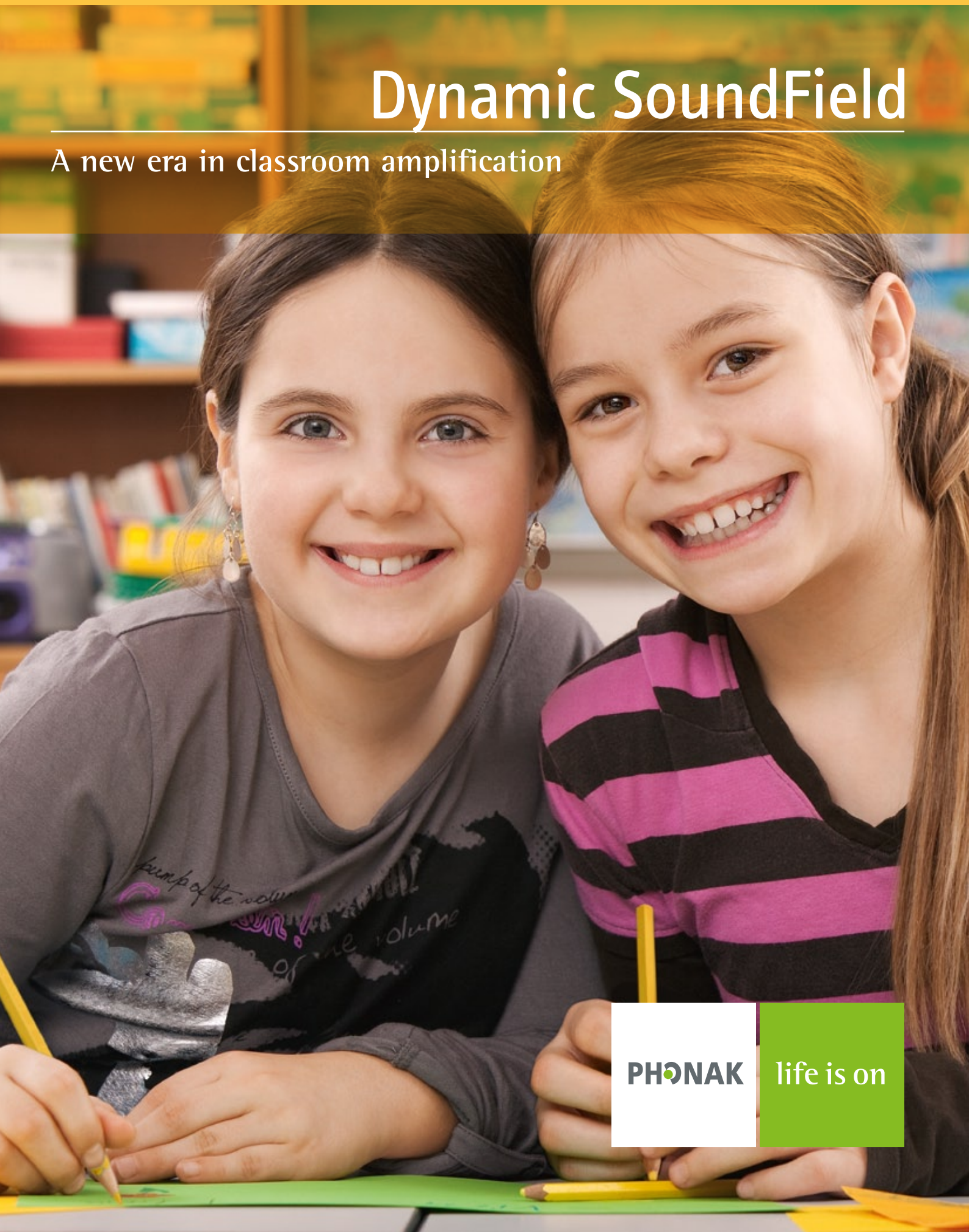
Dynamic SoundField

A new era in classroom amplification



PHONAK life is on

Why soundfield matters

For the best possible learning experience children must be able to hear the teacher's voice clearly in class, but unfortunately this is not always possible. Factors such as classroom noise, the distance between teacher and students, and challenging classroom acoustics can make understanding the teacher difficult, even for children with normal hearing.

For teachers meanwhile, noisy classrooms mean raising the voice to be heard, which in turn often leads to vocal strain, hoarseness and in the case of temporary voice loss, time off work.

These reasons are why soundfield technology was born; to clearly amplify the teacher's voice and, in doing so, help students to hear and understand directions more easily.

This amplification approach has been scientifically proven to improve student performance and the vocal health of the teacher, meaning less teacher sick days as a result.

