

Phonak Insight.

AutoSense OS™ AI 8.0 provides a more natural listening experience for speech in loud noise.

AutoSense OS AI 8.0 increases engagement time for the Speech in Loud Noise program, enabling increased activation of features that improve speech understanding and reduce listening effort, and overall supporting a more natural listening experience.

Preuss, M., Müller, S., August 2026

Introduction

Automatic, AI-based scene classification is the foundation by which modern hearing systems steer processing to balance speech understanding, comfort and environmental awareness. AutoSense OS (ASOS) AI 7.0 demonstrated that increasing the quantity and diversity of training data (18x more sound samples compared to previous generation) improves classification accuracy for challenging listening environments such as speech in noise and music. Improved classification translated to increased activation of the Speech in Noise program and its perceptual benefit (Wright et al., 2025).

ASOS AI 8.0 builds on this innovation by refining not only what the classifier detects, but how long it remains in a detected state. The key change is a separate exit criterion for the Speech in Loud Noise classification: the exit threshold is set below the entry threshold, creating hysteresis, meaning a larger, sustained acoustic change is required to exit the program than to enter it. This refinement makes the system less likely to react to momentary changes in otherwise stable environments.

The practical benefit is expected to be seen most clearly in situations where the listener remains in the same place

(for example, at a restaurant) but the noise level or speaker composition fluctuates slightly, for example, when people move, join or leave groups, or when conversation partners take turns in speaking. With a single, identical entry and exit threshold, if such environmental changes occur around the threshold, the hearing aid may be unable to maintain consistent speech in loud noise processing.

By contrast, ASOS AI 8.0's hysteresis reduces unnecessary program switching and increases activation persistence in the Speech in Loud Noise program, resulting in a more consistent activation of speech enhancing features such as Spheric Speech Clarity 3.0 or StereoZoom 2.0.

These features have been demonstrated to improve speech understanding (Latzel et al., 2025; Woodward & Latzel, 2022) and reduce listening effort (Tian et al., 2025) when appropriately engaged. Their activation in ASOS AI 8.0 therefore has direct implications for client outcomes in noisy conversational settings. Importantly, the exit criterion is tuned to require a meaningful, sustained change before exiting the program, preserving the system's ability to respond when the acoustic environment changes

more significantly, while minimizing switching programs when the environment merely fluctuates.

The technical measurements below demonstrate higher activation of the Speech in Loud Noise program with ASOS AI 8.0.

Technical measurements

Methods

To demonstrate the hysteresis feature, the microphone signal of a pair of Audéo hearing aids was directly recorded during lunch time at Sonova's headquarters, representing a typical speech in loud noise scenario. The person wearing the hearing devices was having a conversation with several colleagues at the same table. Over the course of about 30 minutes, the situation remained subjectively static.

However, the hearing aids' estimated noise floor levels reveal that the situation's level dynamics are much more volatile (Figure 1). This is due to people at other tables coming and going, and conversations themselves being sometimes louder, sometimes less loud. Consequentially, the level fluctuated around the criterion that demarcates a speech in noise from a speech in loud noise scenario.

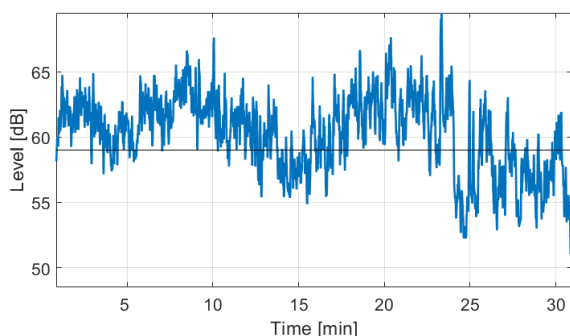


Figure 1: The hearing aids noise floor estimate while having a conversation at lunch, recorded over 30 minutes.

To compare the effect of the hysteresis mechanism, the same recording was fed directly to the microphones of the Infinio Ultra platform (ASOS AI 7.0) and through the new EON platform (ASOS AI 8.0). With this electrical recording and playback method, it can be ensured that both generations of hearing aids are processing the exact same signal. Both generations of technology share the same criteria to enter the Speech in Loud Noise program, but EON has the updated exit criteria as previously discussed; this analysis allows for the direct comparison of outcomes with and without the new exit criteria.

