IN THE LOOP
Helping the growing population with hearing loss.

BY DAVID G. MYERS, PhD, & JULIETTE STERKENS, AuD

Momentum is accelerating toward a new world of assistive listening for Americans with hearing loss. We refer to the mushrooming support for induction loops (aka “hearing loops”), which transmit a magnetic signal to the telecoil (T-coil) receiver that now comes with most hearing aids and all new cochlear implants. With nothing more than a push of a button, the hearing instrument becomes a wireless loudspeaker.

Becoming More Common
Until recently, hearing loops have been largely unknown in the US, though they are now in tens of thousands of British and Scandinavian venues, from home TV rooms, to the back seats of all London taxis, to public venues ranging from ticket windows to cathedrals. But consider these new developments:

• In September 2009, a first-ever International Hearing Loops Conference, convened by the European Federation of Hard of Hearing People for attendees from 15 countries, concluded with a resolution advocating hearing aid-compatible assistive listening: assistive listening that, with no need for extra equipment, transmits wireless signals directly to most hearing aids and cochlear implants.

• In the Summer of 2010, the Hearing Loss Association of America (“the nation’s voice for people with hearing loss,” www.hearingloss.org) and the American Academy of Audiology (the world’s largest association of hearing professionals, www.audiology.org) jointly launched a “Get in the Hearing Loop” initiative. The campaign’s purpose is to encourage consumers,

Hope College social psychologist David G. Myers is the author of A Quiet World: Living with Hearing Loss (Yale University Press) and the creator of www.hearingloop.org. Audiologist Juliette Sterkens has practiced in Oshkosh WI since 1983 and owns Fox Valley Hearing Loop with her husband, LeRoy “Max” Maxfield.
audiologists and other hearing professionals to “get in the loop” for hearing assistive technology, with a primary focus on hearing loops and telecoils, in order to improve accessibility for the 36 million Americans with hearing loss. The campaign will culminate in the Second International Hearing Loop Conference in Washington DC (hosted by The Hearing Loss Association of America, June 18-20, 2011), where attendees will learn about the technology, installation techniques, the user perspective, the integration of loop technology with FM and infrared systems, and the status of hearing loop installations in the United States and elsewhere.

- Sertoma (“Service to Mankind,” www.sertoma.org), a national service organization with 540 clubs in local communities, has launched an effort to bring hearing loops to their communities across America.

**State & Local Initiatives**

- State and local community initiatives, mostly spearheaded by organizations representing people with hearing loss, are popping up across America. A West Michigan initiative led to the looping of several hundred venues, including most worship facilities in Holland and Grand Rapids, and many public auditoriums and businesses.

  Community initiatives are also promoting the technology in Wisconsin, Arizona, New Mexico, Rochester (NY) and Silicon Valley (hearingloop.org offers links to each). New York City Transit, with support from federal stimulus monies, is adding hearing loops to 488 subway information booths.

- Looped venues range from one person (via an individual neck loop) to home TV rooms to both concourses and all individual gate areas of Michigan’s second largest airport to, as of October 2010, Michigan State University’s Breslin Center arena for basketball and special events.

- In response to the growing consumer demand for hearing loops, several new American hearing loop companies have begun manufacturing or distributing equipment (see hearingloop.org/vendors.htm). New developments in this decades-old technology now enable control of unwanted sound spillover to adjacent rooms and strong, equal coverage even in metal-laden modern facilities.

**Other Systems**

Other assistive-listening systems are easier to install, at less cost. So why are the organizations that represent audiologists and people with hearing loss now urging sound engineering firms to install hearing loops? There are several big reasons:

- First, people with hearing loss require more than just volume. Hearing loss typically reduces the brain’s ability to process auditory information. Even when fitted with state-of-the art hearing instruments, persons with hearing loss still require signal-to-noise ratios of 15dB to 20dB in order to obtain reasonable levels of speech intelligibility.

  At best, hearing aids can deliver an SNR improvement of 3dB to 6dB, which, therefore, is insufficient in places with reverberation and ambient
Greetings Fellow Clergy:

It is with pleasure that I write to you about my congregation's experience with installing and using a hearing loop. Through April 2009, Martin Luther congregation in Oshkosh WI used an FM sound system for hearing assistance, with users wearing receivers and using headphones. With this system, we had about three users, and they often were frustrated with the sound level not being acceptable or the batteries being worn out.

