



*L'ingénierie
acoustique et vibratoire
depuis 1975*



Cultural Projects

LASA : Acoustic and Vibration Engineering since 1975

L'ingénierie
acoustique et vibratoire
depuis 1975



4.9

million euros

revenue in 2024

5000

clients

trusting us since 1975

25

software tools

developed in-house by LASA

5



OPQIBI qualifications

Professional Qualification Organization for Engineering, Construction and Industry

10

sites

Paris – Lyon – Bordeaux – Marseille
Rennes – Nantes – Toulouse – Annecy
Antilles – Guyana

6

partners

all actively involved in the firm

90

sound level meters

vibration analysers, single or multichannel

20

noise and vibration sources

omnidirectional, directional, standalone,
low frequencies, shock machines



Understanding

of architectural and client requirement

Feasibility

of solutions

Advanced optimisation

of proposed solutions

Satisfaction

of our clients

50

team members


experts and passionate about their craft

10 000

completed projects

Music Conservatory - Antibes

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Completion : 2016-2021
Cost of works : €12,65 million
Architect : Atelier JRA

Description : Construction of a conservatory including music education classrooms, rehearsal studios, two large ensemble rooms for instrumental and vocal practice, a 300-seat auditorium, a drama studio, a central patio, and a large landscaped rooftop terrace.

LASA's scope : Full project management services in joint venture, covering both design and construction phases, with acoustic engineering expertise.

Music Conservatory - Antibes

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Théâtre de l'Olivier - Istres

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Completion : 2022 - 2026

Cost of works : €13,8 million

Architect : Wilmotte & Associés

Description : Demolition and reconstruction of the Théâtre de l'Olivier, providing a 900-seat main auditorium and a 200-seat smaller hall. The project also includes a 120 m² restaurant located above the theatre. Low-carbon materials are used throughout the design and construction.

LASA's scope : Full project management services in joint venture, covering both design and construction phases, with acoustic engineering expertise.

Completion : 2022 - 2026
Cost of works : €13,8 million
Architect : Wilmotte & Associés

Description : Demolition and reconstruction of the Théâtre de l'Olivier, providing a 900-seat main auditorium and a 200-seat smaller hall. The project also includes a 120 m² restaurant located above the theatre. Low-carbon materials are used throughout the design and construction.

LASA's scope : Full project management services in joint venture, covering both design and construction phases, with acoustic engineering expertise.

Hector Belioz Conservatory – Bourgoin-Jallieu

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Completion : 2019-2023
Cost of works : €13,6 million
Architect : Atelier JRA

Description : Construction of a departmental-level conservatory for dance, music, and drama, including a 250-seat performance hall, individual and group teaching rooms, music rehearsal studios, dance and drama studios, and a documentation resource centre.

LASA's scope : Full project management services covering design, construction supervision, and commissioning measurements, with acoustic engineering expertise.

Hector Belioz Conservatory – Bourgoin-Jallieu

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Completion : 2019-2023
Cost of works : €13,6 million
Architect : Atelier JRA

Description : Construction of a departmental-level conservatory for dance, music, and drama, including a 250-seat performance hall, individual and group teaching rooms, music rehearsal studios, dance and drama studios, and a documentation resource centre.

LASA's scope : Full project management services covering design, construction supervision, and commissioning measurements, with acoustic engineering expertise.

Théâtre Quintaou - Anglet

Completion : 2010-2014
Cost of works : €9,45 million
Architect : Hérault Arnod

Description : Theatre and performance venue with 790 seats, designed for theatre, music, dance, conferences, film screenings, and live performance, featuring variable acoustics. The facility also includes a small black box creation space, dressing rooms, offices, reception areas, and a bar-restaurant. It hosts the *Scène Nationale du Sud Aquitain*.

LASA's scope : Full project management services in joint venture, covering both design and construction phases, with acoustic engineering expertise.

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Vadim Rogemond Theatre - Villeurbanne

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Completion : 2011-2014
Cost of works : €1,4 million
Architect : KAA Architectes

Description : Renovation of a 300-seat performance venue dedicated to theatre, dance, and music, including improvements to its internal acoustics. The project also includes the creation of a rehearsal studio, dressing rooms, and related support spaces.

LASA's scope : Full project management services in joint venture, covering both design and construction phases, with acoustic engineering expertise.



Music, Dance and Drama Conservatory - Montbéliard

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Completion : 2012-2022
Cost of works : €11,35 million
Architect : Atelier JRA

Description : The project includes reception areas, a resource centre, an auditorium, teaching facilities (music theory, individual and group practice, studios), vocal rooms, music production (MAO) rooms, dance and movement studios, and logistical support spaces.

LASA's scope : Full project management services in joint venture, covering design, construction, and commissioning phases. Project stopped at detailed design (APD) stage. Project later resumed at final design (PRO) phase.

Théâtre de l' Arsenal - Val-de-Reuil

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Completion : 2011-2015
Cost of works : €5 million
Architect : Bodin Architecte

Description : Conversion of a former fire brigade arsenal into a 500-seat municipal theatre.

LASA's scope : Full project management services in joint venture, covering both design and construction phases, with acoustic engineering expertise.

La Belle Electrique - Amplified Music Venue - Grenoble

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Completion : 2008-2015
Cost of works : €6,3 million
Architect : Hérault Arnod

Description : Amplified music venue with a capacity ranging from 400 to 800 people, including a restaurant area, lounge space, chill-out areas, and a music bar.

