



INVISIBLE LOUDSPEAKER APPLICATION STUDY

# PLATAFORMA DAS ARTES

— Guimarães, Portugal —

*amina*



Atrium - Plataforma das Artes, Guimarães, Portugal

## Audio in Big Open Spaces

Reproducing clear audio in large open spaces presents a number of challenges to both the interior designer and audio system integrator.

These difficulties become even more problematic when the entire focus of a space is solely on visual art, increasing the demand for beautiful room filling sound with minimal visual impact.

The ability to install loudspeakers that cannot be seen is an incredible benefit in such spaces, but the ability to install a loudspeaker which also effortlessly integrates with the space in terms of construction, but also acoustic performance.



Front Exterior - Plataforma das Artes, Guimarães, Portugal

## Project Requirements

As an active art gallery and public space, hosting both resident and touring exhibitions, Plataforma das Artes presents a very specific set of audio system requirements.

1. Even sound coverage throughout
2. Zero visual detracton from visual art
3. Flexible space to adjust for use
4. Technology positioned out of way from physical disturbance

### Even Sound Coverage

With a large space and no fixed single listening position, a sound system that delivers flawless audio to every position within the space is critical. Use of VPT loudspeakers gives full 180° coverage throughout the entire frequency range of the loudspeaker.

As well as incredible wide dispersion angles, the incoherent phase waveform generated by a VPT loudspeaker also means that all reflected sound helps to smooth out any inconsistencies in SPL throughout the space, further improving the coverage. A conventional loudspeaker system used in such a space would typically require more loudspeaker units to achieve the exact same coverage.

### Zero Visual Impact

Using very small vibrations within the flat radiating panel to generate sound, Amina loudspeakers are able to replace a section of plasterboard in a ceiling or wall. They can then be plastered-in and painted over, allowing them to become completely invisible.

With the removal of the visual aspect of a loudspeaker, it both allows complete focus on the artwork (in terms of visual art and any background audio being reproduced) as well as reduce sound localisation, which helps with the impression of even immersive audio.

### Flexible Space

As with any active art gallery, the focus is on creating a space that is neutral in appearance while also remaining flexible in use. The regular adjustment and movement of artworks throughout the space means that there needs to be ample space left for the hanging of work, and the ability to re-patch any sign of previous wall/ceiling hangings. This requires a construction technique that can be quickly and easily patched as well as loudspeakers that are not positioned in a space that may be required to hang artwork.

### Carefully Positioned Technology

Positioning loudspeakers such that they are out of the way of artwork, preventing them being covered or damaged through placement of art may typically cause conflict with regard to loudspeaker positioning. With the wide dispersion pattern of Amina loudspeakers, this can allow for unconventional loudspeaker positioning. The loudspeaker does not have to visually line up with lighting fixtures or be fitted so that it directly points at the listener. This flexibility of loudspeaker positioning and even dispersion pattern makes a difficult space easy to deal with, and guarantee incredible acoustic performance throughout.

## Construction Requirements

As with many art galleries and public spaces, Plataforma Das Artes features vast expanses of clean white ceilings and walls. The monolithic nature of these clean surfaces provides the perfect platform for the artwork to be presented. With the constant cycle of resident and visiting exhibitions, the space needs to be structurally robust enough to reposition work, patch, paint and repeat. This requirement often means that such galleries are constructed with a structural board with no wet plaster skim. This could be hung from either a timber or metal frame as normal. There may also be large areas (specifically on the ceiling) which could be covered using acoustic plaster to help control problematic reflections.

As a working commercial property, the space requires a loudspeaker system that is easy to install, will require zero maintenance and will be compatible with typical commercial high impedance distributed audio systems.

Once installed, Amina loudspeakers require no more maintenance than the wall or ceiling that surrounds the product.



Exhibition Space - Plataforma das Artes, Guimarães, Portugal



Exhibition Space - Plataforma das Artes, Guimarães, Portugal

## High Impedance Audio

Many large commercial properties opt for a high impedance 100V / 70V line loudspeaker systems. All Amina Invisible Loudspeakers can be supplied with high quality toroidally wound transformers, available as either multi-tap or fixed value.

High impedance (also known as fixed voltage) loudspeaker systems allow for long, low-noise cable runs and reduced amplification requirements, making them a great option for large open properties.

For smaller commercial installations, loudspeakers may be supplied without the transformer. This can sometimes be desirable as it may provide a slightly more flexible solution for ultimate audio performance.

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