I'm sure that you are familiar with comments about not being able to hear. We also were receiving such comments, seemingly in increasing numbers. So we began to investigate better microphones, better speaker placement and hearing loops. We left the speakers alone, but I am now using a headset microphone, which helps greatly with our members' hearing. Then, after speaking with Juliette and Max [of Fox Valley Hearing Loop], we decided to put in a hearing loop, too. And after explaining to the congregation the benefits of a hearing loop, funds for installation came in within the week, both from people who needed hearing assistance and people who didn’t.

Now, with the hearing loop, I estimate we have about 15 to 20 loop users. Because each person’s hearing aid is tuned to his or her needs, the audio of our service comes through loud and clear for everyone. Also, the frustration is gone from those who struggled with the previous wireless system. Now we are looking into also looping our Bible classroom and adding passive classroom microphones so everyone can hear the discussion.

Wouldn’t a hearing loop be worthwhile even if it only benefited one person? But we have many people to reach: the elderly who are hard of hearing; the member who has stopped coming to church because she can’t hear; the child with a cochlear implant. What’s more, we have the greatest message to share; we want people to hear the Word!

—Pastor Nathan R. Ericson

Martin Luther Evangelical Lutheran Church, Oshkosh WI

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Added Benefit

An added benefit is that most hearing aids now allow for either a T-coil program only (where no background noise is heard by the listener) or a combined mic+telecoil (MT) program that allows nearby ambient sounds to be heard. When watching television through a hearing loop, for example, listeners enjoy sound broadcast via their own hearing aids, while also being able to converse or hear the phone ring.

A third reason is that people with hearing loss are much more likely to use listening assistance that is directly hearing aid-compatible. When people with hearing loss find themselves in situations where they are unable to hear a lecture, sermon or play, will they take the initiative to get up, locate, check out and wear a receiver and headset? They should, but they don’t. Thus, most assistive-listening units in theaters, worship places and auditoriums sit unused.

If, however, the listening assistance requires only the inconspicuous push of a button, people will do so gladly. This means that, often, despite a hear-
ing loop’s increased installation costs, the cost per user is less.

For these reasons, a growing number of full-service sound and communication firms has discovered a new business and service opportunity in providing this hearing aid-compatible assistive listening. “We have now installed four loop systems in churches,” reported Steve Roth of Roth Electric Sound in Mt. Pleasant MI. “The users love them.”

Skip Spackeen, of AV Innovations in Tucson AZ, has installed 20 loops, “from small rooms to a 450-seat theater.” Some are simple perimeter loops around floors or in ceilings. Some are larger figure-8 loops placed in ceilings or cut into concrete or tile floors. Spackeen also offers FM systems with accessories, “but these typically seem to be underused once installed.”

**Greater Excitement**

Typically, when a venue installs a loop, there is greater excitement, Spackeen reported: “higher awareness, higher acceptance, perhaps greater appreciation.” That also has been the experience of Dana Erickson at Commercial AV Systems in Onalaska WI, when worship center installations led to reports of “elated” worshipers.

Reflecting on his 25 years as a sound contractor, Todd Billin, President of Grand Rapids MI-based ASCOM, recalls his pleasure in attending the first worship service after each of his company’s installations to confirm the results. After doing his first loop installation, “The congratulations and pats on the back turned into tears of pure joy from an elderly woman.” For 15 years of attending services, she had experienced great difficulty hearing the message. “On this morning, she heard and understood every word that the pastor shared, all because a small coil located in her hearing aid received the signal that my company provided. This helped me envision a new calling for my company [a new ASCOM division, Hearing Loop Systems] to help many more people experience that woman’s feeling.”

“The interesting fact about hearing loop systems,” added Mike Mair of Lifeline Amplification Systems in Platteville WI, “is the number of venues you can place them in. We have talked to churches, auditoriums, banks, funeral homes, businesses, long-term care facilities and many other venues. It is a great ‘add on sale’ for Lifeline and a way to get our foot in the door in places where it has been difficult to get business.”

