

A faint, grayscale background image of a classical painting depicting a group of figures in a dramatic scene, possibly a religious or historical event, with figures in the foreground and background.

Vivace

PERFECTION IN ROOM ACOUSTICS



Composer, conductor, opera director

“That which makes music great is not written in the score”

Gustav Mahler

| 1860 – 1911



Austria

Australia

Belarus

China

Denmark

Germany



Divorce



Italy

Malaysia

Russia

Switzerland

United Arab Emirates

VIVACE — because sound has many facets

A unique listening experience is a combination of many factors. A gifted composer, a creative conductor, a well-rehearsed orchestra, world-class soloists, also, outstanding acoustics. But what constitutes ideal acoustics or the perfect sound? Are they things that only exist in our imagination?

VIVACE, our electronic room acoustics system, offers an innovative approach to achieving the optimum in natural sound. VIVACE improves the acoustics of a listening space without robbing it of its individual characteristics. The room retains its unique sound. Strengths are emphasised, and weaknesses compensated for. A well-rounded, vital acoustic is created, providing the essential balance between unique character and the acoustic ideal. The result is an unforgettable listening experience.

With VIVACE, the existing characteristics of a listening space provide the essential basis in creating the optimal acoustic for that space. Picture an artist painting on a coloured canvas. VIVACE enhances the character of a space with precisely calculated amounts of additional sound energy. A nuance here, a bold stroke there, as the space demands. New reflections are generated by VIVACE using recordings of other, acoustically outstanding rooms, concert halls or churches. These recordings are like having the acoustic fingerprint of those rooms. VIVACE generates a superb natural acoustic, and improves thereby the listening experience of audience and performer alike.

“Our orchestra sound has become more well-rounded, and our audience has commented on the orchestra’s greater presence since the installation of VIVACE.”

Austria

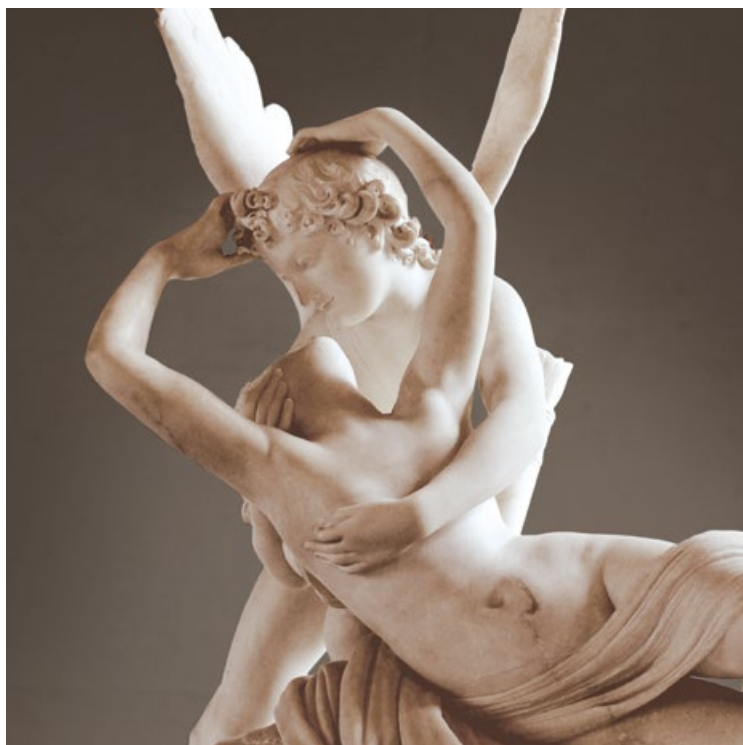
Australia

Belarus

China

Denmark

Germany



“As an orchestra musician, I often had the feeling of sitting alone on the stage. Now, we can interact much more easily with our fellow musicians, and much better illustrate the commonalities and differences in our musical material during the performance.”

Vivace

JANE BERGER *f*

SECTION LEADER 2ND VIOLIN AND MEMBER
OF THE ORCHESTRA BOARD OF THE
AUGSBURG PHILHARMONIC ORCHESTRA



Italy

Malaysia

Russia

Switzerland

United Arab Emirates



BACKGROUND

The Augsburg Congress Centre was renovated between 2010 and 2012, and re-christened “Kongress am Park”. The architecture of the old “Augsburger Kongresshalle” was principally designed for speech, so in the course of the renovations, the acoustics were to be improved to accommodate the needs of concerts and music events. With its typically 1970’s exposed-concrete style, the structure is a listed building, and architectural changes were not possible. The only way to change the acoustic characteristics of the auditorium was by means of an electronic acoustics system. Initial reservations on the part of the Orchestra Board, that the resulting acoustics might sound artificial, are now a thing of the past. The musicians are so convinced that they no longer perform without “their” VIVACE.

VIVACE PROJECT DETAILS KONGRESSZENTRUM AUGSBURG

Measure: Renovation

Contracting body: City of Augsburg

Capacity: 1.400 seats

Project services: Planning, calibration,
event support

“Only since the introduction of VIVACE is the sound source the stage itself, and not an undefinable box. This is a great quality improvement.”