LASA's scope : Full project management services in joint venture, covering both design and construction phases, with acoustic engineering expertise.

Completion : 2009-2014
Cost of works : €31,8 million
Architect : Hérault Arnod

Description : Construction of a large 5,000-seat venue for sports and cultural events, including amplified performances similar to a Zénith-style arena, partner and press areas, a training gymnasium, and a fitness space. First venue in France to obtain the Arena Label.

LASA's scope : Full project management services in joint venture, covering both design and construction phases. Advanced internal acoustic study including 3D modelling and low-frequency optimisation

Espace Mayenne – Arena Laval

Completion : 2016-2021
Cost of works : €32,9 million
Architect : Hérault Arnod

Description : Construction of a multi-purpose arena featuring a 4,500-seat main hall, a secondary hall with a capacity ranging from 500 to 1,900 seats including a 15-metre-high and 50-metre-long climbing wall, and a congress area with a 500-seat auditorium and partner lounges.

LASA's scope : Full project management services in joint venture, covering both design and construction phases, with advanced internal acoustic studies.

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Le Colisée – Arena Tremblay

Completion : 2022-2024
Cost of works : €60 million
Architect : DVVD Architectes

Description : Construction of a multifunctional sports and entertainment arena comprising a 7,000-seat main hall, a secondary 2,000-seat indoor sports hall, bars and “bodegas”, a dance studio, partner lounges, VIP boxes, and operational facilities. The project features rammed earth walls, a multilayer roof, and high acoustic performance requirements.

LASA’s scope : Detailed design (execution phase) studies for the acoustic optimisation of the main 7,000-seat hall roof system. Numerical modelling, solution studies, laboratory testing, technical detailing, construction follow-up, and contractor support.

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Interference Performance Venue - Toulouse

Completion : 2023 - 2026
Cost of works : €7 million
Architect : Gerald de FAVARI

Description : Construction of a 2,000-seat concert hall dedicated to amplified music performances, equipped with an immersive L-ISA sound system by L-Acoustics. The project also includes a rooftop reception area.

LASA's scope : Full project management services covering both design and construction phases, with acoustic engineering expertise.

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The House of Lights - Vilnius



Completion : 2019
Architect : Anastasia Elrouss

Description : Cultural facility comprising two concert halls (1,700 and 500 seats), bar and lounge areas, a spacious entrance hall with panoramic city views, additional spaces for cultural activities, and an open-air theatre.

LASA's scope : Design competition for the project management team. Internal acoustic design of the concert halls during the competition phase. NON-WINNING PROPOSAL.

Théâtre - Fontainebleau

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Completion : 2003-2005
Cost of works : €2,5 million
Architect : Monceyron

Description : Renovation of this Italian-style theatre, built in the early 1900s and listed as a Historic Monument since 1991.

LASA's scope : Full consultancy services to the client during both design and construction phases, with acoustic engineering expertise.

Nîmes Convention Centre - Nîmes

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Completion : 2019
Cost of works : €31,6 million
Architect : Barozzi Veiga / Tolila+Gilliland

Description : Construction of the Nîmes Convention Centre in the heart of the historic city centre, including a 700-seat auditorium, committee rooms, an exhibition hall, and a 500-seat dining area.

LASA's scope : Design competition for the project management team. Acoustic design of the different rooms during the competition phase.
NON-WINNING PROPOSAL.



OPERA BASTILLE – Roof Renovation in an Occupied Building

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Completion date : 2022 - 2026
Area : 15 000 m²
Architect : Clé Millet Architectes
Client : Opéra National de Paris / OPPIC

Description : Technical and environmental upgrading of all waterproofed roof areas (approximately 15,000 m²), along with the renovation of the glass roof of the painting workshop. The works generate noise and vibration disturbances but must be carried out without interrupting the opera's activities (rehearsals, performances, etc.).

LASA's scope : Initial diagnostic and technical assistance for managing construction works in an occupied building and associated noise impacts, including testing and simulation of construction noise in sensitive areas of the opera, and preparation of the site noise management plan.



OPERA BASTILLE – Roof Renovation in an Occupied Building

Completion date : 2022 - 2026
Area : 15 000 m²
Architect : Clé Millet Architectes
Client : Opéra National de Paris / OPPIC

Description : Technical and environmental upgrading of all waterproofed roof areas (approximately 15,000 m²), along with the renovation of the glass roof of the painting workshop. The works generate noise and vibration disturbances but must be carried out without interrupting the opera's activities (rehearsals, performances, etc.).

LASA's scope : Initial diagnostic and technical assistance for managing construction works in an occupied building and associated noise impacts, including testing and simulation of construction noise in sensitive areas of the opera, and preparation of the site noise management plan.

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Voltaire Cultural Centre – Déville-lès-Rouen

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Completion : 2025 – 2025
Cost of works : €8,5 million
Architect : Hérault Arnod

Description : Reconstruction of the Voltaire Cultural Centre, including a 450-seat performance hall, a 50-seat restaurant, dressing rooms, offices, and support spaces.

LASA's scope : Design competition for the project management team. Acoustic design of the performance spaces during the competition phase. **NON-WINNING PROPOSAL.**



SMAC - Contemporary Music Venue - Angers

Completion date : 2022-2026
Cost of works : €9,3 million
Architect : Hérault Arnod

Description : Contemporary music venue (SMAC) comprising two performance halls with capacities of 1,200 and 300 seats, eight rehearsal studios, and a 70 m² cultural activity room.

