

**sumo!**



**Super Power  
Maximum  
Output**

# Introducing SUMO

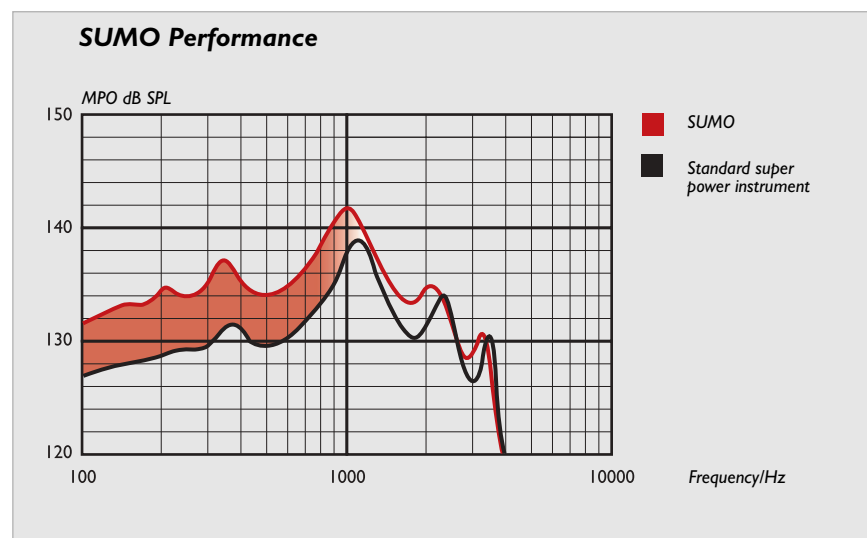
SUMO stands for 'Super Power Maximum Output'. Using a new output technology SUMO offers more MPO than any other Super Power instrument.

## The world's most powerful BTE



SUMO is the most powerful BTE ever developed. Inside its small case is a new breakthrough in receiver technology and design - Output Optimization Technology - providing extreme MPO and LF gain, without distortion or any increase in battery drain. But SUMO offers much more than just exceptional power; it offers a new standard in hearing care for those people who need it most. With a focus on sound quality, flexibility, functionality and design, it clearly stands above other super power instruments - analog or digital!

*Social interaction can be a major challenge for people with severe or profound hearing losses. SUMO has the extra dBs for those who need them the most.*



*SUMO delivers an increase of up to 7 dB in MPO up to 1 kHz – the zone where profoundly hearing impaired people benefit most from amplification.*

SUMO meets the complex needs of people with severe and profound hearing losses:

### Power

- High gain, 82 dB, and high MPO, 142 dB SPL
- Unsurpassed levels of LF MPO
- Dynamic Battery Management system for long battery life

### Flexibility

- Multiple fitting algorithms
- Effective feedback management
- Active 4th order response shaping
- Dedicated pediatric applications, including DSL and RECD compensation

### Function

- Small, thin and light case
- Reliable and robust design
- Exceptional telecoil performance
- Full FM and DAI compatibility
- Unique interlocking shoe design