Austria

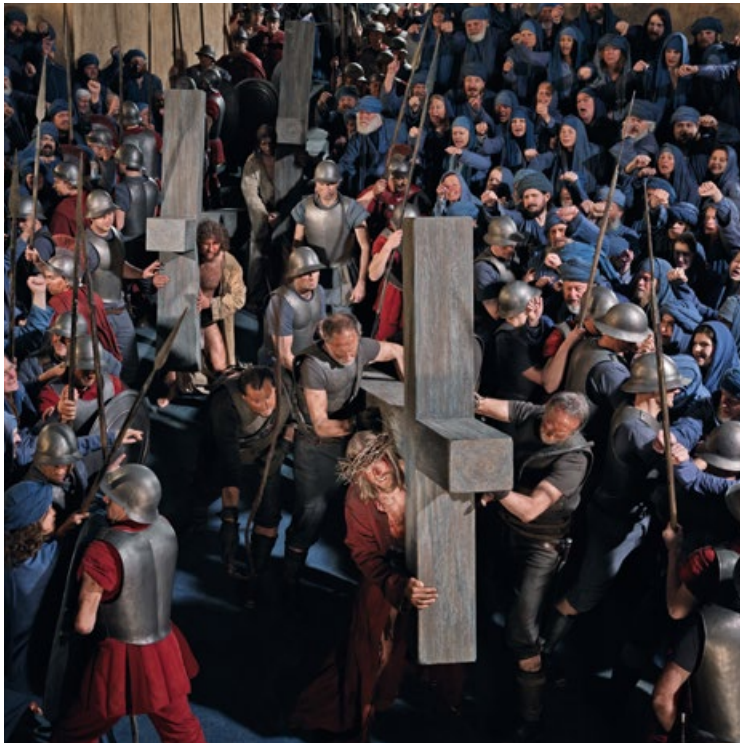
Australia

Belarus

China

Denmark

Germany



“Traditionally, the actors in Oberammergau worked solely with the strength and volume of their own voices. Environmental noise has slowly risen over time, creating the desire among the audience for clear, clean sound. Microphones have become unavoidable.”

Vivace

CHRISTIAN STÜCKL

ARTISTIC DIRECTOR,
PASSIONSTHEATER OBERAMMERGAU,
VOLKSTHEATER MUNICH



Italy

Malaysia

Russia

Switzerland

United Arab Emirates



BACKGROUND

Every ten years, Oberammergau rises to its great challenge: The world-famous Passion Play, with its almost 400 years of tradition, attracts around a half a million visitors to the quiet little town in the Bavarian Alps. The townspeople depict the last 5 days in the life of Jesus Christ in a production which spans several hours. In the years between, the 4,800 seat Passionstheater is used to stage imposing Opera and Theatre productions. The theatre is, however, not without its difficulties. The open air stage is unusually large at about 40 m. wide and 15 m. deep, and the roofed over audience space produces multiple detrimental early reflections, but a weak overall reverberation level. All of this contributes to a generally poor speech intelligibility. To compensate for this, electro-acoustic sound reinforcement and electronic room acoustics have been implemented in all of the productions including and since the Passion Play in 2010. VIVACE provides natural support for actors, singers and the orchestra sound.

VIVACE PROJECT DETAILS PASSIONSTHEATER OBERAMMERGAU

Measure: Temporary Installation

Producer: Passionstheater Oberammergau

Capacity: 4.800 seats

Project services: Electro-acoustics, electronic room acoustics, tracking system planning

Planning: Calibration, event support

“For the famous choral sections in Mozart’s “Requiem”, we lengthened the reverberation time to create a more clerical effect, similar to large churches.”

Austria

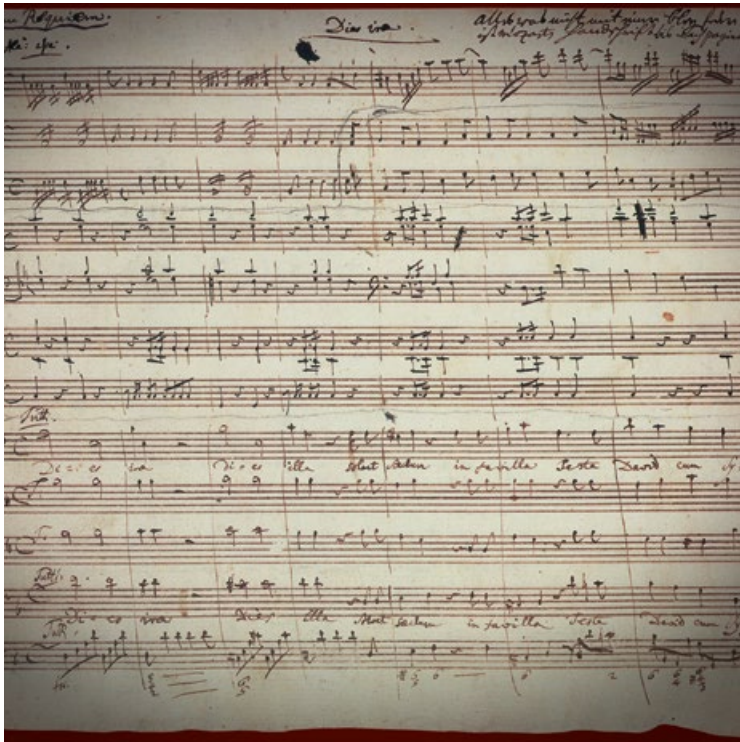
Australia

Belarus

China

Denmark

Germany



„We use VIVACE above all as a creative artistic tool in around 50% of our productions. The system allows us to accommodate the specific musical-dramatical wishes of musicians and conductors in a directed and effective manner.“

BACKGROUND

As a performance space, the Felsenreitschule is a natural phenomenon. The stage area nestles in against 96 natural stone arcades set over three stories. The theatre was first built in 1693 in the site of the Mönchsberg quarry. Initial usage was as a riding school and for animal hunts, with the audience seated in the arcades. Since 1926, the Felsenreitschule is one of the principle venues for the Salzburg Festival. The audience is now seated facing the arcades, which form an imposing back-drop

DR. EDWIN PFANZAGL-CARDONE

CHIEF TONMEISTER SALZBURGER FESTSPIELE



Italy

Malaysia

Russia

Switzerland

United Arab Emirates



for the stage area. A mobile roof allows the conversion of the stage area to an open-air venue in a matter of minutes.

