn 1, Opn 2 and Opn 3

Hearing loss limits the amount of acoustic detail the brain receives. The fewer number of details, the harder the brain has to work to decode sound. Oticon Opn 1, Opn 2 and Opn 3 all provide access to a 360° listening environment, but they differ in the way they support and help the brain making sense of sound.

## Three Opn features are key in supporting the brain in making sense of sound:



**OpenSound Navigator** opens the sound by preserving distinct speech and removing the noise that makes speech unclear. The level of noise that can be removed in different listening environments ranging from 9 dB to 3 dB and results in different levels of BrainHearing support.



**Spatial Sound LX** makes sure that important information about the location of sound is preserved. With 4 level estimators Oticon Opn 1 offers the best spatial information of the three performance levels.



**Speech Guard LX** amplifies and preserves clean speech information as well as improves the ability of the brain to separate speech from noise. The difference between Opn 1, Opn 2 and Opn 3 lies in the input range combined with the linear window which ranges from 12 to 9 dB, resulting in different levels of speech cue preservation.

In addition, Oticon Opn also contains a number of other features that will influence the support the brain receives in different listening situations e.g. Clear Dynamics, Binaural Noise Management, bandwidth, and number of processing channels.

**Oticon Opn 1 provides the maximum support across different listening environments, client age and lifestyle.**



## Oticon Opn product comparison

|   | Oticon Opn 1              | Oticon Opn 2              | Oticon Opn 3              |
|---|---------------------------|---------------------------|---------------------------|
| <b>Speech Understanding</b>                     |                           |                           |                           |
| OpenSound Navigator™                            | Level 1                   | Level 2                   | Level 3                   |
| Balancing power effect                          | 100%                      | 50%                       | 50%                       |
| Max. noise removal                              | 9 dB                      | 5 dB                      | 3 dB                      |
| Speech Guard™ LX                                | Level 1                   | Level 2                   | Level 3                   |
| Spatial Sound™ LX                               | 4 estimators              | 2 estimators              | 2 estimators              |
| Soft Speech Booster LX                          | •                         | •                         | •                         |
| Speech Rescue™ LX                               | •                         | •                         | •                         |
| <b>Sound Quality</b>                            |                           |                           |                           |
| Clear Dynamics                                  | •                         | •                         | -                         |
| Binaural Noise Management                       | •                         | •                         | -                         |
| Fitting Bandwidth                               | 10 kHz                    | 8 kHz                     | 8 kHz                     |
| Processing Channels                             | 64                        | 48                        | 48                        |
| Bass Boost (streaming)                          | •                         | •                         | •                         |
| <b>Listening Comfort</b>                        |                           |                           |                           |
| Transient Noise Management                      | 4 configurations          | On/Off                    | On/Off                    |
| Feedback shield LX                              | •                         | •                         | •                         |
| Wind Noise Management                           | •                         | •                         | •                         |
| <b>Personalization &amp; Optimizing Fitting</b> |                           |                           |                           |
| YouMatic™ LX                                    | 3 configurations          | 2 configurations          | 1 configuration           |
| Fitting Bands                                   | 16                        | 14                        | 12                        |
| Listening Programs                              | •                         | •                         | •                         |
| Multiple Directionality Options                 | •                         | •                         | •                         |
| Adaptation Management                           | •                         | •                         | •                         |
| Fitting Formulas                                | VAC+, NAL-NL1+2, DSL v5.0 | VAC+, NAL-NL1+2, DSL v5.0 | VAC+, NAL-NL1+2, DSL v5.0 |
| <b>Connecting to the World</b>                  |                           |                           |                           |
| Stereo streaming (2.4 GHz)                      | •                         | •                         | •                         |
| Made for iPhone®                                | •                         | •                         | •                         |
| Oticon ON App                                   | •                         | •                         | •                         |
| ConnectClip                                     | •                         | •                         | •                         |
| Remote Control 3.0                              | •                         | •                         | •                         |
| TV Adapter 3.0                                  | •                         | •                         | •                         |
| <b>Special Needs</b>                            |                           |                           |                           |
| Tinnitus SoundSupport™                          | •                         | •                         | •                         |

### “ TELL YOUR CLIENT

Only Oticon Opn opens up the soundscape to embrace multiple speakers in difficult listening environments. It's just a matter of choosing the right version.

### DID YOU KNOW?

Regardless of end-user age and lifestyle, Oticon always recommends Opn 1 for maximum support across different listening environments, simple as well as complex.



# How the difference influences Oticon Opn's ability to support the brain

BrainHearing support is delivered by a unique combination of technologies working together to reduce listening effort and provide the brain with better conditions to perform in. All three members of the Opn family provide the unique open sound experience, with access to multiple

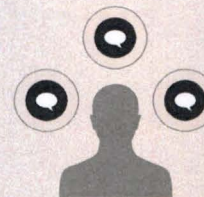
speakers. However, they differ in the amount of support they give the brain in terms of rapid noise reduction, localization of sounds, speech clarity, and the personalization of the listening experience - **i.e. they differ in the level of BrainHearing support they deliver.**



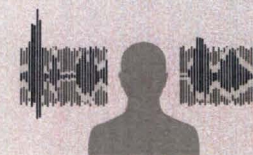
Product



BrainHearing™ support



Open access to all speakers



Rapid noise reduction

| Product      | BrainHearing™ support | Open access to all speakers | Rapid noise reduction |
|--------------|-----------------------|-----------------------------|-----------------------|
| Oticon Opn 1 | Level 1               | Yes                         | ● ● ●                 |
| Oticon Opn 2 | Level 2               | Yes                         | ● ●                   |
| Oticon Opn 3 | Level 3               | Yes                         | ●                     |

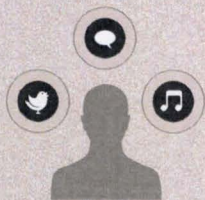
## Supporting features:

- OpenSound Navigator™
- Spatial Sound™ LX

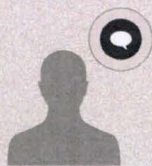
- OpenSound Navigator™
- Frequency bands







Localization of sounds



Speech clarity



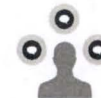
A personalized listening experience

|       |       |       |
|-------|-------|-------|
| • • • | • • • | • • • |
| • •   | • •   | • •   |
| •     | •     | •     |

- Speech Guard™ LX
- Spatial Sound™ LX
- Clear Dynamics
- Bandwidth

- OpenSound Navigator™
- Speech Guard™ LX
- Clear Dynamics
- Bandwidth
- Frequency bands

- Fitting bands
- YouMatic™ LX
- Soft Speech Booster LX



### 1. Open access to all speakers

The open sound experience is built on the foundation of ensuring open access to multiple speakers, even in noisy environments.



### 2. Rapid noise reduction

Intruding noise puts extra load on the brain, so a rapid and precise reduction of noise coming from specific directions, as well as diffuse background noise, is essential to make distinct speech stand out.



