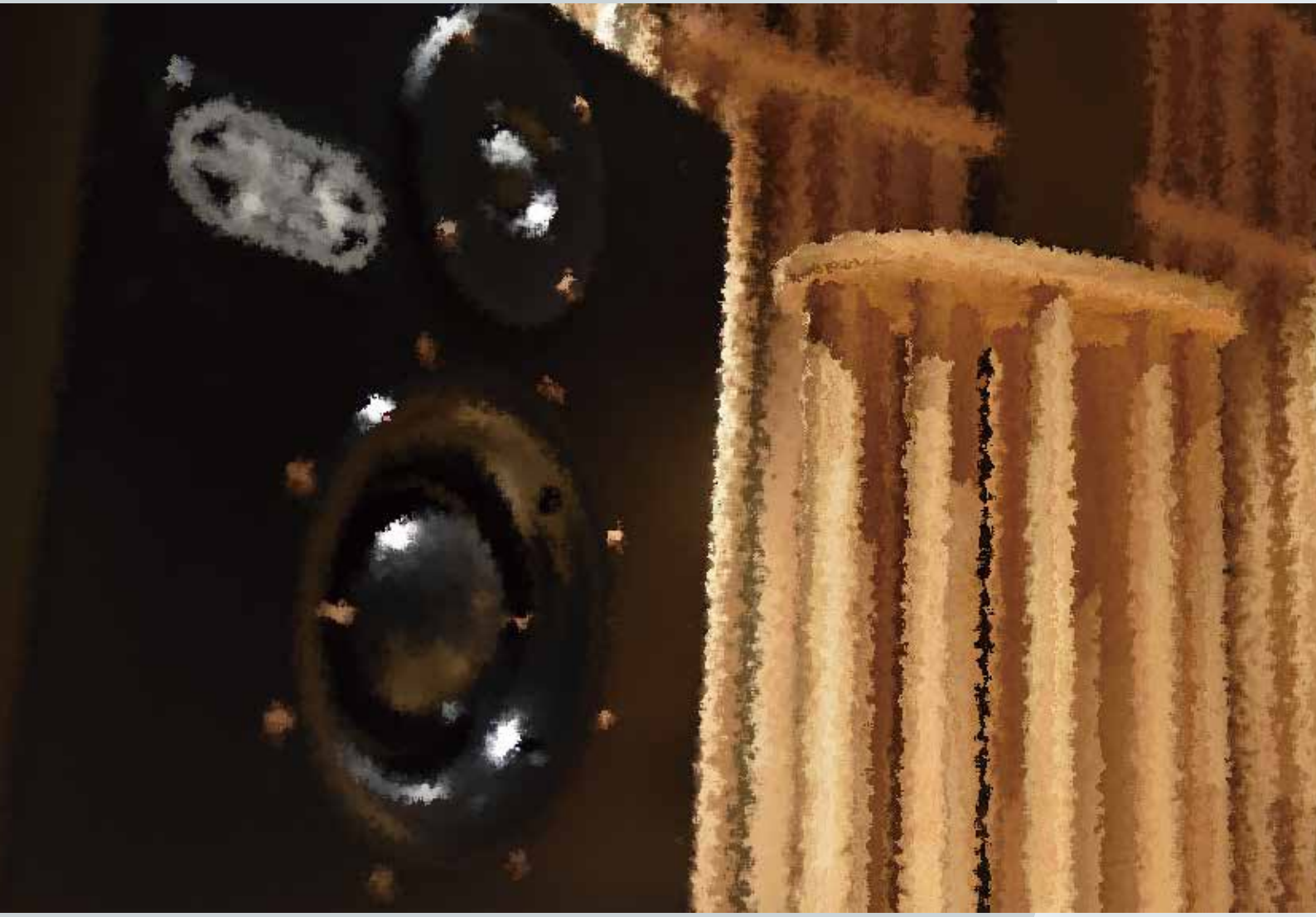
AGS Newsletter

Acoustic Grove System



Acoustic Grove System

Audio room CASE.1

March 2016

1. Summary

An audio room was completed in a newly built house in Kyoto. The architect who designed this house made a fundamental design of the room. Appearance-wise, it maintains a sense of unity with other rooms, using basic tones of reddish wood materials and whitish paint.
Acoustically, a sense of expansion of the sound field and distinctive resolution are both well maintained by providing a space for absorbing low range sound in the front corners, and AGS units with a depth of 30 cm both on the side walls and above the storage rack on the rear wall. This caused the main speakers, Sonus Faber, to produce a more pleasant and meticulous sound, and created an ideal space where the client could enjoy his favorite classical music in a more satisfying environment.