The exceptional status of the Felsenreitschule amongst the great opera houses of the world is also due to the enormous size of the room. This brings with it very specific acoustic advantages, but also challenges. In order to meet and maintain the extremely high artistic standards of the Salzburg Festival, the opportunity was taken during renovations in 2009/2010 to optimise the acoustic characteristics and develop a new acoustic concept for the auditorium. One of the measures taken was the installation of a VIVACE system.

The basis of the set-up consists of 50 loudspeakers integrated into the side and rear walls and ceiling of the auditorium, and also in the stage area. Over and above the enhancement of the room acoustics, the system also allows for the creation of impressive 3D audio effects and movements in the festival productions..

VIVACE PROJECT DETAILS SALZBURGER FESTSPIELE

Measure: Renovation

Venue owner: Salzburger Festspiele

Capacity: 1.430 seats

Project services: Room acoustics, electro-acoustics, electronic room acoustics, planning,

Planning: Simulations, evaluation and certification acoustic measurements, event support

“Every factor which serves to improve the quality of that which is heard assists the artist in his performance, and thereby the audience.”

Austria

Australia

Belarus

China

Denmark

Germany



“The audience as such has a very sure instinct for quality. Good room acoustics play a very important role in this.”

BACKGROUND

February 2007. The pianist and concert manager Till Janczukowicz reads in the New York Times of the planned construction of a giant Culture Centre in Abu Dhabi. Star architects such as Zaha Hadid and Frank Gehry had just presented their fabulous designs for the Culture Mecca. Included in the complex was to be a 6,000 seat Performing Arts Centre, with the completion date set for 2020. Janczukowicz is inspired: without further

Divace

TILL JANCZUKOWICZ

FOUNDER AND ARTISTIC DIRECTOR OF THE
ABU DHABI CLASSICS, 2008–2011



Italy

Malaysia

Russia

Switzerland

United Arab Emirates



ado, he proposes to the Ministry for Culture and Cultural Heritage in Abu Dhabi a concert series with internationally acclaimed musicians. The Abu Dhabi Classics are born, and are met with an enthusiastic response. Between October 2008 and the spring of 2011, the stars of the classic world appear in Abu Dhabi: The Vienna Philharmonic Orchestra, the Bayreuth Festival Orchestra, the London Philharmonic Orchestra, Zubin Metha, Lorin Maazel, Cecilia Bartoli, Lang Lang, Bobby McFerrin, and many more. The Venue for these outstanding concerts was a hall in the luxury hotel Emirates Palace. Enhancement with VIVACE in this acoustically damped environment allowed the creation of natural acoustic spaces, which could be optimised for the character of each individual performance.

VIVACE PROJECT DETAILS ABU DHABI

Measure: Temporary Installation in the Emirates Palace Hotel, Abu Dhabi

Event management: Columbia Artists Management GmbH, Berlin

Capacity: 1.200 seats

Project services: Electronic room acoustics, planning, evaluation acoustic measurements, Vivace calibration, event support, recordings

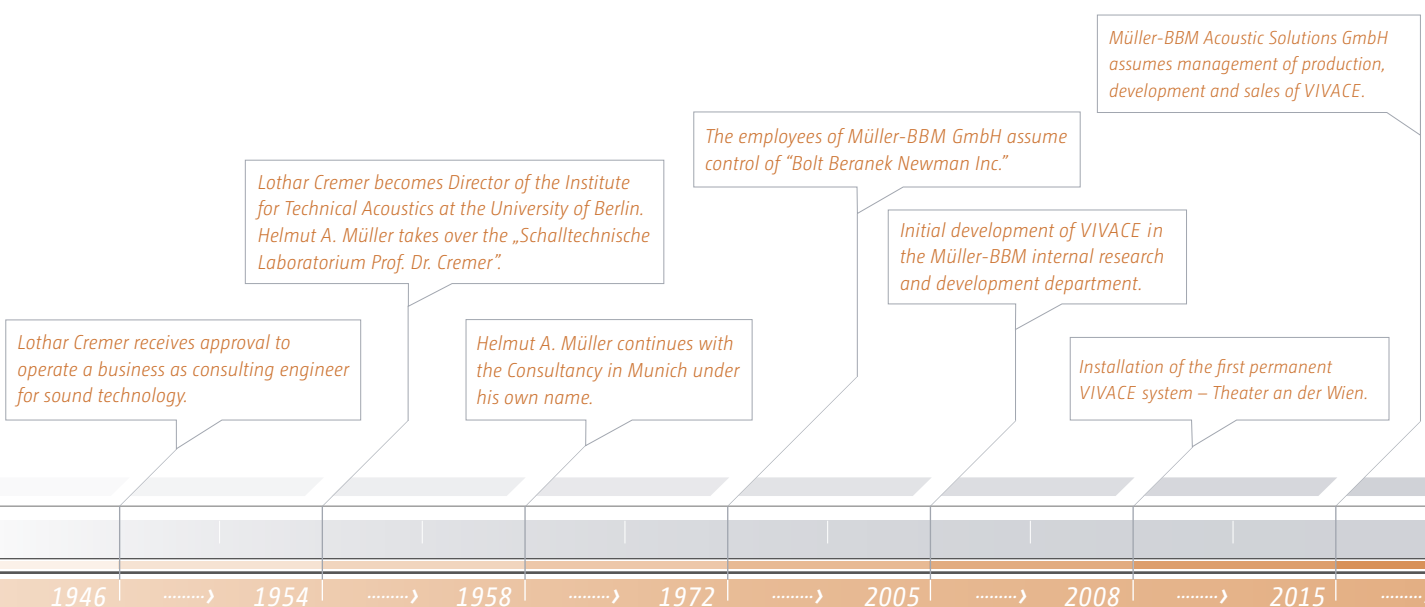
VIVACE goes round the world, and delivers unforgettable sound.