To compare the effect of the new mechanism, the activation of the Speech in Loud Noise program is logged on both platforms and visualized.

Results

As an outcome, the activation of the Speech in Loud Noise program over the course of the recording can be evaluated (Figure 2,3)

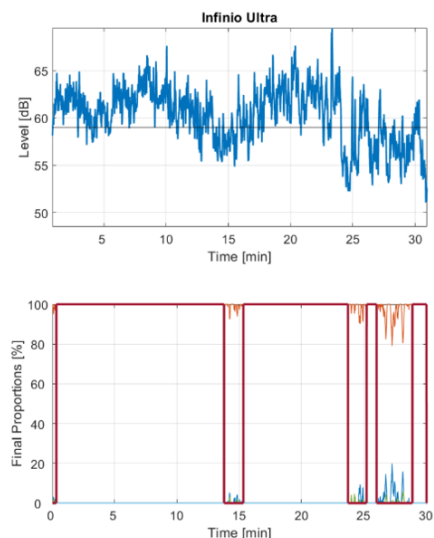


Figure 2: Activation of the Speech in Loud Noise program for Infinio Ultra hearing aids. The program is active when the proportion is at 100%, and not active when it is at 0%.

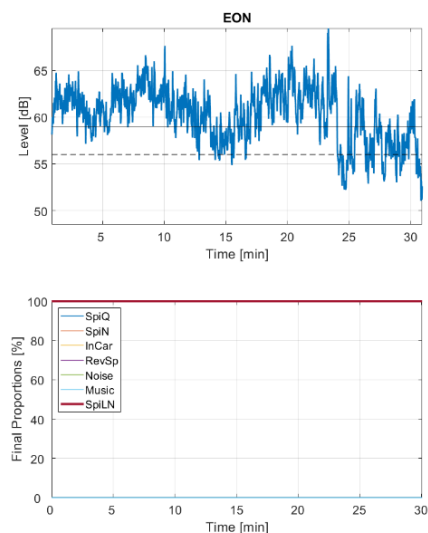


Figure 3: Activation of the Speech in Loud Noise program for EON hearing aids. The program is active when the proportion is at 100%, and not active when it is at 0%.

Although Infinio Ultra engages Spheric Speech Clarity the majority of the time over the course of 30 minutes, the system also reacts to fluctuations in the situation by deactivating the Speech in Loud Noise program in relatively soft segments. In contrast, EON's ASOS AI 8.0 is much more stable, as it keeps the Speech in Loud Noise program active over the full course of the recording.

In this scenario, this difference translates to 20% more activation of the program through the hysteresis mechanism (Figure 3).

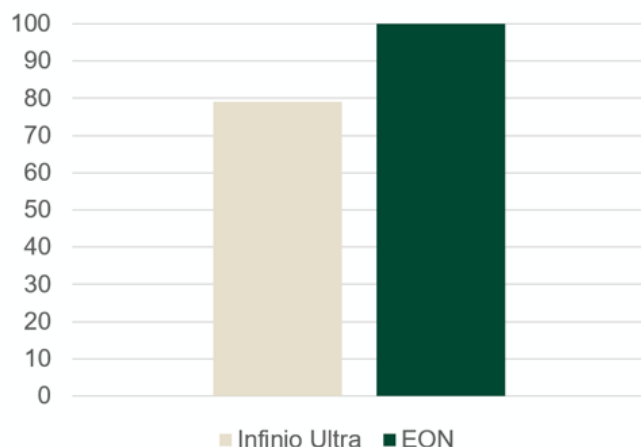


Figure 3: The percentage of time that Infinio Ultra and EON hearing aids were in the Speech in Loud Noise (SPiLN) program during the technical measurements.

Conclusion

Evaluation results align with the design intent: ASOS AI 8.0's hysteresis-based refinement complements prior advances in classification accuracy by stabilizing program engagement where it matters most. The result is a more natural listening experience in everyday noisy environments through improved classification persistence in subjectively stable but acoustically fluctuating settings (such as restaurants), while preserving prompt response to genuinely sustained environment changes.