*SUMO's small, thin size will delight your power clients.*

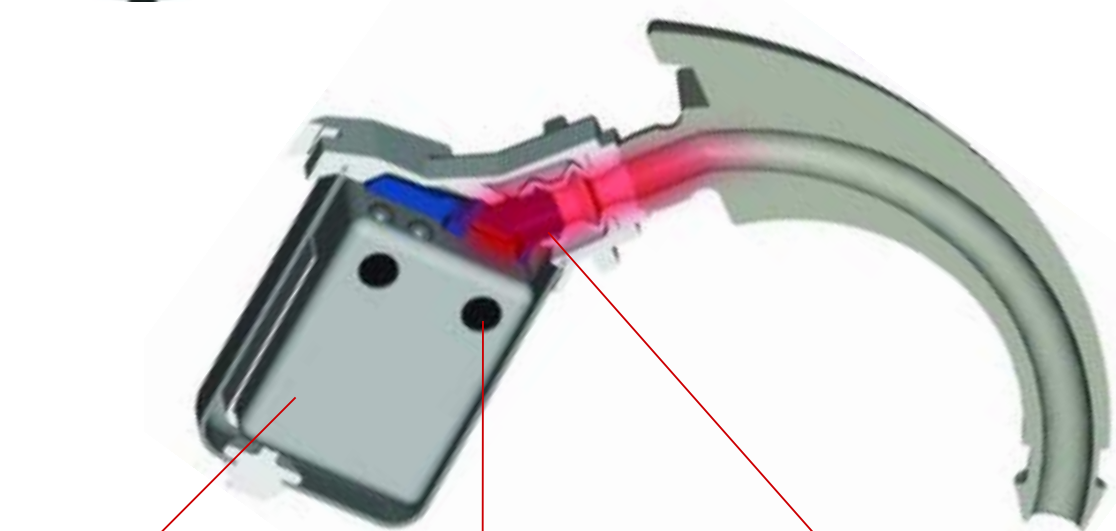
# SUMO Power

SUMO uses new technology to raise the MPO above all others.

## with new Output Optimization Technology



Output Optimization Technology is a breakthrough engineering design to achieve greater Maximum Power Output. It combines three innovations:



### 1 Low Impedance Receiver

The electrical impedance of the SUMO receiver is very low, resulting in a higher overall output. An exceptional amplifier design controls for instability and ensures that increased current consumption is controlled.

### 2 Receiver Venting

SUMO uses innovative receiver venting to increase movement of the receiver diaphragm. The result is a significant increase in low frequency MPO and in the MPO around 1-2 kHz.

### 3 Power Sound Outlet

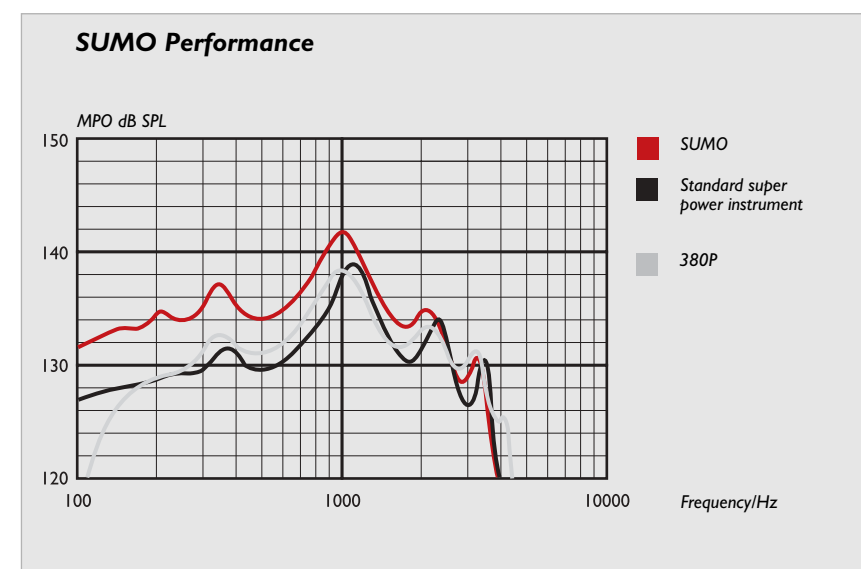
A special power sound outlet on the end of the receiver channels the sound generated by the diaphragm through a flow-optimized pathway to the earhook. The result is a higher and broader MPO peak.



### Power when you need it – economy when you don't

The innovations used in Output Optimization Technology make SUMO the most powerful BTE available. The low frequency MPO is up to 7 dB higher than in typical super power instruments. For those who don't need this extreme power, a lower MPO is automatically prescribed - resulting in significantly lower battery consumption than other Super Power instruments at comparable MPO levels.

People with severe or profound hearing losses can have extremely limited dynamic ranges. SUMO can make a difference through the precise frequency response adjustments and access to additional low frequency speech information.



### Power where it's needed – in the low frequencies

SUMO offers a dramatic increase in the LF headroom. For many users, this will be their only remaining area of residual hearing. The result is less distortion of own voice and a more natural sound quality of other people's voices.