VIVACE appeared on the market in 2008, and has been thrilling and exciting music lovers around the globe ever since. In Germany, Austria and Switzerland, in Denmark, Italy and Russia, in China, Australia and the United Arab Emirates, VIVACE improves the room acoustics of Opera Houses, Theatres and Concert Halls of the most varying natures. Every Venue offers its own new and unimagined possibilities. VIVACE exploits these possibilities to create acoustic marvels, and provide listening experiences that linger on in the hearts of all who hear them.

The birthplace of VIVACE is Müller-BBM in Planegg, a suburb of Munich, Germany. The company is one of the world's leading engineering consultancies for room acoustics, building physics and environmental protection, with a more than 60 year history. Room acoustics has been one of the core businesses since the very beginning. Starting at the end of the 1950's, alongside the continuing activity in room and building acoustics, the company branched into industrial noise control and noise protection in town planning and ship construction. Müller-BBM grew, and became known beyond the borders of Germany.



With the general increase in the importance of public address and sound reinforcement systems, the planning of high grade electro-acoustic systems developed to be a further area of expertise at Müller-BBM. The symbiosis of room acoustics and sound reinforcement systems led, some years later, to the birth of a new system: VIVACE. The collective acoustic knowledge at Müller-BBM merges with the bold, creative ideas of the developers to create a truly innovative product. Since 2015, Müller-BBM Acoustic Solutions GmbH manages the production, sales and development of the room acoustic and 3D audio system VIVACE.



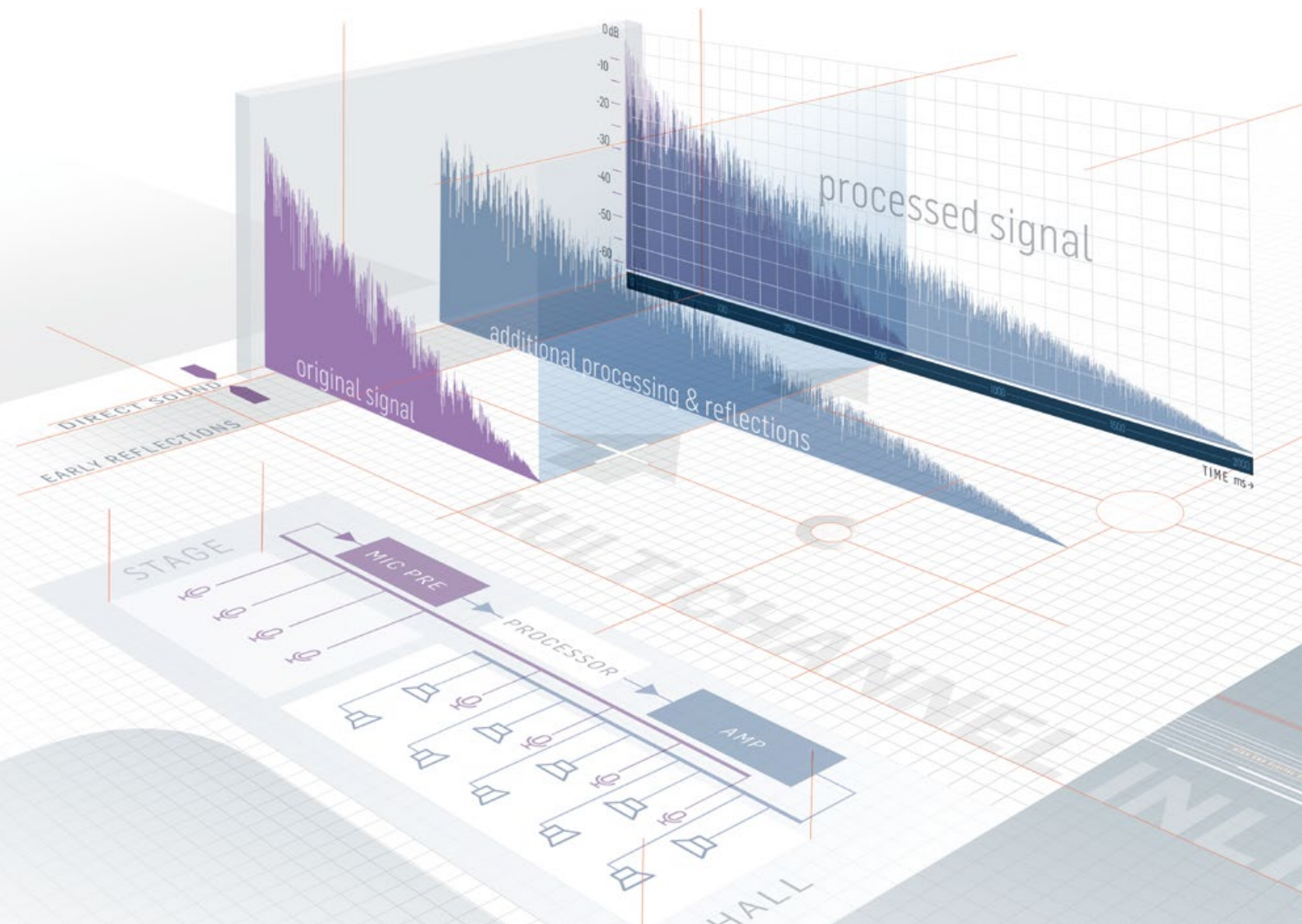
What makes VIVACE so unique.
The marvel of artistry
and technology.



How is a new room acoustic created?

Acoustically excellent concert halls and opera houses represent a desirable ideal for VIVACE, which can be transposed onto other rooms in the form of their impulse responses. These impulse responses are recorded for the purpose of further processing, as they represent the total characteristic of optimal sound spaces with all their acoustic nuances – much like the acoustic fingerprint of a space. VIVACE combines these impulse responses with

microphone signals collected in the auditorium and creates a harmonious and perfect concert hall and opera house acoustic. The in-built adjustment and processing possibilities allow a very free and yet precise realisation of all your creative wishes.

