

# HEARD AROUND THE WORLD!

Hearing aid compatibility and wireless assistive devices.

**BY DAVID G. MYERS, PHD, WITH NORMAN LEDERMAN, MS**

'A couple of years ago, our church proposed installing a system that required people to use headphones. A poll of those who might use it revealed little interest, so that idea was dropped. A loop system would be much more acceptable because it would use the hearing aids we already have.'

—BVK, Midland MI

*The telecoil feature is in more and more hearing aids, the use of telecoil-compatible induction loop assistive-listening systems is increasing and, increasingly, hearing-impaired activists are vocal in their requests for hearing aid-compatible telephones and assistive-listening systems. This bodes well for people with hearing loss, hearing-care professionals, and sound system designers and installers. The primary author of this article, David Myers, is a hearing-aid user and advocate for hearing aid-compatible access to assistive-listening technology. As a college professor with no commercial affiliations, he is a well-wisher to all manufacturers and audio professionals who are enabling hearing aid-compatible assistive listening.*

Imagine this happier scenario for the nearly 30 million Americans with hearing loss: Hearing-aid users are able to interface with *any* telephone and *all* assistive-listening systems...simply by pushing a button on their own hearing aid! In churches, auditoriums, theaters, meeting rooms, home TV rooms and vehicles, clear sound—prescription-fitted to one's own needs—is broadcast by tiny loudspeakers right inside one's ears. Telephone conversations are less of a struggle, thanks to the conversation being broadcast to both ears. And, thanks to their increased functionality, hearing aids, which formerly were worn by fewer than one in four people with hearing loss, now are welcomed by half or more.

## The Technical Premise

The basis of this hearing-assistance advancement is magnetic induction, a process as old as alternating current and transformer technology. Current flowing in one conductor induces a current in a nearby conductor. Inside an increasing number of hearing aids—nearly 50% in North America and some 95% in the United Kingdom—is a small component called the “telecoil,” a sub-miniature coil of very fine wire (Figure 1). When the hearing-aid user switches to “T,” the telecoil is engaged, enabling the direct reception of electromagnetic signals. This technology may be applied to a wide variety of applications, ranging from counter tops and vehicles to churches and living rooms. Figure 2 depicts a television viewing application for an induction loop assistive-listening system. Basically, the installation of an induction loop assistive-listening system is a three-step process:

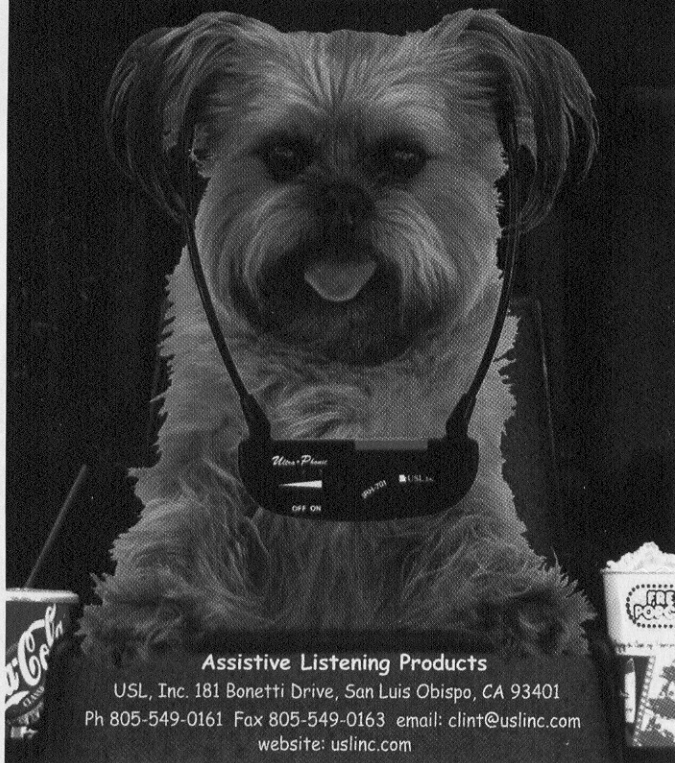
1: survey of the space to be looped, including check of ambient electromag-