# SUMO Longevity



**Super Power users require consistently high gain and output, but they also demand economical battery usage. With SUMO, there are no compromises.**

## Stronger for longer

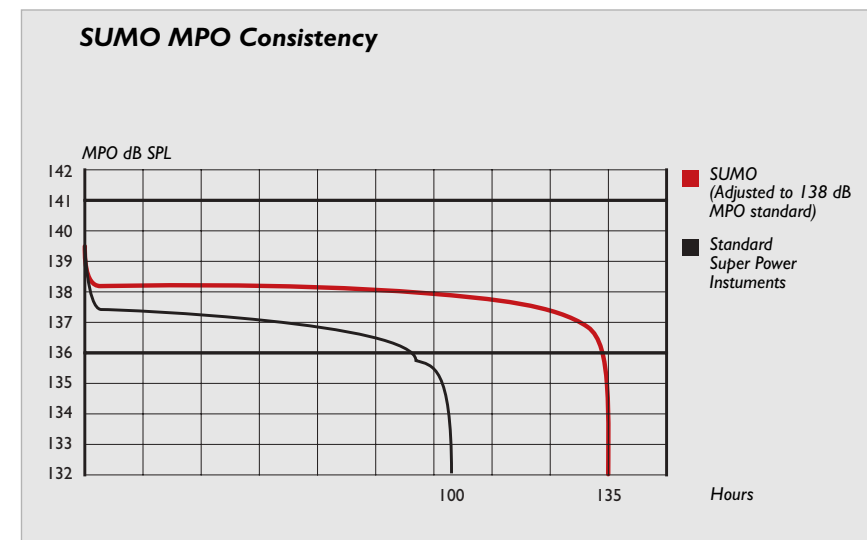


With many super power instruments, the initially high MPO quickly fades by a couple of dB and continues to fall as the battery ages. The user will experience such an instrument as being too weak long before the battery is completely used up.

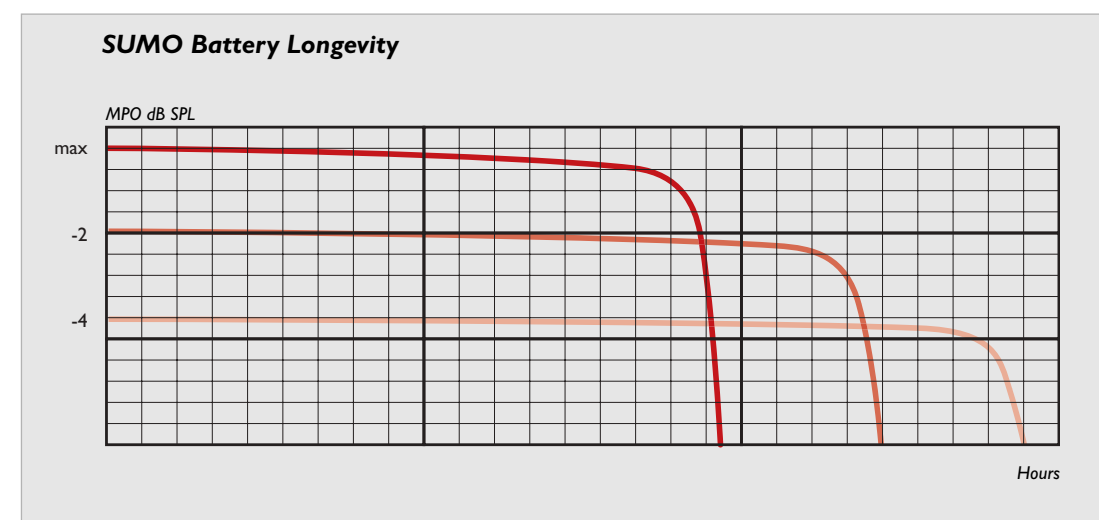
SUMO uses a unique Battery Management System to dramatically improve MPO consistency. This system constantly monitors the output voltage of the battery. When this falls below a set level, the Battery Management System slightly reduces the current drain on the battery for extreme inputs, allowing it to recover. The result is a more consistent MPO over the lifetime of the battery and a longer overall battery life.