### 3. Localization of sounds

With the open sound experience bringing access to all sounds, it's important that users receive precise sound localization information, so they can decide where to focus.



### 4. Speech clarity

To ensure maximal speech understanding with less effort, and a richer listening experience, all speech sources in any location are enhanced and clarified.



### 5. A personalized listening experience

The performance of Oticon Opn is optimized by making adjustments based on individual needs and personal preferences.



# By supporting the brain, Oticon Opn significantly reduces listening effort...

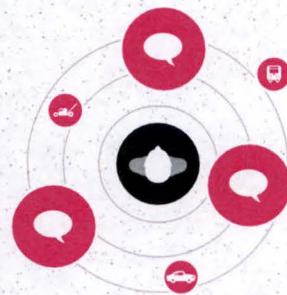
In difficult listening environments, the limitations of traditional hearing aid technology has led to the use of narrow directionality to make speech coming from the front clear. All other sounds, speech and noise alike are reduced, leaving the user with a narrowed, artificial listening experience. But with the speed and precision of Multiple Speaker Access Technology (MSAT), the OpenSound Navigator can reduce noise enough to significantly reduce listening effort, while at the same time delivering an open sound experience.\*

## Traditional technology



Traditional directionality – focusing on one speaker, while suppressing all other sounds.

## MSAT in: Oticon Opn 1



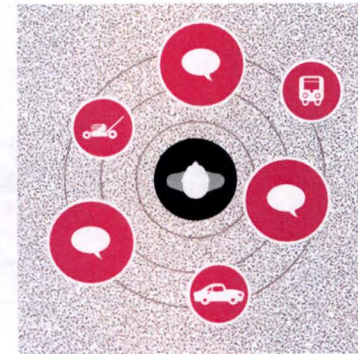
The easiest listening experience with maximum reduction of background noise and rapid reduction of loud noise coming from specific directions while preserving speech.

## Oticon Opn 2

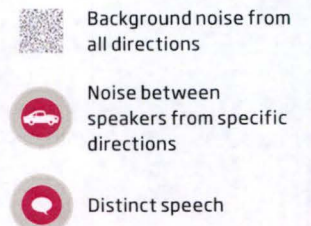


An easier listening experience with moderate reduction of background noise, and reduction of loud noise coming from specific directions while preserving speech.

## Oticon Opn 3



An improved listening experience with basic reduction of background noise, and reduction of loud noise coming from specific directions while preserving speech.



\* Wendt et al. 2016, "Impact of noise and noise reduction on processing effort: A pupillometry study". (under review)

\*\* Only Oticon Opn 1 has the full effect of OpenSound Navigator™

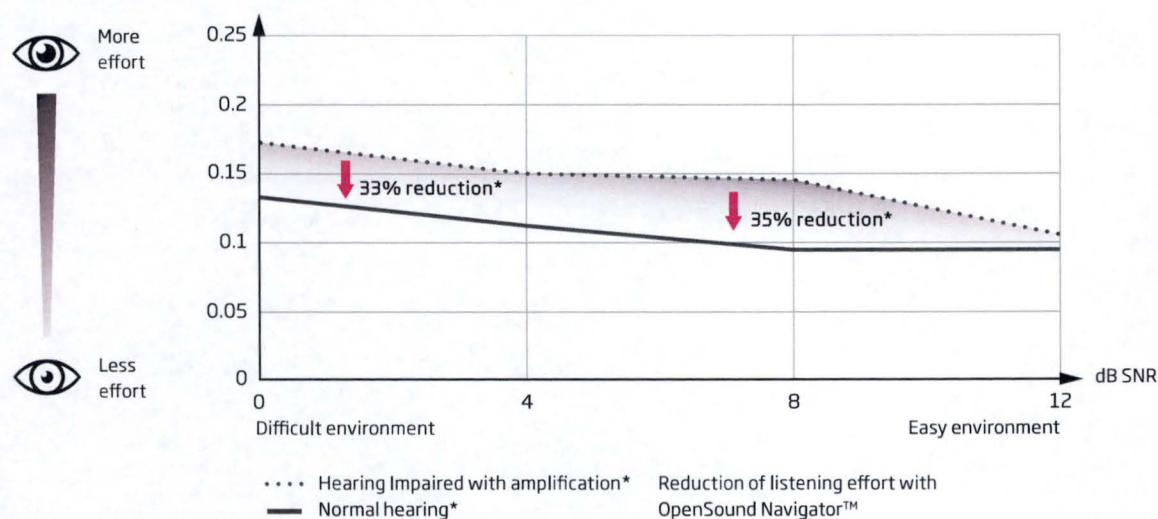


# ... in both simple and complex environments

With hearing loss, the brain must work harder to make sense of sound. Using pupillometry as the objective measure for listening effort, new research shows a significant increase in the load on the brain for people with hearing loss, even in easy communication conditions where noise is quieter than speech, and speech understanding is high.

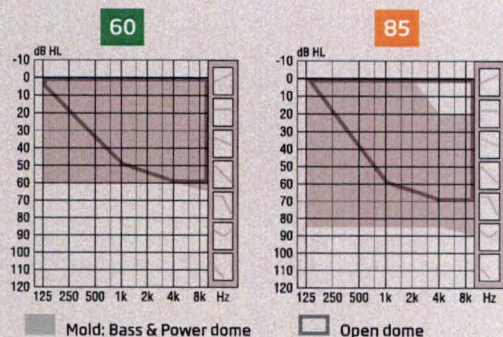
Oticon Opn is now proven to reduce noise to significantly decrease listening effort, even in these easy listening situations. In doing so, Opn significantly narrows the gap in listening effort between people with normal hearing and people with hearing loss. Oticon Opn 1 provides the most support across different listening environments.\*\*

**Listening effort, as indicated by Peak Pupil Dilation (mm)**





## Oticon Opn fitting range\*



### OSPL90 (peak)

Ear simulator 116 dB SPL  
2cc coupler 105 dB SPL

### OSPL90 (peak)

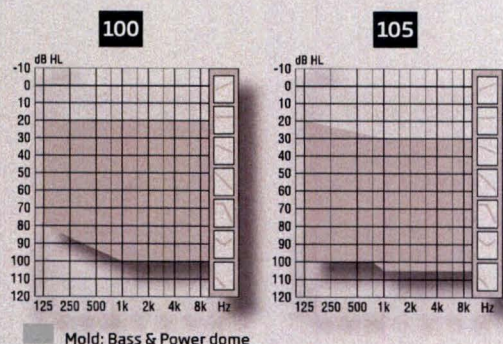
Ear simulator 127 dB SPL  
2cc coupler 116 dB SPL

### Full-on gain (peak)

Ear simulator 46 dB  
2cc coupler 35 dB

### Full-on gain (peak)

Ear simulator 66 dB  
2cc coupler 54 dB



### OSPL90 (peak)

Ear simulator 132 dB SPL  
2cc coupler 122 dB SPL

### OSPL90 (peak)

Ear simulator 135 dB SPL  
2cc coupler 127 dB SPL

### Full-on gain (peak)

Ear simulator 66 dB  
2cc coupler 57 dB

### Full-on gain (peak)

Ear simulator 72 dB  
2cc coupler 64 dB

## Small, discreet miniRITE



Oticon Opn miniRITE has a discreet design with a smart single push button for easy operation of volume and programs.