Proven soundfield benefits*

- Children's listening and learning skills improve
- Less teacher repetition required
- Enhanced class instruction and management
- Less vocal strain for teachers

*The MARRS Project: Mainstream Amplification Resource Room Study – http://www.classroomhearing.org/research/marrsStudy.html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Soundfield: the story so far

Despite soundfield's proven benefits, the story of this technology has not always been a happy one, as there are very real issues associated with traditional soundfield systems. These range from in-class echoes and feedback to overly complex settings and incompatibility with the wireless "FM" systems worn by many hearing impaired students.

This imperfect situation even led The Acoustical Society of America, in its position statement on sound amplification in the classroom*, to state that sound amplification "increases rather than reduces overall classroom sound levels" and that "improperly maintained microphones and loudspeakers or poor user skills can cause even poorer speech communication than no amplification systems".

*http://asa.aip.org/amplification.pdf

Today's 4 key soundfield issues

Unwanted noise

- Many classrooms create lots of reverberation, meaning amplified sounds bounce off hard surfaces, producing lots of problematic noise.

Hardware hassle

- Many soundfield systems feature several loudspeakers, which can be a hassle. Where should they be placed? How should the cabling be run around the room? It is not always possible to place a loudspeaker in a room's acoustically preferred position.

Configuration confusion

- Many soundfield systems feature adjustable frequency settings and separate volume controls. Who 'sets these sliders'? Does a qualified person need calling each time settings are accidentally changed?

Patchwork complexity

- If there are FM-wearing hearing impaired students in class, someone must 'patch' together a system that enables both FM and normal-hearing soundfield listeners to hear the teacher's words. This often results in an FM system's voice signal being degraded.

The Dynamic difference

Phonak's scientists, engineers and audiologists designed our Dynamic SoundField system both to address each of today's problem issues and to be 100% future-proof.

The outcome is a digital system that helps students hear the teacher's voice more easily than ever before, that teachers love due to its ease of use, and that audiologists appreciate for its outstanding sound quality and instant FM compatibility.

Dynamic SoundField features

Unique "line source" loudspeaker unit

- Phonak's 12-loudspeaker "array" offers high directionality and creates far less problematic reverberation than any other existing soundfield system. It covers a large area (up to 860 sq. ft. / 80 m²) with a clean, high-quality signal, using just one loudspeaker per class, to help students comfortably hear the teacher wherever they are sat.

Fully automated settings

- With Dynamic SoundField teachers do not need to monitor or adjust frequency settings and volume levels. The system automatically measures the room's actual noise level and optimizes its own settings to provide optimal signal-to-noise ratios* (SNRs) – integrating the acoustical expertise previously found only in textbooks into the world's first intelligent soundfield product anyone can use. Just plug in, turn on and teach.

Exclusive built-in FM compatibility

- Dynamic SoundField's **inspiro** teacher transmitter can be used to broadcast in one of three modes: Dynamic SoundField mode, Dynamic FM mode, or Phonak's exclusive combined Dynamic SoundField & Dynamic FM mode.

Intelligent frequency hopping

- An ingenious new way of automatic hopping frequencies eliminates interference issues, allowing Dynamic Soundfield to happily coexist alongside a school's WiFi and Bluetooth networks. Classrooms do not need a particular allocated channel, pairing is easy, and there is usually no limit to the number of Dynamic SoundField systems that can be installed in one school building.

Reassuringly future-ready

- Dynamic SoundField is 100% future-proof. Both the **inspiro** transmitter and the loudspeaker unit feature USB connectors, through which firmware updates can be downloaded via an internet-connected PC. This ensures users benefit from new features as soon as they are released.

*Signal-to-noise ratio (SNR) describes the relationship between the strength of an information-carrying signal (in soundfield's case a speech signal) and the strength of the "noise" (such as background chatter or corridor sounds) corrupting that signal. In other words, SNR compares the useful noise to false or irrelevant noise.


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Introducing inspiro

inspiro is Phonak's award-winning Dynamic FM transmitter and is already used in tens of thousands of schools around the world. It is supplied with a new durable mini-boom microphone, which accurately picks up speech without amplifying the surrounding noise.

In addition to its 3-mode functionality, **inspiro** offers numerous other industry-leading features. These include: Dynamic Speech Extractor (DSE), a technology that dramatically improves signal-to-noise ratios; DataLogging, which records usage data for reference and analysis by school audiologists, and the ability to use several **inspiros** and/or DynaMic passaround microphones in one class via Phonak's MultiTalker Network (MTN).