*Hearing aid users, especially those with severe and profound losses, rely on battery longevity and consistent performance from their instruments. SUMO's dynamic Battery Management system fills these needs.*

**As an added convenience to the user, SUMO's Battery Management System does not require special batteries and will function on regular 675 zinc air batteries.**



*Comparison of SUMO's battery performance against a standard Super Power BTE, using 138 dB MPO as a reference. SUMO's Battery Management System delivers a consistently higher MPO over the lifetime of the battery.*



*At output settings even just a few dB less than the maximum, battery life is further increased 30-50%.*

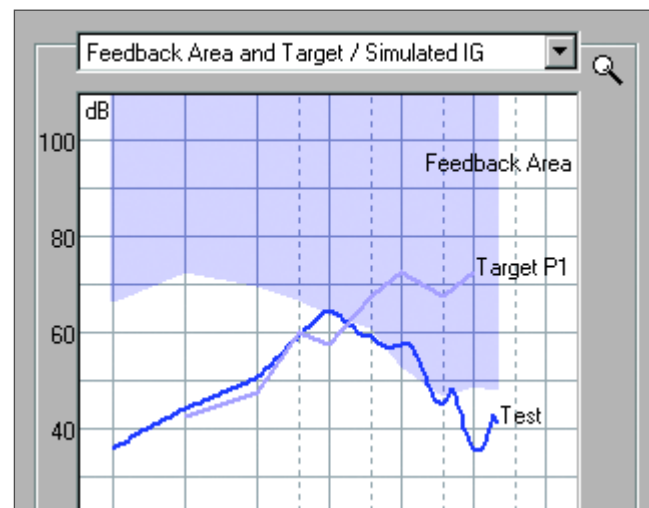
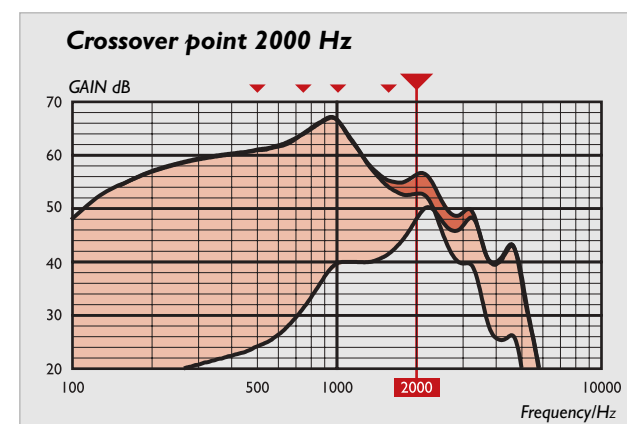
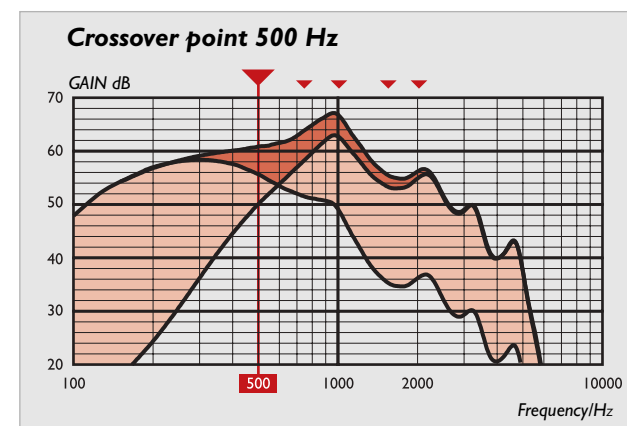
# SUMO Flexibility

SUMO has the flexibility needed to replace a wide range of power and super power instruments. The fitting software provides logical controls with easy access to a range of unique power features.

## – One Instrument Covers All

### Active Response Shaping

Precise shaping of the frequency response is essential when fitting users with demanding sound preferences. SUMO has extremely flexible 4th order filtering, with 5 choices of crossover frequency from 500 to 2000 Hz. This allows for precise frequency response adjustments.



### Feedback Management – dedicated to Power

Feedback is almost always a challenge when fitting super power hearing aids. Furthermore, many users with severe or profound hearing losses cannot hear it. SUMO uses an intelligent two-stage feedback management system to tackle this problem. First, it sets a limit to the prescribed HF gain to provide a safe feedback margin in the initial setting. This HF gain limit can then be fine-tuned, based on the integrity of the earmold fit and the acoustic leakage at higher volume control (VC) settings. SUMO's feedback manager will then eliminate feedback by rolling off the HF gain level for higher VC settings. The HF gain prescribed for normal VC settings will remain unchanged.