Oticon Opn miniRITE offers clients a discreet hearing aid with a wealth of features and functionalities including 2.4 GHz wireless

technology, Made for iPhone functionality and Tinnitus SoundSupport.

Oticon Opn miniRITE uses the proven miniFit receivers and earpieces, fits up to 105 dB HL and is powered by a 312 battery.

### miniFit receivers

Select between three different receivers. miniFit receivers are available with lengths 0-5.

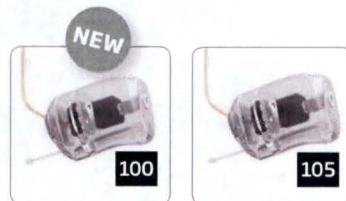


### Accessories for miniFit receivers:

- Different ear grips for receiver 60 and 85
- ProWax miniFit filter
- Measuring tool

### Power Receiver Mold

Select between two Power Receiver Molds. Power Receiver Molds have separate wires, available in length 1-5.



Power Receiver Mold

### Accessories for Power Receiver Mold:

- ProWax filter
- Measuring tool
- Power Receiver Mold required for 105 receiver

### IP68 - water and dust resistant

Oticon Opn is robust and reliable, and has a certified rating of IP68 for dust and water resistance. All vital components are nano-coated inside and out.

\* Fitting range is based on Oticon Opn 1. Details for Oticon Opn 2 & Oticon Opn 3 are available in Technical Data sheets.



## Standard earpieces

miniFit domes

5 mm 6 mm 8 mm 10 mm 12 mm

|                                 |   | 5 mm | 6 mm            | 8 mm            | 10 mm           | 12 mm           |
|---------------------------------|---|------|-----------------|-----------------|-----------------|-----------------|
| Open dome                       |  | 60   | 85              | 85              | 85              |                 |
| Bass dome, single vent (0.8 mm) |  |      | 60<br>85<br>100 | 60<br>85<br>100 | 60<br>85<br>100 | 60<br>85<br>100 |
| Bass dome, double vent (1.4 mm) |  |      | 60<br>85<br>100 | 60<br>85<br>100 | 60<br>85<br>100 | 60<br>85<br>100 |
| Power dome                      |  |      | 60<br>85<br>100 | 60<br>85<br>100 | 60<br>85<br>100 | 60<br>85<br>100 |

### All domes:

- Made of silicone
- Compatible with miniFit receivers
- Have built-in wax protection

## Grip Tip

Select between two different Grip Tip types, in two different sizes (small & large) for both left and right ear.



### Grip Tip:

- Tinted pink
- More durable than domes
- Tacky texture to help prevent slippage

## Customized earpieces<sup>1</sup>

|                        |   |            |
|------------------------|---|------------|
| MicroMold <sup>2</sup> |    | 60<br>85   |
| LiteTip <sup>2</sup>   |    | 60<br>85   |
| Power Receiver Mold    |   | 100<br>105 |
| MicroMold, VarioTherm® |  | 60<br>85   |
| LiteTip, VarioTherm®   |  | 60<br>85   |

### MicroMold and LiteTip:

- Made of acrylic

### VarioTherm®:

- Thermoplastic
- Remains hard at room temperature for easy insertion
- Softens at body temperature for increased comfort and optimum sealing
- Available in two hardnesses - 50 and 70. 70 is standard.

Please note:

VarioTherm® requires gentle warming of the mold with a hair dryer before insertion or removal of the receiver.

1) Requires taking an ear impression. 2) Uses ProWax filter.

® VarioTherm is a registered trademark of Dreve.



**C068**  
Royal Blue

**C090**  
Chroma Beige

**C094**  
Terracotta

**C093**  
Chestnut Brown



**C063**  
Diamond Black

**C092**  
Steel Grey

**C091**  
Silver Grey

**C044**  
Silver

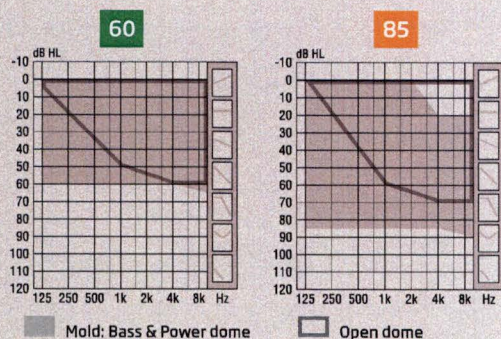
|                   |                        |
|-------------------|------------------------|
| Battery size      | 312                    |
| Battery life (h)* | 60: 60-65<br>85: 55-65 |

|                    |                          |
|--------------------|--------------------------|
| Wireless           | •                        |
| Directional        | •                        |
| Program control    | •                        |
| Volume control     | •                        |
| Made for iPhone    | •                        |
| TV Adapter 3.0     | •                        |
| Remote Control 3.0 | •                        |
| AutoPhone          | •                        |
| Wireless fitting   | FittingLINK 3.0          |
| Cable fitting      | FlexConnect and Cable #3 |

\* Real usage battery life is shown as an estimated interval based on mixed use cases with variable amplification settings and variable input levels, incl. direct stereo streaming from a TV (25% of the time) and streaming from a mobile phone (6% of the time). Interval is shown for miniFit 60. Details for other speakers can be found in Technical Data sheets.



## Oticon Opn fitting range\*



### OSPL90 (peak)

Ear simulator 116 dB SPL  
2cc coupler 105 dB SPL

### OSPL90 (peak)

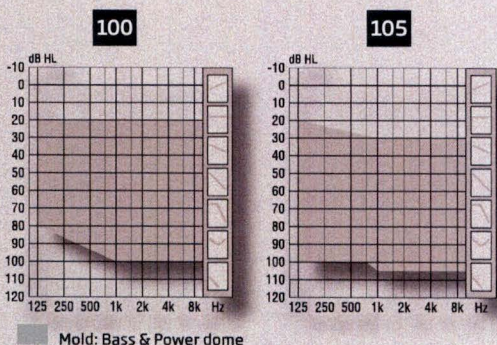
Ear simulator 127 dB SPL  
2cc coupler 116 dB SPL

### Full-on gain (peak)

Ear simulator 46 dB  
2cc coupler 35 dB

### Full-on gain (peak)

Ear simulator 66 dB  
2cc coupler 54 dB



### OSPL90 (peak)

Ear simulator 132 dB SPL  
2cc coupler 122 dB SPL

### OSPL90 (peak)

Ear simulator 135 dB SPL  
2cc coupler 127 dB SPL

### Full-on gain (peak)

Ear simulator 66 dB  
2cc coupler 57 dB

### Full-on gain (peak)

Ear simulator 72 dB  
2cc coupler 64 dB

## Sleek and discreet miniRITE-T



Oticon Opn miniRITE-T is a discreet new style, based on the popular miniRITE, and features a telecoil and a convenient double push button for easy volume and program control.