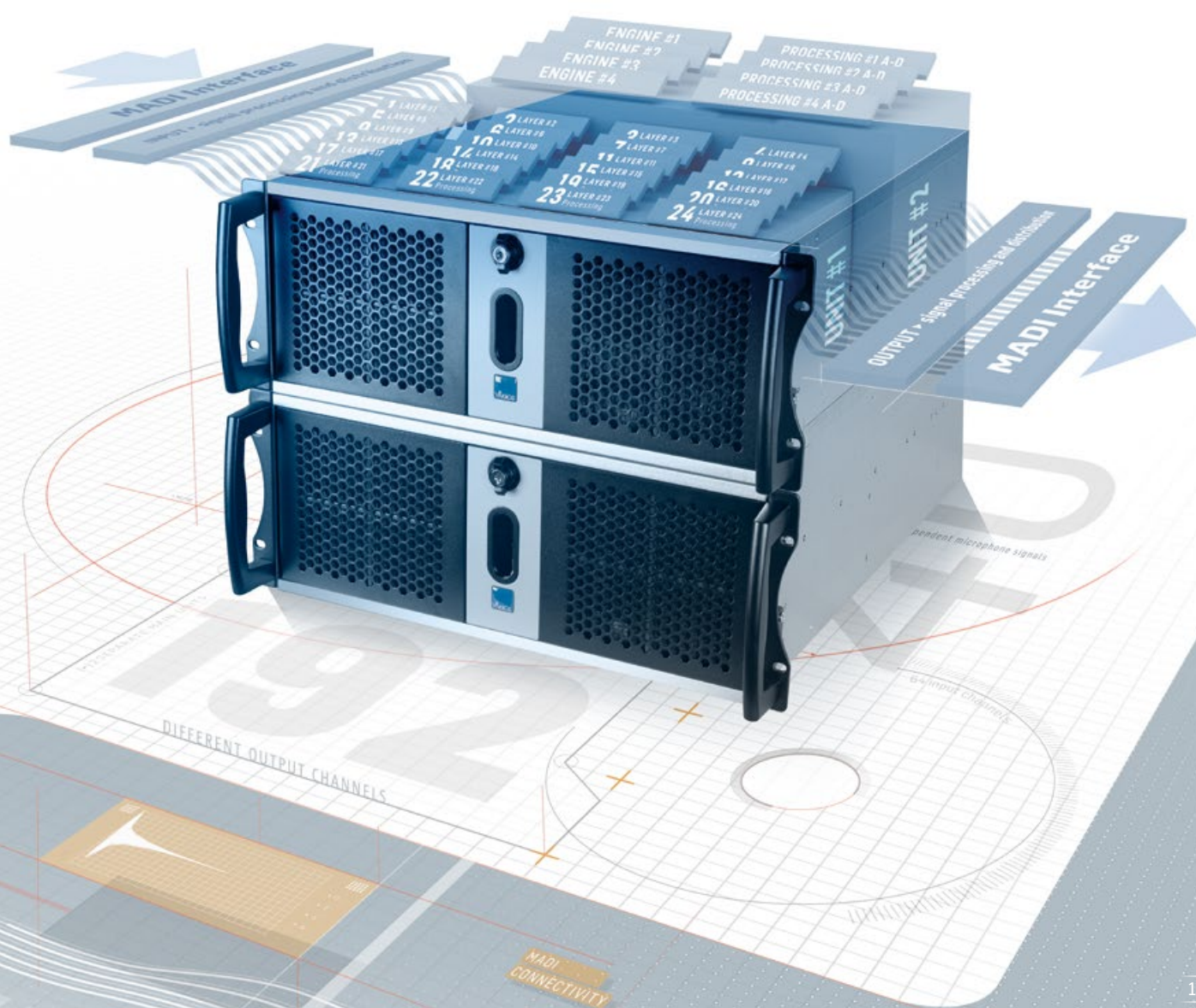


The VIVACE Processor

The heart of the room acoustic system is the VIVACE processor. It consists of two redundant units, which are monitored and controlled via Ethernet. The patented internal signal processing can handle up to 40 microphone signals on multiple independent processing layers. Convolution algorithms running in four main processors and 32 supplementary engines create natural sound fields with up to 192 different output signals based on the incorporated high resolution impulse responses. The composition of each of the 192 output signals can be adjusted in detail. High processing capacity and efficient implementation of the algorithms makes it possible for VIVACE to simultaneously generate up to four acoustic spaces with independent characteristics. With these four variations, it is possible to acoustically treat different areas of the concert hall or opera house according to artistic requirements, or blend different acoustic situations into one another.

TECHNICAL DATA OVERVIEW:

- two redundant parallel processor units
- 64 input channels, 192 output channels (via MADI or Dante interface)
- height 266mm, width 482 mm, depth 538 mm
- 19" rack format (6 RU)
- no restrictions to a specific manufacturer regarding external hardware (Microphones, Loudspeakers, Interfaces, Amplifiers)



VIVACE captivates audiences

The expectations of a modern audience are very high. In a world of brilliant CD recordings and surround systems in the home, the listener is already fully aware of the sound possibilities of a piece of music even before they enter the concert hall.