Easy overview and intuitive fitting is the essence of the fitting software.



### Portability

SUMO can also be fully programmed using the EasyFit stand-alone fitting box. It's an ideal solution in situations where a NOAH HiPro system is not available or when added flexibility and portability for field use is required.

### New Genie Programming Software

The comprehensive Genie 2.1 fitting software offers a full support package for fitting SUMO. This includes RECD corrections for children, sounds and pictures, fine-tuning guide, and much more. Genie 2.1 is compatible with NOAH 2.0 and 3.0.



EasyFit offers the same comprehensive programming features as the Genie fitting software.

Beep Level: 70

Frequency: 500 Hz (selected), 1000 Hz

Telecoil Control:  Telecoil Boost

### An Exceptional Telecoil

Not only does the telecoil response closely match that of the microphone, SUMO is the only super power instrument with a 6 dB telecoil boost. That means the user can potentially achieve the equivalent of up to 88 dB gain when using the telecoil! In addition, there is a full range of M-T combinations, as well as an adjustable audible beep indicator.

MPO Method

PC

AGC Fast

AGC Slow

### Output Limiting

There are three methods of output limiting:

- PC
- AGC Fast + PC
- AGC Slow + PC

The default setting is PC. AGC Fast + PC is a fast-acting output compression which results in a rapid gain reduction, preventing distortion even for quickly changing sounds. The slow attack time of the AGC Slow + PC prevents brief sounds from activating the output AGC and a more natural sound reproduction may be obtained. Both AGC systems use a fast release time in order to maintain a high gain for subsequent speech inputs.

The fitting software will automatically prescribe an MPO based upon the hearing threshold and the age of the wearer. Whatever MPO method is chosen, PC will always be instantly activated to prevent sudden loud sounds from exceeding the user's UCL.

VC Range

Full (30)

Half (15)

Disabled

### Programmable VC

This unique feature allows the VC range to be reduced for people with dexterity problems so they can more easily use the VC. The programmable VC allows a gain range of 30 dB or 15 dB and it can be disabled as well.

POGO II+BC

POGO II+BC

NAL-RP

**DSL i/o**

Corell-2

SSM+

### Rationales

The fitting software offers five different linear rationales, including three of the most popular for power fittings: POGO II + BC, NAL-RP, and DSL i/o.

# SUMO *Functionality*

## *Setting new design standards*



### **Smaller Size - Superior Ergonomics**

Super Power typically means larger components and an obtrusive instrument. SUMO's unique amplifier design and receiver technology make it possible to put more power into less space. With SUMO, people with severe or profound hearing losses can now enjoy the comfort of a smaller, narrower and lighter hearing aid. Special attention has also been given to the functionality of user controls and the integration of the accessories so often required by this group of clients.



### **Programming Shoe**

The black programming shoe conveniently interlocks with the instrument – ensuring robust connectivity.



### **Manual VC and Switch**

The manual VC gives power users the control they want, but can be disabled as needed. The telecoil switch has two positions that can be programmed for a variety of M-T combinations, or disabled.



### **FM Connectivity**

SUMO delivers superior accessibility and ease of use with ear level FM receivers, while maintaining a sleek profile. The smart interlocking FM shoe has been especially designed to prevent loss and ensure connectivity. Yet, it still allows access to the battery compartment without removing the shoe.



### **R-L Identification**

Red and blue plates are provided for easy identification of right and left hearing aids.



### **Interlocking DAI Shoe**

A universal HI/LO impedance DAI shoe provides easy access to all external audio sources. It also interlocks with the instrument for a stable connection.

# SUMO for Kids

Children are demanding hearing aid wearers. The design, fitting software and performance of SUMO have been conceived with the diverse needs of children and their parents in mind.

## Reliability and Audibility



SUMO's small size and robust design mean it can take the rough and tumble of a child's world.

Choosing amplification for severely and profoundly hearing impaired children encompasses a whole range of challenges and requirements. Flexibility is paramount when the same instrument has to fit the child at three months as well as at three years.

