Oticon • Safari

Living Everyday ADVENTURES

oticon
PAEDIATRICS

Safari – built for a LIFE of ADVENTURE

Safari is a journey
For children, the path towards adulthood resembles a safari, an overland adventure offering countless opportunities to explore new things. There will be challenges, surprises, victories and defeats - but that's what makes the experience so worthwhile.

Safari family
The new **Oticon Safari family** is designed to help children with hearing loss get the very best out of every stage of their development. Initially, the signal is delivered in its most natural state providing the brain with access to cues that are critical for speech and language developement. Then, as children progress, more processing features can be activated - from advanced directionality to groundbreaking wireless connectivity.

The Safari family

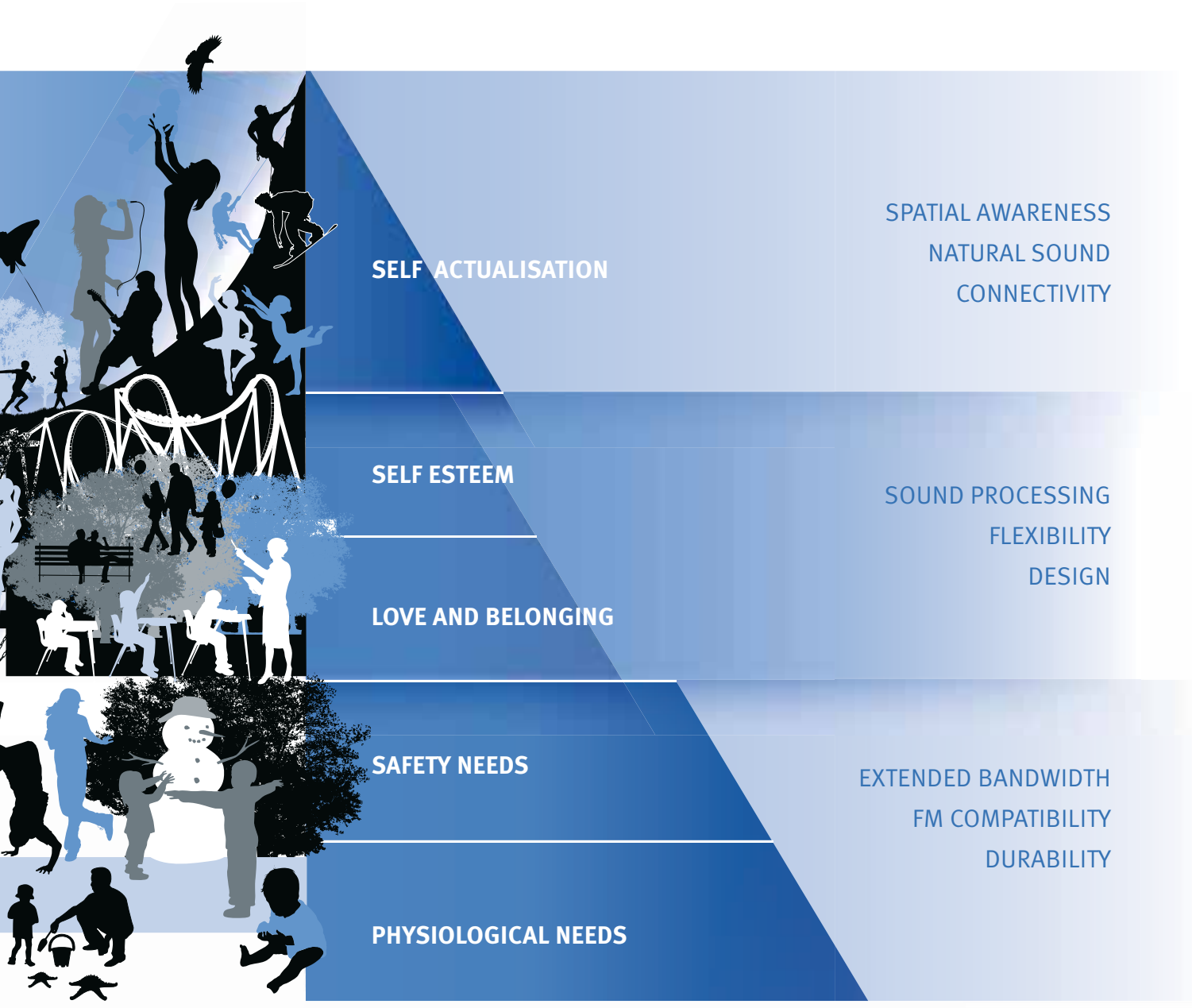
- Supports the active, playful lifestyle that most children lead
- Enhances spatial awareness even for the most complex sound environments
- Supports language acquisition without unnecessary signal manipulation
- Provides peace of mind and the intelligent LED status indicator
- Offers elegant FM design with easy connection at school and everywhere else
- Provides zero-delay connectivity to phones and other devices
- Promises robust and adventure-proof design
- Features child-friendly design and options
- Comes with a new paediatric fitting mode in Genie providing better results in less time