With miniRITE-T, clients with hearing loss up to 105 dB HL can choose a discreet hearing aid with a full set of features and functionalities,

including 2.4 GHz wireless technology, Made for iPhone functionality and Tinnitus SoundSupport.

The new miniRITE-T uses the proven miniFit receivers and earpieces and is powered by a 312 battery.

### miniFit receivers

Select between three different receivers. miniFit receivers are available with lengths 0-5.

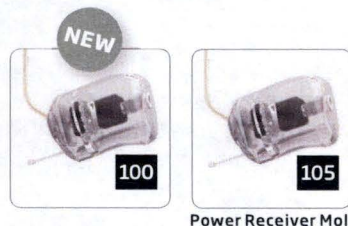


### Accessories for miniFit receivers:

- Different ear grips for receiver 60 and 85
- ProWax miniFit filter
- Measuring tool

### Power Receiver Mold

Select between two Power Receiver Molds. Power Receiver Molds have separate wires, available in length 1-5.



### Accessories for Power Receiver Molds:

- ProWax filter
- Measuring tool
- Power Receiver Mold required for 105 receiver

### IP68 - water and dust resistant

Oticon Opn is robust and reliable, and has a certified rating of IP68 for dust and water resistance. All vital components are nano-coated inside and out.





\* Fitting range is based on Oticon Opn 1. Details for Oticon Opn 2 & Oticon Opn 3 are available in Technical Data sheets.



## Standard earpieces

miniFit domes

5 mm 6 mm 8 mm 10 mm 12 mm

|                                 |   | 5 mm | 6 mm | 8 mm | 10 mm | 12 mm |
|---------------------------------|---|------|------|------|-------|-------|
| Open dome                       |  | 60   | 85   | 85   | 85    |       |
| Bass dome, single vent (0.8 mm) |  |      | 85   | 85   | 85    | 85    |
| Bass dome, double vent (1.4 mm) |  |      | 85   | 85   | 85    | 85    |
| Power dome                      |  |      | 85   | 85   | 85    | 85    |

### All domes:

- Made of silicone
- Only compatible with miniFit receivers
- Have built-in wax protection

## Grip Tip


Select between two different Grip Tip types, in two different sizes (small & large) for both left and right ear.



### Grip Tip:

- Tinted pink
- More durable than domes
- Tacky texture to help prevent slippage

## Customized earpieces<sup>1</sup>

|                        |   |     |
|------------------------|---|-----|
| MicroMold <sup>2</sup> |    | 60  |
| LiteTip <sup>2</sup>   |    | 85  |
| Power Receiver Mold    |   | 100 |
| MicroMold, VarioTherm® |  | 85  |
| LiteTip, VarioTherm®   |  | 85  |

### Micro mold and LiteTip:

- Made of acrylic
- ProWax filter

### VarioTherm®:

- Thermoplastic
- Remains hard at room temperature for easy insertion
- Softens at body temperature for increased comfort and optimum sealing
- Available in two hardnesses - 50 and 70. 70 is standard.

Please note:

VarioTherm® requires gentle warming of the mold with a hair dryer before insertion or removal of the receiver.

1) Requires taking an ear impression. 2) Uses ProWax filter.

® VarioTherm is a registered trademark of Dreve.



**C090**  
Chroma Beige

**C094**  
Terracotta

**C093**  
Chestnut Brown



**C063**  
Diamond Black

**C092**  
Steel Grey

**C091**  
Silver Grey

**C044**  
Silver

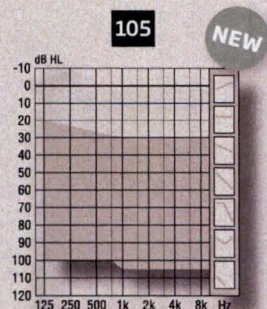
|                   |           |
|-------------------|-----------|
| Battery size      | 312       |
| Battery life (h)* | 60-65     |
|                   | 85: 55-65 |

|                    |                          |
|--------------------|--------------------------|
| Wireless           | •                        |
| Directional        | •                        |
| Program control    | •                        |
| Volume control     | •                        |
| Made for iPhone    | •                        |
| TV Adapter 3.0     | •                        |
| Remote Control 3.0 | •                        |
| AutoPhone          | •                        |
| Wireless fitting   | FittingLINK 3.0          |
| Cable fitting      | FlexConnect and Cable #3 |

\* Real usage battery life is shown as an estimated interval based on mixed use cases with variable amplification settings and variable input levels, incl. direct stereo streaming from a TV (25% of the time) and streaming from a mobile phone (6% of the time). Interval is shown for miniFit 60. Details for other speakers can be found in Technical Data sheets.



## Oticon Opn fitting range\*



### OSPL90 (peak)

|               |            |
|---------------|------------|
| Ear simulator | 138 dB SPL |
| 2cc coupler   | 131 dB SPL |

### Full-on gain (peak)

|               |       |
|---------------|-------|
| Ear simulator | 73 dB |
| 2cc coupler   | 66 dB |

## Powerful and compact BTE13 PP



Oticon Opn BTE13 PP features a new compact design with a tactile double push button for easy operation of volume and programs. BTE13 PP comes with telecoil and an optional discreet, two color LED indicator to monitor hearing aid status.

The compact and powerful hearing aid provides an MPO of 131 dB SPL and offers a full set of

features and functionalities, including 2.4 GHz wireless technology, Made for iPhone functionality and Tinnitus SoundSupport.

Oticon Opn BTE13 PP supports fittings with either a hook and Corda miniFit or is powered by a 13 battery.

### Hook and Corda miniFit options

BTE13 PP is defaulted with an undamped hook for adults. This is interchangeable with a damped hook or child hooks (damped/undamped) or the more discreet Corda miniFit Power option. Corda miniFit Power (1.3 mm thin tube) is available in 6 different lengths (-1 to 4).



### Accessories for Corda miniFit:

- Measuring tool

### Tamper resistant battery drawer

The standard battery drawer can be replaced by a tamper resistant battery drawer available in all instrument colors.



### IP68 - water and dust resistant

Oticon Opn is robust and reliable, and has a certified rating of IP68 for dust and water resistance. All vital components are nano-coated inside and out.




\* Fitting range is based on Oticon Opn 1. Details for Oticon Opn 2 & Oticon Opn 3 are available in Technical Data sheets.



# Corda miniFit earpieces

## Standard earpieces

miniFit domes                      6 mm   8 mm   10 mm   12 mm

|                                    |   |   |   |   |   |
|------------------------------------|---|---|---|---|---|
| Bass dome,<br>single vent (0.8 mm) |  | • | • | • | • |
| Bass dome,<br>double vent (1.4 mm) |  | • | • | • | • |
| Power dome                         |  | • | • | • | • |

### All domes:

- Made of silicone
- Compatible with Corda miniFit Power
- Have built-in wax protection

## Grip Tip



Select between two different Grip Tip types, in two different sizes (small & large) for both left and right ear.



