urenco

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

NSIRDI
NSIR
NMSS

LES-19-022-NRC

cc:

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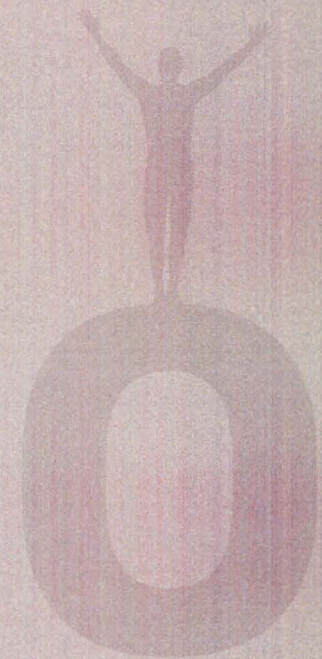U.S. Nuclear Regulatory Commission
Karl.Sturzebecher@NRC.gov

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!

Contents
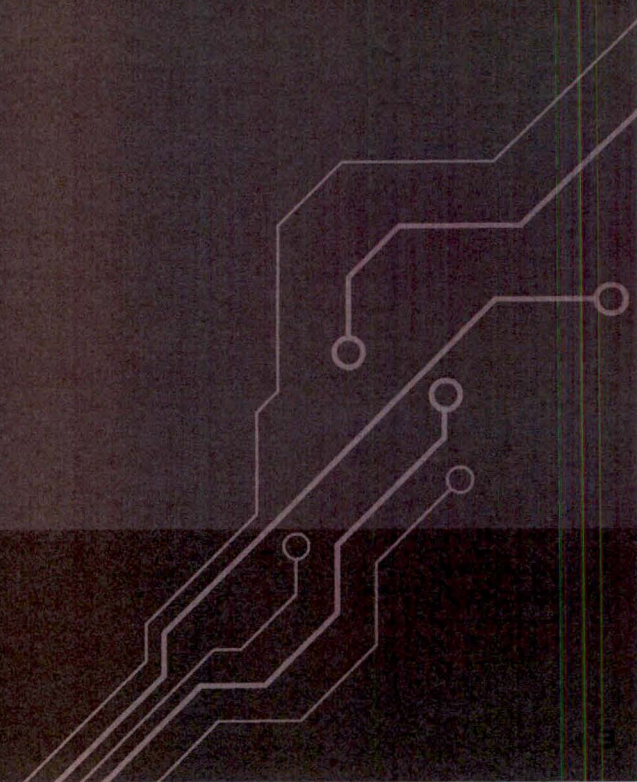
The highlights of
Oticon Opn

- **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

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" It has **actually changed my life** "
Biddy Stevenson, hearing aid user

CES INNOVATION AWARDS 2017 HONOREE

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

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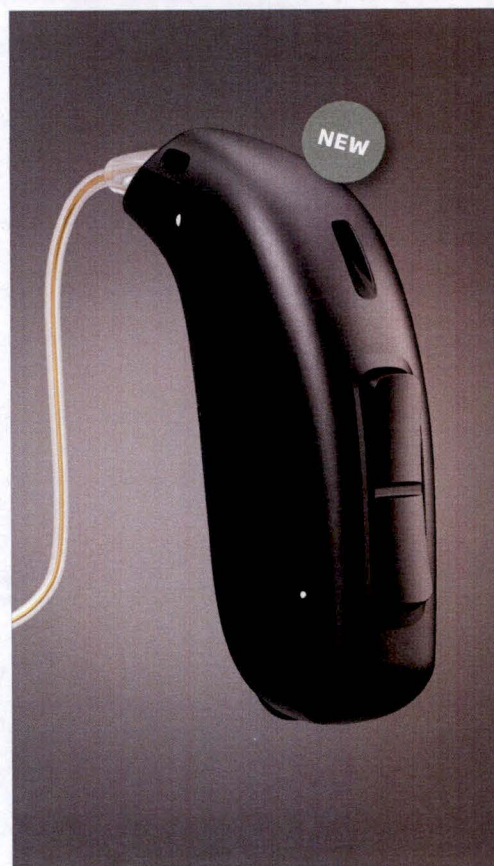
miniRITE-T:
Sleek and discreet
Features a telecoil and double push button for easy volume and program control. The fully featured solution includes Tinnitus SoundSupport, Speech Rescue LX, DSL, and TwinLink for 2.4 GHz wireless technology and Made for iPhone® functionality.

Page 34

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.

Page 48
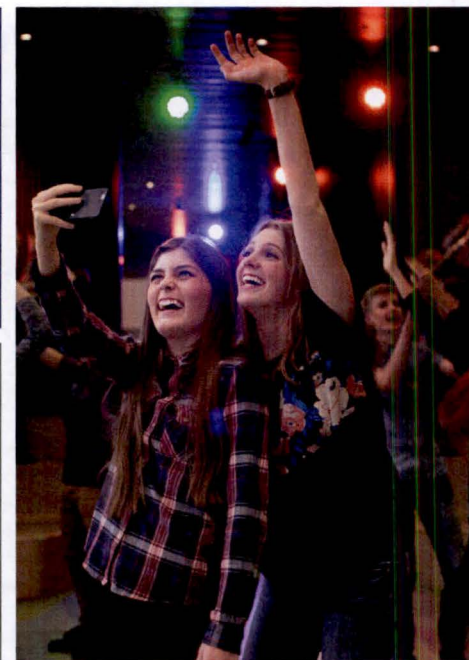
Speech Rescue™ LX:
Access to inaudible high frequency sounds

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.

Page 16

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.

Page 20

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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NEW

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.

Page 49

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.

Oticon
BrainHearing™
Technology

Powered by
Velox™
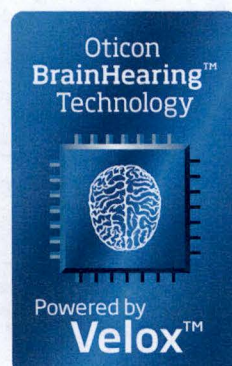
TwinLink

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.
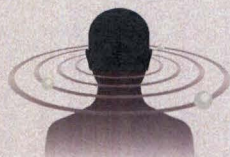
TwinLink
NFMI + 2,4 GHz

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.