2. Customer's feedback

I personally love classical music, while also enjoy popular music with my wife as well. We are very thankful to all the professional people for having created this new audio room where everything, from tiny delicate notes to loud booming sounds, are brought about in a pleasant manner. This audio room was designed to create a better sound than normal listening rooms, and one of the biggest points of appeal is that it creates an exceptionally pleasant sound without making it sound too loud, probably due to the AGS effect no matter what genre of music.

Side View

Rear View

AGS

Audio room CASE.2

March 2018

1. Summary

This client was a long-time user of our AGS products, and we were able to participate in the designing process of the audio room when he talked to us about his family's moving plans. A new building containing an audio room with an ideal acoustic space was completed.
An independent floor structure underneath the audio equipment rack was employed to minimize the effect from the speakers when playing analog records. AGS units were placed along the front wall, and AGS faces and slanted walls plastered with porous materials were installed alternately on the side walls. We employed low band processing for the air layer behind the slanted walls to realize tight sound in the low frequency range, which this client particularly desired. Lighting was also carefully chosen to provide a spacial presentation suitable for various scenes with indirect lighting.

2. Customer's feedback

I was 16 years old when I first became an audiophile. I've kept this enthusiasm for such a long time now. I've moved four times before this, and I've had to replace my audio equipment each time. I had given up on the idea of having an ideal audio room because I encountered acoustic restrictions every time. This was the fifth move that I've made, and my long-awaited audio room solely for listening was finally completed. I named it "M Studio" just to be classy. The first AGS product I bought was a unit 1200 cm high. I had used AGS products before in my previous rooms, but this time I started off by designing the audio room itself since this would be a newly built house. I was surprised by the total difference in inner finish and also in sound. Even though I was listening to CD's and LP records that I was so used to listening in the past, but they sounded totally new. I'm satisfied 200% with not just listening to the sound, but feeling it with five senses. I'm very thankful to the audio dealer who provided me with the opportunity to go after my "amateur and self-indulgent dream". I would also like to thank the NOE staff and the craftspeople who supported the plan until its final settings. I'm now determined to go on with the eternal journey pursuing better sound.

Rear View

Side View

Audio room CASE.3

March 2018

1. Summary

A special audio room was completed upon construction of our client's newly built house, which was dedicated to his strong desire to have a room suitable for the large size speakers he had hoped to install in the place of his old speakers.
The client had already used AGS products and asked us to be of assistance from the stage of searching for suitable land property. We were thus given the opportunity to get involved from the early designing phase all the way to construction.
The sound field was designed with the main focus being on enabling the client to listen to music (audio) for a long time and making the best use of the potential power of the large foreign-made speakers. In order to prevent low range sound generated by six huge bass horns from becoming boomy, high-volume sound from getting saturated, and to create a fatigue free listening space even when listening for long periods of time, we focused on processing low range sounds by placing AGS products at critical points in the room. We adopted a mechanism where AGS products can be installed in a stepwise manner, both on the front and sides walls, as requested by the client.

Side View

Rear View

2. Customer's feedback

My audio room was finally completed after about one-year process of design and construction.
The sound generated in the room is dynamic enough to make the listener forget about the presence of the walls and speakers. There is no accompanying noise or baseline saturation, and the sound of the instruments is very pleasing. For the middle-to-high range, I actually got a realistic sensation of being in a hall, forgetting about the height (3.5 m) of the ceiling.
I realized from this experience the importance of the room for playing records, feeling that 70% of the sound is determined by the room and its settings, while 30% is determined by the components (equipment). Thanks to the great cooperation of NOE and the assistance of many others, I can now enjoy excellent audio every day.

Audio room CASE.4

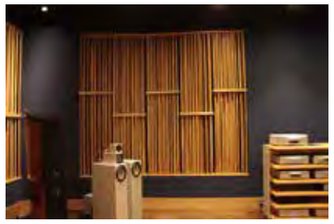
October 2017

1. Summary

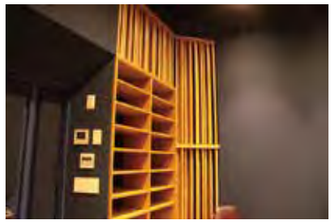
The audio room with which we got involved from the stage of planning to designing and construction was finally completed. It was designed to focus on delivering the full potential of the musicality incorporated in the sound source, as well as the innate performance of the audio equipment so as to create a comfortable space where listening for a long time will not cause fatigue. To that end, we placed AGS units on all four walls, and gave it a little twist for low band processing.