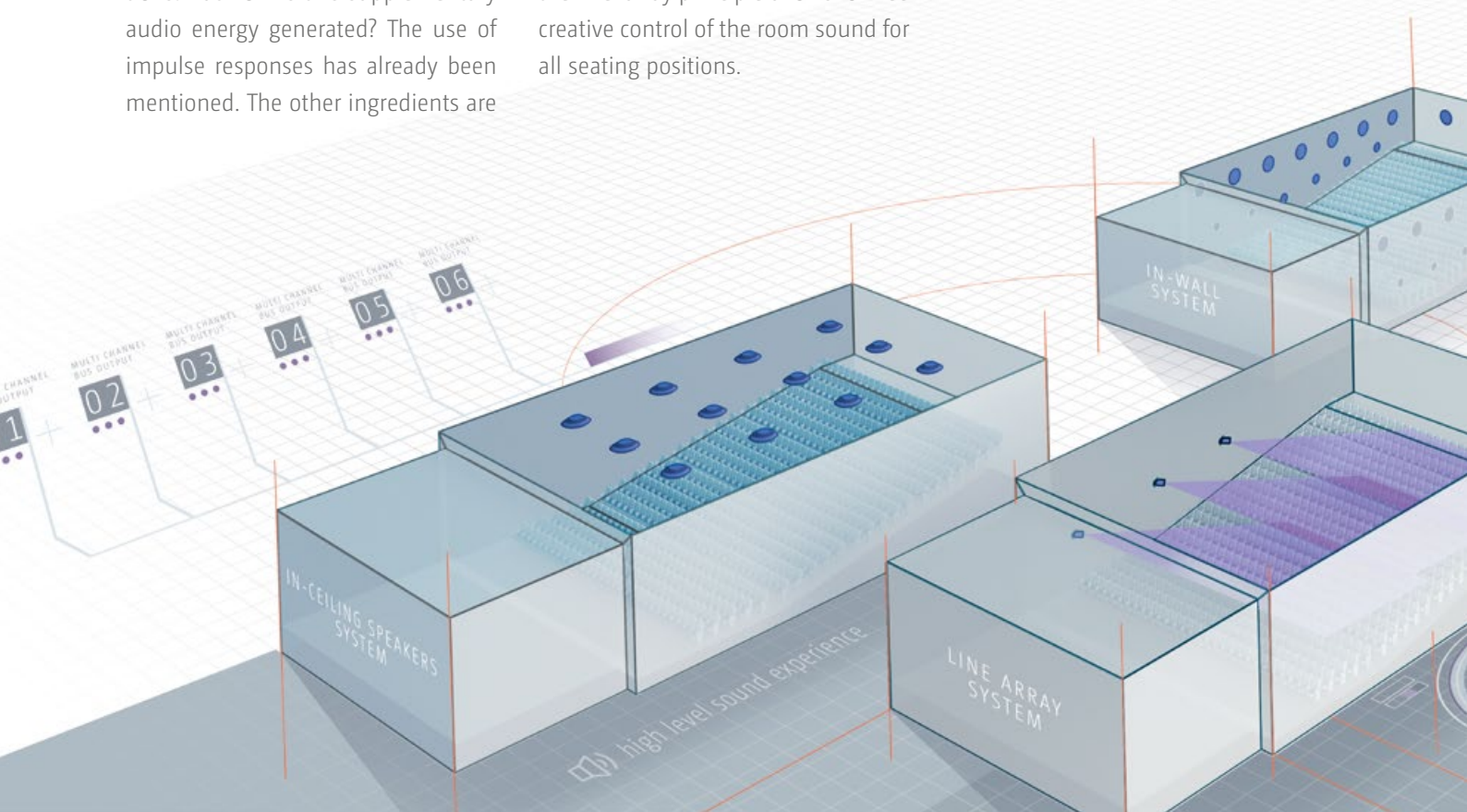
The measure of this progress poses a huge challenge for modern musical performance in the practice. On one hand, the listener is seeking a natural, authentic sound, on the other hand they expect a perfect, three dimensional audio image that can stand up against sophisticated modern recording techniques.

There are many possible reasons why the natural acoustics of a space may meet their limits under these conditions. That is where VIVACE comes into play. A large number of loudspeakers all around the auditorium serve to enhance the existing acoustics with supplementary room reflections. But how is this supplementary audio energy generated? The use of impulse responses has already been mentioned. The other ingredients are

input signals collected by precisely adjusted high quality microphones. The microphone set-up for a VIVACE system consists of multiple main microphones to collect a perfect orchestra sound, and a number of ambience microphones to collect the existing room sound. These components are then both integrated into the system processing. The loudspeaker set-up consists of wide-angle, constant directivity conventional loudspeakers installed around the walls and ceiling of the auditorium, as well as line-array sources in the walls, whose directionality can be electronically steered. The precise focussing and minimal loss of level over distance provided by the line-array principle allows for free creative control of the room sound for all seating positions.

SIX FACTORS FOR OPTIMAL NATURAL ACOUSTICS

1. Primary studio microphones in the stage area
2. Secondary condenser microphones in the auditorium
3. Recorded impulse responses from acoustically excellent rooms
4. Patented internal signal processing
5. Loudspeakers all around the audience
6. And not the least of it, the expertise of our sound engineers, to create the perfect mix for the room



3D sound effects reveal the emotional side of VIVACE

In the creation of natural room acoustics, VIVACE remains as much as possible unobtrusively in the background. In the creation of 3D effects, however, VIVACE can come to the fore and define acoustic spaces, which electrify the audience and carry them away to another world. The infrastructure of processing system, amplifiers and loudspeakers is already available, so it is no great problem to use it, and would almost be a shame not to.