*David G. Myers, PhD, is a social psychologist at Hope College, Holland MI. He can be reached at [myers@hope.edu](mailto:myers@hope.edu) or [www.hearingloop.org](http://www.hearingloop.org). Norman Lederman, MS, is director of Research & Development at Oval Window Audio, Nederland CO: [norman@ovalwindowaudio.com](mailto:norman@ovalwindowaudio.com) or [www.ovalwindowaudio.com](http://www.ovalwindowaudio.com).*

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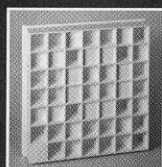
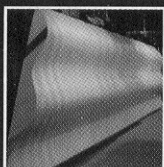
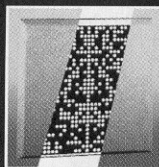
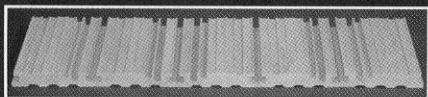
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FIGURE 1.

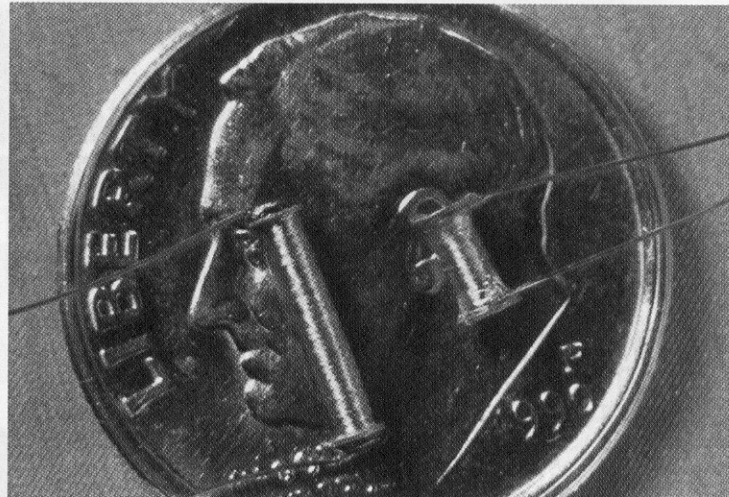


Photo courtesy Tibbetts Industries, Camden ME.

**The tiny hearing aid telecoil enables reception of audio transmissions from all induction loop assistive-listening systems.**

netic fields and identification of best loop wire placement.

2: a single conductor wire (the "loop") is installed around the perimeter of the seating area and connected to a special low-impedance high/constant-current loop amplifier.

3: the loop amplifier is "connected" to the sound source with microphones, or with a patch cord to the PA system.

All telecoil-equipped hearing-aid users, plus those with newer model cochlear implants or with portable loop receivers and headsets, benefit by the improved signal-to-noise transmission from the loop system. Because loop reception by a hearing aid is inconspicuous and hassle-free, it is much more likely to be actually used than assistive-listening technology that is *not* hearing aid-compatible.

In public facilities, the use of this technology creates a win-win situation for the facility as well as the hearing-impaired listener:

- Less cost: for each telecoil-equipped hearing-aid user, the facility has to purchase one *less* dedicated receiver
- Less maintenance and replacement; fewer receivers mean lower maintenance costs (batteries, broken headphones, damaged cases), and fewer units walking out the door.

This technical premise can also be applied to telephones. By switching to "T," the hearing-aid user can receive direct electromagnetic transmissions from the telephone handset, resulting in less acoustic background noise. Better yet, a small loop system can be interfaced with a telephone system. In this scenario, a hard-of-hearing person with *two* telecoil-equipped hearing aids can receive a direct transmission of the telephone signal to *both* ears, thereby enhancing speech comprehension. (Most of today's hearing-aid users do have two aids, and so have the potential to enjoy greatly increased phone comprehension.)