2. Customer's feedback

In planning to build a new house, I wanted to have my own room where I could continue to enjoy my hobby even after I get older. So I went out to see how things are nowadays in Akihabara. Listening to sounds from the latest high-end audio equipment in a shop, I came to realize that I wanted to enjoy the same audio quality at home. The store manager suggested that I contact NOE about designing and constructing an audio room capable of the best audio performance. So I visited NOE's listening room, their Sound Lab located in Chiba that was designed to test listening with superb sound, and decided to commission NOE to build my audio room.
It's been more than two years now since that day in Akihabara, and my audio room has finally been completed. It's been done for about two months now, and every day I enjoy listening to records and CD's, just excited at sounds that I was never really able to discern before with my old system, regardless of genre of music. I'm determined to continue pursuing my favorite sound in the future with help from NOE and my audio dealer. Let me express my thanks to all those who helped me realize my dream.



Side View



Rear View

AGS

Audio room CASE.5

March 2017

1. Customer's feedback

Now I think that I was really lucky to have the chance to visit NOE's listening room, "Sound Lab" in Chiba for test listening. Because the immersive audio experience that I had there drove me to go after my dream of playing loud music even at midnight in a high-quality acoustic environment, all within my new house. The new audio room features the following characteristics, as opposed to the old environment that had the exact same system configuration:

- The baseline sounds crisper as if you can actually feel the player's fingers moving.
- The sounds of acoustic guitar and piano are so vivid that it provides a totally different sound experience.
- New life is brought to vocals as if tidal waves of emotions are coming one after another.
- The sound field has widened not only laterally but also depth-wise. I'm telling the truth.

I absolutely love the intensively powerful sound created by a combination of Connoisseur 3.0 and FM Acoustics, and now I don't have to worry about sound leakage even when listening at volumes as high as I want them to be.

I'm really thankful to the staff members at Nihon Onkyo Engineering who built this audio room with perfect sound insulation, and then fine tuned it to maximize the potentials of CD's and records that I listened to many times before.

Front View

Rear View

AGS installed on the door

Audio room CASE.6

October 2014

1. Concept

An audio room at A's house, with AGS fully adopted on all four walls, was completed this spring. The client came to NOE's listening room, the Sound Lab, for the first time in late 2012, and asked us about constructing an independent house dedicated to audio listening with AGS units. We were able to reflect the specifications for creating a space for better sound in the house design as desired by the client, because we were allowed to get involved in the designing process at the planning stage.
Requirements for the power supply, practical usability, and his request to make two different systems coexist together were incorporated in the layout, and a rectangle-shaped room for easy use with appropriate dimensions was adopted so as to minimize standing waves innate to the room. AGS units all with a depth of 60 cm were specifically designed in accordance with room requirements.
One year after conceiving of the idea, the joy of listening to music in this room, which is full of valuable high-end systems of limited availability in Japan, and the highly realistic and fresh sensation that make you feel as if you are actually in a room with musicians, are all wonderful experiences that you can really only have in a room like this.

2. Customer's feedback

I consulted NOE from the designing stage when the land was still vacant, and they completed a very satisfying audio room where possible compromises were ruled out in the framework of a limited budget.
I'm quite satisfied with the outcome in S/N ratio, sound field, and sound image. The room creates a beautiful and graceful sound with a solid core combined with potential passions.

McIntosh System

The Sonus faber

Audio System

Audio room CASE.7

April 2012

1. Customer's feedback

I'm determined to create my long-awaited theater and audio room by renewing all the equipment, since I have the opportunity to build a new house. The requirements for this room were to ensure the high performance of the sound insulation because I often listen to music played at a relatively high volume even at night and I didn't want to disturb the neighborhood or my family, yet I wanted to reproduce a clear sound without muddiness, even in an enclosed space, with no unnecessary reverberations or standing waves.

I thought that architecture alone would not be sufficient to cope with my requirements, so I decided to consult with an acoustic professional firm after discussing the matter with the designer. Among the several firms that I consulted with, I was most amazed, or almost shocked, at the sound produced in NOE's listening room, "Sound Lab". This experience made me decide to commission NOE to design and construct my room in the house.