OpenSound Navigator

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.

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.

Analyze   Balance   Noise Removal
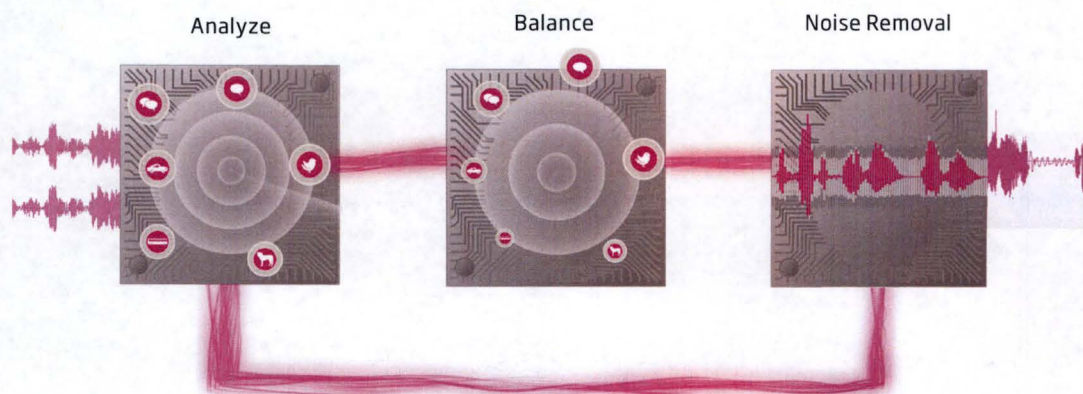
Spatial Sound LX

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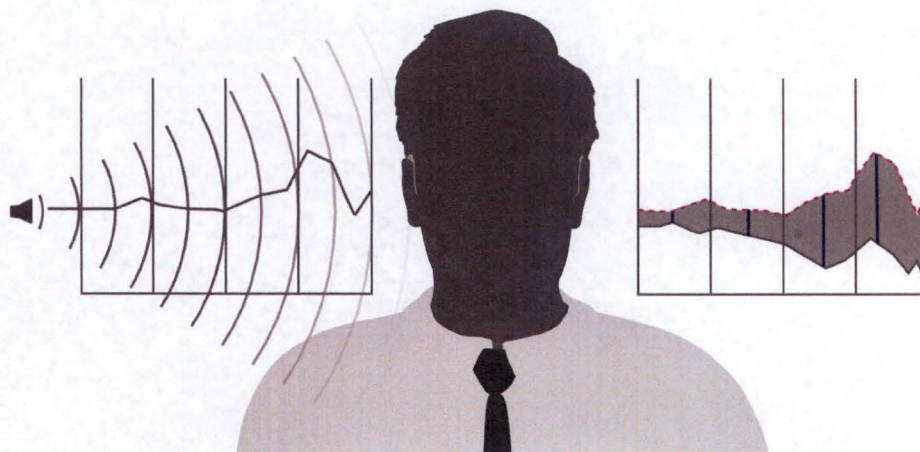
❝ TELL YOUR CLIENT
Provides a richer, more realistic sound picture so you perceive the location and direction of sounds with greater ease.

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.
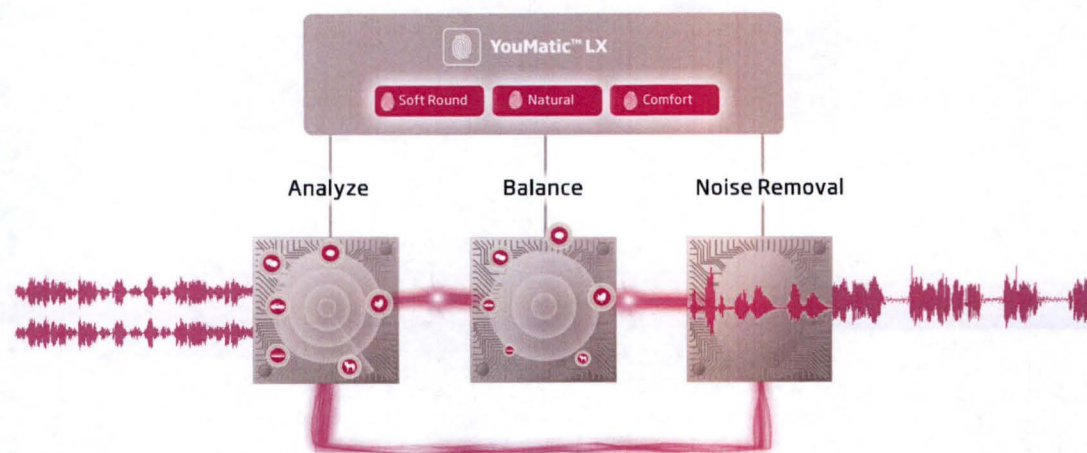
YouMatic LX

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.

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

Soft Round   Natural   Comfort

Analyze   Balance   Noise Removal

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Speech Guard™ LX

![icon] **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.
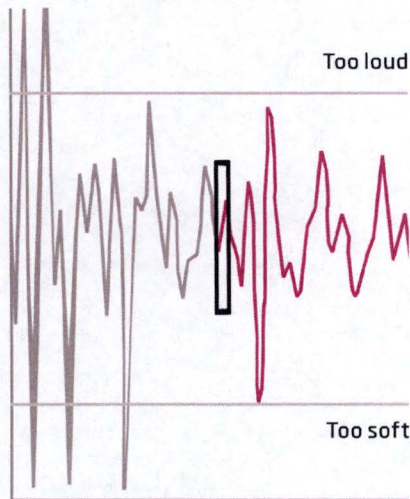
❝ **TELL YOUR CLIENT**
Improves speech understanding in noise and makes it easier for you to follow conversations in many situations – from soft to loud environments and even those with multiple speakers.

