univox
BY EDIN

Hearing excellence since 1965

Foto: Conny Andersson

CASE STUDY:

Stockholm Concert Hall

The Stockholm Concert Hall was built in the 1920's and includes two smaller concert rooms apart from the main stage welcoming up to 1770 music lovers. As the stage construction is made up of 32 vertically moveable segments, the demand for many small SLS systems provided a special challenge. In total 25 separate hearing loop systems have been installed to add maximum flexibility and usability. In the next stage the two smaller rooms will be equipped with hearing loop systems as well.

Where we come from

Our founder Bo Edin started Univox 1965. He was challenged by the fact that the needs of people with hearing loss were constantly overlooked in public venues as well as in their own homes. He developed the very first specially designed constant current hearing loop amplifier and received his first order for 100 pieces shortly after.
Since that moment Univox has been the industry leader in hearing loop design and today more than 15,000 Univox hearing loop amplifiers are sold annually.

What we believe in

With our strong belief that a hearing loop is the best solution to transmit sound to hearing aid users, we are constantly developing new products that improve the life of millions all over the world. Univox loop drivers are designed to always supply the power necessary to really make a difference. Time and experience have proven that only Univox has the technical know-how, design expertise, and manufacturing skills to build the best hearing loop amplifiers in the world.

Univox convenes the IEC committee

For many years Univox has played an important role in the international development of the IEC standard on the measurement of hearing loops, IEC 60118-4. Our owner and R&D director Mr. Conny Andersson has been the leader of the IEC committee for several years. With his deep technical expertise combined with a thorough understanding of the hearing impaired communities' needs, he has led the work within the IEC committee to develop a much needed standard.

Foto: Mats Håkanson

Why is Univox always the right choice?

Many hearing loop systems are not powerful enough to send the hearing aid users an adequate signal, causing them to miss what is being said. This is the biggest challenge with hearing loops all over the world. The reason is often poor planning and/or installation of the system, but another common fact is that the amplifier itself is too weak to produce the current needed to create the necessary magnetic field strength. The system is simply under-powered, mostly due to economical restraints, poor design or an amplifier that does not meet an expected level of performance.

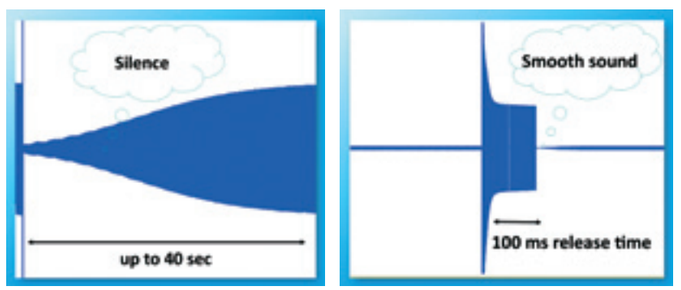
Power is vital!

At Univox we don't play that game. We know there is no substitute for power and our amplifiers are always built to give that necessary power to the system: A combination of very high voltage and super-high current make our loop amplifiers unparalleled in the world. So far no other brand can produce the amount of current that Univox amplifiers do – always and everywhere.

The unique Univox AGC

While power is important there is more to a well-working hearing loop system. Power has to be combined with a comprehensive way of managing the output in the loop to compensate for varying input levels. The unique Dual Action Automatic Gain Control (AGC), built into every Univox amplifier, is still unrivalled in this respect. Two separate systems, one handling the input levels and the other managing the output levels work flawlessly together to bring an absolute smooth sound experience to every user. No sudden sound bursts or long gaps make it a true pleasure to listen to the sound of a Univox loop system.

Standard AGC compared to Univox Dual Action AGC



Standard AGC *Univox Dual Action AGC*

Schematic picture of the effect of a sudden sound burst on the output current in a hearing loop system.
A standard AGC (left) leaves a long-lasting silence while the Univox AGC (right) excel with hardly no sound drop at all.

Outstanding product quality

Univox' solid position within the hearing loop industry has been achieved by technical excellence, a unique market presence and a lot of hard work. We focus many of our resources on the product development process, as it allows us to improve our high level of product quality year after year and continue to create new useful products. We firmly believe that by allocating time and energy in the R&D department, we will maintain the product quality at the level we wish and you deserve. We will never compromise that!

Free planning and product support

But even the best products can be used in the wrong way. A vital part of creating a loop system complying with the IEC standard is an insightful and pro-active planning partner. Univox employees have the right skills to help any customer obtain the right solution for every venue. You will always receive prompt and accurate planning support whenever you need a hearing loop system. No need to know what to ask as we will ask the questions necessary to find the best solution possible for your need. Both planning process and choice of amplifier is handled for you.