NEEDS-BASED philosophy

Oticon's commitment to putting people first is the driving force behind everything we do. In paediatrics this means providing the most child-friendly hearing care available!

Maslow's Hierarchy of Needs represents a progression from basic physiological needs to self actualisation, and Oticon's needs-based philosophy takes the same holistic approach. This enables us to address not just the hearing loss but also the child's abilities, needs and desires at every stage of their development.

With Safari instruments you can help children with hearing loss overcome life's challenges, so they can pursue the same opportunities and dreams as their peers.



Maslow's Hierarchy of Needs

A NEW STANDARD
in paediatric sound processing

Building good communication skills demands consistent access to the broadest range of speech and environmental cues. Capturing these sounds is one thing, but it's how they are presented that makes all the difference.

The ears and the brain work as a **binaural system**, yet this teamwork isn't supported if hearing instruments work independently. Conflicting cues can produce an artificial "wall of sound" that can be extremely difficult to unravel. By enabling two instruments to communicate wirelessly, Oticon's RISE platform presents fully coordinated signals that are far easier to segregate and interpret.

REAL sound from RISE
The Oticon RISE processing platform is a powerful and versatile engine. In Safari it drives a unique combination of technologies that set a new standard in paediatric hearing care.

High-speed broadband processing
High-speed broadband processing ensures that the extremely dynamic auditory environments in which children live, learn and play are always accurately represented. No matter how fast the situation changes, Safari delivers a clear, authentic signal and superior sound quality, so the child can follow events and keep up with changes with accuracy and ease.

Wireless binaural processing
Wireless binaural processing preserves the subtle interaural timing and level differences that enhance spatial awareness and sound localisation abilities. When children can pinpoint someone talking without losing the start of a sentence, they find it easier to participate and keep up. And being able to turn the right way in response to an alarm signal, will make both child and parent feel secure.

Wireless connectivity
The RISE platform offers high-speed, easy access to today's ever-growing world of connectivity. Bluetooth and EarStream communication promise instant and high-quality connectivity to remote audio sources such as phones, TVs, PCs and mp3 players. Signals are streamed seamlessly into both instruments with no confusing delays, so children can enjoy the same activities as their peers.

Great sound for everyone!
With advanced features in all price segments, the Safari family offers children superior sound quality regardless of the financial situation.

NATURAL sound

One of the most important paediatric benefits offered by Safari is its **extended bandwidth**. The impact of this on speech audibility is tangible. With greater access to ALL parts of speech, children have more opportunities to hear the nuances and differences in speech sounds and accurately reproduce them.

Extra cues in the mid-to-high frequency range also provide vital perceptual information on the child's environment. Safari's ability to provide more accurate spatial information gives children a clearer auditory picture of their surroundings, indoors or outdoors. The boost in self-confidence might encourage kids to explore even more!