The instrument needs to be small enough to fit snugly behind an infant's ear, while being robust enough to handle the roughest of treatment. Control settings for VC and T-coil need to be clearly visible to parents or care givers. SUMO's slim size, pediatric hook, clear switch marking and tamper resistant battery drawer make it ideal for this population.

SUMO is engineered for exceptional reliability, with special design features to greatly reduce moisture-related breakdowns: isolated battery compartment, moisture-channeling shell, and Conform coating over the entire amplifier assembly. The click design in the hook means that it cannot be over-tightened and stays very secure, minimizing feedback and instrument loss. SUMO is an instrument that you, your young clients and their families can depend on!

### Child Focused Fitting

SUMO provides the precise power and frequency shaping needed to meet the audiometric requirements of children. SUMO's software allows for the inclusion of RECD information and audiometric earphone data in the prescription of settings for children. So safety is ensured.



Tamper resistant battery drawer.

### Speech Acquisition

With the growing implementation of universal newborn hearing screening, infants with severe or profound hearing loss can now be identified at 1-2 months of age. These children require small yet powerful hearing instruments to maximize their speech and language development, especially those children who are being assessed for cochlear implant candidacy. For these children with limited auditory capabilities, SUMO's increased LF gain and MPO provide the most access to crucial speech information

### Cochlear Implants

For children using a cochlear implant, research indicates that contralateral hearing aid fitting can provide real life benefits in speech perception, localization, and speech production<sup>1</sup>. In addition, these contralateral hearing aid fittings require 6dB more gain than typically recommended<sup>2</sup>. SUMO's extra low frequency amplification provides the ideal solution in these cases.



[1] Ching TY, Psarros C, Hill M, Dillon H, Incerti P. Should children who use cochlear implants wear hearing aids in the opposite ear? *Ear Hear.* 2001 Oct;22(5):365-80.

[2] Blamey PJ, Dooley GJ, James CJ, Parisi ES. Monaural and binaural loudness measures in cochlear implant users with contralateral residual hearing. *Ear Hear.* 2000 Feb;21(1):6-17.

RECD		ITE adaptor / Foam plug		BTE adaptor / Foam plug		BTE adaptor / Overmould					
Right	Hz	250	500	750	1k	1.5k	2k	3k	4k	6k	Use
Predicted		9	11	12	13	14	16	12	13	23	☞
Measured											☞
Left	Hz	250 <th>500</th> <th>750</th> <th>1k</th> <th>1.5k</th> <th>2k</th> <th>3k</th> <th>4k</th> <th>6k</th> <th>Use</th>	500	750	1k	1.5k	2k	3k	4k	6k	Use
Predicted		9	11	12	13	14	16	12	13	23	☞
Measured											☞

Oticon's Genie fitting software contains features specifically designed for the pediatric audiologist. While it is preferable that measured RECD values are used, the Genie software can provide predicted data based on the child's age.





# SUMO Support

**SUMO joins a respected line of Oticon power instruments. Its outstanding performance is matched by our renowned support and customer service.**



Power Support is an ongoing program for Hearing Care Professionals who provide amplification solutions to people with severe or profound hearing losses. It helps professionals to provide relevant audiological information and advice, and select the most appropriate hearing instruments and assistive listening devices.

Oticon's Power Support also means:

- Marketing Support
- Audiological Tools
- Educational Seminars
- Internet-based Knowledge Sharing

Visit [www.oticonus.com](http://www.oticonus.com) and select Power Support for the latest in audiological information and a full range of power instruments.

**Oticon offers worldwide support to professionals and users alike. To find a list of Oticon manufacturing offices, distributors, and repair facilities on all continents, visit our website at [www.oticonus.com](http://www.oticonus.com), and choose "Contact us".**



The OtiKids program is designed to make the process of getting hearing aids easier and more comfortable for children and their families. Along with special packaging, colored hearing aids, stickers, and story and coloring books featuring Otto, our whimsical mascot, the OtiKids program includes information for children, parents, teachers, and Hearing Care Professionals.

In addition, OtiKids is represented by an award-winning website, oriented to parents and grandparents, with a lively and informative section just for children.

