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Telecoils Deserve Wider Acceptance as Assistive Listening Devices

by Mark Ross

In the United States, when people talk about assistive listening systems, they generally mean one that employs either FM radio or infrared (IR) light signals. There is, however, another type of assistive listening device (ALD) available, one that has been in existence for 50 years, although it has been more commonly used in Europe. This is the induction loop (IL) system.

Rather than radio or light waves, an IL system uses electromagnetic signals to deliver its signals to a receiver. But unlike the other two, the "receiver" is simply a component of a personal hearing aid—the telecoil—and not an external device. With an IL system, the electromagnetic signals transmitted by an IL loop (which can vary in size from a loop around a room to one that encircles a person's neck) are detected by the telecoil and converted into sound by the hearing aid. In effect, the telecoil substitutes for the hearing aid microphone at the input stage.

The telecoil itself is a metal rod encircled by many turns of copper wire. When placed in a time-varying magnetic field, an electrical current is "induced" in the copper wire. Indeed, in other than hearing aid contexts, it is known as an "induction coil." What happens is that the telecoil converts the magnetic field to an alternating electrical current in the same way that a microphone converts acoustic signals to electrical energy. The strength of the induced signal depends upon the relative positions of the telecoil and the induction loop. For the optimum detection of magnetic signals emanating from a loop, a telecoil needs to be vertically situated within a hearing aid.

Modern telecoils are quite small—10 or more can easily fit on the surface of a dime. Amplified telecoils, which provide about a 20 dB boost, are about the same size. One recent survey shows that 44% of the hearing aids dispensed by audiologists contain a telecoil whereas the percentage for hearing instrument specialists is somewhat lower at 30% (see Strom, K. E. [2003]. The HR 2003 dispenser survey. *The Hearing Review*, 10[9] 22-38). This percentage must increase if telecoils are to fulfill their potential as a ubiquitous ALD.

Probably the biggest challenge facing the widespread adoption of IL systems is conceptual rather than practical. People do not think of the "telecoil" as an ALD. Possibly because of its very name, telecoils have generally been recommended and used only with the telephone. This is unfortunate since, of all the assistive listening systems, they are the most convenient to use and most readily accepted by facilities and people with hearing loss.

The major limitation of FM and IR systems is that they require a separate receiver to detect the transmitted signals. From the perspective of a public facility, a staff person is required to check the

ALD receivers in and out and ensure their proper functioning and maintenance. Facility managers would likely have fewer objections to installing an ALD if they could just install and forget it.

From the point of view of consumers, a telecoil is a convenient and less intrusive ALD than FM or IR receivers. Some consumers object to using a visible receiver, preferring not to advertise their hearing loss. Telecoils are built into a hearing aid, and all that's required to use a telecoil in a looped facility is to switch the hearing aid to the "T" position.

Loops can be installed in large and small facilities. In Great Britain such facilities as Canterbury Cathedral, Westminster Abbey, and St. Giles Cathedral in Edinburgh are looped. Most of the churches and many auditoriums in Great Britain and Scandinavia are looped as are many smaller locations, such as bank and train counters, post offices, tourist information centers, and in England, even taxi cabs. In a [pilot program](#) in Michigan more than 50 churches and many public facilities have been looped in the past few years, with convincing reports of increased attendance in church and other public events. Additionally, [IL systems](#) are being installed in many drive-through locations, to supplement the loudspeaker used to communicate with customers.

Given an effective telecoil and the availability of a loop, consumers can have immediate, convenient, and improved auditory access to the verbal signals in numerous large and small areas. IL systems are an old technology deserving of a renaissance in this modern age.

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