Too loud

Too soft

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.

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.

COPY
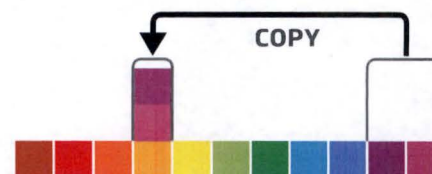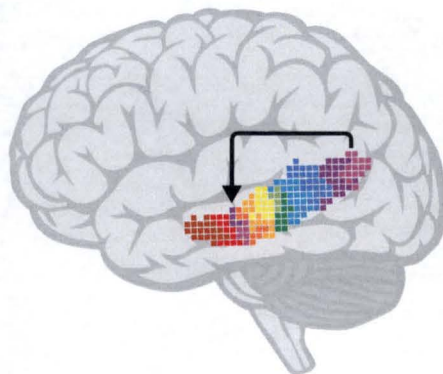
Soft Speech Booster LX

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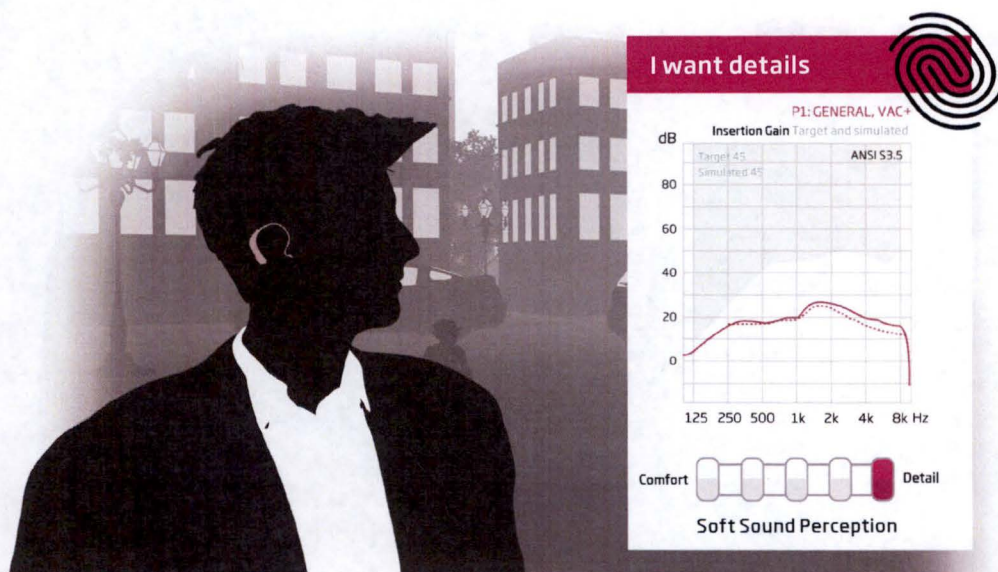
❝ TELL YOUR CLIENT
Increases access to soft sounds so that you can enjoy up to 20% improved soft speech understanding without turning up the volume.

I want details

P1: GENERAL, VAC+
Insertion Gain Target and simulated

| dB | | ANSI S3.5 |

Target 45
Simulated 45

80
60
40
20
0

125 250 500 1k 2k 4k 8k Hz

Comfort ▭▭▭▭▭▭▭ Detail

Soft Sound Perception

DID YOU KNOW?
More than 75% of normal speech has soft sounds.
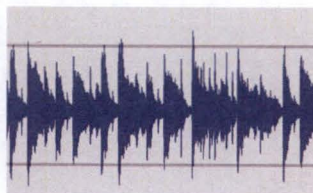
Clear Dynamics

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.
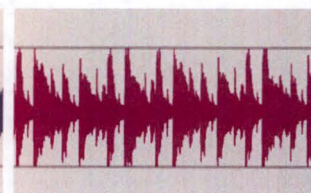
| Loud input	Without Clear Dynamics	Clear Dynamics

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.
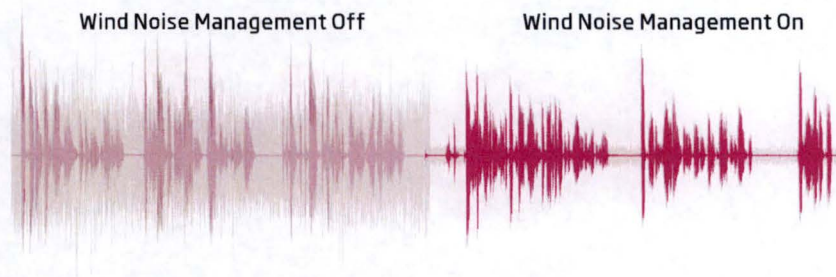
Wind Noise Management Off   Wind Noise Management On

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.
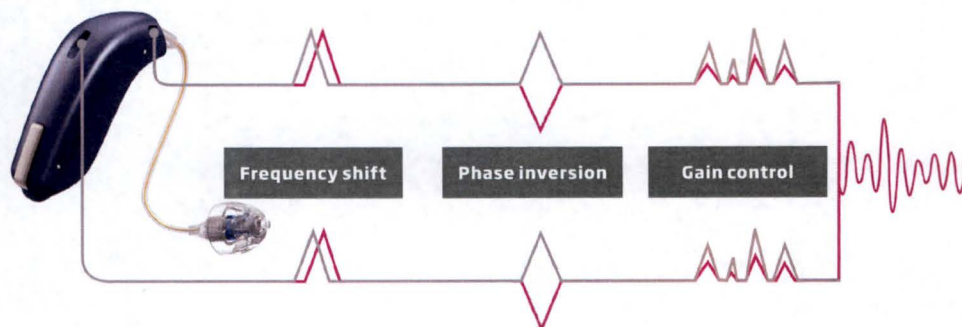
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Feedback shield LX

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.

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.

