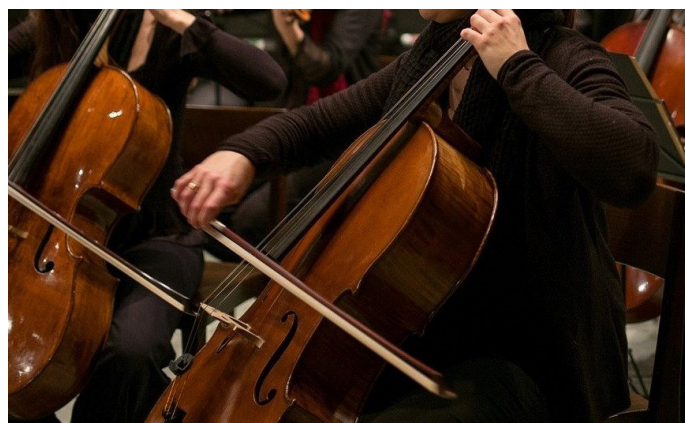




# Carmen®

## Mastering acoustics in auditoriums

Control the acoustics of your venue  
to enhance your performances







For the comfort of musicians and an optimal listening experience for audiences, every type of performance requires specific acoustics.

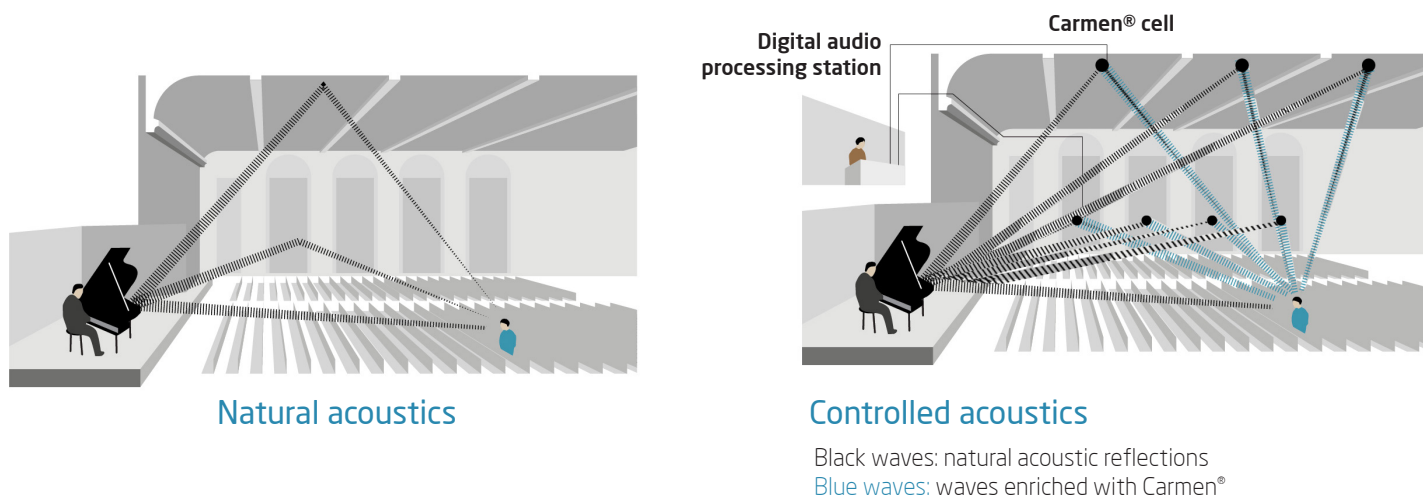
With Carmen®, your venue becomes completely versatile, thanks to customized acoustic configurations:

- Symphony concerts
- Concertos
- Operas
- Chamber music
- Choral performances
- Ballets with orchestra
- Theater

- One-of-a-kind active electroacoustic technology, developed at the CSTB's research laboratories
- Optimal acoustic variability, adjusted to suit every type of music
- Preserves the spatial and temporal consistency of the soundfield
- The natural timbre of the musical instruments is preserved, for the benefit of both the musicians and their audience
- Adapted to large performance halls (more than 600 seats)

## Preserving natural acoustics

Carmen integrates active cells—each of which comprises a microphone and a loudspeaker—into the walls and ceiling of the performance venue. These cells modify the acoustic characteristics of the walls of the venue virtually, thereby enriching its sound field and fine-tuning its acoustics.



