BAA England Heads of Service Day 2014:

Loop Technology
Hearing Loops

Agenda

- Why aren’t hearing aids the complete solution?
- What are Hearing Loops and how do they work?
- Where can hearing loops be used?
- It’s old tech – So why are Hearing Loops so topical and important?
- Why did they get a bad reputation and what has changed?
- Why are hearing aid users advocates for hearing loops?
- Why should you be an advocate for hearing loops?
About Ampetronic

- World’s leading developer of induction loop systems
- Over 25 years of innovation within the ALD market
- Worldwide distribution & training network
- Contributors to international performance Standards
- Committed to education & promotion of good practice
- Our core principle: Provide a genuine benefit
Hearing Loops

Why aren’t hearing aids the complete solution?
Limitations of Hearing Aids

- Limited by microphone technology
- Limited by distance to desired sound source
- Pick up unwanted ambient sound and reverberation despite DSP
Limitations of Hearing Aids

- **Effective hearing aid range: 6 feet** (M. Bakke)
- Hearing aids do not correct auditory processing issues
- Hearing aid manufacturers claim that DSP can solve many problems
  - Noise suppression and directional microphones offer at best an average 3-5 dB effective AIDI* at <1.5m
  - Users who need 15+dB signal-to-noise ratios do not benefit significantly from directional instruments

*A: Articulation Index weighted Directivity Index*
Signal-to-noise ratio vs intelligibility

M. Bakke, PhD determined users typically need +18dB SNR
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**Inverse square law**

The laws of physics cannot be defied by hearing aid manufacturers!
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Haven’t digital hearing aids solved the problem?

Sergei Kochkin asked leaders in the industry in 2010

Has current digital technology made any progress on the SNR issue?

“The answer is no, if by progress we mean improving the user's ability to understand speech in the presence of competing talkers. “

Mead Killion (Etymotic Research, September 2010)
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What are Hearing Loops and how do they work?
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**Induction / Hearing Loop Systems**

- Input ‘source’ audio
- Loop amplifier
- Loop(s) of cables
- Hearing aid telecoil receiver
- Sound direct to the ear
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Area Coverage Systems Magnetic Field
Hearing Loops

Retails Counters, help points reception desks etc
The Assistive Listening Device Principle
Hearing Loops

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Hearing Loops

Where can they be used?
Unique Applications – Transient Use

- Anywhere that the user is temporary or ‘transient’
- Hearing loops can be used where other systems can’t, e.g.
  a) Reception desks
  b) Service counters
  c) Intercoms
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**Unique Applications - Transport**

- Hearing loops are the only system suitable where receivers cannot be handed out, e.g.
  a) Trains & Trams
  b) Coaches
  c) Taxis
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Airports
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Intercoms & Emergency Help Points

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Applications - Theatres & Cinemas
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Concerts & Live Music Events
Hearing Loops

Applications - Classrooms & Lecture Theatres
Hearing Loops

Lifts
Hearing Loops

Transport
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It’s old tech – So why are Hearing Loops so topical and important?
The use of hearing loops is expanding

- Over the last 10 years the United States has woken up to hearing loops – driving demand with HA manufacturers
- Increasingly popular across Europe
- Legislation is tightening up across the World
- Activity by both hearing aid user and advocacy groups
- The quality of hearing loops has improved immeasurably
- No other technology can provide the same service
Hearing Loops vs competing technologies

- Competing assistive listening technologies (IR and FM) require receivers
- Induction loops are direct-to-hearing aid
  - Discreet and convenient for users
  - Low-overhead for facility providers
- “It’s a dignified solution”, Richard Einhorn, Composer and hearing aid user
Hearing Loops vs personal listeners

- Hearing Loops provide 1:1 and 1:Many communication across small and large areas without the requirement for ‘pairing’.
- Proprietary personal listeners cannot be used for broadcast, or couple directly to a venue’s audio system.
- Passive technology; does not drain the hearing aid battery.
Why don’t HA manufacturers do more to advertise compatibility?