Frequency shift   Phase inversion   Gain control
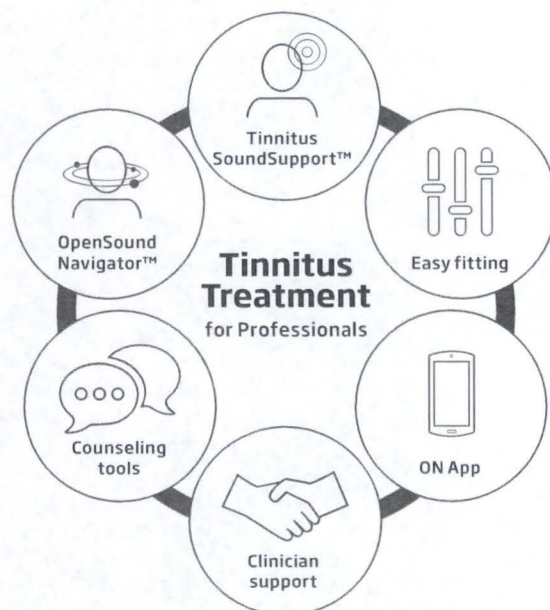
Tinnitus SoundSupport

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.

Tinnitus Treatment for Professionals

- Tinnitus SoundSupport™
- Easy fitting
- ON App
- Clinician support
- Counseling tools
- OpenSound Navigator™

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

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

OpenSound Navigator	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
Oticon Firmware Updater	Enables you to update Velox based hearing aids and connectivity solutions, adding new and improved features with just one click	Page 48
Phone Program	Optimizes hearing aid for telephone conversations using the hearing aid microphone and/or telecoil	
Processing Channels	Data is analyzed and processed in 64 channels, more than 100 times per second	Page 10
REM AutoFit	Enables you to personalize fittings to individual ear acoustics	
Soft Speech Booster LX	Applies an individual amount of soft gain to increase soft speech understanding	Page 17
Binaural Noise Management	Optimizes listening in asymmetrical, noisy situations	
Sound Studio	Offers a large selection of soundscapes to simulate different listening environments in the process of providing a better first fit	Page 46
Spatial Sound LX	Uses binaural compression to provide precise spatial awareness that helps users identify where sounds are coming from	Page 13
Speech Guard LX	Preserves the dynamics of speech by combining the benefits of linear and non-linear compression	Page 15
Speech Rescue LX	Makes high frequency speech sounds like /s/ and /sh/ more audible using frequency composition	Page 16
Stereo Streaming	Streams audio input in stereo	Page 40
Tinnitus SoundSupport	Provides a variety of relief sounds, including soothing ocean sounds, to meet the individual needs of people with tinnitus	Page 21
Transient Noise Management	Protects against sudden loud sounds with fast recovery to preserve audibility. Offers four different levels for fine tuning, including 'Off'	
TwinLink	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
Wind Noise Management	Protects against the discomfort of wind noise	Page 19
YouMatic LX	Accommodates personal listening preferences and sound perceptions in the prescription of gain and automatics	Page 14

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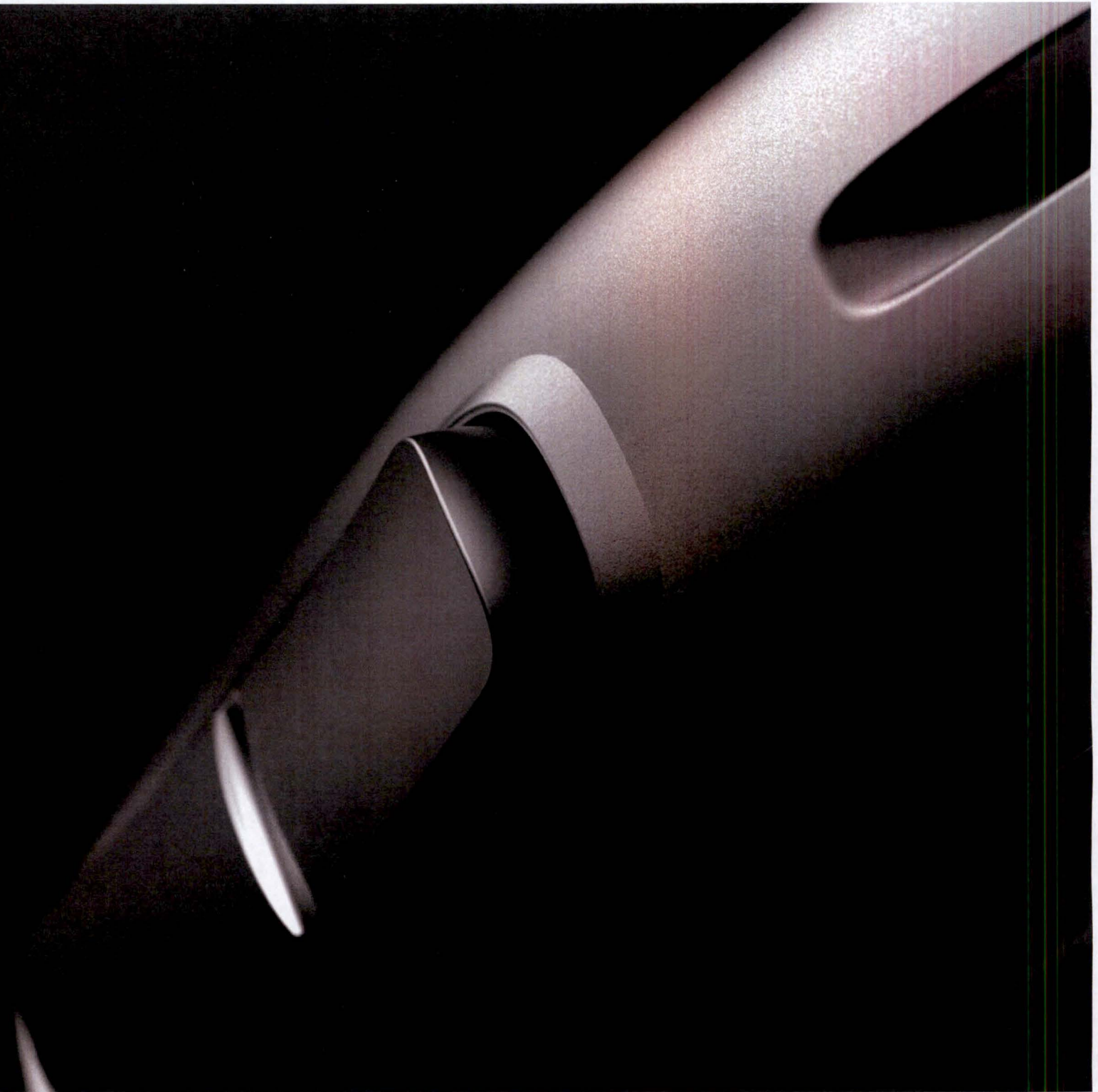
The audiological difference between Oticon Opn 1, Opn 2 and Opn 3