**Echoed Experience**

The audio professionals’ experience is echoed by hearing professionals who have heard from patients delighted with hearing loops in their home TV rooms or in their community. As an experienced audiologist, co-author Juliette Sterkens wondered why hearing loops, which have been so beneficial to the hearing impaired in her native country (the Netherlands) since the 1970s, had never made it to the US, and tried for years to get clients to use FM technology in theaters and churches.

Although patients admitted to hearing better with these devices, they were
reluctant to use them regularly due to the hassle of earphones and receivers. Over the years, Sterkens always kept hoping that improvements in hearing aids eventually would bring the desired hearing results. “In 2008, having been made aware of the growing number of hearing loops in western Michigan, I finally understood why hearing loops make so much sense audiologically: I realized that loops could also happen in Wisconsin if someone would just get it going. It soon dawned on me that I would have to be that person and I started the Fox Valley Hearing Loop Initiative.

“Thanks to my retired engineer husband, LeRoy ‘Max’ Maxfield, Fox Valley Hearing Loop has installed more than 35 loops in the last 20 months and the area will soon have more than 50 installations, including one at our newly remodeled 1888 Grand Opera House and our convention center.”

The results have been overwhelming: Clients are grateful, often admitting that they did not hear prior to a hearing loop installation. As one happy person reported, “I wore my hearing aid for the Easter Service and, to my surprise, I heard every word the minister said. It sure made a difference to hear him instead of just sitting there wondering what he said.”

**Teary Eyed**

Sterkens added, “Family members approach me teary eyed, explaining how, once again, mom was able to hear in church: ‘Thank you so much for helping people with hearing aids hear better. It made a big difference to my mother-in-law last month when she was able to hear every word at the confirmation service of our son.’ Several ministers have embraced this technology almost as enthusiastically as I have, and invited me to speak at gatherings where I was asked to explain the benefits of hearing loops to parishioners, fellow clergy and church leadership committees.

“With the rapid spreading of hearing

**IR Systems**

Installed infrared systems are another option for providing assistive listening for the hearing impaired in a multitude of applications. These systems provide high-quality stereo sound transmission in theaters, houses of worship, courtrooms, classrooms and more. Sennheiser first introduced professional infrared system solutions for assistive listening more than 30 years ago. The benefits of an installed infrared system include ease of installation and design. For large-scale, multi-level theaters, EASE modeling data provides unparalleled predictable system coverage. The flexible system components offer facilities, large and small, the ability to support both assistive listening and visual description for easy ADA compliance. With user-friendly controls and universal operation, all listeners, regardless of whether they use a hearing aid, can benefit from installed systems. Furthermore, infrared technology allows for multiple systems to be used in a common building, without the need for any system coordination or signal spill-over control.

—Vanessa Jensen, Sr. Product Specialist, Systems Integration
Sennheiser Electronic Corp.
loop acceptance, we now get weekly requests that our small business cannot handle. I have reached out to other AV companies, as well as to fellow audiologists and hearing professionals in Wisconsin and around the country. As a result, other communities now, too, are looking to start hearing loop initiatives. AV specialists benefit from contracting with local hearing care professionals to introduce hearing loop technology in their communities. These experiences have shown me the potential for positive synergy, almost a symbiotic relationship between AV and hearing care professionals.

One skeptic undertook due diligence before recommending a hearing loop for his church: “Before we installed our [church’s] loop system, I telephoned a number of facilities listed by a loop vendor as having installed such a system. I was amazed to discover that not a single installed site had anything but vociferous praise for the product! One would expect at least one naysayer in a group that large [22], but there was not a single one!”

Media Recognition

In 2010, various media began reporting on the movement to transform American assistive listening and to double hearing aid functionality. Scientific American, Redbook and trade magazines for hearing professionals and worship centers all have reported on hearing loops. So did the September 2010 AARP Bulletin, which went to 24 million homes. And so have regional newspapers, including the Chicago Tribune (in a front-page story), the Charlotte Observer and the Arkansas Democrat Gazette. NPR dedicated the lead segment of its July 2, 2010, Talk of the Nation: Science Friday to hearing loops, complete with audio examples (available at hearingloop.org) of a Grand Rapids airport announcement as heard with and without the airport’s hearing loop.