LASA's scope : Design-phase project management services, including initial acoustic measurements, studies, and preparation of the acoustic design report.

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SMAC Astrolabe - Contemporary Music Venue – Orléans

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Completion : 2024 - 2024
Cost of works : €10,9 million
Architect : Hérault Arnod

Description : Contemporary music venue comprising a 750-standing-capacity concert hall (200 seated), a 240-seat club venue, an Agora supporting the operation of the facilities, and backstage areas ensuring the functionality of both performance spaces. The project also includes four rehearsal studios, one recording studio, and two music production (MAO) studios.

LASA's scope : Design competition for the project management team. Acoustic design of the performance spaces during the competition phase. NON-WINNING PROPOSAL.



SMAC – Contemporary Music Venue - Hettange

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Completion : 2025 - 2025
Cost of works : €14,7 million
Architecte : Hérault Arnod

Description : Construction of a community cultural facility including a Contemporary Music Venue (SMAC) with an 800-seat performance hall, a 150-seat auditorium, and ancillary spaces (dressing rooms, offices, technical areas, catering, and restaurant facilities).

LASA's scope : Design competition for the project management team. Acoustic design of the performance spaces during the competition phase.
NON-WINNING PROPOSAL

SMAC Le Normandy - Contemporary Music Venue – Saint-Lô

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Completion : 2024 - 2024
Cost of works : €5,97 million
Architect : Hérault Arnod

Description : Renovation of a heritage building and its extension, including a contemporary music venue with a 900-capacity hall (200 seated), a club room, two rehearsal/recording studios, dressing rooms, offices, and related support spaces.

LASA's scope : Design competition for the project management team. Acoustic design of the performance spaces during the competition phase.
NON-WINNING PROPOSAL.



Le Boréal - Dunkirk

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Completion : 2024 - 2028
Cost of works : €45 million
Architect : Hérault Arnod

Description : Arena-type performance venue with a capacity of 7,000 standing or 5,500 seated spectators. The facility includes multifunctional spaces (VIP lounges, dressing rooms, etc.), a large concourse enabling the setup of food and beverage stands, bars and “bodegas”, as well as changing rooms, offices, and operational/logistics areas.

LASA's scope : Full acoustic and vibration engineering services, covering both design and construction supervision phases.

EuropaCity Music Venue - Gonesse

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Completion : 2018-2019

Cost of works : € 24 million

Architect : Hérault Arnod

Description : Concert hall with a capacity of 7,000 seats (+1,500 outdoor seats), integrated into the “EuropaCity” leisure and retail complex. The roof of the hall is designed as a belvedere, connected to a promenade arriving from the future Gonesse station. The overall “EuropaCity” project was cancelled by the State at the end of 2019.

LASA’s scope : Technical assistance to the architect during the competition phase, including 3D modelling for internal acoustic optimisation (reverberation, low frequencies, etc.), study of façade sound insulation, and preparation of the acoustic design report at concept stage (ESQ).

Les Grandes Serres de Pantin : Auditorium - Pantin

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Completion : 2018-2024
Architect : MOATTI-RIVIERE

Description : Conversion of an industrial brownfield site and development of a mixed-use complex including a 282-seat auditorium intended for unamplified acoustic music concerts and conference-type events.

LASA's scope : Full project management services during design and construction phases. 3D modelling studies to define and position acoustic treatments, and analysis of the auditorium envelope, including a curtain wall system at the rear of the stage.

Le Beffroi : Cultural and Convention Centre - Montrouge

Completion : 2004-2012
Cost of works : €22 million
Architect : Blond & Roux

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Description : Two performance halls (for theatre, dance, music, and screenings) with capacities of 735 and 250 seats (the latter dedicated to puppet theatre), a 1,092 m² multipurpose space, nine committee rooms, reception areas, and backstage/logistics facilities for performances.

LASA's scope : Full project management services in joint venture, covering both design and construction phases, with acoustic engineering expertise.

Great Mosque Auditorium - Algiers

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Completion : 2023-2024
Cost of works : €898 million
Architect : Jurgen Engel Architekten

Description : 3,000-seat multipurpose auditorium (13,000 m²), divisible into two separate halls (9,600 m² and 3,100 m²) for musical performances and conferences, equipped with a high-quality electroacoustic system.

LASA's scope : Technical assistance to the contractor during the construction phase. Acoustic measurements of room performance criteria (reverberation time, STI speech intelligibility, etc.), comparison with technical specifications (CCTP requirements), analysis of design alternatives, and preparation of conclusions.

Le Monde Group Headquarters – Paris

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Completion : 2014 - 2020
Architects : Snøhetta / SRA

Description : Construction of the new headquarters of the Le Monde Group, bringing together all editorial teams. The project includes an auditorium, TV/radio studios, a restaurant, and retail spaces.

LASA's scope : Full project management services covering both design and construction supervision phases, with acoustic engineering expertise.

Russian Orthodox Spiritual and Cultural Centre – Paris

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Completion : 2013 - 2016
Cost of works : €150 million
Architects : Wilmotte & Associés

Description : The complex includes two exhibition halls, the Holy Trinity Orthodox Cathedral, a 210-seat auditorium, offices for the embassy's cultural department, residential apartments for staff, and an educational hub with classrooms, workshops, and a library.

LASA's scope : Technical assistance to the design team during both design and construction phases, with acoustic engineering expertise.