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
Speech Understanding			
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	•	•	•
Sound Quality			
Clear Dynamics	•	•	–
Binaural Noise Management	•	•	–
Fitting Bandwidth	10 kHz	8 kHz	8 kHz
Processing Channels	64	48	48
Bass Boost (streaming)	•	•	•
Listening Comfort			
Transient Noise Management	4 configurations	On/Off	On/Off
Feedback shield LX	•	•	•
Wind Noise Management	•	•	•
Personalization & Optimizing Fitting			
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
Connecting to the World			
Stereo streaming (2.4 GHz)	•	•	•
Made for iPhone®	•	•	•
Oticon ON App	•	•	•
ConnectClip	•	•	•
Remote Control 3.0	•	•	•
TV Adapter 3.0	•	•	•
Special Needs			
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 ex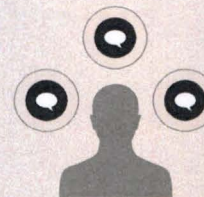perience, with access to multiple speakers. However, they differ in the amount of support they give the brain in terms of rapid noise reduction, localization of sounds, speech clarity, and the personalization of the listening experience – **i.e. they differ in the level of BrainHearing support they deliver.**

Oticon
BrainHearing™
Technology

Powered by
Velox™

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

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.

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

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.
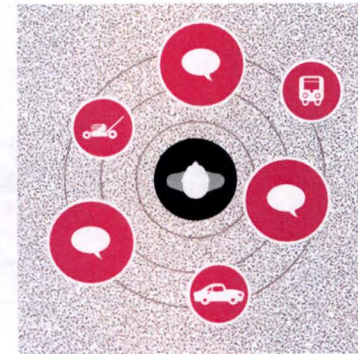
MSAT in:
Oticon Opn 1
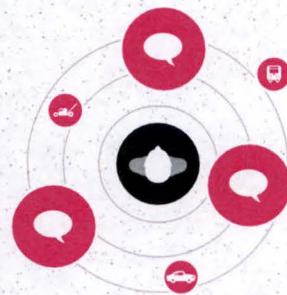
The easiest listening experience with maximum reduction of background noise and rapid reduction of loud noise coming from specific directions while preserving speech.
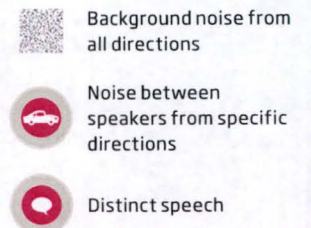
Oticon Opn 2

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.

Background noise from all directions

Noise between speakers from specific directions

Distinct speech

* Wendt et al. 2016, "Impact of noise and noise reduction on processing effort: A pupillometry study". (under review)
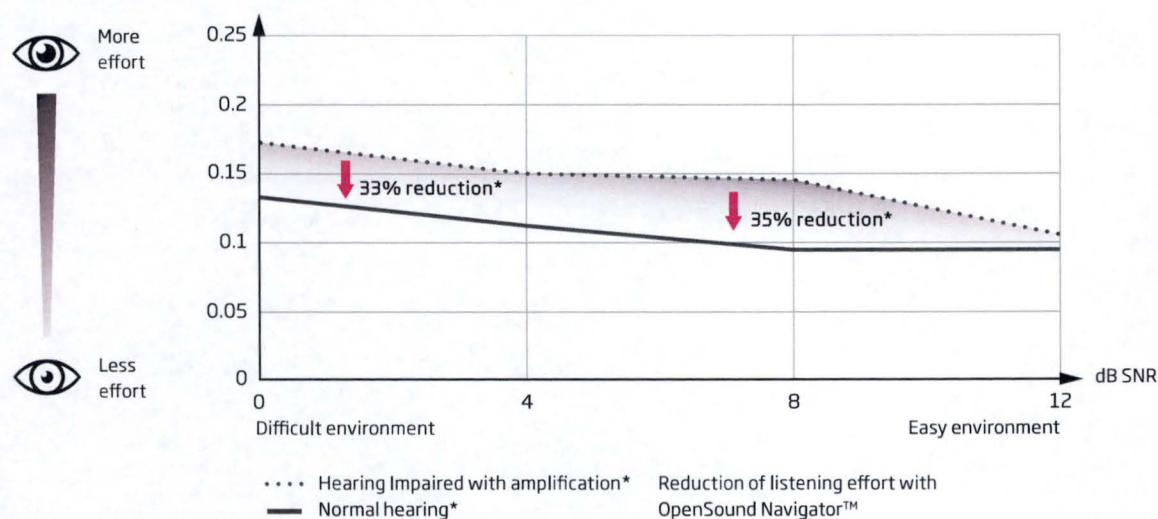** Only Oticon Opn 1 has the full effect of OpenSound Navigator™

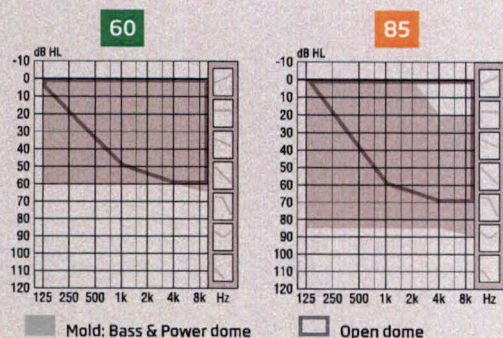# ... in both simple and complex environments