To empathize, audio professionals might imagine themselves as someone with hearing loss. You are at a movie, in a worship center, listening to a lecture or standing at a ticket window, struggling to carve meaning out of sound. Which of these hearing solutions would you prefer?

• to leave where you are to locate, check out, wear and return special equipment (often, either a conspicuous headset or earbuds that have been in others’ ears)? Or,
• simply to activate your hearing instruments’ telecoils, thereby transforming them into wireless, in-the-ear loudspeakers that broadcast sound customized to your own hearing needs?

Britain and Scandinavia now overwhelmingly offer the second option. In America, leaders among those who represent people with hearing loss and the professionals who serve them are now advocating the same. As we approach a tipping point where new assistive listening will be mostly hearing aid-compatible, audio and hearing professionals are working together to double hearing instrument functionality. For those of us with hearing loss, such work exemplifies business at its best: doing good while doing well.
Imagine yourself as a person with hearing loss attending your place of worship. As you struggle to hear, which of these two hearing solutions would you prefer?

1. To take the initiative to get up, go locate, check out, wear, and return special equipment (often a conspicuous headset that is incompatible with your hearing aids)? Or,

2. To simply push a button that transforms your aids or cochlear implant into a wireless, in-the-ear loudspeaker that broadcasts sound customized to your own hearing loss?

Solution 1—the hearing aid incompatible solution—has been the prevalent assistive listening technology in America’s worship places and theatres. Solution 2—the hearing aid compatible solution—has spread throughout the United Kingdom, across the Nordic countries, and now is being adopted in several states, including by several hundred Michigan churches.

The simple “hearing loop” technology takes a feed from a PA system and transmits it through a wire loop surrounding the worshipers. The loop projects a magnetic signal to an inexpensive “telecoil” receiver, now found in a growing number—60 percent—of new hearing aids (even more among people most

By making assistive listening hearing aid compatible, churches are leading the way to doubled hearing aid functionality for people with hearing loss
needing hearing assistance). The telecoil also serves as a receiver for magnetic signals transmitted by “hearing aid compatible phones,” which include all landline phones and designated cell phones. (For any without suitably equipped hearing instruments, portable receivers and headsets are available.)

Thus when one worships at Westminster Abbey in London, or in virtually any church with a PA system in Holland or Grand Rapids, MI, all you need do when the preaching begins is to activate your hearing aid telecoils. Voila! A clear voice is now speaking from the center of your head!

This simple technology, which also enables a home TV to broadcast through one’s hearing aids, is now being advocated by a growing number of hearing leaders. In 2010, the Hearing Loss Association of America (the nation’s voice for people with hearing loss”) and the American Academy of Audiology (the world’s largest association of hearing professionals) announced a joint “collaborative public education campaign ‘Get in the Hearing Loop.’” The campaign aims “to enlighten and excite hearing aid users, as well as audiologists and other professionals who dispense hearing aids, about telecoils and hearing loops and their unique benefits.”

Hearing loops are coming to America.

The move to making future assistive listening installations hearing aid compatible is gaining momentum:
- The California, Michigan, Wisconsin, and New Mexico hearing loss associations are now advocating hearing loops. “In all new and extensively remodeled buildings, wherever there is a public address system, a loop should be permanently installed,” declared the California Hearing Loss Association. “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.”
- Local hearing loop initiatives are underway in Albuquerque, Tucson, Silicon Valley, central Wisconsin and elsewhere.
- Michigan’s second largest airport, in Grand Rapids, now offers the technology throughout both its concourses and in all gate areas.
- A national service organization, Sertoma (“SERvice TO Mankind”) announced in 2010 that it will be promoting the installation of hearing loops through its 540 clubs nationwide.
- Several new companies have begun manufacturing and marketing hearing loop equipment and training audio professionals in its installation (see hearingloop.org/vendors.htm).
- New York City Transit, with a nudge from the Hearing Access Program and using federal stimulus monies, is installing hearing loops at 488 subway information booths.
- Scientific American reported on the move to hearing loops in its January, 2010 issue.
- The first international “Hearing Loops” conference, hosted in late 2009 by the European Federation of Hard of Hearing People (www.efhoh.org) for attendees from 15 countries, adopted a resolution recommending that “Venues and service points where sound is broadcast shall offer assistive listening, such as induction loop systems designed to the IEC 60118-4:2006 standard, which broadcast sound directly to hearing aids and cochlear implants, enabling them to serve as customized, wireless loudspeakers (without the need for extra equipment).”