## It's Spreading

Around the world and across the US, induction loop assistive-listening systems are enabling wireless communi-

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cation with hearing aids. Here are some examples:

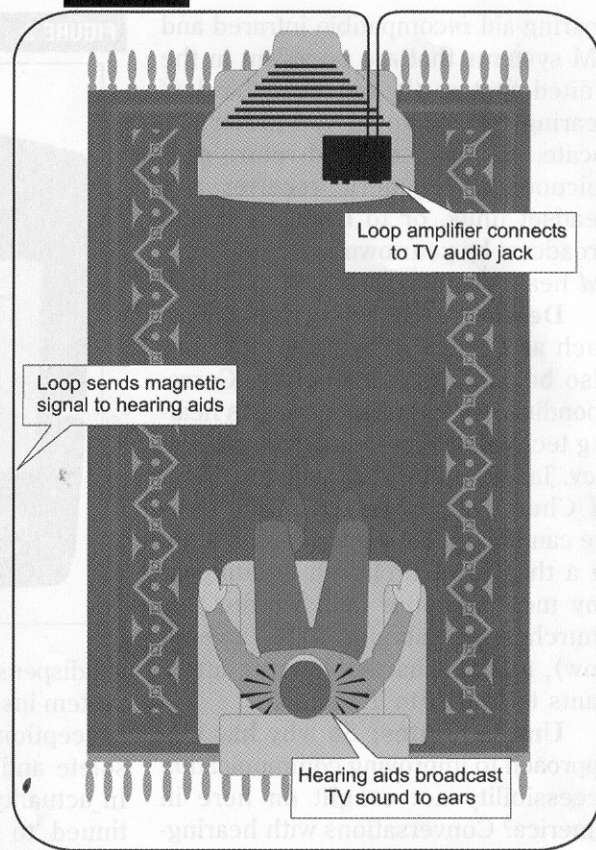
• **Great Britain:** Recently, I sat with several hundred others in London's Gatwick Airport departure lounge, straining to hear announcements about my delayed flight home. Alas, the loudspeakers were too distant and the sound therefore too foggy.

But hold it! This was the United Kingdom, where induction-loop systems now broadcast sound to telecoil-equipped hearing aids in most churches, cathedrals and auditoriums, as well as at more and more train-station ticket windows, tourist information counters, bank-teller stations and post-office windows. On the chance that this vast lounge also was looped, I activated my telecoils. Voila! Suddenly, the announcements were broadcasting inside my ears, and I could hear the announcements as well or better than other travelers. Just as my laptop was receiving information wirelessly, so, too, were my hearing aids!

With loop systems now mandated for all London Underground ticket centers and all future London taxis—and with Britain's National Health Service (NHS) now routinely including telecoils in hearing aids—hearing aid-compatible assistive listening is en route to becoming omnipresent in the United Kingdom. "The whole of the church is served by a hearing loop," began Westminster Abbey's program for the 50<sup>th</sup> anniversary celebration of the Queen's coronation. "Users should turn their hearing aid to the setting marked 'T.'"

As an occasional UK resident, I have found this invisible, hassle-free assistive listening much more user-friendly than the

**FIGURE 2.**



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hearing-aid incompatible infrared and FM systems that are prevalent in the United States. (If you were hard of hearing, which would you prefer: To locate, ask for, wear and return conspicuous and generic receiver and headset units, or to have the sound broadcast by your own *prescription fitted* hearing aids?)

- **Denmark:** In other countries, such as Denmark, hearing loops are also becoming commonplace. Corresponding from one of the world's hearing technology centers, Denmark, the Rev. Jan Granborg Eriksen, president of Churchear, observed that, "Here we can just install a good loop system in a theater or a church building or any meeting room (and we do: Our churches are almost 100% covered now), and ask hard-of-hearing attendants to switch to T-position."