Hearing ALL the notes

Not only does Safari enhance speech and intelligibility in noise, the wider bandwidth adds depth to music.

Whether it's from MTV or an mp3 player, music is at the core of today's youth culture. With Safari, the hi-fidelity details and close-to-natural sound quality that children have been missing, will finally be within reach.

– WITHOUT compromise

Natural, high-frequency speech cues

Parents of children with hearing loss want their children to develop speech and language in pace with their normal hearing peers. Studies confirm, however, that children with hearing loss need higher audibility and a wider bandwidth in order to perform at levels similar to those of normal-hearing children or hearing impaired adults *(Stelmachowicz, Pittman et.al., 2001; Stelmachowicz, Hoover et.al., 2000)*.

Expanding audibility

Safari can help bridge this gap through its extended bandwidth, which is further optimized when combined with an audibility-focused fitting rationale such as DSL v5.0a. With a 10,000 Hz bandwidth, high frequency prescriptive targets can more readily be reached, thus providing the child with additional high frequency speech audibility. This is critical for the acquisition of speech and language by children who are newly identified with hearing loss. Furthermore, those children with residual high frequency hearing who did not have access to these additional speech cues with their old instruments can also benefit from the enhanced high frequency audibility.

The Spatial Sound element

Safari's Spatial Sound feature helps preserve naturally occurring inter-aural intensity cues that are important for maintaining spatial awareness. With traditional, independent implementation of compression, this intensity difference is reduced as the hearing instrument on the far ear provides a higher amount of gain to the signal that has become softer due to the head shadow effect (see Figure 1). When Safari's Spatial Sound

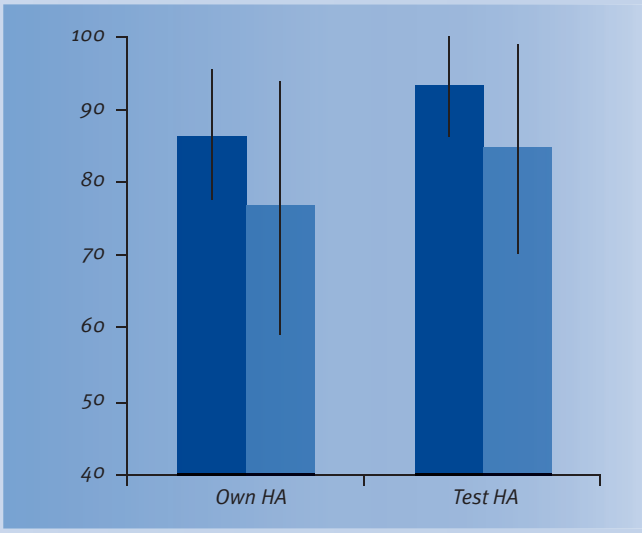


Figure 2. Percent correct scores on PBK-50 word lists and the California Consonant Test (CCT) obtained by children using their own hearing instruments versus hearing instruments employing an extended bandwidth and spatial sound processing.