United Nations House – Diamniadio – Senegal

Completion : 2018 - 2021
Architects : Wilmotte & Associés

Description : Design of the United Nations House in Diamniadio, hosting the 34 UN agencies present in Senegal. The building features central public and official functions, peripheral office plateaus, and a 495-seat hemicycle.

LASA's scope : Acoustic engineering assistance to the design team during the design phase, including 3D numerical modelling for internal acoustic prediction, 3D modelling for environmental noise propagation studies, and preparation of the acoustic design report.

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School of Arts – Carcassonne

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Completion : 2007-2012
Cost of works : €9 million
Architects : Atelier JRA

Description : School dedicated to music, dance, and drama, including rehearsal rooms, a 200-seat orchestra and choir hall, dance studios, and visual arts workshops.

LASA's scope : Full project management services (design and build) in joint venture, with acoustic engineering expertise.

SMAC Le Kubb – Main Venue – Evreux

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Completion : 2008-2016
Cost of works : €5,85 million
Architect : Hérault Arnod

Description : Music complex comprising two performance spaces: a 600-seat concert hall and a 150-seat club/café-concert, connected by a public through-space. The project also includes recording studios, a local radio studio, and office spaces.

LASA's scope : Full project management services in joint venture, covering both design and construction phases, with acoustic engineering expertise.

Completion : 2008-2016
Cost of works : €5,85 million
Architect : Hérault Arnod

Description : Music complex comprising two performance spaces: a 600-seat concert hall and a 150-seat club/café-concert, connected by a public through-space. The project also includes recording studios, a local radio studio, and office spaces.

LASA's scope : Full project management services in joint venture, covering both design and construction phases, with acoustic engineering expertise.

Cité de la Musique - Auditorium - Romans

Completion : 2008-2013
Cost of works : 6,9 M€
Architect : CR&ON/AA GROUP

Description : Contemporary music venue including a 350-seat performance hall, a 255-seat auditorium, six rehearsal/recording studios, a music production (MAO) room, a 100 m² rehearsal space, 30 individual instrument practice rooms, dressing rooms, and a bar/restaurant.

LASA's scope : Full project management services in joint venture, covering both design and construction phases, with acoustic engineering expertise.

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Auditorium - Villepinte

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Completion : 2015-2018
Cost of works : €4 million
Architect : Atelier JRA

Description : Construction of a 300-seat auditorium, a media library, and a music conservatory. Project stopped at the preliminary design stage (APS).

LASA's scope : Full project management services in joint venture, with acoustic engineering expertise.



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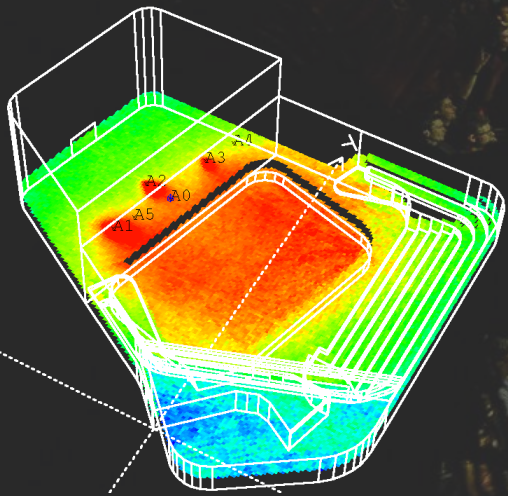
LASA's Services



Whether for an existing performance venue or a new build, LASA provides comprehensive support using dedicated measurement equipment and advanced numerical modelling tools. The aim is to design, optimize, and ensure acoustic environments that meet the specific requirements of each project.

Examples of LASA services include:

- **Initial acoustic diagnostics**, including on-site visits and acoustic measurements
- **3D acoustic modelling** of the various spaces to support sound design
- **Optimization of acoustic treatments**, with the proposal of multiple scenarios and technical solutions
- **Presentation of results** using decision-support tools (evaluation of comfort criteria, performance gains, etc.)
- **Definition of recommended solutions** and preparation of an acoustic design report to support tender documents (CCTP)

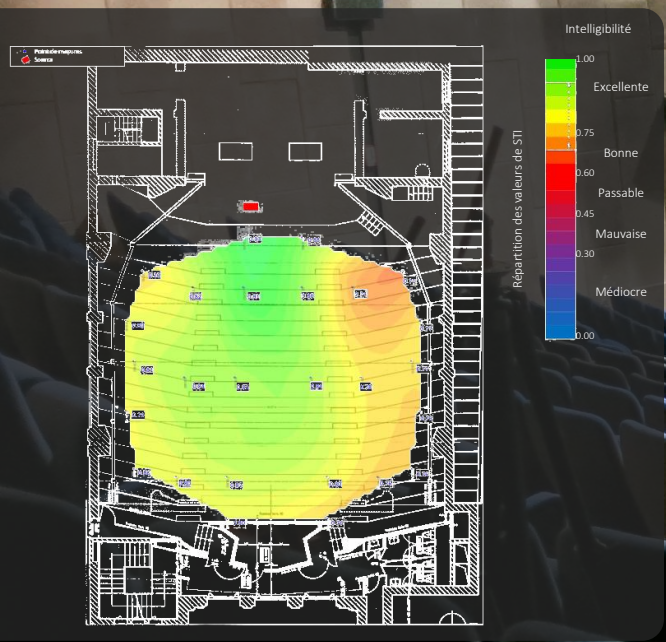


“

45 years of experience and acoustic measurements, using the best modelling tools and our engineers' expertise to ensure the acoustic quality of your venue ! Tell us what kind of sound you are dreaming of !