The theater and audio room completed as a result of repeated discussions with architectural designers and NOE's representatives was well beyond my expectations. The room itself is not just an innocuous space with excellent acoustic properties, but is a comfortable room to be in like a cozy living room with nice atmosphere.

Clear sound is of course ensured even at high volumes without interference of sounds from different instruments. The extension of the violin' s higher ranges was so bewitching that it really changed the concept of musical instruments. Sounds from contrabasses or the lower range of the piano, on the other hand, are kept tight with no excessive emphasis. I look forward to further adjustments in the equipment and aging in them, which will lead to the development of an even more pleasant acoustic space.

Front View

Rear View

Wall with AGS

Steinway & Sons selection room 1

Steinway & Sons Japan, Selection room

October 2015

1. Summary

We got engaged in a project conducted by Steinway & Sons Japan, a subsidiary of the world-class piano manufacturer, Steinway & Sons. In this project, we were in charge of the acoustic design and construction of the company's selection room. The selection room is a space where their customers can play, test, and select their favorite instrument from several models of the same type. This requires a sound field where the characteristics of each piano can be meticulously discerned. To this end, we adopted a design approach in which direct absorption of high range sound is minimized, and the wall face is slanted in the longitudinal direction to reduce parallel planes as a flutter reduction measure. We made the most use of the space created behind the slanted wall in order to secure acoustic absorption of low frequency sound utilizing the air layer. In addition, we installed four Acoustic Grove System units so that the sound field could be improved, moving them around as necessary.

Appearance-wise, the room was designed based on the image of a collection of maple wood keyboards in association with the idea of a piano keyboard proposed by Ikawaya Architects.

Let us belatedly take this opportunity to thank our client, Steinway & Sons Japan, and Ikawaya Architects, the designing office.

2. Customer's feedback

We have the impression, after completion, that we were able to create a room in which each individual note from the keyboard could be heard clearly and naturally. This room is not only used for piano selection, but also visited by world-famous pianists for the purposes of reporting or test playing. This environment is capable of meeting any requests for test playing, and test listening in any situation. We are quite satisfied that such a sound environment has been completed.

Steinway & Sons selection room 2

Boston selection room

AGS

"Otomai no Shirabe Concert — Transcended Time and Space"
Scharoun Ensemble Berlin concert at Sougaku-do concert hall of Tokyo University of the Arts

Introduction of Acoustic Grove System installations in instrument playing space

October 2016

1. Introduction

The Acoustic Grove System, our room-tuning item, has extended its range of use from studios and broadcasting stations for professional use and audio rooms for personal use, to instrument playing spaces, such as practicing rooms and performance halls.
Unlike sounds from speakers in which sound sources are usually fixed, the effects of AGS vary depending on where you place AGS units since the stage shapes and arrangement of the instruments vary. We are at the stage of accumulating experience at this point. The way acoustic effects are perceived differs based on individual preferences and tastes. However, we got high praise from both players and listeners in the audience. The following are some of the most recent examples:

2. "Otomai no Shirabe Concert — Transcended Time and Space" at Sougaku-do concert hall of Tokyo University of the Arts

On May 19, 2016, the Scharoun Ensemble Berlin Philharmonic concert was held at the Sougaku-do Concert Hall organized by the COI Site of the Tokyo University of the Arts (TUA). During this event, our AGS products were employed. This event was a concert where a performance by the 20th century piano maestro, Sviatoslav Richter, was reproduced using an AI (artificial intelligence) playing system, which was a collaboration with the Scharoun Ensemble. We brought six flat-type AGS units and a floor-type unit to be placed under the grand piano (both available on the Japanese market) at the time of rehearsal. Detailed discussions were held on the position where units should be placed in order to improve the acoustic sound in Sougaku-do Concert Hall, which is highly noted for its high-quality sound. Members of the Scharoun Ensemble praised us by saying "Amazing! The sound field improved, which made it easier to play". Many listeners who were used to listening to the sound in Sougaku-do Concert Hall also gave us complimentary remarks, like "the performance sounded much better today".

