

In Ear Monitors a Brief History

The background and creation of In Ear Monitoring(IEM) and the professional and consumer markets it spawned is a remarkable story. A true testament to a product created by demand and circumstance. In ear monitoring is now just about used by every professional live musician providing a multitude of benefits including the ability to hear vocals and instruments in the mix at levels the artist would like. IEM will also help singers pitch accurately; with the system also doubling as a hearing protection device. For monitor engineers IEM have been a revolution both in the complexity of the mix and the fight with artists over levels and the constant problem of acoustic feedback. In fact monitor mixing has become considerably more complex as the mix has to assemble all instruments as well as ambient microphones to generate the live feel for the performers which would otherwise be absent as their ears are occluded. And for the concert-goer the benefits include significantly improved sound as the floor monitors and side fills, often at high audio levels were picked up by the stage microphones are now used as low level backups or somewhere to put feet and playlists.

In the consumer market IEM earphones are part of the iPod revolution where it is possible to block out sound and create your own "listening space" in substantially better quality than regular non-occluding earbuds aka: Walkman style earphones.



Chrys Lindop with Ultravox circa 1981

The vision for IEM came from Chrys Lindop, a seasoned sound engineer having worked with Stevie Wonder, Elaine Paige, Bjork, Mike Oldfield and Maggie Reilly, to name just a few. He was very much up for improving sound engineering and very happy to experiment with new techniques and equipment.

Chrys experimented with the idea of In Ear monitoring with George Glossop (then of Hardware House) using Howard Jones as a guinea pig to assess if a musician could work in this way. It provided a valuable evidence to establish that musicians could work using IEM in its rudimentary format. Using just hard-wired headphones to Howard during a stage performance; initial comment were that of a "dry" sound quickly addressed with some large-room echo to recreate a live environment. The experiment confirmed to everybody who took part, that monitoring was possible using this exciting new format.

Of course the talent being tethered using cables was a major hurdle; the need for a wireless solution was sought. In the late 1980's, Stevie Wonder was playing a concert at Wembley Stadium in London, UK, Chrys was presented with a problem that would be very much up his street! Frustrated at being restricted to the keyboards, Stevie Wonder (being blind) particularly enjoyed having the freedom of performing on the stage which meant leaving the keyboard and expressing himself as singers often do. This is where his sound engineer, Chrys Lindop, enjoyed an eureka moment, putting together some very simple units to allow the music mix as well as communications to be delivered wirelessly directly to his ears. The floor monitors were removed from the stage, whilst the In ear Monitor system allowed communication to ensure his safety on stage.

The equipment included a FM radio station transmitter, a low power device used for community radio broadcast, a pocket FM receiver, an Aphex Dominator multi-band limiter and a set of Sony Walkman earbuds. The transmitter was fed from the monitor mixing desk into the Aphex which limited the audio signal to the transmitter which then broadcast the monitor mix to Stevie. His minder had a vocal microphone to instruct his movements and any other observations that would help enhance performance. The system worked well, with a RF power of 5 watts, allowing the majority of West London to tune into the mix as word spread throughout the community. This was the pivotal concert that proved that concept. Chrys then decided that a more practical system running on legal frequencies was required; surmising that if this worked for Stevie Wonder there must be a wider market for a market specific product.

Chrys joined up with an electronics engineer called Martin Noah and formed a company called Garwood and designed the very first commercially available In Ear Monitoring system known by the brand name "Radio Station". The original commercial system comprised of a rather more conservative stereo transmitter of 500mW working within the radio microphone frequency band of the time - TV channel 69 (854 - 862MHz). They also decided that the receiver needed to be robust and stylish if the artists would consider using them. At great expense a die-cast body worn receiver case was created and manufactured, production started in 1987. Some of the first to major acts to sign up to this new way of monitoring were Rod Stewart, Peter Gabriel followed by a plethora of musicians as the fashion took hold. It also heralded cleaner live sound as the problems of acoustic feedback disappeared, allowing far more stage creativity, musicians could use all of the stage as well as the auditorium without losing their monitor mix or being concerned about timing.

The next problem was how to deliver audio to the ears and it was the unity of Chys Lindop and Marty Garcia of Futursonics that saw the next product that was to form the creation of in ear monitors as we know them today. Chrys suggested stripping down a set of Walkman drivers and installing them into custom ear shells made from the user's ear impressions. Marty did just this, he rebuilt the monitors which proved to be a great success and was the creation of the In Ear Monitor. It is still pretty much the de-facto way of working for modern day musicians as well as consumers.

From using broken down Walkman Mylar transducers, IEM's spawned an industry for both custom and generic units with custom units becoming fashion items. Miniature transducers from the hearing aid industry were employed to substantially reduce size, improve performance with elegant driver

combinations to satiate musician's acoustic preferences. Artwork and jewels were added to further personalise them, with the consumer industry giants like Shure Electronics step to fill a new market for in-ear headphones. Look online now and there are a plethora of manufacturers claiming all sorts of features. Whilst audio quality is paramount, fashion has been the leader with shape, materials and colour differentiating what is essentially just an In Ear Monitor.

Sensorcom have been building IEM's since 1999 following a chance meeting with Garwood. Since then products such as the Fleximonitors, IEM's made with soft silicon, have been developed as well as the ProGuard brand which includes a full range of hearing protection and monitor products. More recently the Earzlug has been completed. Earzlug is an insert earphone that will fit into generic and custom eartips to form a system that can be used for monitoring, personal listening and hearing protection. More recently Sensorcom has developed a range of cables and sockets for the IEM industry in a range of colours and formats.

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