”

Example of an initial acoustic diagnosis : Théâtre de la Renaissance – Oullins



Initial acoustic diagnosis

The director's objective: an efficient renovation making maximum use of the existing acoustic elements.

A comprehensive acoustic diagnosis was carried out, including a survey of existing materials and measurements of relevant acoustic indicators depending on the project requirements (RT, EDT, D50, C80, G, STI, DL, lateral reflections, sound coverage uniformity, detection of potential resonances or acoustic focusing effects, etc.).

This diagnosis then serves as the basis for further analysis, 3D numerical modelling, and studies/optimisation of improvement solutions.

Example of 3D acoustic modelling : Théâtre Vadim Rogemond – Villeurbanne

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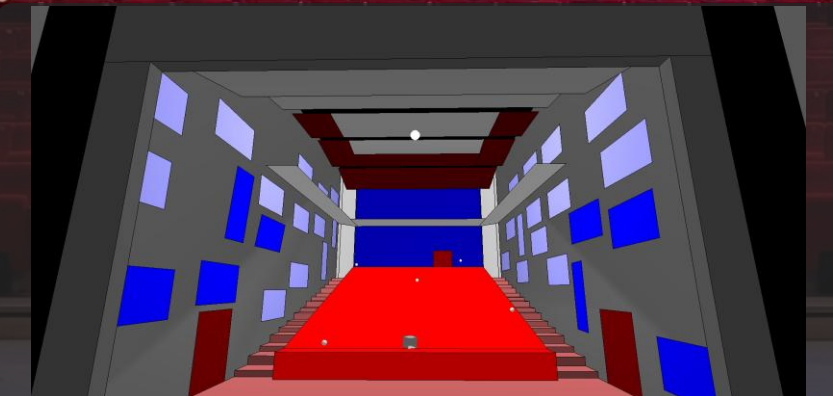
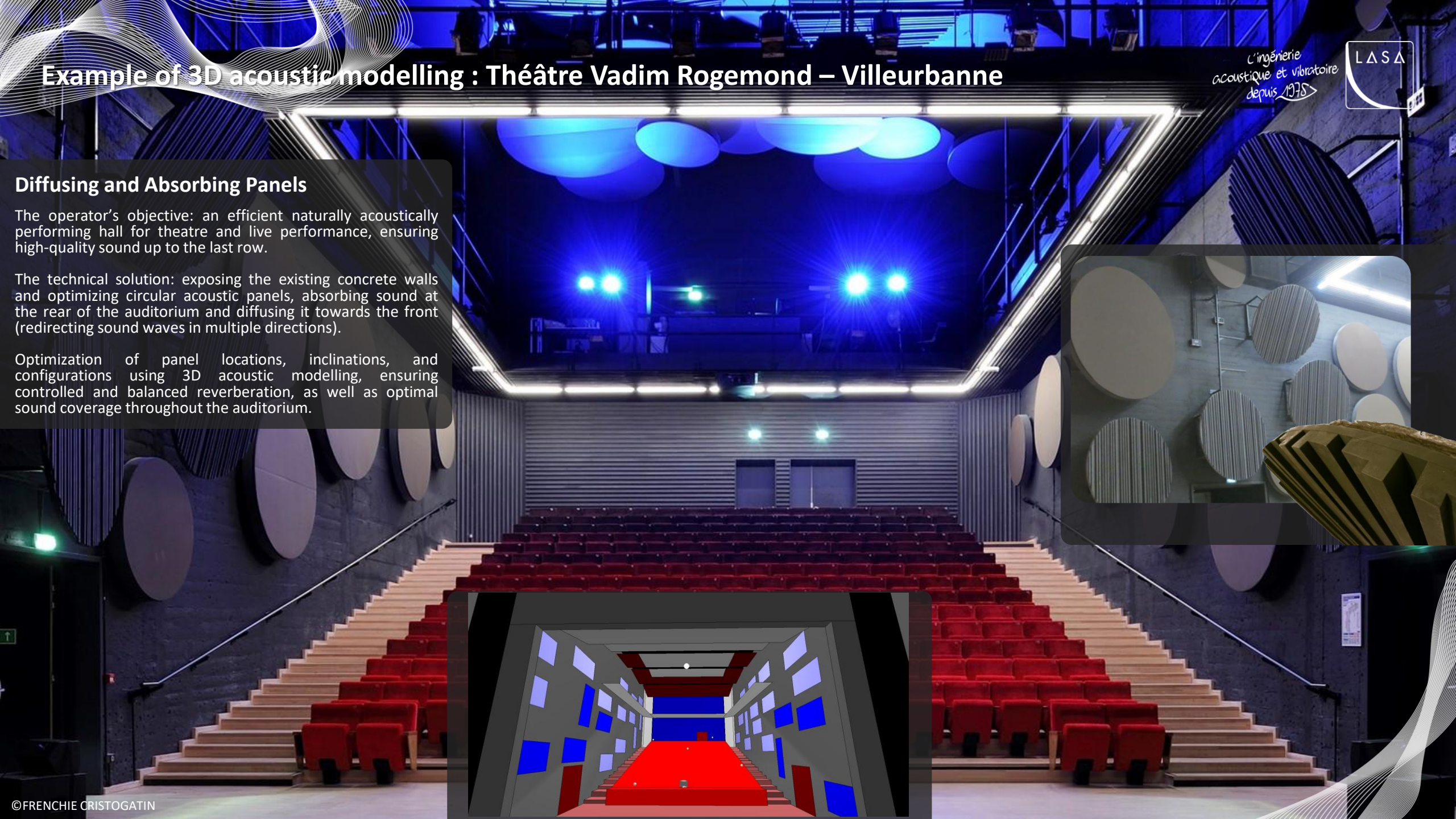


Diffusing and Absorbing Panels

The operator's objective: an efficient naturally acoustically performing hall for theatre and live performance, ensuring high-quality sound up to the last row.