### Systems That Work

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### FAQs About Hearing Loops

- **Hearing loops harness magnetic energy. So is magnetic interference problematic?**
  Generally not. Old fluorescent lighting and some old dimmer switches generate interference. But the experience in hundreds of West Michigan venues and thousands of Scandinavian and British venues is that interference-free installation is nearly always possible.
- **Isn’t this a decades-old technology?**
  Like electronic computers, magnetic induction loop technology began more than a half century ago, and now is in newly developed forms (with new amplifier and telecoil technologies, and new computer-modeled designs for complex installations) and with increasing applications.
- **Will new wireless connectivity technologies work better?**
  New wireless technologies, including Bluetooth, do some helpful things, such as enable binaural phone listening. But Bluetooth is not an assistive listening answer (it requires significant battery power and has limited range). An alternative future assistive listening solution-one that, like hearing loops, is hearing aid compatible-will need similarly to a) be inexpensive (essentially no cost to the consumer), b) be capable of covering a wide area, c) drain little battery power (telecoils require no power), d) be universally accessible, and e) be sufficiently miniaturized that the receiver can fit in nearly all hearing aids.
- **Can hearing loops be used in adjacent rooms?**
  Yes, with a professional design that controls sound spillover.
- **Where can one find more information about equipment, installation, applications, and costs?**
  Visit the nonprofit information resource www.hearingloop.org
There are many advantages to hearing aid compatible loop systems. For example, many hearing aids now come with a mic + telecoil (M/T) setting that enables one to hear sound from nearby people singing or speaking while simultaneously receiving direct PA system input. Additionally, sound broadcast by one’s own hearing instrument is contained in one’s ear, without bothering others nearby. Moreover, there is no need to juggle between headsets and hearing aids (during, say, a worship service). There are no hygienic concerns about putting in or on one’s ear what has been around others’ ears. And most importantly, when not hearing well, people need only activate their telecoils. There’s no need to get up, seek out, and wear conspicuous equipment (which, as TFWM readers have likely noticed, few people with hearing loss take the initiative to do).

Wisconsin audiologist Juliette Sterkens and her engineer husband Max Mayfield have recently installed hearing loops in 30 Wisconsin churches, with gratifying responses, sometimes spoken through tears. The following is a list of testimonials they have heard.

“What I experienced last Sunday was nothing short of a miracle. For the very first time in many, many years I was able to hear every single word said in church along with every note of music. I cannot express my thankfulness in words. It was truly one of my most memorable moments in my life and I felt ‘normal.’”

“I took my mother to Mass. In her words, ‘I could hear every word, and this is the first time that’s happened in years.’ She went on to say how much more she got out of the service and realized how much she had been missing.”

One skeptic from another state undertook due diligence to assess the suitability of a hearing loop for his own church:

“I can certainly attest to the spread of the loop system in Michigan. Before we installed our [church’s] system I telephoned a number of facilities listed by a loop vendor as having installed such a system. I was amazed to discover that not a single installed site had anything but vociferous praise for the product! One would expect at least one naysayer in a group that large (22). But there was not a single one!”

As we approach a tipping point where hearing loops become the accepted user-friendly assistive listening technology, we can take satisfaction in knowing that churches are leading the culture. As they enable their people to better hear the word, worship centers are also enabling people to glimpse a future in which hearing instruments have doubled functionality— as not only microphone amplifiers, but also as customized, wireless loudspeakers.

Hope College social psychologist David G. Myers has written two dozen articles advocating the coming transformation in American assistive listening. He has also created hearingloop.org and authored ‘A Quiet World: Living with Hearing Loss’ (Yale University Press).