Scharoun Ensemble at rehearsal

Collaborations with western
and Japanese music and fashion

3. Spring Festival in Tokyo — TOKYO OPERA NO MORI

The 12th "Spring Festival in Tokyo" this year. Flat-type units were installed in four venues this year: the Tokyo Metropolitan Art Museum Auditorium, the National Museum of Western Art Auditorium, the Entrance Hall and Heiseikan Lounge at the Gallery of Horyuji Treasures at the Tokyo National Museum. The positions for placing AGS units were carefully chosen to convey live sounds from music instruments as faithfully and pleasantly as possible, considering the halls were not originally designed for music. Reverberation time in the museum auditorium, which is furnished with carpet, is relatively short, while in the entrance hall, which has a high ceiling finished with granite stones, it is longer, which may annoy the players. An arrangement to compensate for insufficient primary reflected sound will help return sound to the players, making it easier to perform, and it will also help the audience hear the music more clearly.

Photo provided by: Spring Festival in Tokyo Executive Committee
Photographed by: Rikimaru Hotta
Piano: Yurie Miura
Tokyo Metropolitan Art Museum Auditorium

Photo provided by: Spring Festival in Tokyo Executive Committee
Photographed by: Rikimaru Hotta
Recorder: Yoshimichi Hamada
Viola da gamba: Kaori Ishikawa
Historical harp: Marie Nishiyama
The National Museum of Western Art Auditorium

Photo provided by: Spring Festival in Tokyo Executive committee
Photographed by: Rikimaru Hotta
Violin: Yayoi Toda
Entrance hall of the Gallery of Horyuji Treasures
at Tokyo National Museum

Photo provided by: Spring Festival in Tokyo Executive committee
Photographed by: Satoshi Aoyagi
Viola: Yasushi Toyoshima
Violin: Fumiaki Miura
Cello: Rentaro Tomioka
The Heiseikan Lounge at Tokyo National Museum

4. TWILIGHT CONCERT (Otemachi)

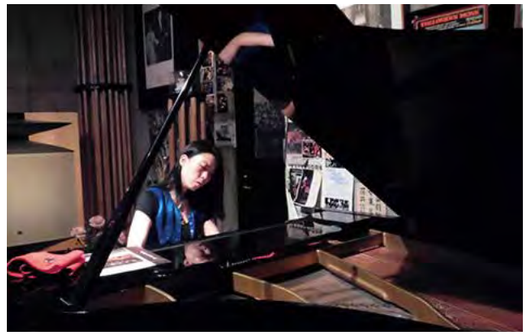
The TWILIGHT CONCERT (Otemachi) is held at Mitsui Sumitomo Bank, East building, Rising Square 1F, Earth Garden. This concert is held about once a month and organized by Internet Initiative Japan Inc. Concerts are also distributed live. Programs vary widely and are very popular. Seats at the concerts are almost always fully occupied. This venue is in the lobby of a bank, which of course is not designed for music, so expectations toward AGS are high. Some of the players commented "I could hear the sound from my instrument very well, and that made it easier to play". The organizer said "the venue is not specially designed for musical performances, but a remarkable difference was discernible. They are must-have items".

TWILIGHT CONCERT rehearsal scenes
Trumpet: Kenichi Tsujimoto
Trombone: Mikio Nitta
Piano: Tomohito Matsushita

TWILIGHT CONCERT rehearsal scenes
Violin: Ryo Mikami
Cello: Rintaro Kaneko
Piano: Chiharu Sudo

5. Live music club

Jazz Spot CANDY in Inage, Chiba. In addition to the fixed installation of flat-type AGS, a floor-type AGS unit temporarily placed under the piano is particularly effective for piano playing. The effect is to mitigate standing waves between the bottom surface and the floor. The owner said "the granularity of each piano note is accentuated and sound clarity is increased, which helps convey the pianist's delicate touches in a much more natural way". One player made a positive comment, saying, "the sound of my instrument sounds much crisper, which makes it easier to play".



Makiko Hirata Piano recital

Professor Meinhard Prinz,
University of Music and Performing Arts Vienna
Photo provided by: Jazz Spot CANDY
Photographed by: Miyoko Hayashi

6. Application examples in recording

Recently, opportunities where AGS units have been used to record the sounds of the piano in concert halls have increased. Our products are not complimented just because they enable players to perform better by making it easier for them to hear, but also because they record acoustic sounds more naturally and beautifully.

Miyuji Kaneko

AGS units placed around the piano

A piano performance by Jun Fukamachi was recorded in NOE's listening room, the "Sound Lab", in the summer of 2009 as a test recording, and it became his last recording as he passed away the next year. The Sound Lab listening room is surrounded by four walls and part of the ceiling is finished with AGS, which not only creates an ideal environment for audio listening, but also works perfectly as a recording studio. This was an incredibly thrilling project because all the pieces are improvisations, but the recording went smoothly all the way to the end in a friendly atmosphere.