The technical solution: exposing the existing concrete walls and optimizing circular acoustic panels, absorbing sound at the rear of the auditorium and diffusing it towards the front (redirecting sound waves in multiple directions).

Optimization of panel locations, inclinations, and configurations using 3D acoustic modelling, ensuring controlled and balanced reverberation, as well as optimal sound coverage throughout the auditorium.



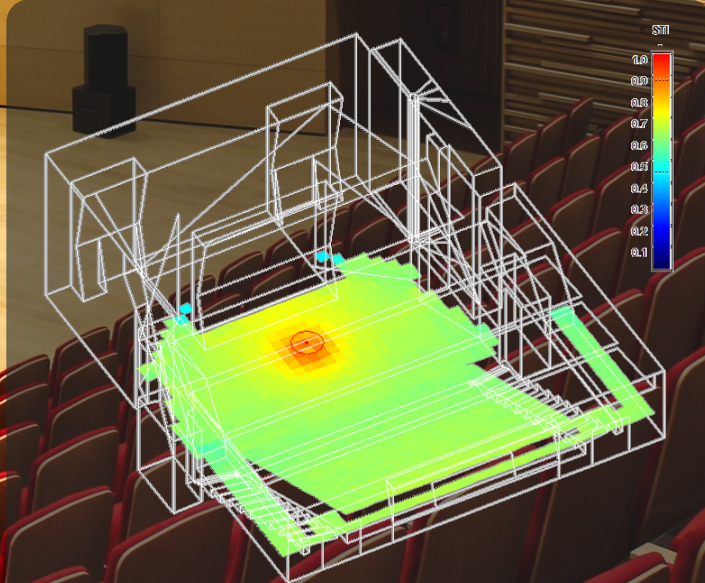
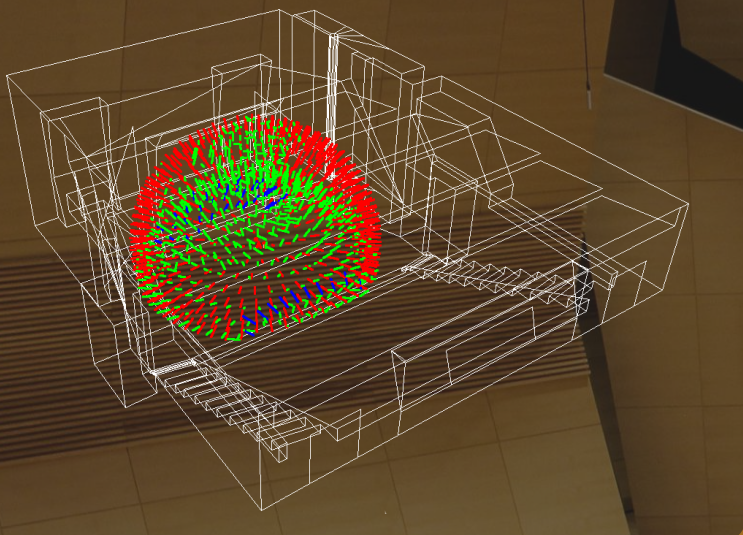
Example of 3D acoustic modelling : Music Conservatory – Antibes

Mobile acoustic shells – diffusing side walls

The objective: rich, balanced sound that envelops the entire audience, whatever the size and composition of the musical groups.

The technical answer: several mobile conches with optimized inclinations thanks to 3D acoustic modelling, and predominantly diffusive side walls.

These elements reflect the sound of the instruments back to the audience as well as to the musicians, offering optimal listening and playing comfort even with small musical ensembles.



Example of 3D acoustic modelling: Théâtre Quintaou– Anglet

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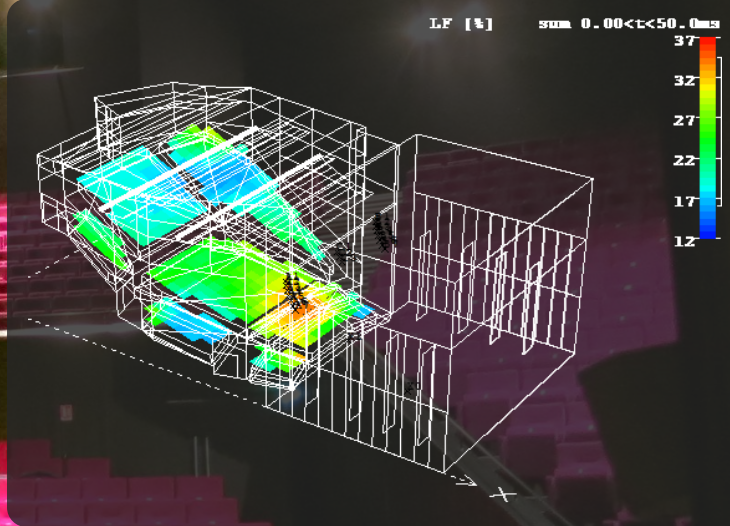
Diffusing "scales" and variable acoustics

The city's objective : a multifunctional venue capable of delivering optimal acoustic quality for a wide range of uses, including opera, classical concerts, live performances, and amplified shows.

