

**HEAD**

**HIGH END AUDIO DEVICES**



**H.E.O.L.O.**

**BRIEF TECHNICAL DESCRIPTION**

## **THE STORY BEHIND**

H.E.O.LO. (High End Omnidirectional Loudspeaker)- represent an innovative loudspeakers that has been developed to create a system that overcomes the typical limits of the conventional loudspeakers.

Generally speaking, loudspeakers don't have the ability to radiate the sound in an homogeneous way, they have the tendency to reproduce correctly only in a narrow listening cone, located on the frontal part of the speaker.

The theory on which HEOLO are based is very simple but nevertheless, not easy to be implemented, years of study have brought to a solution that makes these loudspeakers unique and inimitable.

## **THE DIRECTIVITY OF THE SOUND.**

The problem of the directivity is well known and has physical reasons: sound directivity phenomena appears when the frequencies components of the musical signal has a wavelength that is comparable, or lower, compared to the dimension of the speaker, furthermore, a progressive attenuation of the level of the signal can be measured when moving out from the speakers axis.

The problem is therefore particularly evident for the higher frequencies, whereas, the lower frequencies, tends to be absolutely omnidirectional without any particular intervention, in natural way.

## **THE HEOLO SOLUTION**

Taking into consideration the characteristic of a driver's directivity , in the high frequencies range, a smart and innovative devices for the correction of the dispersion diagram of the driver has been developed, modifying the diffusion pattern of a standard tweeter. The obtained result is that the frequency response is significantly independent from the angle of the listening position, virtually creating a system that approximates the ideal pulsating sphere that is the goal of every hi-end system.

A further characteristic of the **HEOLO** technology, due to the particular geometry of assembly, is the closeness of the emission's centres of the drivers, generating practically a coherent source. This latest feature is also extended to the crossover frequency where the frequency response is slightly modified by the change in the listening position.

This latest aim it's rarely achieved by conventional loudspeakers, also considering high priced competitors.

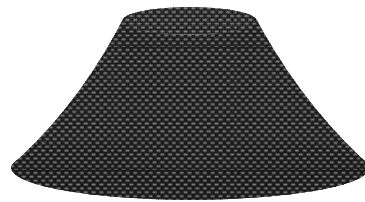
## **THE HEOLO ADVANTAGE**

The concluding results can be summarized with the following main features of the HEOLO:

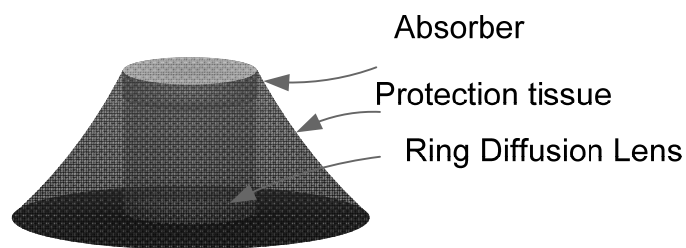
- Ability to dissimulate completely their presence, virtually masking their position
- Deep and wide sound stage that would not be modified by the change of the listening position.

## THE HEOLO DEVICES

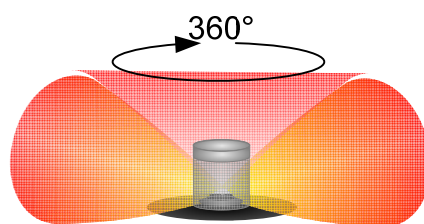
The HEOLO' S tweeter is hidden below a trunk of a cone that is placed on the top surface of the loudspeaker. (see drawings)



External view



Internal view



Horizontal dispersion

The sound is scattered substantially in an homogeneous way, both on a vertical and on an horizontal plan.

The vertical symmetry of the implemented tweeter device allows the dispersion on the horizontal plan to be absolutely homogeneous, making possible to listen the loudspeaker from any angle without hearing significant tonal differences.

Practically the frequency response remain unchanged within a wide spherical angle.

The result is provided through 2 key components:

1. an acoustics lens called **RDL** (Ring Diffusion Lens) responsible of the focusing of the horizontal sound dispersion
2. a mechanical filter called **MLP** (Mechanical Low Pass) responsible of the regularization of the vertical sound dispersion

With these two devices, a wide diffusion angle of  $360^\circ$  is obtainable with a regular frequency response.