### Grip Tip:

- Tinted pink
- More durable than domes
- Tacky texture to help prevent slippage

## Customized earpieces<sup>1</sup>

|                        |   |
|------------------------|---|
| MicroMold              |    |
| MicroMold, VarioTherm® |  |

### MicroMold:

- Made of acrylic
- Uses ProWax filter

### VarioTherm®:

- Thermoplastic
- Remains hard at room temperature for easy insertion
- Softens at body temperature for increased comfort and optimum sealing
- Available in 70 shore. (Hardness)

Please note:

VarioTherm® requires gentle warming of the mold with a hair dryer before insertion or removal of the thin tube.

1) Requires taking an ear impression.  
® VarioTherm is a registered trademark of Dreve.



**C090**  
Chroma Beige

**C094**  
Terracotta

**C093**  
Chestnut Brown



**C063**  
Diamond Black

**C092**  
Steel Grey

**C091**  
Silver Grey

**C044**  
Silver

|                    |                 |
|--------------------|-----------------|
| Battery size       | 13              |
| Battery life (h)*  | 80-105          |
| Wireless           | •               |
| Directional        | •               |
| Program control    | •               |
| Volume control     | •               |
| Made for iPhone    | •               |
| TV Adapter 3.0     | •               |
| Remote Control 3.0 | •               |
| AutoPhone          | •               |
| Wireless fitting   | FittingLINK 3.0 |
| Cable fitting      | Cable #3        |


\* Real usage battery life is shown as an estimated interval based on mixed use cases with variable amplification settings and variable input levels, incl. direct stereo streaming from a TV (25% of the time) and streaming from a mobile phone (6% of the time). Interval is shown for miniFit 60. Details for other speakers can be found in Technical Data sheets.





## Connectivity & Apps





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| CONNECTIVITY & APPS   | 38 |
| FITTING               | 44 |



## “ TELL YOUR CLIENT

Enjoy audio streamed directly from your iPhone®, iPad® and iPod touch® to your hearing aids.



## “ TELL YOUR CLIENT

Connects your iPhone or Android™ smartphone directly to your hearing aids so you can control volume, switch programs, adjust settings and more with just a tap of your fingers.

### DID YOU KNOW?

Made for iPhone means that you have basic control over your hearing aids directly from your iPhone, such as volume control and battery status.

Learn more at [oticon.com](http://oticon.com)

# Made for iPhone

Oticon Opn is a Made for iPhone hearing aid. Directly connected to iPhone, the hearing aid doubles as wireless headphones – without the need for an intermediary device. The Bluetooth technology in Oticon Opn supports stereo streaming of music and produces sound with high fidelity and bandwidth. When making calls,

the user's voice is picked up by iPhone microphone. iPhone also doubles as a basic remote control for the hearing aids.

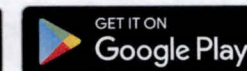
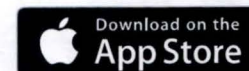
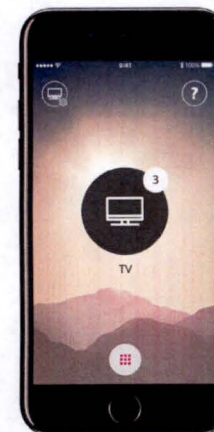


# Oticon ON App

The Oticon ON App makes it easy for Oticon Opn hearing aid users to have additional control of their hearing aids with just a touch of their fingertips. iPhone or the Android smartphone is connected directly to the hearing aids using Bluetooth 4.0/Bluetooth SMART.

The ON App allows users to adjust volume levels of both gain and tinnitus relief sounds, as well as switching between programs, settings and more. The app also offers a “find my hearing aid” search feature, a client information and education guide, links to hearing aid instructions and low battery notification.

Please note that direct audio streaming is currently not supported by Android.



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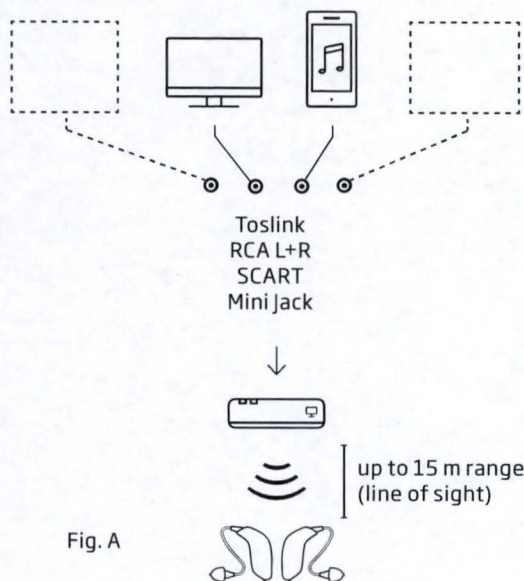


Fig. A

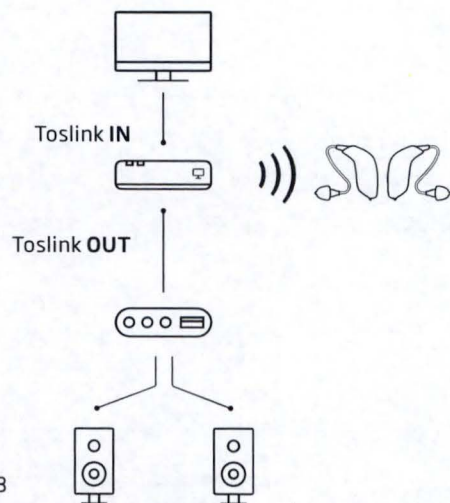


Fig. B

## TV Adapter 3.0

TV Adapter 3.0 wirelessly transmits real-time stereo audio from a TV or home entertainment system directly to Oticon Opn hearing aids at a distance of up to 15 meters. Users can set the volume to their preferred level for a listening experience free from the distraction of surrounding noise. The TV Adapter is installed and placed at the TV. Practically any audio source can be connected to the TV Adapter including digital stereo (PCM) and Dolby Digital® (Optical Toslink input) (Fig. A).

As a unique feature, the TV Adapter can be installed in most existing home entertainment systems (Fig. B).

## Remote Control 3.0

The Remote Control, roughly the size of a modern car key, gives users discreet control over Oticon Opn hearing aids. Users can easily adjust volume, switch between programs or control connectivity sources. Simple and easy to use, the Remote Control is especially beneficial for users with dexterity challenges.

### “ TELL YOUR CLIENT

With the TV Adapter you can enjoy TV sound directly in your hearing aids, at the volume you prefer, without the distraction of surrounding noise.



### “ TELL YOUR CLIENT

Gives you discreet and easy control over your Oticon Opn hearing aids. Adjust volume or switch between programs with this small device, roughly the size of a modern car key.





## “ TELL YOUR CLIENT

Turns your Oticon Opn hearing aids into virtual wireless headphones by streaming conversation from practically any mobile phone directly to your hearing aids.