The technical solution: an advanced variable acoustics system combined with optimized diffusing wall elements, designed using LASA's dedicated acoustic modelling tools and validated through laboratory testing.

The solid lower "scale" elements along the side walls are specifically designed to reflect sound towards the entire audience. The open upper "scales" act as diffusers and conceal motorised heavy velvet curtains, whose varying deployment levels significantly modify the room's reverberation depending on the intended use.

These elements, together with the geometry of the hall and ceiling inclinations, were optimised through 3D acoustic modelling in close collaboration with architects and scenographers.



Exemple of initial acoustic and vibration diagnosis for works in an occupied building : OPERA BASTILLE

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L A S A

Initial diagnosis and prediction of construction noise and vibration propagation in an occupied building to avoid disrupting site operations

The client's objective : to carry out major renovation works, including the removal and replacement of waterproof roofing and the renovation of a glass canopy, while maintaining the normal operation of the opera house (rehearsals, artistic work, performances, etc.), despite potential airborne noise and structure-borne vibration transmission depending on the location of both the works and the sensitive areas affected (mobile construction site).

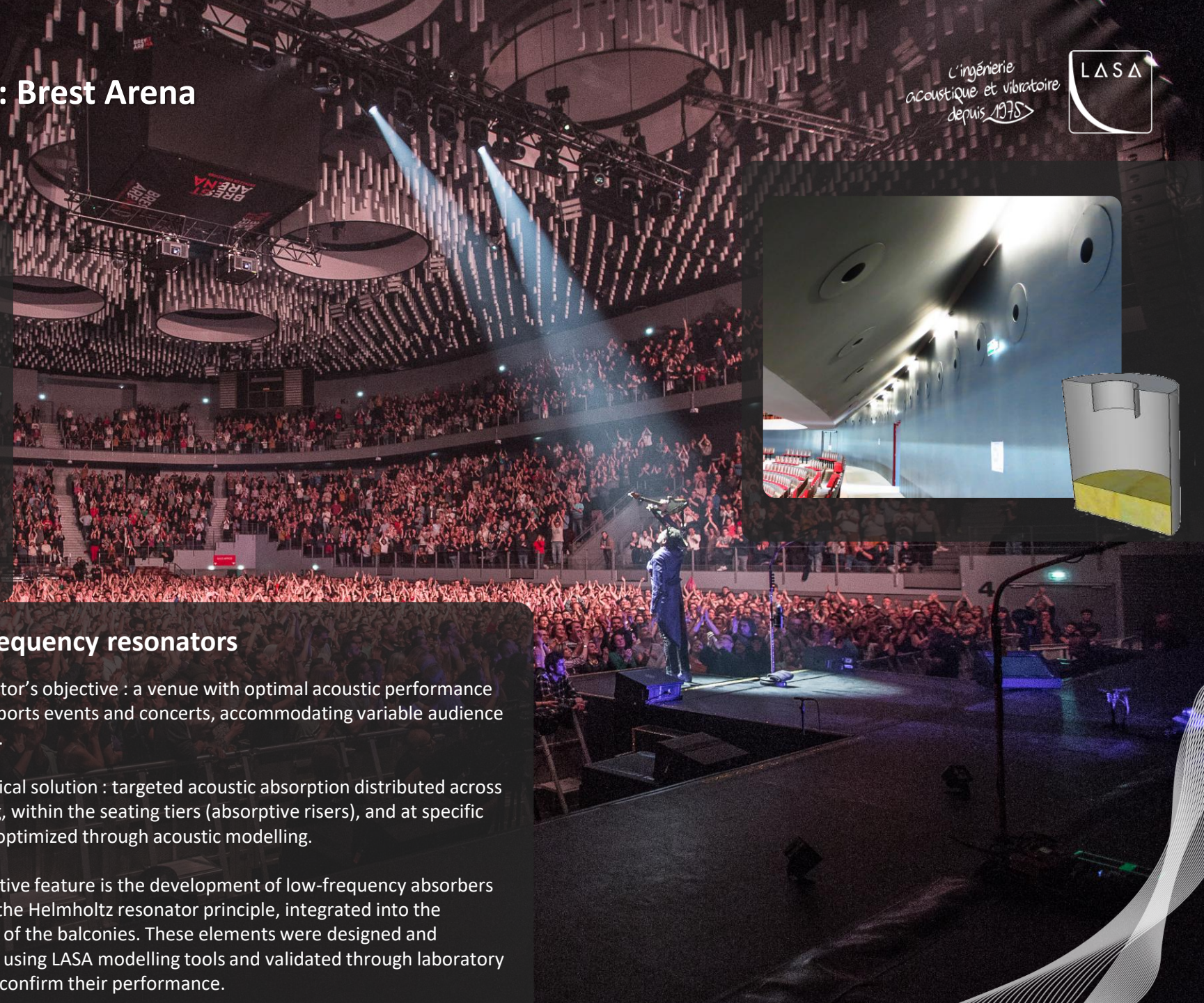
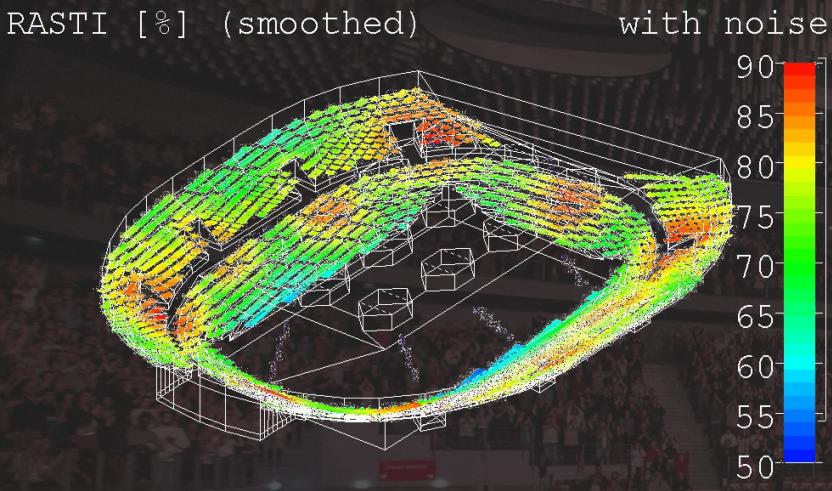
LASA's scope : Initial diagnostic and technical assistance for managing works in an occupied building and associated noise and vibration impacts, including testing and simulation of construction impacts in sensitive areas of the opera house, definition of disturbance distances, support in selecting suitable low-impact construction equipment and intervention methods, preparation of the construction site noise management plan, definition of required real-time monitoring systems and target threshold values, etc.