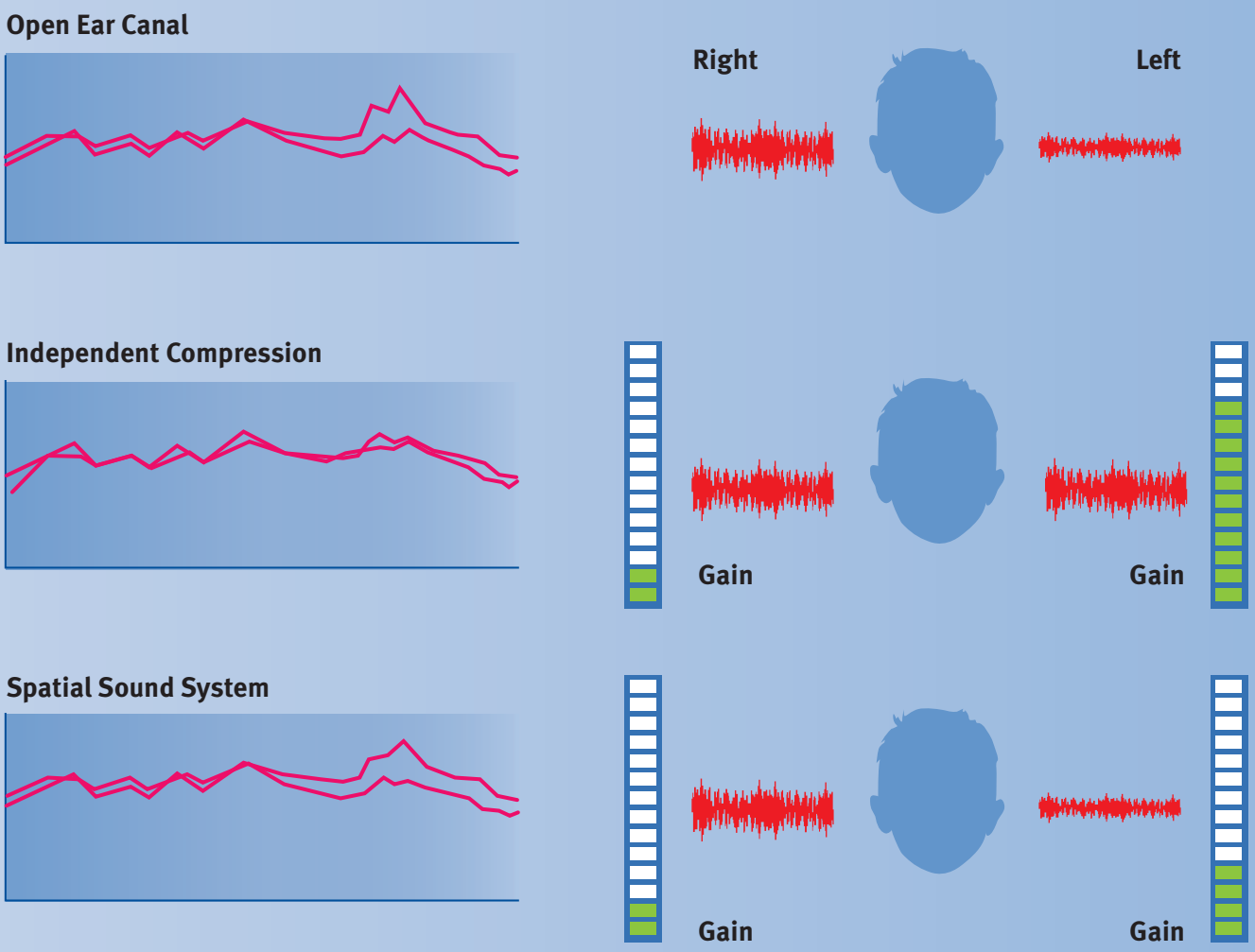


Figure 1. Shows the effect on naturally occurring spectral differences of two hearing aids acting independently (ill. 2) and when coordinated via Spatial Sound in Safari (ill. 3)

feature is enabled, the difference in intensity levels is retained and the natural localization cues are received by the ear and brain. By using binaural processing between the hearing instruments, the child with hearing loss can now have access to localization cues available to children with normal hearing. Furthermore, by having a clearer picture of the spatial relationship between a target speaker versus competing signals, the child's brain is better able to reduce the negative impact of background noise on speech intelligibility.

Improved speech recognition and spatial awareness

Recent studies with children and adults have shown that individuals with hearing loss are able to benefit from the additional audibility provided by an extended bandwidth and improved spatial awareness provided by binaurally implemented compression *(Kreisman et.al., 2009)*. Figure 2 (left) for example shows the improvement in speech recognition ability obtained by children with hearing loss when additional bandwidth and binaural compression is provided. These improvements have also been reported subjectively by both parents and children.