## ConnectClip

ConnectClip is used with mobile phones and other audio devices not supporting direct wireless connectivity (or streaming) to the hearing aids (Fig. C). The hearing aids function as a wireless headset and the user's conversation is picked up by the ConnectClip's built-in directional microphones.

Audio from the mobile phone streams to ConnectClip using standard Bluetooth technology. The audio is then streamed directly to the user's hearing aids using 2.4 GHz technology. ConnectClip works with almost any mobile phone produced since 2010.\*

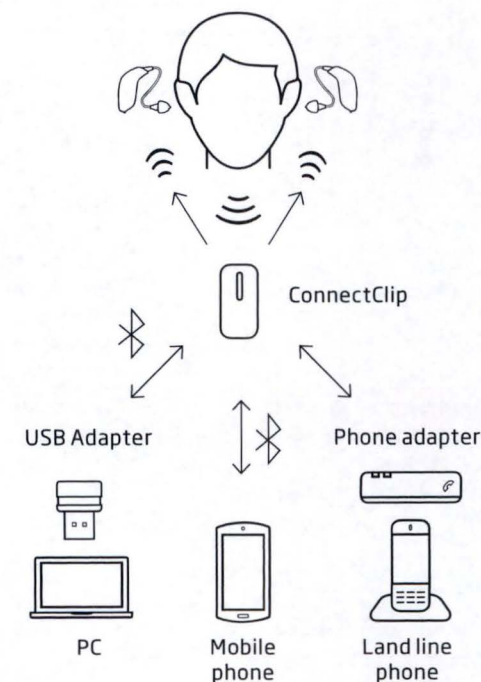


Fig. C

## Phone Adapter

Phone Adapter 2.0 connects wirelessly to the ConnectClip, allowing for hassle-free daily use of traditional phones.

## USB Adapter

The USB Adapter (BTD 800) is a "plug and play" solution which wirelessly connects the ConnectClip to practically any computer for Skype, Messenger, Lync and other softphones.

\*ConnectClip will be available during second half of 2017.



# The world's first Internet-connected hearing aid

Connect to your home security system

Connect to your smart devices

Connect to kitchen devices

Connect to your TV, radio and game console

Connect to electricity and thermostat controllers

Connect to your car

## Open up to a world of endless connectivity possibilities

Through a unique Oticon cloud solution, Oticon Opn can be linked to the If This Then That (IFTTT) network. This allows users to connect to and control an endless range of devices used in everyday life.

Imagine, for instance, that hearing aids are able to notify users when an email is received, turn

the home alarm system on and off or inform when someone is at the front door – all of this is possible with Oticon Opn.

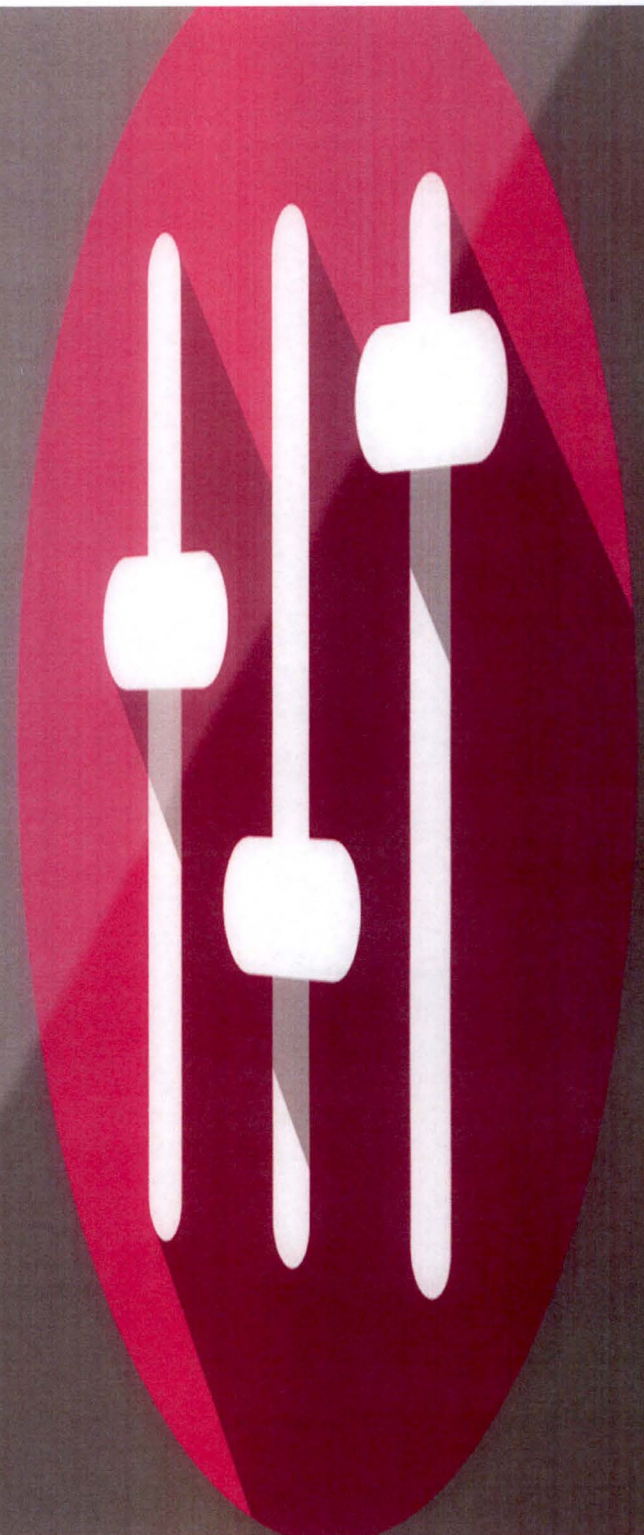
Explore the endless possibilities available when connecting Oticon Opn to the Internet. Visit [IFTTT.com](http://IFTTT.com) and [oticon.com](http://oticon.com) for additional information.

## Ideas for inspiration:


- Turn off lights when you leave home
- Get a voice alert when doorbell rings
- Send text when battery is low
- Switch to home program when entering front door



## Fitting







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### **Sound Studio – now featuring tinnitus relief sounds**

Sound Studio now offers tinnitus relief sounds so you can simulate the benefit of Tinnitus SoundSupport in various situations (simple or complex) as part of the fitting process.

The Sound Studio sound library includes a large selection of virtual sound scenes to simulate common listening situations. You can also design your own sound scenes using various signals, such as speech, music, and situations with background noise.

The 3D sound system runs on the fitting PC and uses the speaker setup in the clinic.

## New features in Genie 2

### **Tinnitus SoundSupport for tinnitus relief**

Tinnitus SoundSupport is now available in all Oticon Opn hearing aids. The integrated sound generator offers relief from tinnitus with customizable relief sounds that you can add to any conventional program in the hearing aid. Tinnitus SoundSupport is activated in Genie 2 and provides you with a range of four broadband sounds and three ocean-like sounds. These relief sounds can be adjusted and fine-tuned to suit each client's individual needs and preferences. You can also adjust the relief sounds through Automatic Level Steering, hearing aid microphone on/off in tinnitus programs, frequency shaping, four modulation settings and easy level adjustment.