International network

Univox works with distributors all over the world that are regularly trained to help their customers. We already cover most of Europe, North America, Australia/New Zealand and parts of Asia. It doesn't matter if you need a hearing loop in San Francisco or Sydney, Hong Kong or Hamburg, Manchester or Madrid – the Univox network of distributors will take care of your needs and help you through your project. We are constantly looking for professional companies that have the right profile to distribute our products in markets where we are not yet represented.

Why do we need assistive listening systems in the first place?

Hearing loss is increasing...

The need for assistive solutions for people with hearing loss is increasing all over the world. In the western world approximately one in six is hard of hearing (Bridget Shields study, UK). Those who worked in the growing industries of the fifties, sixties and seventies are now retired and many of them experience hearing loss due to exposure of high sound levels throughout their working lives. Also teachers working in loud and poorly sound improved class rooms, musicians exposed to harmfully loud music and many other groups need help to hear better.

... even among younger people

Although hearing loss is quite common in the aging population, that is only part of the picture. An increasing number of middle aged working people are experiencing hearing problems and the omni-present MP3 player, loud live music and a constant stream of sounds in school and at home have unfortunately increased the number of young people at risk of becoming hearing impaired. This is very concerning and will probably increase the percentage with hearing loss even more in the future. This also means it's equally important to install hearing loops in schools, conference facilities and sports arenas as in churches, theatres and nursing homes.

Foto: Adam Mark

CASE STUDY:

Opera House Copenhagen

It was vital to overcome the reinforced concrete and steel constructions in the Opera House in Copenhagen in order to achieve correct field strength and frequency response. A carefully designed loop solution with the use of Univox Super Loop Systems offers opera fans with hearing loss high class accessibility with perfect reception at every seat. Bar and box office are equipped with counter hearing loop systems. Many visitors have witnessed how well they work and the overall feedback has been very positive.

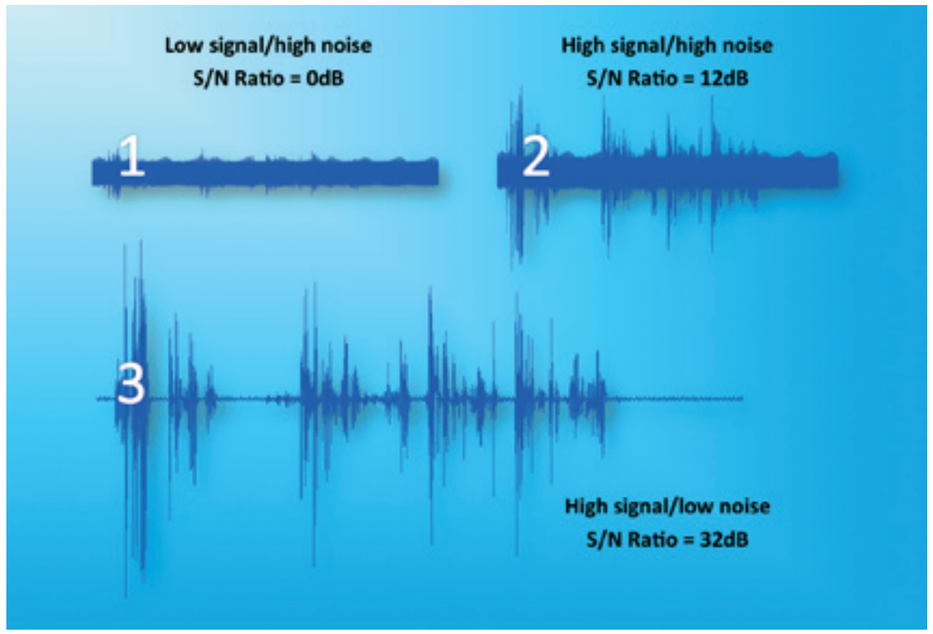
Why is the hearing aid not always enough?

The single most important assistive device for people with hearing loss has been, still is and will be for the foreseeable future the hearing aid. But the hearing aid alone, now digital, high-tech and nice looking, is not a sufficient tool for better hearing in every environment. Sometimes it's just not enough, especially in very noisy or busy situations. When the hearing aid is insufficient the user gets alienated and cut-off from the social setting. To be unable to take part in social life is a dreadful experience and it tends to make people lonely and unhappy. This is not necessary!

How to increase speech intelligibility?

The basic idea of an assistive listening device is to assist the person with a hearing loss whenever the hearing aid doesn't give sufficient support. In many cases the only way to increase speech intelligibility is to decrease the distance between the sound source and the listener and at the same time reduce the present background noise. This can basically be achieved with the use of three different techniques – hearing loops, radio (FM) or infrared (IR) systems.