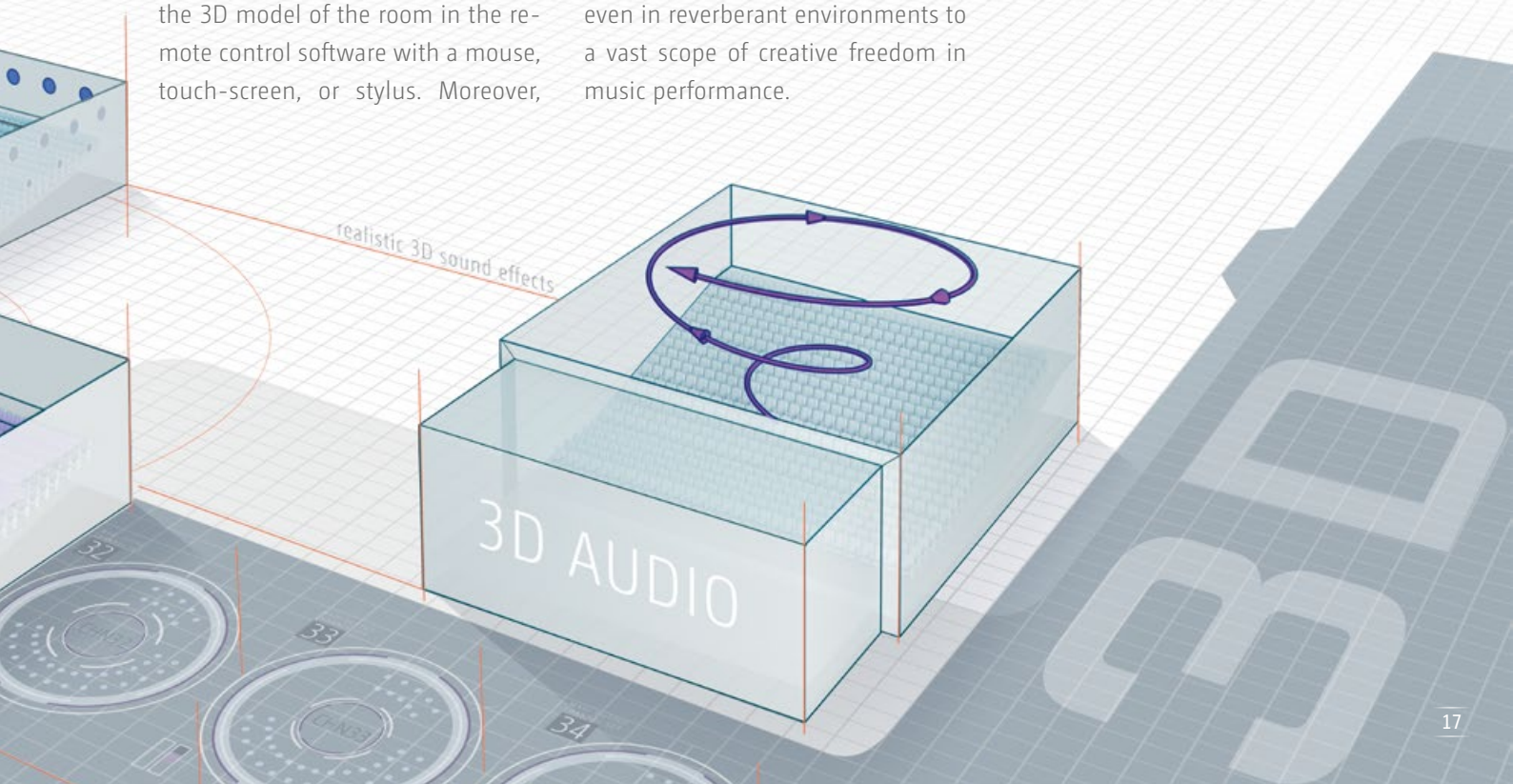
VIVACE imparts sound objects with a precise localisation, be it on the stage or around the audience. The source can be controlled and programmed in terms of direction, size, and perceived distance from the listener. As a modern 3D audio system, VIVACE offers heretofore undreamt of qualities of transparency and natural reproduction. The technology, developed to meet the high standards demanded by classical music, benefits all genres, from speech theatre through to musical productions. Objects can be moved around the 3D model of the room in the remote control software with a mouse, touch-screen, or stylus. Moreover,

VIVACE can embed these objects in an environment-specific acoustic (e.g. a forest, a cave, a mountaintop, a street between high buildings), creating a three-dimensionality which enfolds the listener like an acoustic hemisphere, and leaves an enduring impression on the listener's conscious and unconscious perception.

VIVACE draws on the results of state-of-the-art research in room acoustics and psychoacoustics, opening fascinating and diverse possibilities, from optimal speech intelligibility even in reverberant environments to a vast scope of creative freedom in music performance.

FIVE FACTORS FOR 3-DIMENSIONAL SOUND

1. *Precise localisation*
2. *Definition of the size of the source, and distance from the listener*
3. *Manual or automatic positioning, in real-time or pre-programmed*
4. *Generation of natural sound backgrounds (rain, crowd noise, etc.)*
5. *Reproduction of any multi-channel format*



The calibration: VIVACE comes to life

Commissioning a VIVACE system consists of between two and four days of basic set-up, and then fine adjustments during rehearsals. During the basic set-up, the frequency response, level and required delay is measured for each loudspeaker, and the system as a whole is tuned to harmonise with the auditorium. Then the microphones on stage are set and tuned. The aim is to create a homogeneous acoustic in all parts of the auditorium. The familiar criterion reverb time is very important, but not alone the deciding factor in this. Particularly the early reflections are very significant in how we perceive the characteristics of a room. Accordingly, we pay great attention to the composition and energy level of this component of the room acoustics. The final stage occurs during rehearsals with the orchestra, singers or actors. The room acoustics are fine tuned to appropriately enhance the real sources on the stage, and to fulfil creative requirements and wishes. During this final stage, the end-users are intensively involved in the process. This is always an exciting time: the Artistic Director, the Musical Director, orchestra musicians and sound engineers get to hear the VIVACE system in their own house and experience directly its acoustic characteristics in their familiar setting.