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Example of 3D acoustic modelling : Brest Arena

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Low-frequency resonators

The operator's objective : a venue with optimal acoustic performance for both sports events and concerts, accommodating variable audience capacities.

The technical solution : targeted acoustic absorption distributed across the ceiling, within the seating tiers (absorptive risers), and at specific locations optimized through acoustic modelling.

An innovative feature is the development of low-frequency absorbers based on the Helmholtz resonator principle, integrated into the underside of the balconies. These elements were designed and optimized using LASA modelling tools and validated through laboratory testing to confirm their performance.

Example of 3D acoustic modelling : Cultural and Sports Facility - Chartres

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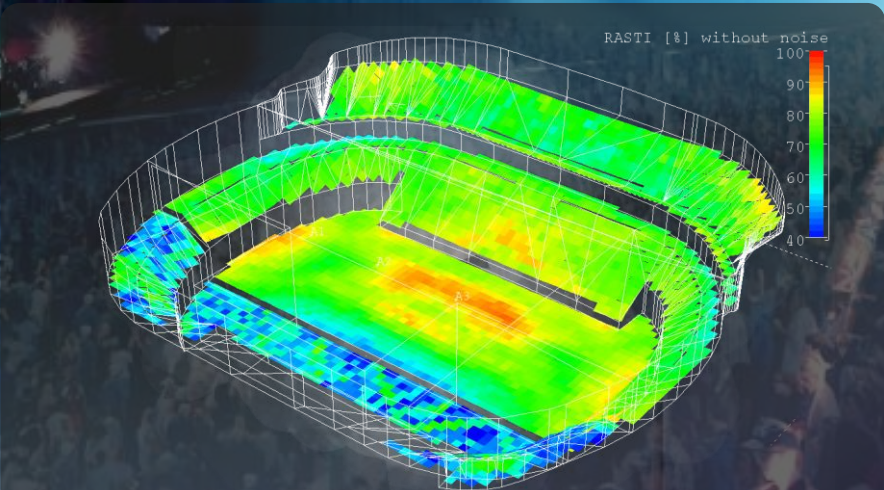


Shape and absorbtion optimization

The city's objective: a multifunctional venue primarily dedicated to performances but also capable of hosting sporting events, ensuring optimal acoustic quality in both configurations.

The technical solution: work on the geometry of the hall and the distribution of acoustic absorption (ceiling, seating tiers, wall surfaces, etc.), combined with a variable acoustic system integrated with the blackout of glazed strips (deployable shading elements in performance mode).

Optimization of the hall's acoustics across different usage scenarios, and verification of sound quality with the intended sports and performance sound reinforcement systems, using 3D acoustic modelling. NON-WINNING PROPOSAL.



Great Mosque Auditorium - Algiers

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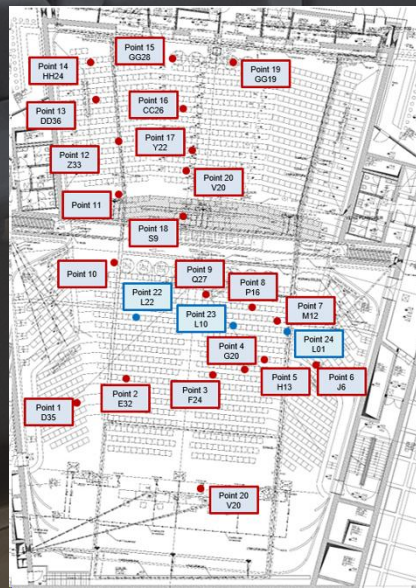


Post-construction acoustic measurements

The contractor's objective: to ensure that the delivered building meets all acoustic comfort requirements defined in the specifications, and to provide formal justification to the project management team.

Comprehensive measurements were carried out using a full range of instrumentation and software tools, enabling objective assessment of the acoustic criteria defined in the tender documents (RT, STI speech intelligibility, D50, C80, sound coverage uniformity, detection of potential resonances or acoustic focusing effects, etc.).

For LASA, this phase also provides an opportunity to deepen the analysis of in-situ measurements and further enhance feedback and expertise for future projects.



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