Signal-to-Noise (S/N) Ratio



Speech intelligibility is very much a question of S/N Ratio. If noise levels are high the S/N Ratio will be low and understanding will be difficult (picture 1), even if the signal level increases (picture 2). The only way to increase speech intelligibility is to decrease the noise level and at the same time increase the signal level to create a high S/N Ratio (picture 3).

Shortcomings of FM and IR for the hearing impaired…

Using FM or IR systems in public venues poses a variety of problems, both for the hearing aid user and for the owner of the venue. The hearing aid user has to locate the assistive listening devices and ask for help, thereby revealing his or her disability. During the whole event the user has to wear a conspicuous receiver/headset that is not adjusted to his or her hearing loss and has to be returned after the event. The number of simultaneous users is also limited to the number of receivers that are present.

… and for the owner of the venue

The owner of the venue on the other hand has to arrange for someone to hand out the receivers and collect them afterwards. The receivers have to be stored, checked, charged, cleaned, repaired and replaced which eventually adds up to considerable maintenance costs.

CASE STUDY:

Brisbane Domestic Airport

Though the installation of several hearing loop systems at the Brisbane Domestic Airport originally was carried out by a local contractor, using internationally well known loop amplifiers, the installation failed. The Univox distributor in Australia, Phoenix Hearing Instruments, was called in to correct the faulty installation. All existing under-powered amplifiers were replaced by Univox PLS-900 and PLS-700 amplifiers. Now the system is operational and of great benefit to hearing aid users.

Why is the hearing loop system the best solution?

While FM and IR systems may have its advantages in certain personalized situations, only the hearing loop can bring sound to every hearing aid user, everywhere and instantly without the need for an extra receiver. The hearing loop uses the built-in receiver (T-coil) in the hearing aid to deliver the sound without background noise through the personally adjusted hearing aid. Without an extra receiver and extra power consumption, the hearing aid user can experience crystal clear sound, free of disturbing noise and without the need to bring attention to their hearing loss.
They just switch their hearing aids to the T-coil mode and enjoy the sound. Giving this freedom back to the hearing aid user has always been the most important goal for us.

Everyone wins

The hearing loop is indisputably the best option for the hearing aid user in public venues. Furthermore we believe it's also the best solution for the owner of the venue. Although a loop system might demand a little more commitment at the start, it will pay back many times over. A loop system is always active and works for everyone as it's not limited to the number of receivers you have. With a minimum of maintenance it's also the most cost effective solution. In customer service situations like bank tellers or ticket booths the loop system is actually the only practical solution.

Loop systems can be used everywhere

In larger venues like stadiums and sports arenas, conference facilities and auditoriums, cinemas and theatres as well as in churches and places of worship, the loop system is the optimal solution. But also for a smaller meeting room or a classroom a loop system can benefit the needs of the hearing impaired in a great way. In noisy vehicles, like trains, trams, buses, boats, private cars and taxis, a loop system does make a huge difference.

Different kinds of hearing loops

There are several kinds of hearing loop solutions available. The choice of loop system depends on the coverage area, the use and characteristics of the room and the demand for overspill control/secrecy.