Existing Phonak **inspiro** users can upgrade their transmitters to full Dynamic SoundField functionality for free. With this upgrade, **inspiro** evolves from an analogue transmitter into a dual analog/digital device; transmitting digitally to the Dynamic SoundField loudspeaker while utilizing analogue FM to serve hearing impaired listeners.

Introducing the DigiMaster 5000

Phonak's Dynamic SoundField system features an innovative new loudspeaker array called the DigiMaster 5000, which features no less than 12 individual high-quality loudspeakers (3), all housed in a robust aluminum frame.

The ratio between the teacher's speech signal and any undesired background noise (the signal-to-noise ratio or SNR) is much more favorable using this kind of loudspeaker design, compared to those forms traditionally employed by soundfield systems. This is especially true when children are sat further away from the teacher, where they need high sound quality the most.

The DigiMaster 5000 array emits sound waves with a narrow vertical directivity and a wide horizontal directivity, ensuring that the required sounds are carried effectively across a large area, while generating very little speech-hindering 'late reverberation' or echo.

The DigiMaster 5000 is available with a sturdy floor stand (1) or can be wall-mounted (2).

1

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DynaMic & the MultiTalker Network

DynaMic is Phonak's handy Dynamic FM passaround microphone. Designed for use with **inspiro's** Multi Talker Network (MTN), DynaMic is used by students during group or presentation work to ensure that FM-wearing, hearing impaired students catch all the conversation. Up to 7 Dynamic FM transmitters (i. e. **inspiro** or DynaMic) can be used in one MTN.


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Dynamic SoundField for every listener

In schools across the world three trends are emerging more and more often:

- Hearing impaired children are being integrated into mainstream schools
- Greater numbers of hearing-impaired children are using FM hearing systems
- Schools are adopting soundfield technology for normal hearing students

The result? A technical challenge that has, until now, remained unsolved: how to combine soundfield and FM signals effectively.

Dynamic SoundField overcomes the audiologist's previous patchwork headaches by using one Dynamic transmitter to transmit both FM and soundfield signals.

This is possible because Phonak's **inspiro** features FM and soundfield signal processing and amplification algorithms within the same proven, durable housing.

Therefore Dynamic SoundField's three operating modes cover every possible situation:

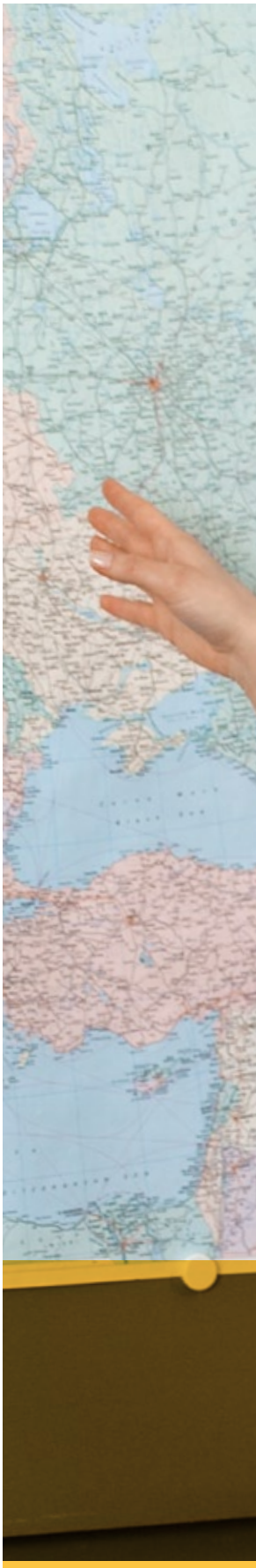
- Do all the students have normal hearing?
  Use Dynamic SoundField mode.
- Do all students wear personal FM systems?
  Opt for Dynamic FM-only transmission.
- Are both normal hearing and hearing-impaired students in the class?
  Choose combined Dynamic SoundField & FM mode.

Never before has transmitting speech to a fully integrated group of students been so simple and so effective.

Facing the future

Dynamic SoundField is 100% future-proof, as both the DigiMaster 5000 loudspeaker unit and Phonak's **inspiro** transmitter can accept firmware updates via the internet.

This functionality is important because it ensures that Dynamic SoundField never becomes "stuck in time", but instead always remains at the cutting edge of soundfield technology. (Previous **inspiro** updates for example included new language options and additional useful menu items).

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Life is on

We are sensitive to the needs of everyone who depends on our knowledge, ideas and care. And by creatively challenging the limits of technology, we develop innovations that help people hear, understand and experience more of life's rich soundscapes.

Interact freely. Communicate with confidence.
Live without limit. Life is on.

www.Phonak.com
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