- Keen to promote the benefits of DSP technology
  - Enhancements for:
    - Directivity
    - Ambient noise suppression
    - Reverberation suppression
- Aiming to sell proprietary accessories
- Competition for space within miniaturised devices
- Not in their interests
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Why did Hearing Loops get a bad reputation & what has changed?
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Hobby Engineering Projects

Audio frequency induction loop – I can do that – it’s a doddle!
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**Other issues**

- Portable Counter & Desktop Loops
- Poor microphone specification and placement
- Lack of understanding of building design and materials
- Poor understanding of hearing loss
- Tick-box solutions to legislation
- Interference between hearing loops and other equipment
“Service providers are required to make changes, where needed, to improve service for disabled customers or potential customers. There is a legal requirement to make reasonable changes to the way things are done (such as changing a policy), to the built environment (such as making changes to the structure to improve access) and to provide auxiliary aids and services (such as providing information in an accessible format, an induction loop for customers with hearing aids, special computer software or additional staff support when using a service).”
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International Loop Performance Standard

- IEC 60118-4:2006
- Specifies performance criteria, including:
  a) Low magnetic noise
  b) Adequate field strength, and uniformity of field strength across coverage area
  c) Linear (and consistent) frequency response
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**British Standards Code of Practice**

- **BS 7594: 2011**

  “... gives recommendations for and guidance on the design, planning, installation, testing, operation and maintenance of an audio frequency induction loop system (AFILS) intended for communicating speech, music and/or other signals.

  It is mainly concerned with AFILS for hearing enhancement, in which the signals are communicated to users of hearing aids equipped with magnetic pick-up coils”
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Different Loop Designs

Overspill Loop
Perimeter Loop
Cancellation Loop
Single Array
Loss Control MultiLoop™
Low Spill MultiLoop™
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Loop Amplifier Design
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Why are hearing aid users advocates for hearing loops?
Value of Hearing Loops to users

- In many situations, Hearing Loops give users their best and most convenient means of access to high quality sound.
- User appreciation of Hearing Loops is illustrated by strong and growing grass-roots advocacy worldwide.
- Many are unaware of the benefits of Hearing Loops
  - Better education is required
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Improvement in listening experience with hearing loops

1 means “I cannot hear”
10 means “I heard every word”
Why should you be a hearing loop advocate?
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**Importance of Telecoil fitment and use**

- Without common fitment and correct programming of Telecoils, the technology faces decline.
- All NHS-dispensed hearing aids are telecoil equipped
  - *Wasted opportunity if not enabled!*
- HA manufacturers may not emphasise the benefits
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**U.S. Assistive Listening Device Legislation**

- **The Hearing Aid Compatibility Act (HAC)(15)**
  All landline telephones must be hearing aid compatible and all wireless telephones must have a compatible version.

- **Arizona Senate Bill 1348** Audiologists must inform patients about telecoils and assistive listening devices
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**Reasons for delays/non-purchase of Hearing Aids**

(Kochkin, S et al, Marketrak VIII)

- Lack of effectiveness in background noise (29%)
- Fit and Comfort issues (26%)
- Not enough value for costs incurred (20%)
- Other reasons (a.o. reliability, care, maintenance, did not benefit tinnitus, stigma and sound quality (14%))
- Limited benefit (48%)
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In Conclusion
In conclusion

- There is growing demand for Hearing Loops from HA users
- There are very real limits to the effectiveness of hearing aids
- When used correctly, Hearing Loops are the most effective assistive listening solution
- There is no replacement for Hearing Loops expected for at least 10 years
- Hearing Loop systems are good for Audiology businesses
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**In conclusion**

Most importantly, ensure that customers are informed of the benefits of telecoils and Hearing Loops, and where telecoils are fitted ensure that they are enabled, programmed, and demonstrated.
Thank you for your attention

Any Questions Please?
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