Domestic loop systems

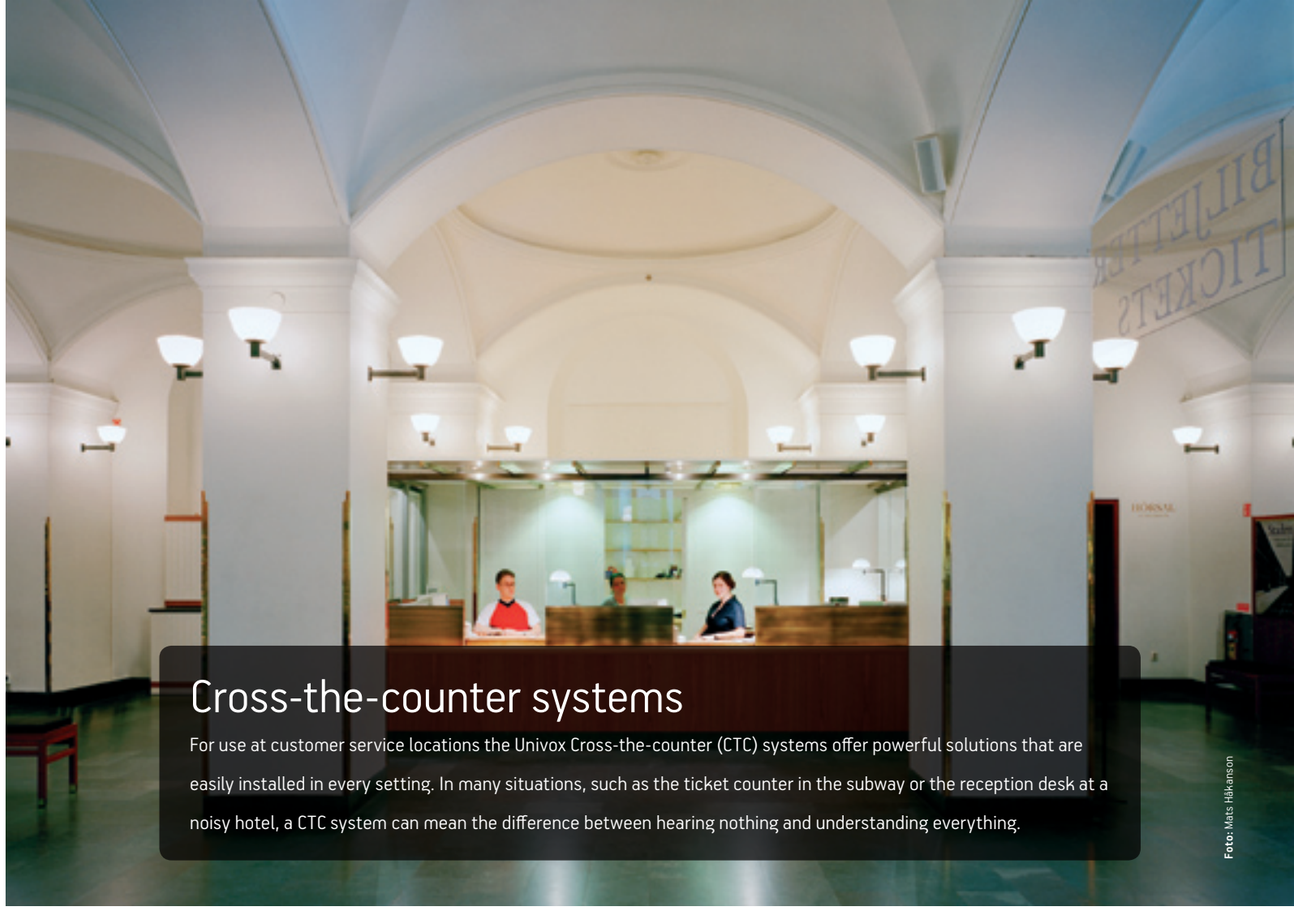
The Univox Domestic Loop System (DLS) series powers personal loop systems in the home environment. Hear the sound of the TV or stereo again, without annoying your family or neighbours. It can cover areas from the smallest TV room up to the size of a complete house. By using a loop pad or neck loop, any DLS system becomes a flexible do-it-yourself option to all FM and IR TV systems, thereby utilizing each user's individually adjusted hearing aid.

Professional loop systems

The Univox Professional Loop System (PLS) series offers powerful amplifiers for the professional setting – conference rooms, churches, cinemas and theatres. For all conventional loop systems a PLS amplifier is the right choice. Many different models, ranging from the medium sized PLS-100 and PLS-300 to the larger rack mountable PLS-700 and PLS-900, will handle virtually any area.

Portable loop systems

If there is a need to use a loop system in different locations from time to time, a Univox portable loop case (p-LooP) might be the best idea. If there is no loop installed – simply take the loop with you! Univox p-LooP can also be equipped with several wireless microphones and used with wireless speakers, thereby working as a complete sound system.



Cross-the-counter systems

For use at customer service locations the Univox Cross-the-counter (CTC) systems offer powerful solutions that are easily installed in every setting. In many situations, such as the ticket counter in the subway or the reception desk at a noisy hotel, a CTC system can mean the difference between hearing nothing and understanding everything.

Foto: Mats Håkanson

Super loop systems

If it is vital to cover large areas or to control the loop system's overspill, the Univox Super Loop System (SLS) is the right choice. A smooth magnetic field and a heavily reduced overspill are two of the key features that will make it possible to loop adjacent rooms. Some examples are multi-theatre cinemas, conference rooms with curtain walls or TV rooms on top of each other in nursing homes. Also large sports arenas and exhibition halls can be handled by combining several SLS systems for a virtually endless coverage area.

Loop systems for special use

Several other specially designed loop systems facilitate the use of loops in trains, buses and elevators, making it possible to comply with applicable disability standards. It should be safe to move around even though you have a hearing loss!