Through a combination of an extended bandwidth and binaural processing, Safari provides a more natural input to the child's brain and truly maximizes the child's potential to take advantage of the natural speech and environmental cues all around them.

References:
Kresiman B, Mazevski A, Schum,D & Sockalingham R. (2009). Performance with Broadband Ear to Ear Wireless Instruments. Submitted to Trends in Amplification

Stelmachowicz PG, Hoover BM, Lewis DE, Kortekaas RW, Pittman AL (2000). The relation between stimulus context, speech audibility, and perception for normal-hearing and hearing-impaired children. J. Speech Language Hearing Research. 43:902-014.

Stelmachowicz PG, Pittman AL , Hoover BM, Lewis DE (2001). Effects of stimulus bandwidth on the perception of /s/ in normal- and hearing-impaired children and adults. J. Acoustical Society of America. 110:2183-2190.

INTELLIGENT LED status indicator

The younger children are, the harder it can be to establish whether they are receiving consistent amplification. A three-year-old engrossed in fun games isn't going to be concerned about providing feedback on programs, volume levels or low batteries!

Such uncertainty – particularly in educational settings – is what motivated Oticon to introduce an LED indicator on the Sumo DM hearing instrument some years ago. The popularity of this feature left no doubt as to the value of incorporating it into the Safari line of instruments.

Intelligent LED signals are extremely effective, particularly for parents and teachers of young children. This **visual communication** helps them confirm that the child's instruments are working properly. Unique blinking patterns indicate that the instrument is on; which program it's in, whether the volume level is correct, and whether the battery is about to run out – a feature no other paediatric solution can offer.

– confirming they are ALWAYS hearing

Visual indicator

Visual Indicator summary table

Blinks	Meaning	Audible beeps	Action
	Program 1	1 beep	
	Program 2	2 beeps	
	Program 3	3 beeps	
	Program 4	4 beeps	
	Accessory* + microphone	low tone high tone	
	Accessory* only	high tone low tone	
	Preferred volume level	2 beeps	
	Low battery power	2 beeps every 15 minutes	Change battery

**FM, DAI, Streamer, Auto phone*

FREEDOM to CONNECT

Children with hearing loss want to keep pace with their friends. Whether they're toddlers, school-goers or teens, they want to be able to chat on a mobile phone or listen to their favourite songs with ease - and with the Oticon ConnectLine series they can.

It all starts with the **Streamer**. This optional, neck-worn accessory transmits an audio signal into *both* ears, effectively turning a pair of Safari instruments into the world's smallest wireless headset.

The Streamer can also be used as a remote control for Safari – a feature that parents will find particularly useful. It works even when the volume control or program switch on the instrument itself has been disabled to prevent tampering or accidental changes.

– to what MATTERS

A world of connectivity options

The Streamer offers easy access to:
- Mobile and landline phones
- mp3 players
- PC/ laptops
- Video games
- TVs

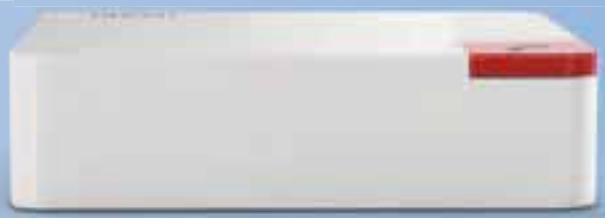
The ConnectLine series includes easy-to-use adaptors for home entertainment systems. So when children are watching films or gaming, they can get just as much out of the soundtrack as the visual effects.

Total TV
With the ConnectLine TV adaptor, speech intelligibility increases because the wider bandwidth captures vital high frequency details. Also, no transmission delay time helps to eliminate the echo and lip-sync problems that so often occur with less sophisticated Bluetooth systems.