Genie 2 now allows you to demonstrate all seven relief sounds in Sound Studio to help clients and their significant others better understand aspects of tinnitus treatment using sound therapy.

With the Max wearing time indicator and the Max wearing time table, also new in Genie 2, you can counsel your client on safe use of relief sounds. The allowable number of relief hours are clearly shown, supporting safe use of the tinnitus sound generator for all clients. This is especially important for clients that require the sound generator to be set at higher levels.





## Prescribing Speech Rescue LX in Genie 2

Speech Rescue LX improves speech understanding for users with more severe, asymmetric, progressive and unilateral hearing loss by preserving high frequency cues that might otherwise be lost. Speech Rescue LX benefits clients when conventional forms of amplification have not produced audibility in the high frequencies.

The prescription of Speech Rescue LX is based on the Maximum Audible Output Frequency (MAOF). In Genie, the MAOF is combined with data extracted from the audiogram, the fitting rationale, the output of the hearing aid and the average spectrum for conversational speech to determine the Speech Rescue LX prescription. Speech Rescue LX is also suitable for clients with a moderate to severe-to-profound hearing loss whose MAOF is below 6 kHz.

Conveniently located in the Fitting section below, the Feedback Analyzer and Speech Rescue LX are defaulted to OFF for both adults and children. When you choose to enable Speech Rescue LX for a client, Genie automatically applies the default setting. Speech Rescue LX can be fine-tuned to each client's needs and can be activated in all or specific programs. Fine-tunings are simulated within Genie so that you can visualize the changes as they are made.

Speech Rescue LX can be utilized in both bilateral and unilateral fittings and is prescribed separately for each ear.





### **Oticon Firmware Updater**

A new firmware package with the newest features, including Speech Rescue LX and Tinnitus SoundSupport, is now available in Genie 2. The newest firmware package enables you to continue to add improved and new features as they become available to Oticon Opn hearing aids regardless of style or performance level.

When an Oticon Opn hearing aid is connected to Genie 2, you receive a notification that the new Firmware package is available and instructions on how to update the hearing aid. Existing settings are removed during the update. When the update is complete, you can easily reload the original settings from Genie 2 to save time and ensure that the client's personalized fitting and adjustments are preserved in the updated solution.

For more information go to  
[www.oticon.com](http://www.oticon.com)

### **BE INFORMED**

New hearing aids you receive may have a new FW version that is not compatible with your old Genie 2 installation. Therefore, you must always install the newest Genie 2 software when you receive it from Oticon.

### **DSL for fitting teens**

With the DSL v5.0 fitting rationale now available for Oticon Opn, you can offer your teen clients the full benefit of the open sound experience with assurance that best practice guidelines are supported. Selecting DSL v5.0 within the Genie 2 Program Manager will help ensure maximal audibility and comfort for the young adults' listening situations.

Combining DSL v5.0 with Oticon's new open sound experience enables confident listening at school and in the complex listening environments that are common in a teen's life. They will enjoy streaming directly from iPhone® and iPads®, and also benefit from access to the digital advantages of Oticon Opn Internet connections via the IFTTT network.\*

\* This product is intended for the young adult. It is not intended for use in infants and young children. Oticon Opn fulfills the necessary criteria relating to audiological candidacy, routing of signal, signaling processing and features, and hearing aid fitting and verification (AAA Guidelines 2013). The provision of the independent pediatric prescription rationale DSL v5.0 is a considered and deliberate inclusion. It enables the intended teen population access to a pediatric focused prescription method, which can be verified in situ or using simulated real-ear responses (RECD using a 2cc coupler).



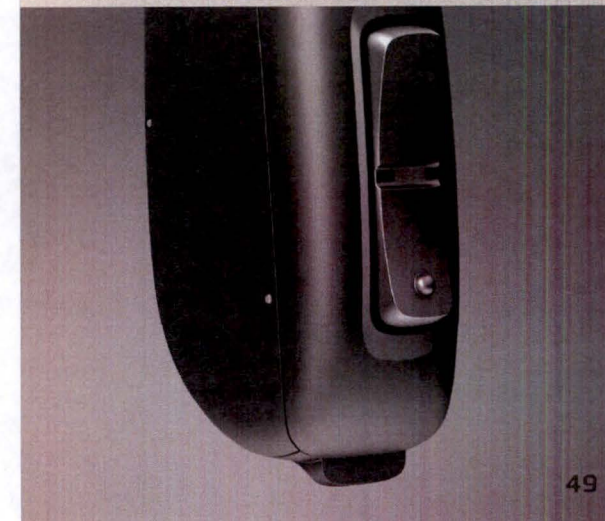
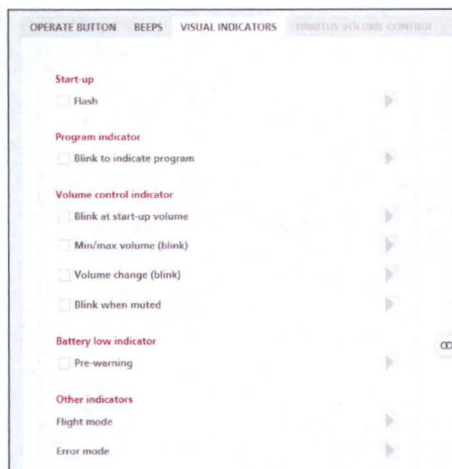
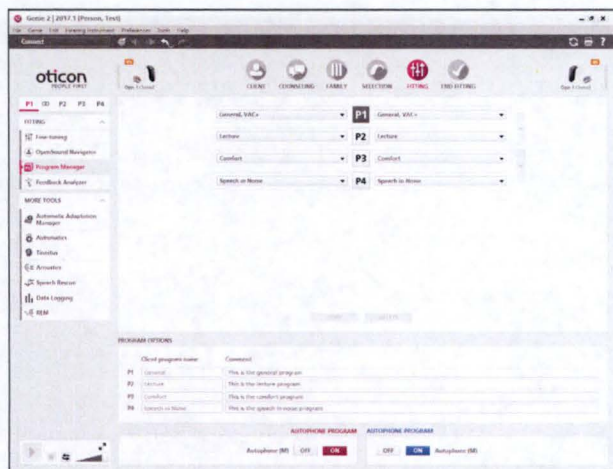
## Listening programs

Listening programs can provide users with benefits in specific listening situations when the user wishes to have programs in addition to the general program, such as listening to speech in an auditorium or to a loop system. The listening programs allow you to maintain the overall sound characteristics of the general program in P1 while modifying it to provide more benefit in a given situation. The Program Manager in Genie 2 features a variety of listening programs including Speech in Noise, Music, Comfort, Auditorium Mic, Telecoil, Telecoil M, and Phone Telecoil.