Legal environment and standardization

UN Convention on the Rights of Persons with Disabilities

The purpose of the present Convention is to promote, protect and ensure the full and equal enjoyment of all human rights and fundamental freedoms by all persons with disabilities, and to promote respect for their inherent dignity.

EU guidelines

Based on the UN Convention, EU demands their members to work actively to ensure all persons with disabilities independence, social and occupational integration and participation in the life of the community.

Both the UN Convention and the EU Guidelines are of course also applicable to people with hearing loss.

Applicable laws

In many countries there are laws facilitating the use of assistive listening devices and hearing loops. Some countries have extensive discrimination laws to prevent discrimination of physically and mentally impaired people, among them hearing impaired. The building standards and recommendations often consider the possibility for hearing impaired people to move around and take part in the society. Although some work has already been done, a lot is left for us to improve and we all clearly have a responsibility to facilitate for impaired people everywhere.

The international loop standard – IEC 60118-4

The international standard for assessment of hearing loops, IEC 60118-4, is designed to ensure that loop systems all over the world are designed to reach a quality that sufficiently will assist hearing disabled people. Any loop system has to be adjusted in such a way that the demands of the standard are met. If the hearing loop complies with the standard, a certificate is completed and included in the technical documentation of the venue. If not, an action plan has to be suggested to reach the scope of the standard.

Professional measurement of loop systems

The only way to measure a hearing loop system according to the IEC standard is to use a professional measurement system, for example the true RMS Field Strength Meter Univox FSM 2.0. With this professional measuring tool the demands for maximum background noise levels, magnetic field strength evenness, frequency response smoothness and required overall field strength level can be assessed.

The project cycle

A hearing loop project is made up of three clear steps – planning, installation and measurement/control. All three steps are equally important and if one step is done improperly the end result will suffer. The final step, measurement and certification of the system, is regulated in an international standard – the IEC 60118-4.

Initial planning

A solid plan lays the groundwork for a successful installation and certification of the system. You have to:

- establish if it's possible to use an induction loop system
- investigate the purpose, possibilities and restrictions of the room
- get an overview of the present input signals
- decide how much overspill is tolerated
- define the area/volume to be covered
- define the desired sound quality
- investigate if there is metal present and how it will affect the loop
- choose the right loop technology – PLS, SLS, CTC or p-LooP
- choose a suitable loop design
- select a loop amplifier with sufficient power capacity
- make drawings of where to put the loop wire and the amplifier

On site planning and installation

Installation is much easier and quicker if a good plan is available! You have to find out:

- what loop wire to use – area and shape
- where to put the loop wire – ceiling, floor or wall
- what are the ceiling, floor or walls made of – wood, concrete, stone, plaster
- how to attach the wire to the surface of the chosen location – clips, adhesive tape, hot melt glue, plastic tubing
- where analogue signal cables are positioned and how to avoid installing the loop wire closely parallel to them
- the influence of other possible interfering systems – projectors, mixer boards, dynamic microphones, electric guitars etc
- where to put the amplifier and how to get there with the loop wire

Measurement and certification

No loop system is finalized until it has been certified by the installer or other part. The following is important:

- the system shall always be measured and certified according to the IEC standard 60118-4
- professional measurement can only be performed by a true RMS field strength meter – for example Univox FSM 2.0
- follow the procedure built into the FSM 2.0 or the certificate form accompanying every professional Univox product
- if the system does not comply with the standard, be sure to point that out in the certificate form
- always attach the measurement protocol/certificate to the technical documentation of the venue
- convince members of the technical staff or facility manager of the need to check the operations regularly with a listening device like the Univox Listener

Milestones

1965 – Bo Edin AB/Univox is founded by Bo Edin in Stockholm, Sweden

1969 – The world's first true constant current loop amplifier, Univox 34A, is developed

1972 – Exports starts to Germany

1979 – First super high power loop amplifier (1000W) is launched

1993 – Dual Action AGC, a new signal processing scheme for constant level sensing, is developed and introduced into all Univox amplifiers

1995 – Univox FSM field strength meter, the first complete loop measurement system according to the IEC standard, is introduced

2002 – Univox Super Loop System, based on a balanced two layer loop system, is introduced to the market

2004 – Univox PLS-100 and PLS-300 are the first electronic products in the world receiving an EPD (Environmental Product Declaration) certificate

2010 – Univox FSM 2.0, the world's first field strength meter using multitone measurements is presented

2010 – Univox TLS-1, the world's first amplifier dedicated for vehicle applications like buses and trains is developed

2011 – Univox Autoloop, a truly automatic loop amplifier, is introduced. No settings, no controls, no fuss!

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