Easy Chatting
With the ConnectLine phone adaptor, gone are the days of holding the phone at an awkward angle. All the child has to do to take a landline call is to press the phone button on their Streamer. The signal will then be fed directly into *both* ears.

ConnectLine TV and phone adaptors offer:
- Excellent sound quality
- Higher intelligibility for the child – normal volume for the rest of the family
- Greater lip-sync accuracy due to no delay times
- One-button switching from TV to phone

ConnectLine™ TV adaptor
3.1 inches wide



ConnectLine™ Phone adaptor
3.4 inches wide

The Safari/Amigo FM duo

Places such as classrooms, cafés and sports arenas harbour three age-old enemies: noise, distance and reverberation. Only FM solutions can counter these negative effects on the signal-to-noise ratio.

Slicing through noise

Amigo FM transmitters deliver a crystal clear signal to ear-level receivers, so children can stay focused for longer periods of time. Like Safari instruments, these Amigo receivers are equipped with an LED that provides instant confirmation that the speech signal is being picked up.

Dealing with distance

Children with hearing loss have a more reduced listening range than normal. Safari can extend their “listening bubble” by capturing sounds from longer distances. In noisy classrooms, attaching an Amigo R12 receiver will effectively **remove the distance** between child and teacher by picking up the speech signal directly.

Designed for flexibility

Safari and the dedicated Amigo R12 receiver are the perfect all-around duo - delivering small size, dependable security, and color-coordinated cosmetics. For Safari 13 battery models, universal FM connectivity is also available using the FM9 adapter and Amigo R1/R2 or other ear-level receivers. And the secure, tamper-resistant connection is available with either the R12 or FM9.

A WORTHY companion

Running, climbing, cycling, skating; if hearing instruments get dislodged or dropped during periods of lively activity they must be **robust** enough to survive. Children have a natural urge to push themselves and Safari offers freedom to do this.

During development of Safari both the external and internal components were subjected to rough treatment - from drop tests to extreme temperatures and humidity. Passing such rigorous performance requirements makes Safari a worthy companion for life in the real world.

– on any ADVENTURE

Keeping children – and their instruments – safe
For young children with inquisitive fingers, tamper-resistant battery doors and FM receivers ensure that shiny batteries and small receivers don't get swallowed or lost. And for older children who are constantly on the move, integrated FM receivers keep their instruments intact no matter how adventurous they choose to be!

FREEDOM to EXPRESS – their own PERSONALITIES

Safari's small size and ergonomic design make it the perfect solution seen from both a child's and parent's viewpoint. For children and teens seeking to express their individuality, Safari offers both bright colours and fun stickers.

Whether it's proud purple or brilliant blue that catches the child's eye, the result is exactly the same: having the freedom to select and personalise their instruments gives them a sense of **identity and ownership**. This can motivate them to wear their instruments every day.

Freedom to change

Even young children are conscious of their appearance. With a broad selection of stickers – from zebra stripes to rambling vines – they can express themselves, transforming their instruments to fit their mood, their favourite outfit or that special occasion.

NEW Peadiatric Fitting Mode

– your own SAFARI GUIDE

Fitting children of all ages can be demanding enough without having to contend with fitting software that primarily addresses adult hearing losses and lifestyles. To equip Genie to meet the needs of today's professionals, we asked experienced paediatric audiologists for their qualified input *(Lindley, 2009)*.

A FLOW that fits YOUR NEEDS

The result is your own **Paediatric Fitting Mode**, an intuitive fitting flow that provides relevant data at the appropriate time. This dedicated tool will help you provide customised fittings for children of any age with confidence. And it's just as easy as the Genie you already know.

Customisable default settings incorporating the DSL prescriptive method promote excellent hearing aid fittings and promise faster and more accurate first fittings.

Tailor-made assessment sheets help you take a holistic approach to the child's needs. And integrated modules designed to supplement your own counselling processes help to motivate the entire family to get involved. All to help you spend less time on technology and more time with the people who look to you for guidance and support.