## LED indicator

The Oticon Opn BTE13 PP style features a two color LED indicator that provides valuable information for the status of the hearing aid. The LED is designed to help users and caregivers, parents and teachers to operate the hearing aid and obtain indications on relevant functions and modes.

You can activate the relevant LED indicators in Genie 2 during the 'End Fitting' session by clicking on Buttons and Indicators and going to Visual Indicator to activate. The LED is configurable for personal preferences.





# Creating an open sound experience

A simple two step procedure creates an open sound experience. With the innovative OpenSound Navigator and YouMatic LX in Genie 2, you can easily build a personalized sound experience with access to all details in the client's environment and, at the same time, superior speech understanding.

Users are proactively engaged in the fitting process with questions and sound demos that make it easy for them to express what they like to hear without the need to describe their preferences.

## Step 1

Establish your client's listening preferences in the 'Personalization' menu to take individual preferences into account when prescribing gain and automatics.

**A** Genie 2 features a personalization process that includes a few simple questions to better capture the variations in sound preferences. In addition to listening preferences, age, gender, hearing aid experience and sometimes language will influence the prescribed gain and automatics.

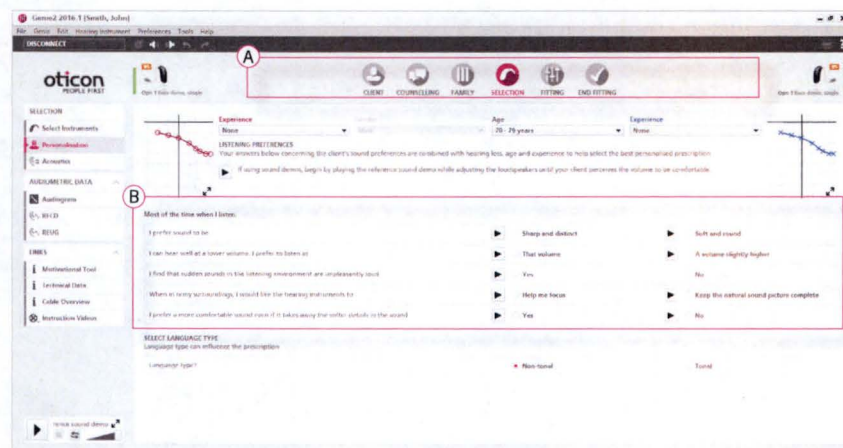
**B** For best results, present the sound sample for each question while clients are wearing their hearing aids, through headphones, or via loudspeakers, depending on each client's hearing loss and your clinical setup.

Once the personalization has been completed, it will impact the prescription and settings for:

- OpenSound Navigator
- Soft sound perception trimmer
- Brightness trimmer
- Gain prescription

Each can be fine-tuned to more accurately meet client preferences in the Fitting step.

The personalization screen should be revisited when experience level changes or greater audiometric changes occur.





## Step 2

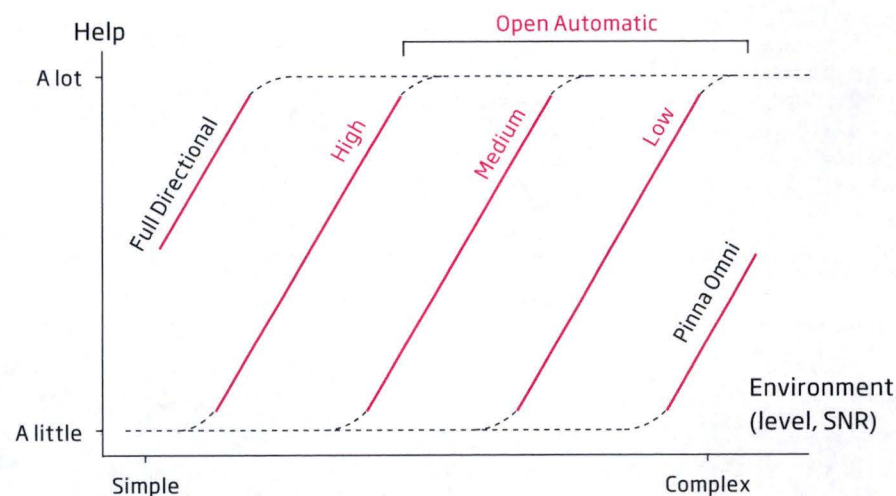
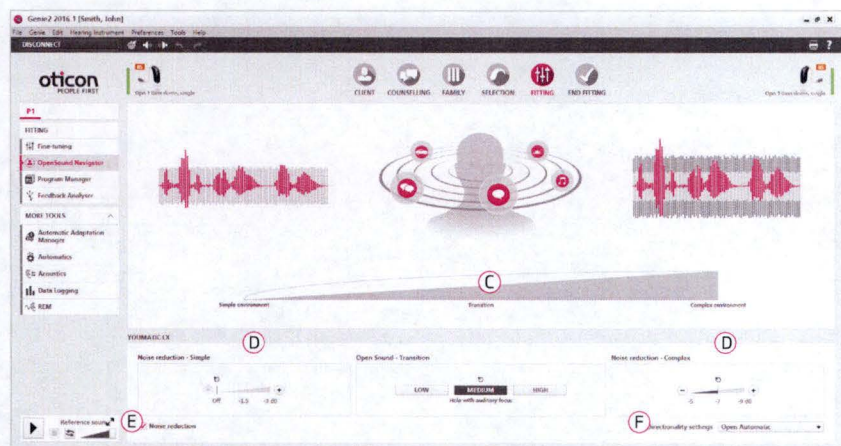
Go to OpenSound Navigator to adjust further with YouMatic LX.

**C OpenSound - Transition:** The control lets you choose how much help is needed in the stage between simple and complex environments. In other words, how early in this transition will your client want the hearing aid to help more? You can choose between a Low, Medium, and High amount of help. As an example, when choosing High, the hearing aid will step in more aggressively to reduce unwanted sounds, even if the environment is not yet complex. OpenSound Navigator transition choices are displayed visually on the Transition bar above the control panel and in the illustration with the head. Background sounds are reduced in size as more help is applied.

**D Noise reduction controls:** Adjustments to noise reduction are divided into Noise Reduction Simple and Noise Reduction Complex. Default settings are based on the client's answers to the questions in 'Personalization/Listening preference' or will default to a Medium profile. Adjustments are made by clicking the +/- buttons. Noise reduction choices are displayed visually in the speech waveforms.

**E Noise reduction on/off:** By default, noise reduction is on because it is an integral part of the open sound experience, but it can easily be deactivated if needed by unchecking the box on the lower left.

**F Directionality setting:** In addition to the three transition settings you have two conventional directionality settings available. See the transition settings overview below.



OSN directionality settings. In Pinna Omni, the hearing aid mimics sound as received by the human ear. In Full Directional, the focus is on sounds coming from the front. In Open Automatics, the hearing aid automatically adapts to the acoustical conditions, based on one of the three help profiles, High, Medium, or Low.





[www.oticon.com](http://www.oticon.com)

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PEOPLE FIRST