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)

- More effort
- Less effort

0.25
0.2
0.15
0.1
0.05
0

33% reduction*

35% reduction*

0   4   8   12   dB SNR

Difficult environment   Easy environment

•••• Hearing Impaired with amplification*
——— Normal hearing*

Reduction of listening effort with
OpenSound Navigator™

Oticon Opn fitting range*

60

Mold: Bass & Power dome

85

Open dome

OSPL90 (peak)		OSPL90 (peak)	
Ear simulator	116 dB SPL	Ear simulator	127 dB SPL
2cc coupler	105 dB SPL	2cc coupler	116 dB SPL

Full-on gain (peak)		Full-on gain (peak)	
Ear simulator	46 dB	Ear simulator	66 dB
2cc coupler	35 dB	2cc coupler	54 dB

100

105

Mold: Bass & Power dome

OSPL90 (peak)		OSPL90 (peak)	
Ear simulator	132 dB SPL	Ear simulator	135 dB SPL
2cc coupler	122 dB SPL	2cc coupler	127 dB SPL

Full-on gain (peak)		Full-on gain (peak)	
Ear simulator	66 dB	Ear simulator	72 dB
2cc coupler	57 dB	2cc coupler	64 dB

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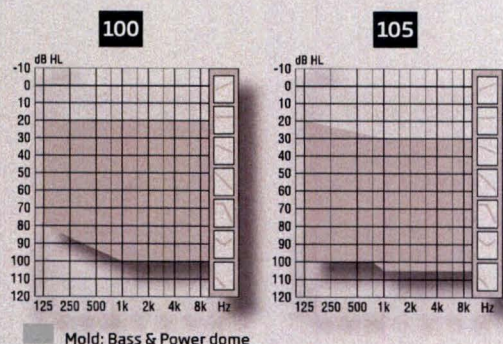
Small, discreet miniRITE

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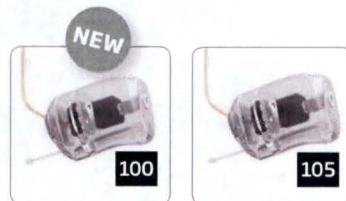Select between three different receivers. miniFit receivers are available with lengths 0-5.

60 **85** **100**

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.

NEW

100 **105**

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.

Standard earpieces

miniFit domes

		5 mm	6 mm	8 mm	10 mm	12 mm
Open dome		60	60 / 85	60 / 85	60 / 85	
Bass dome, single vent (0.8 mm)			60 / 85 / 100	60 / 85 / 100	60 / 85 / 100	60 / 85 / 100
Bass dome, double vent (1.4 mm)			60 / 85 / 100	60 / 85 / 100	60 / 85 / 100	60 / 85 / 100
Power dome			60 / 85 / 100	60 / 85 / 100	60 / 85 / 100	60 / 85 / 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.

No vent   Vent

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

Customized earpieces[1]

MicroMold[2]		60 / 85
LiteTip[2]		60 / 85
Power Receiver Mold		100 / 105
MicroMold, VarioTherm®		60 / 85
LiteTip, VarioTherm®		60 / 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
	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*

	60			85	

Mold: Bass & Power dome   Open dome

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

	100			105	

Mold: Bass & Power dome
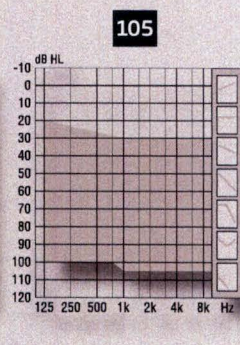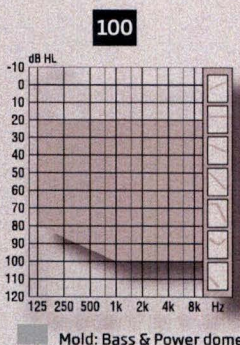
OSPL90 (peak)
Ear simulator	132 dB SPL
2cc coupler	122 dB SPL

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

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

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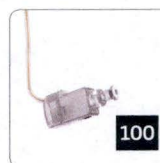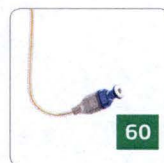
With miniRITE-T, clients with hearing loss up to 105 dB HL can choose a discreet hearing aid with a full set of features and functionalities,

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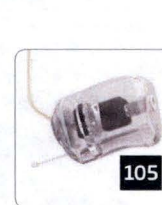Select between three different receivers. miniFit receivers are available with lengths 0-5.

60   85   100

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.

NEW   100   105

Power Receiver Mold

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.

Standard earpieces

miniFit domes

		5 mm	6 mm	8 mm	10 mm	12 mm
Open dome		60	60 / 85	60 / 85	60 / 85	
Bass dome, single vent (0.8 mm)			60 / 85 / 100	60 / 85 / 100	60 / 85 / 100	60 / 85 / 100
Bass dome, double vent (1.4 mm)			60 / 85 / 100	60 / 85 / 100	60 / 85 / 100	60 / 85 / 100
Power dome			60 / 85 / 100	60 / 85 / 100	60 / 85 / 100	60 / 85 / 100

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.

No vent   Vent

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

Customized earpieces[1]

MicroMold[2]		60 / 85
LiteTip[2]		60 / 85
Power Receiver Mold		100 / 105
MicroMold, VarioTherm®		60 / 85
LiteTip, VarioTherm®		60 / 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
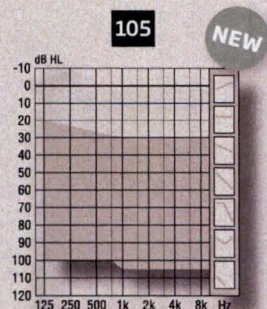
C063 Diamond Black   **C092** Steel Grey   **C091** Silver Grey   **C044** Silver

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*

105 **NEW**

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).