Lindley, G. (2009). Oticon Whitepaper: Development of a Pediatric Fitting Mode in Genie.

Your own Genie SAFARI Guide

In paediatric fittings, hearing care professionals may be working with various formats of audiometric data, a different fitting rationale, differing opinions concerning which automatic features should be used based on the child's age, and different approaches to verification.

The new Paediatric Fitting Mode in Genie is the result of considerable research into the needs of children and the best practices of the professionals who fit them.

Personalise your Genie!
Use the paediatric default settings to define the age groups you find most appropriate in your work – and define the automatics and volume control settings for each of those age groups.

Overview dialogue
The first time you fit Safari this paediatric overview dialogue will offer some suggested settings. After fitting the hearing instrument, you will always have access to the information you have entered for the individual child.

Entering a new age group
When children enter a new age group, Genie will alert you via this dialogue box. Use the 'Apply' button to accept the new age group settings.

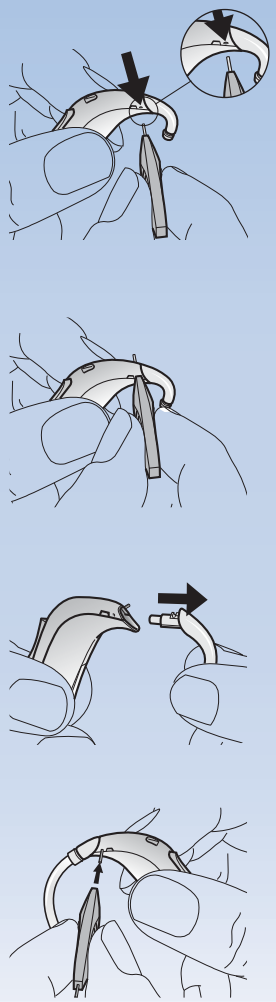
New SPLogram
To simplify verification, the new SPLogram in Genie allows you to compare the fit-to-target with results from external real-ear measurement equipment.

Integration with counselling tool!
The paediatric counselling tool in Genie enables you to import the child's audiogram directly into the tool.

Safari PRACTICALITIES

Changing hooks

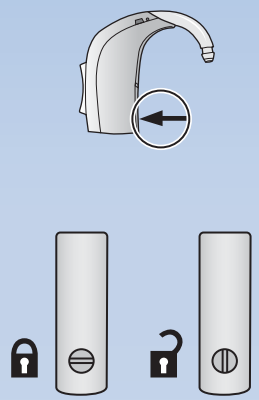
All Safari instruments are shipped with both standard and paediatric earhooks. It's easy to change the earhook as shown below, using the tool supplied. Be careful not to push the retention pin completely out when removing the hook.



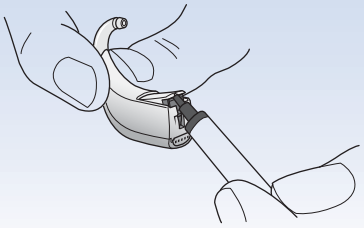
Tamper-resistant battery door

Both the 312 and 13 battery Safari models are available with tamper-resistant battery doors, however, their operation is different. A 'Multi-tool' is provided with each instrument to engage this feature.

The 312 battery door can be made tamper-resistant or 'locked' as shown in the top figures, turning the screw-set clockwise. Open by turning counterclockwise.



The 13 battery door can be opened by inserting the Multi-tool into the slot by the battery door and pushing up.

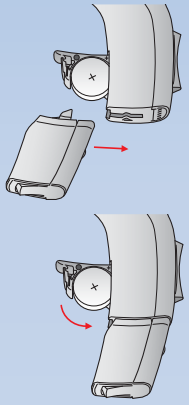


Attaching FM receivers

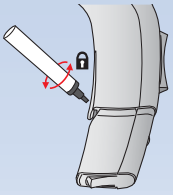
Safari instruments can use dedicated or universal Amigo receivers (with FM9 adaptor). Dedicated R12 receivers are available in 11 colours to match Safari instruments.