- **United States:** So why has this approach to improving communication accessibility not caught on here in America? Conversations with hearing-

**FIGURE 3.**



Courtesy Oval Window Audio.

aid dispensers and professional sound-system installers suggest a major misconception that loop systems are obsolete and/or difficult to implement. In actuality, the technology has continued to evolve and installation is

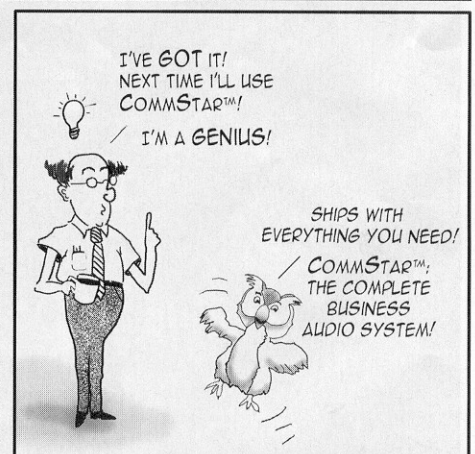
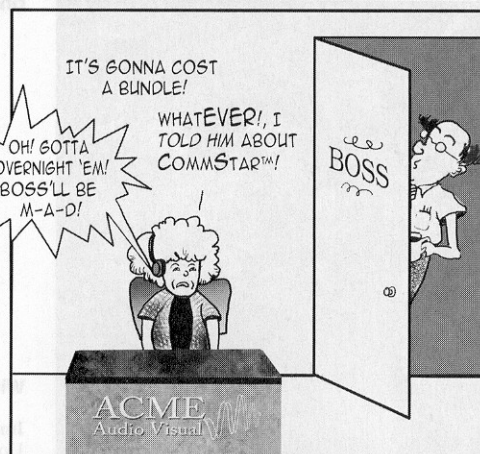
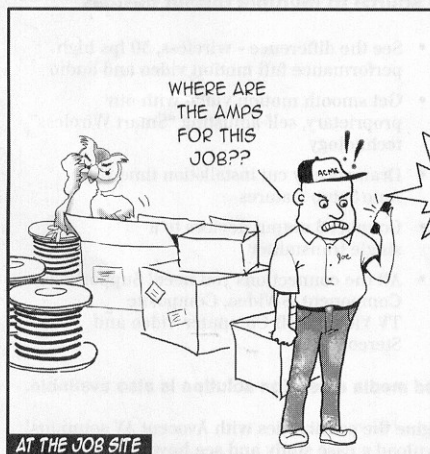
quite straightforward. In fact, as I found out from personal experience, small systems are quite layperson-friendly.

For starters, I looped my home TV room. It took only minutes to link the TV's "audio line out" to a small loop amplifier. I then dropped the loop wire to my basement and stapled it to the ceiling studs underneath the seating area. I couldn't be happier with the results. No longer do I need to use my former hearing aid-incompatible TV listening system. Moreover, with one hearing aid set to the microphone + telecoil (M+T) position, I am able to hear room conversations or the doorbell, in addition to the TV loop signal.

And, thanks to a self-installed office loop, I also enjoy binaural phone conversation. This is strikingly better than one-eared communication! Binaural telephone listening is an idea whose time has come (and represents a huge potential business opportunity for home and office installations).

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formation to interested consumers, including links to equipment vendors, I created the website [www.hearingloop.org](http://www.hearingloop.org). Local media and word-of-mouth publicity, along with more than 33,000 website visits during the last 12 months, have triggered many requests for more information concerning loop-system cost, functionality and installation.

- Congress sets example. Thanks largely to the efforts of informed hard-of-hearing people, loop installations are now happening in places large and small, including, in late 2004, a signature installation: the main chamber of the US House of Representatives. The response to this system has been so positive, numerous hearing rooms are also being equipped.

- Loop-system sales are increasing rapidly. Oval Window Audio, whose American-made systems were used in the US House and hearing room installations, and Assistive Audio, the American distributor of British-made Ampetronic systems, used extensively in west Michigan, both report sales surging more than 60% during the last two years.

- Unique applications continue to be found for this technology. Four examples: confessional booths, loop chair mats for office applications, onstage cue transmissions to ultra-miniature (in-the-canal) loop receivers and crew communication systems for America's Cup yachts.