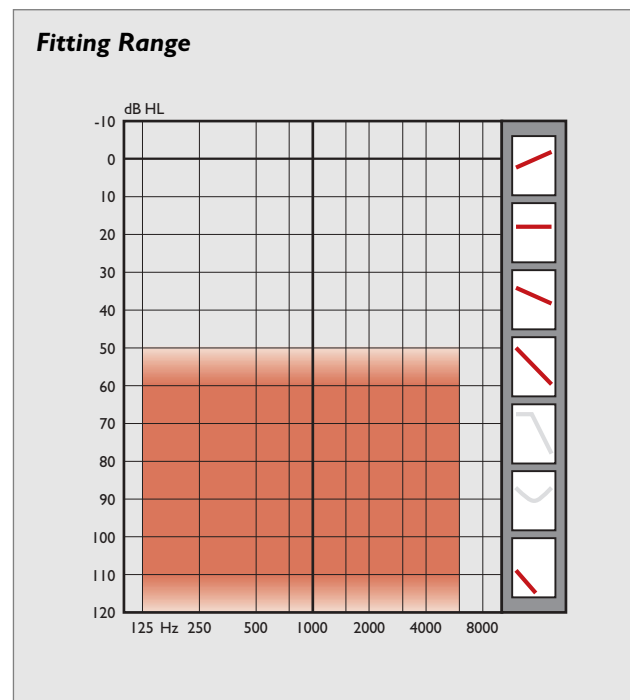
Here, visitors can read real-life stories about living with hearing loss, written by children and their parents.



Another very important aspect of the OtiKids program is service. When hearing instruments are ordered for children, Oticon offers additional warranty coverage at reduced prices. And for those older children fitted with custom instruments, all new warranties include shell remakes and performance changes. Fast turn-around time for repairs - 24 hours for most BTEs - makes life more convenient for the child and the family.

# SUMO Specifications

**SUMO more than meets the complex needs of people with severe and profound hearing losses.**



## Power

- High gain and a consistently high MPO
- Unsurpassed levels of LF MPO
- Dynamic Battery Management system for long battery life

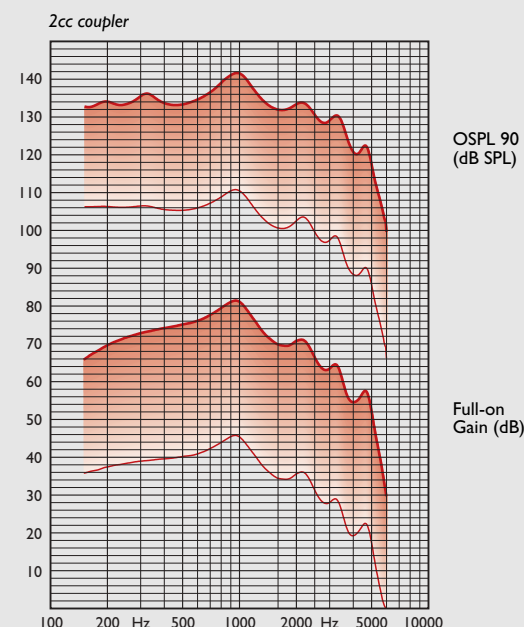
## Flexibility

- Multiple fitting algorithms including the well-known POGO-II, NAL-RP and DSL i/o.
- Effective feedback management
- Active filtering with 5 crossover frequencies
- Dedicated applications for pediatric fittings

## Functionality

- Small, thin, and light case
- Reliable and robust design
- Exceptional Telecoil performance
- Full FM and DAI compatibility
- Unique interlocking shoe design

## OSPL90 and Full-on Gain



	Ear simulator (IEC)	2cc Coupler (ANSI)
OSPL90, Peak - (dB SPL)	146	142
OSPL90, Average - (dB SPL)	142	134
Full-on-Gain, Peak - (dB)	85	82
Full-on-Gain, Average - dB	80	72
<b>Battery size 675 (IEC PR44)</b>		
Estimated life in hours	<b>Max</b>	<b>Typ</b>
1,4 V Zinc air	<b>400</b>	<b>250</b>
		<b>Min</b>
		<b>18</b>

# People first



We believe that it takes more than technology and audiology to create the best hearing instruments. That's why we put the individual needs and wishes of hearing impaired people first in our development of new hearing care solutions.