## **THE COMPETITORS SOLUTION**

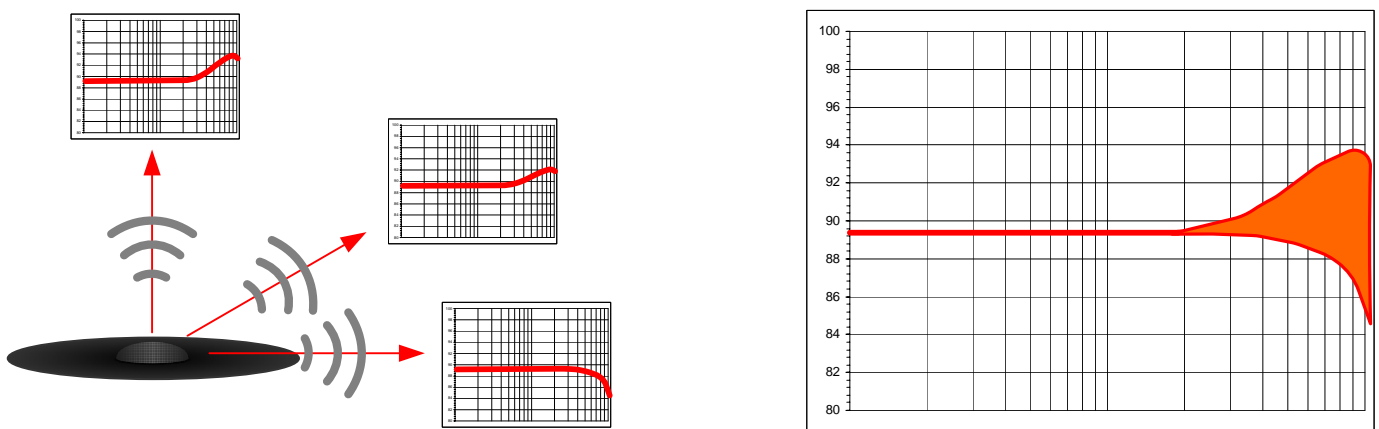
Unlike other builders that have employed wide devices (B&O) or special trumpet design (Duvel) , trying to get an homogeneous distribution of the sound, but practically introducing multiple reflection, **HEOLO's** devices doesn't introduce timbre or tone variation.

For this reason the impulsive response of the **HEOLO's** tweeter is instead extremely fast in time decaying, and this physical characteristic can be audible in terms of clarity and intelligibility of voices and instruments with an absolute lack of listening fatigue.

## HEOLO THE DIFFERENCE

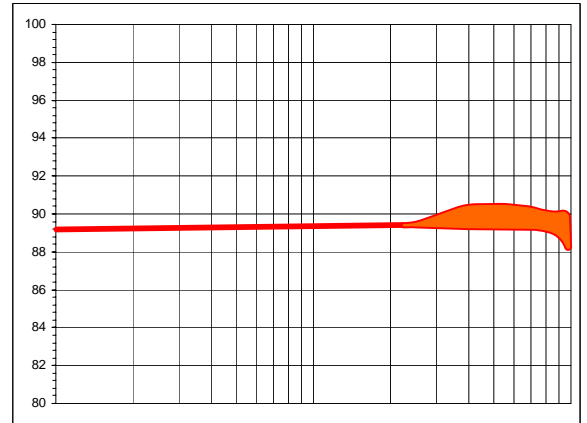
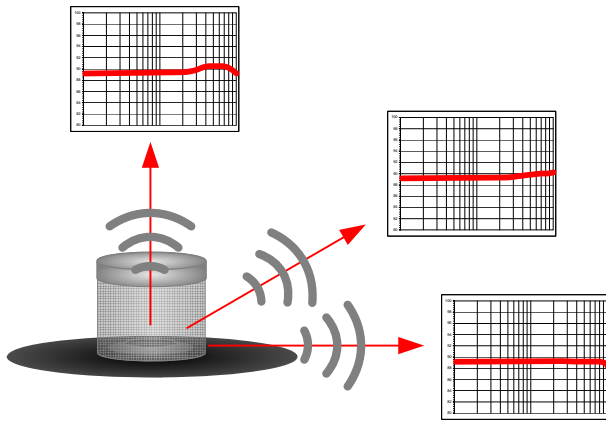
The following schemes shows the results obtainable with the revolutionary solution adopted by the HEOLO.

A normal tweeter has a frequency response that varies with the listening angle as shown in figure:



In a common loudspeaker, few degrees of variation from the on-axis angle, introduces appreciable frequency response change.

The differences at the higher frequencies it's evident, making audible the lack of trebles moving away from the centre of the driver axis, this phenomena contributes also to easy localize the source of sound, where ideally it's something you wish not to have.



The **HEOLO** solution (see above figure ) confines the variation in the frequency response; in other words, the listener would not hear timbre or tone variation even moving around the loudspeakers.

This unique behaviour make the loudspeakers practically “invisible” and not locatable, whereas the sound field it’s extremely focused and the instruments are easy to locate and stable in the sound stage, all this without being affected by the change in the listening position.