By setting the exit threshold below the entry threshold for the Speech in Loud Noise program, the system provides longer, more reliable activation of features that improve speech understanding and reduce listening effort (e.g., Spheric Speech Clarity, StereoZoom 2.0).

Situations that hearing aid wearers face in their day-to-day lives vary greatly, and so does the subjective feeling of what constitutes a loud situation worthy of the activation of Spheric Speech Clarity. Some prefer to access the algorithm in moderately loud situations; others prefer to benefit from it in extremely loud situations. To serve such individual preferences, an activation level slider for the Speech in Loud Noise program can be found in the program options section of AutoSense OS AI in Phonak Target.

The hysteresis mechanism benefits every setting of either activation level.

References

Latzel, M et al. (2025) Spheric Speech Clarity improves speech understanding and reduces both listening effort

and fatigue. Phonak Field Study News. Retrieved from <https://www.phonak.com/evidence>.

Tian, E. et al. (2025) Spheric Speech Clarity significantly improves speech understanding in a multi-talker scenario and reduces spatial listening effort with Mandarin speakers. Phonak Field Study News. Retrieved from <https://www.phonak.com/evidence>.

Woodward, J. & Latzel, M. (2022). New implementation of directional beamforming configurations show improved speech understanding and reduced listening effort. Phonak Field Study News, retrieved from www.phonak.com/evidence.

Wright, A. et al. (2025) AutoSense OS 7.0 improves speech understanding with highly rated sound quality for challenging listening environments. Phonak Field Study News. Retrieved from <https://www.phonak.com/evidence>.

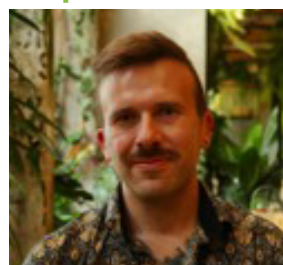
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Michael joined Phonak HQ as an Audiology Manager in 2020. Drawing on his experience as a lecturer at the Academy of Hearing Acoustics in Lübeck and his personal experience with hearing loss, Michael provides audiological input during product development and conducts in-depth expert training sessions. He holds a B.Sc. in Hearing Acoustics from the University of Applied Sciences in Lübeck, Germany.

Expert



Stephan Müller,
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Stephan joined Sonova in 2018 and has been lending his growing expertise in the system steering field to further develop and optimize Phonak's AutoSenseOS AI platform. With his own experience as a proud hearing aid wearer and his former background as a hearing care professional, Stephan constantly strives to make sure that technical developments translate to the benefit of our customers. He holds a Master of Science degree in Auditory Technology from the University of Lübeck.

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One-page summary

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Key highlights

- AutoSense OS (ASOS) AI 8.0 introduces a new exit criterion for the Speech in Loud Noise program, so a larger sustained acoustic change is required to exit than to enter.
- Controlled comparison shows higher cumulative activation of the Speech in Loud Noise program, increasing the time key hearing performance features are active in challenging listening environments.
- ASOS AI 8.0 complements ASOS AI 7.0's accuracy improvement, combining detection accuracy with sustained engagement of speech in noise processing.

Considerations for practice

- With ASOS AI 8.0, clients can experience a longer, more reliable activation of features that improve speech understanding and reduce listening effort.^{1,2}
- ASOS AI 8.0 provides a more natural listening experience in everyday noisy environments through improved classification persistence in acoustically stable but fluctuating settings, such as restaurants.
- Phonak Target allows for easy personalization via the activation level slider for the Speech in Loud Noise program. The hysteresis mechanism benefits every setting of either activation level.

1. Tian, X., Guan, J., Latzel, M., & Kuehnel, V. (2025) Spheric Speech Clarity significantly improves speech understanding in a multi-talker scenario and reduces spatial listening effort with Mandarin speakers. Phonak Field Study News retrieved from <https://www.phonak.com/evidence>

2. Wright, A., Kuehnel, V., Keller, M., Seitz-Paquette, K., & Latzel, M. (2024) Spheric Speech Clarity applies DNN signal processing to significantly improve speech understanding from any direction and reduce the listening effort. Phonak Field Study News retrieved from <https://www.phonak.com/evidence>