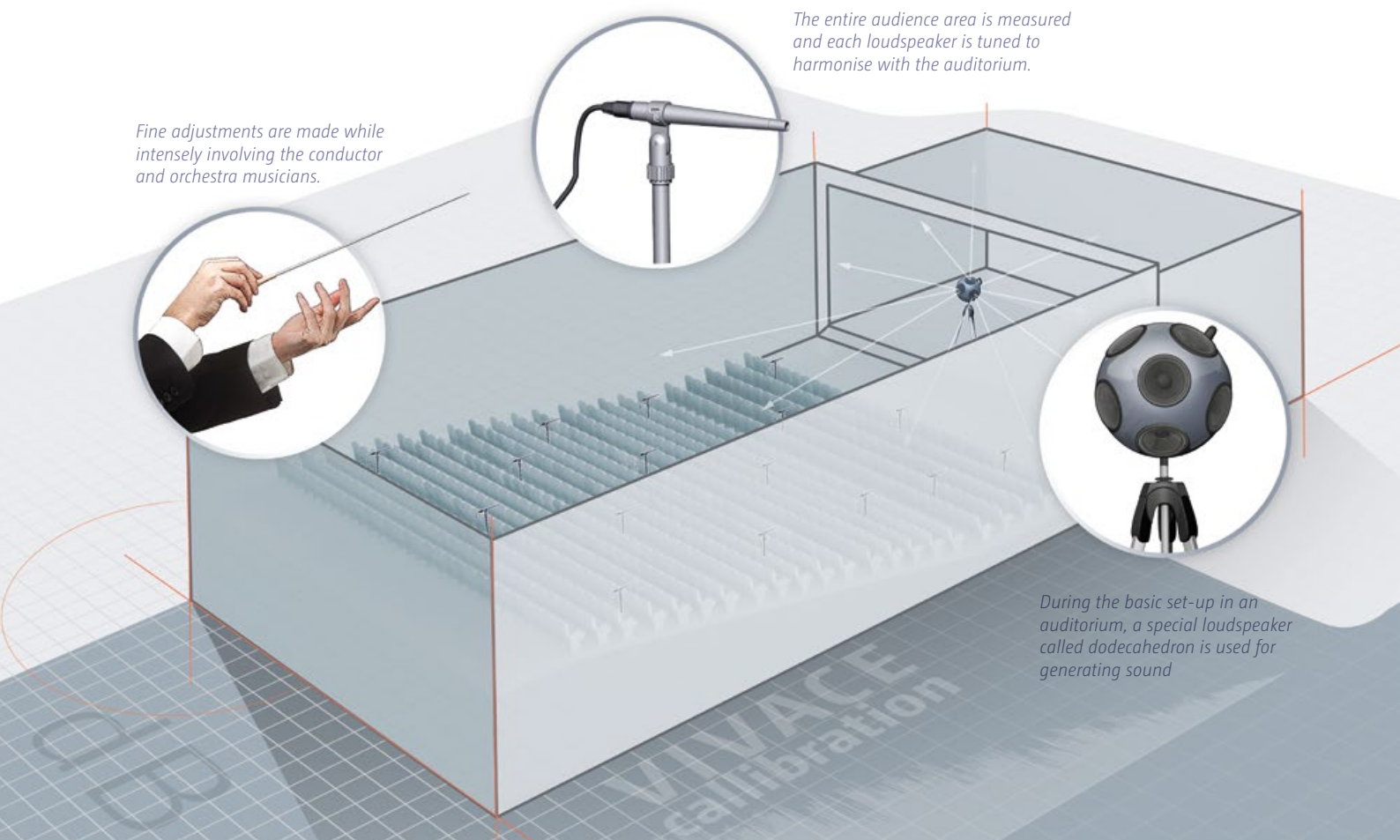
USING VIVACE – INTUITIVE AND VERSATILE

- Presets for varying usages of the space recallable via Touchscreen
- Remote control software for the creation of new presets, automation of moving sources and control of 3D sound effects
- Remote control possible from external devices e.g. the audio console (MIDI, OSC) play-back systems (MIDI-Timecode, MMC) media control systems (Ethernet, MIDI), tracking systems
- Remote monitoring of the processor via router connection and internet is possible

Fine adjustments are made while intensely involving the conductor and orchestra musicians.

The entire audience area is measured and each loudspeaker is tuned to harmonise with the auditorium.

During the basic set-up in an auditorium, a special loudspeaker called dodecahedron is used for generating sound



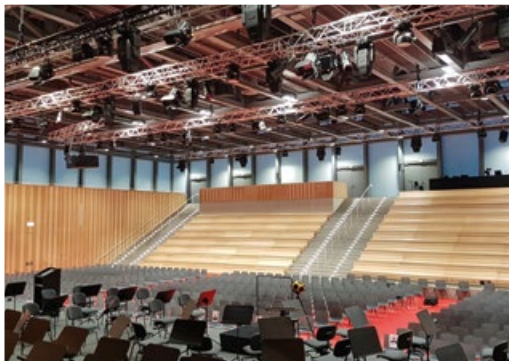
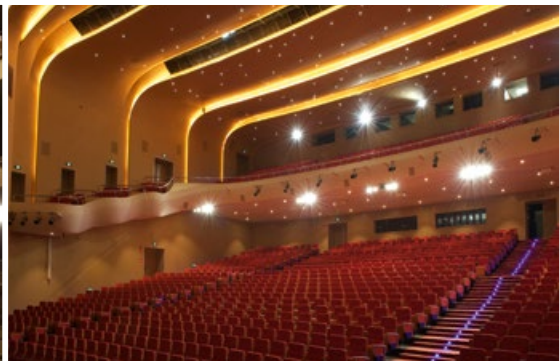
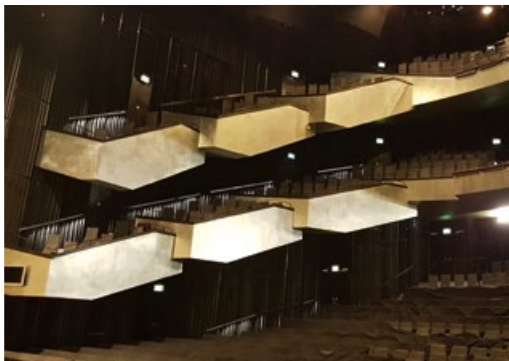


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