Carmen uses high-end audio equipment to preserve the dynamics of music. The system guarantees unrivaled sound transparency and an ultra linear frequency response.



The CSTB has decided to partner with FrenchFlair Audio, to eliminate compromise between technology and aesthetics, ingenuity and elegance. Speaker systems made in France, designed and tailored to your architecture.

Designed to deliver high-end audio performance, AS-8 speakers provide powerful output and incredible accuracy of tone. Thanks to the modularity of the installation system, the acoustic sources can be positioned optimally throughout the space.

Although they meet all of the stringent technical requirements of the Carmen system, thanks to their compact shape and customization options, the speakers can also adapt to the aesthetic requirements of your performance venue.



Possible color options

## A customized design, at the service of your performance hall

- Casings and brackets in aluminum
- Over 200 RAL colors available to customize the speakers and brackets
- Selection of 20 colors for the acoustically transparent fabric
- Matte finish paint, to prevent any interference by unwanted reflections or glare



Carmen is the only system in the world to faithfully preserve the acoustics of the outfitted venue and respect the spatial-temporal coherence of the sound field. No electronic reverberation is added: only the existing acoustic reflections are amplified and/or delayed to increase the reverberation time. This unique technology is the only one to preserve the beauty of a venue's natural acoustics.

Jan Jagla CSTB R&D engineer



For us, Carmen is an essential tool, enabling us to please even our most discerning audiences and musicians. We've been using it for more than twenty years already, for the operas and performances of the Philharmonic Orchestra of Monte Carlo. In 2021, in order to ensure the durability of the system, we asked the CSTB to completely update the equipment.



We now have a new set of acoustic configurations, and the system has been upgraded with the latest technological advances, which we hope to use for the next twenty years.

Enzo

Sound Director, Grimaldi Forum, Monaco



Like the CSTB, at FrenchFlair Audio, we insist on the highest standards for flawless acoustic quality. We're proud to bring our expertise in designing professional speakers to the Carmen system, so you can provide your audience with a top-notch immersive experience.

Guillaume Boda

Founder of FrenchFlair Audio







## Pricing

**Carmen® system support and expertise.**  
**Starting at €260,000 excl. VAT\***

\*Basic rate - may vary according to the architecture and capacity of the performance venue.

In addition to Carmen®, a system resulting from many years of research, the CSTB offers you its expertise and customized acoustic services.

## High-end expertise

The CSTB conducts a preliminary acoustic study, based on a 3D model of the performance venue, to determine the number and position of the system's elements.

Once the system has been installed, we fine-tune the various acoustic configurations and provide technical support. Throughout the project, our experts work closely with the acoustic engineers, architects and project owners to ensure the success of the system.

Come attend a demonstration at one of our outfitted venues, in order to appreciate how our system performs.

## Examples of achievements



### Théâtre des Quinconces, Le Mans

- 825 seats • Volume: 4,700 sq. meters
- 32 cells and voice reinforcement
- Reverberation time without enhancement: 1.0 s
- 9 acoustic configurations extending reverberation time to 2.1 s

#### TECHNICAL CONTACT

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#### FOR MORE INFORMATION

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### Grimaldi Forum, Monaco

- 1,900 seats • Volume: 13,500 sq. meters
- 29 cells and voice reinforcement
- Reverberation time without enhancement: 1.2 s
- 6 acoustic configurations extending reverberation time to 2.0 s

#### FIND OUT MORE

carmen.cstb.fr



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