1.3 mm

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, single vent (0.8 mm)		•	•	•	•
Bass dome, 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.

No vent   *Vent*

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

Customized earpieces[1]

MicroMold	
MicroMold, VarioTherm®	

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

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)

C090	C094	C093
Chroma Beige	Terracotta	Chestnut Brown

C063	C092	C091	C044
Diamond Black	Steel Grey	Silver Grey	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

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

* 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

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.

Made for
🎧 iPod 📱 iPhone 📱 iPad

Oticon ON App   ON

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.

Download on the **App Store**   GET IT ON **Google Play**
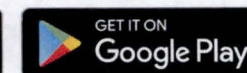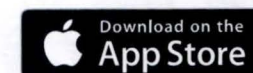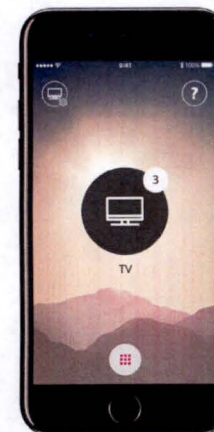
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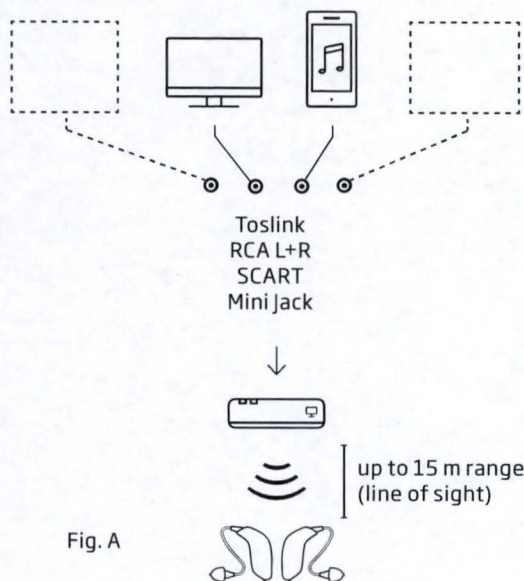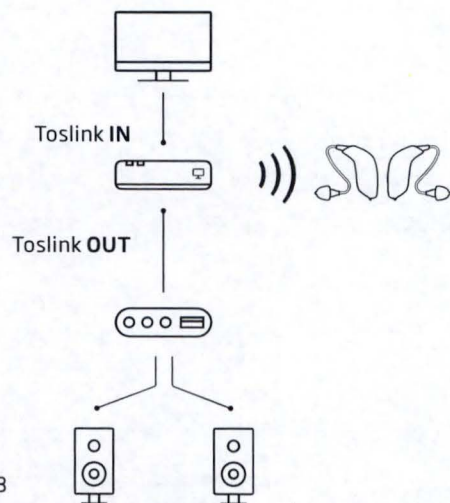
TV Adapter 3.0

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).

Toslink
RCA L+R
SCART
Mini Jack

up to 15 m range
(line of sight)

Fig. A

Toslink **IN**

Toslink **OUT**

Fig. B

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.

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
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.

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.*

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.
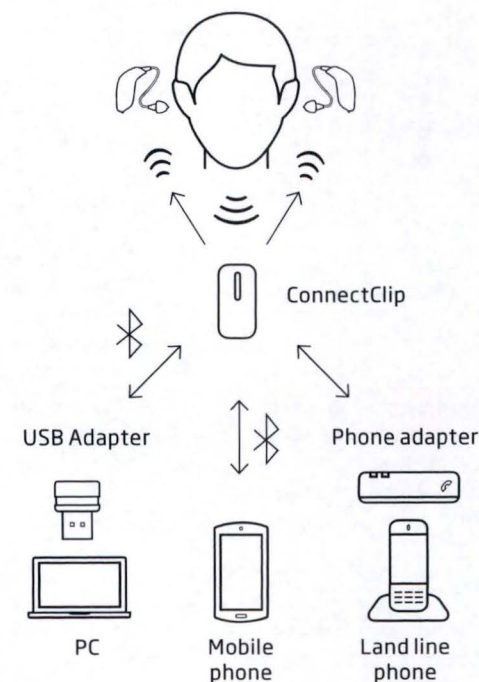

ConnectClip

USB Adapter   Phone adapter

PC   Mobile   Land line
            phone   phone

Fig. C

*ConnectClip will be available during second half of 2017.

The world's first Internet-connected hearing aid

Connect to your smart devices

Connect to your home security system

Connect to electricity and thermostat controllers

Connect to kitchen devices

Connect to your car

Connect to your TV, radio and game console

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 and 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

New features in Genie 2

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.