To attach either a dedicated receiver or FM9 adaptor, open the battery door, then slide the receiver (or adaptor) into the slot at the bottom of the aid. To make it tamper-resistant, follow the specific battery door instructions.

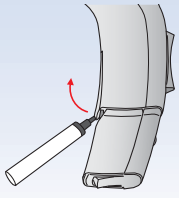
312 + 13



312



13

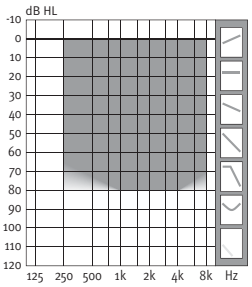
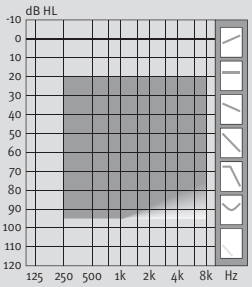
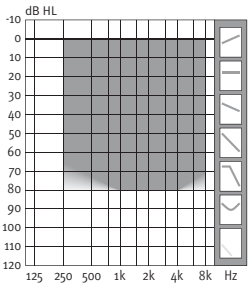
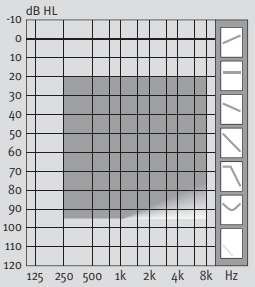


Note: Each of these operations can be viewed in Genie under Instructional Videos.

– and PERSONALITIES

Why Safari is the BETTER CHOICE

OSPL90 (peak)	Ear simulator/2cc coupler
Full-on gain (peak)	Ear simulator/2cc coupler
Fitting formula	
Bandwidth	
Binaural Processing	
Binaural Synchronisation	
Binaural Coordination, PB and VC	
Binaural DFC	
Adaptive Directionality	
Automatic Directionality	
Noise Management	
Automatic Adaptation Manager	
Fitting bands	
User programs	
Streamer	
LED	
Paediatric Hook	
Paediatric Fitting Mode	
Battery life, typical	
Dedicated FM receiver: Amigo R12	
Universal FM receiver: Amigo R1, R2 (FM9)	
Other universal FM receivers	
Amigo transmitters: T21, T20, T10, T5	

Safari 900 312	Safari 900 13P	Safari 600 312	Safari 600 13P
			
126 dB/115 dB	134 dB SPL/127 dB	126 dB/115 dB	134 dB/127 dB
60 dB/51 dB	68 dB/61 dB	60 dB/51 dB	68 dB/61 dB
DSL v5.0a/NAL-NL1	DSL v5.0a/NAL-NL1	DSL v5.0a/NAL-NL1	DSL v5.0a/NAL-NL1
10 kHz	10 kHz	8 kHz	8 kHz
Yes	Yes	No	No
Yes	Yes	No	No
Yes	Yes	Yes	Yes
Yes	Yes	No	No
Multi-band	Multi-band	Multi-band	Multi-band
Tri-mode	Tri-mode	Tri-mode	Tri-mode
TriState	TriState	TriState	TriState
Yes	Yes	Yes	Yes
10	10	8	8
4	4	4	4
Optional	Optional	Optional	Optional
Yes	Yes	Yes	Yes
Included	Included	Included	Included
Yes	Yes	Yes	Yes
108 hours	186 hours	108 hours	186 hours
Optional	Optional	Optional	Optional
Optional	Optional	Optional	Optional
No	Optional	No	Optional
Optional	Optional	Optional	Optional

It takes a truly dedicated approach to help children with hearing problems achieve their full potential. That's why we deliver the solutions and services that professionals and caregivers need to provide children the opportunities they deserve. This is what child-friendly hearing care is all about.

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