## Listening to the Community

As "the nation's voice for people with hearing loss," Self-Help for Hard of Hearing People (SHHH) has vigorously supported the FCC mandates for hearing aid-compatible phones and the inclusion of telecoils in hearing aids. "It is the position of SHHH that telecoils be given the prominence they deserve as a valuable hearing-aid feature that will allow the expanded use of assistive-listening devices<sup>2</sup>."

Now, as a logical extension of its push for telecoil-compatible technology, many SHHH members and some of its state organizations and local



***This cordless, self-contained desk/countertop induction-loop system proves that such systems don't have to be large and cumbersome.***

chapters are also urging hearing aid-compatible assistive listening:

- "On behalf of Michigan's hard-of-hearing persons, Michigan SHHH recommends that the state's churches, auditoriums, theaters, courts, airports and other venues where sound is broadcast install assistive-listening systems that broadcast sound directly through hearing aids<sup>3</sup>."

- "In all new and extensively remodeled buildings, wherever there is a public-address system, a loop should be permanently installed," notes the California SHHH organization<sup>4</sup>. "When there is a loop, all a hard-of-hearing person has to do to be able to hear is click on the T-switches on their hearing aids."

- "Loop systems are preferred for houses of worship because personal receivers and especially headphones are often a problem<sup>5</sup>," observes the SHHH chapter in Rochester NY (another city with many loop systems). "There is good evidence that many people do not extend themselves to identify their need, collect personal receivers ahead of time, and wear rather noticeable headsets. Such receivers are always required for FM and infrared systems."

- Terry Portis, SHHH's national executive director, believes that "Our country will never be accessible for people who are hard of hearing unless we make hearing aid-compatible assistive-listening a reality<sup>6</sup>." He anticipates SHHH developing and distributing a new brochure that explains

telecoils and their usefulness with hearing aid-compatible phones and assistive-listening systems.

## Telecoils in Almost Half

One of the impediments to the spread of hearing aid-compatible telephones and assistive-listening systems has been the claim that, in the US, only 30% of hearing-aid wearers are equipped with telecoils. But, a recent survey of the six leading hearing-aid manufacturers (producing 90% of new aids) was presented at the 2004 American Speech, Hearing and Language Association Convention in Philadelphia that proved this statistic to be obsolete. The investigators, Rebecca Blaha and her Ohio State University audiology mentor, Stephanie Davidson, presented their findings on "Hearing Aid Telecoils: Current Numbers in the US Market." Their main finding: 48% of the hearing aids sold in the United States contain telecoils.

Finally, a new generation of advanced cochlear implants, including Cochlear America's Nucleus and Advanced Bionics's Auria, will be available soon with telecoils. This extends the utility of hearing aid-compatible technologies to those most in need of assistance.

## Accelerating the Momentum

In a variety of ways, sound-system designers and installers can benefit by supporting the gathering momentum toward expanded communication accessibility for millions of hard-of-hearing people:

- Contact the manufacturers of induction loop assistive-listening systems to learn about the latest advances and advantages of this technology.

- When discussing assistive-listening technology with your clients, present induction loops as a viable approach to meeting the requirements of the Americans with Disabilities Act (ADA). (Ironically, although houses of worship are exempt from the ADA, this is the fastest-growing market seg-

ment for this technology).

- Offer simple home loop systems for sale. One chair or a whole house can be looped! One California audiologist has, as an auxiliary service business, looped more than 500 of his patients' homes.

- Take a look at your residential customers' ears. Are hearing aids in use? By offering this technology to the high-end home installation market, the usefulness, satisfaction and added value of each installation is enhanced.

With support from hearing-care professionals, hard-of-hearing consumers and sound system designers and installers, the mutually reinforcing momentum toward more hearing aid-compatible telephones and assistive-listening systems will accelerate further. The tipping point is near. And when we cross it, the best news—of a world in which hearing aids are rightly seen and celebrated as having double their present functionality—will not be far away. For the sound systems industry, new opportunities await!

(Adapted and updated, with permission, from an article by David G. Myers, PhD, that originally appeared in *The Hearing Review*, Volume 12, #1, January 2005.) ■

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