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

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.
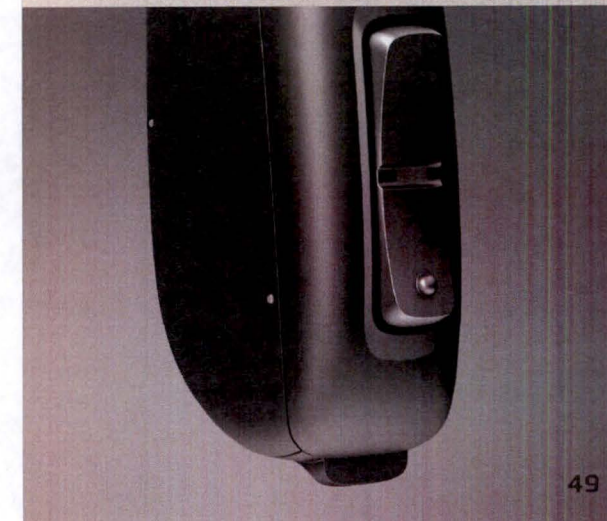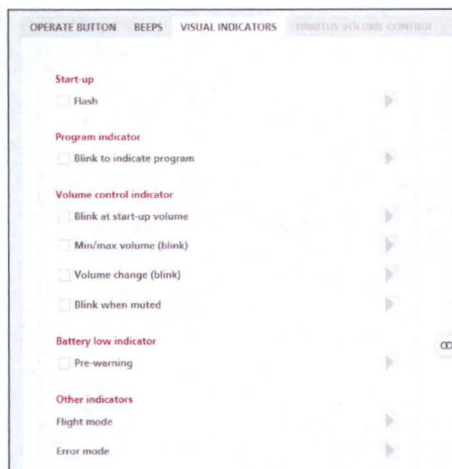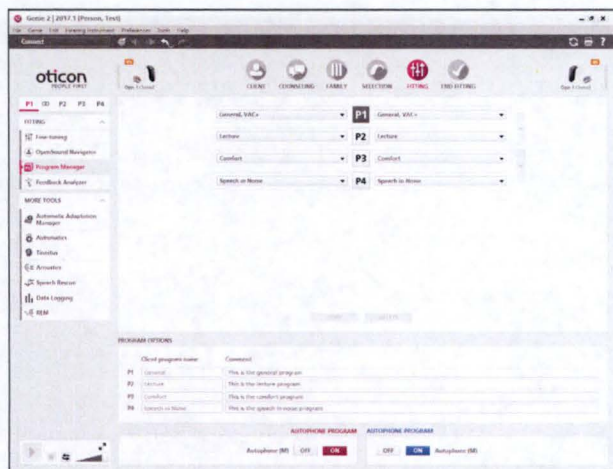
Creating an open sound experience

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.
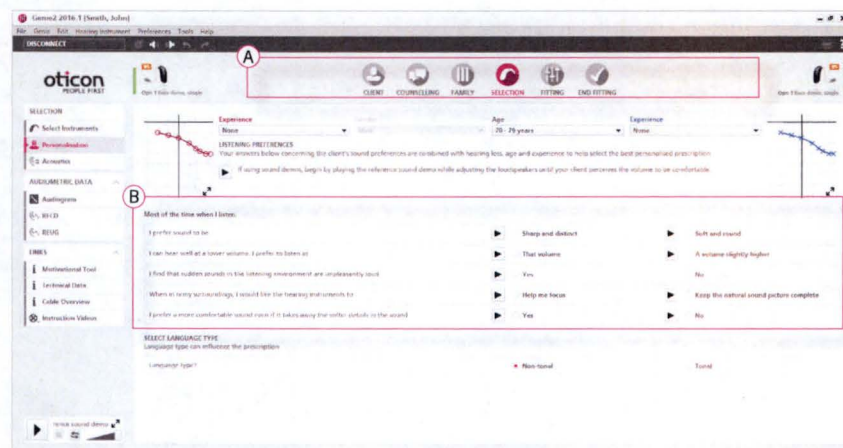
Step 2

Go to OpenSound Navigator to adjust further with YouMatic LX.

Ⓒ **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.

Ⓓ **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.

Ⓔ **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.

Ⓕ **Directionality setting:** In addition to the three transition settings you have two conventional directionality settings available. See the transition settings overview below.
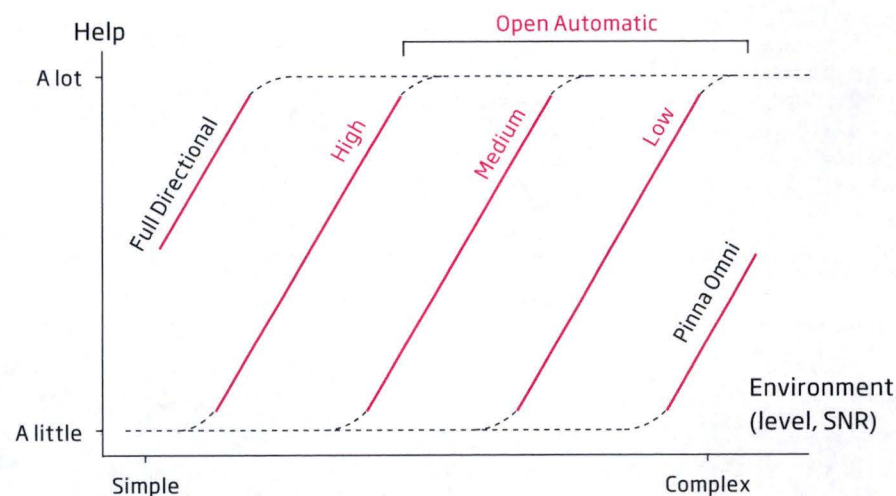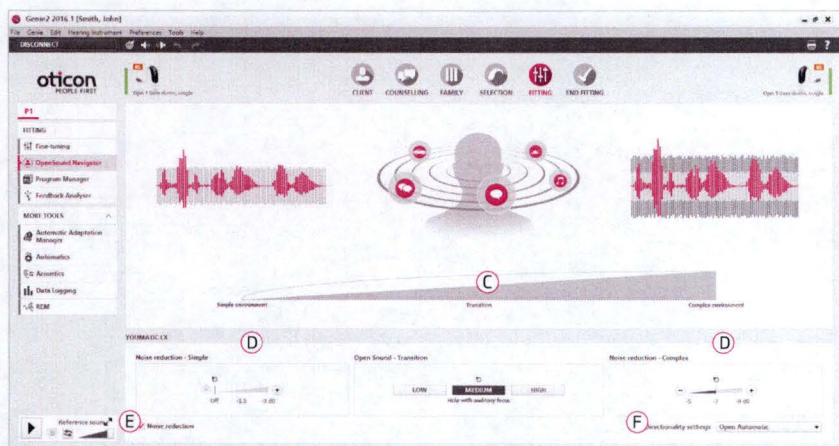
OSN directionality settings. In Pinna Omni, the hearing aid mimics sound as received by the human ear. In Full Directional, the focus is on sounds coming from the front. In Open Automatics, the hearing aid automatically adapts to the acoustical conditions, based on one of the three help profiles, High, Medium, or Low.

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