The late Jun Fukamachi at
NOE's listening room, "Sound Lab"

7. In closing

This issue covered some applications of AGS products in areas other than audio listening, such as in concert settings and recording. It is expected that their applications in instrument playing settings will expand in the future.

Biwako Hall Center for Performing Arts, Shiga — Omi Spring Biwako Classical Music Festival 2018
Dido and Aeneas, bale fire opera

Omi Spring Biwako Classical Music Festival 2018
— AGS installation in an open-air opera —

August 2018

1. Summary

The Omi Spring Biwako Classical Music Festival 2018 was held from May 3 to 5, 2018 at Biwako Hall Center for Performing Arts, Shiga, in commemoration of 20 years of establishment. For the "Bale Fire Opera", the main feature of the event, "Dido and Aeneas", composed by Henry Purcell, was played on a stage built on the shore of Lake Biwa in a fantastic space within a natural space, featuring darkness, a bale fire, stage lighting and a nightscape across the lake.

This was the first open-air opera performed outdoors in this hall, and there must have been various obstacles in staging. For acoustic measures, five flat-type AGS units, available on the Japanese market, were installed. Since this was an outdoor performance, PA equipment was a requirement. But there was a huge glass wall at the back of the stage, because Lake Biwa was expanding behind the audience seats, which was not a desirable environment for conducting a live performance. Acoustic music electronically treated alone was not sufficient to secure a "natural live instrument sound". Installing AGS units created a virtual space where sound collected by microphones was made more natural, which enabled an operation that did not require excessive equalizing. With this, the beauty of the sounds from acoustic instruments was directly conveyed to the audience, creating a space where each individual note from each instrument could be clearly discerned to players as well, which means the desired effect was obtained.

AGS units installed mainly around players

Throughout the event, performances were also played not just in the large or medium-sized hall, but in the lobby, in the lakeside field, and on a luxury cruise ship touring around Lake Biwa. AGS units also came to be used for performances in the main lobby. In the lobby, an Erard full concert grand piano is permanently installed. For performances using this piano, a floor-type AGS unit was used. The sound from the piano placed in the center of the wide-spaced lobby did not adequately reach the audience. Placing AGS units under the piano, however, helped convey sound waves forward and improved the listenability by accentuating the granularity of each note.

AGS placed in the main lobby of the hall

2. Customer's feedback

AGS systems are ideal and effective products for classical music programs, which will never betray the player's expectations. Western instruments by nature are designed to be played in a concert hall. They do not sound right unless a desirable environment is prepared. To that end, sound needs to be treated using resonance boards and acoustic boards. On the opera settings as well, various objects such as the onstage decor, were also useful as resonance boards around singers, helping to augment sound for the audience. In some opera houses abroad, devices called sound boards are installed. But one of the strong points of AGS is that you can selectively focus on certain frequencies where you want the reflection effect to be directed. The applicability of the product is positively expected to expand into various areas in the future where quality of sound changes such as in instruments and vocals, and sound from the horn section is amplified, etc.

Forest scene in "Dido and Aeneas"

Setting up the stage — about 200 seats were prepared

Demonstration of AGS installed orchestra pit of a large concert hall
Opera 2017 "The Marriage of Figaro" produced by artistic director Yutaka Sado

Hyogo Performing Arts Center — Use of AGS in orchestra pit —

January 2019

1. Summary

The Hyogo Performing Arts Center was constructed as a symbol of restoration of heart and culture 10 years after the Great Hanshin-Awaji Earthquake. This cultural complex houses not only a large concert hall (the Grand Hall) where operas and ballets can be performed, but also a medium-sized hall (the Theater) for theatrical plays and a small-sized hall (the Recital Hall) for performances by small groups. Our room-tuning items, the Acoustic Grove System (AGS), were installed in this fabulous facility. The AGS units, originally used by professionals in studios or broadcasting stations, have gradually expanded into the markets of personal audio rooms, and now are widely used in various performing environments. Installation this time is for a dedicated concert hall, specifically in the orchestra pit, a special space used by orchestras for operas and ballets.

A demonstration for testing the effect of AGS units in the orchestra pit was conducted in 2017, a year before actual installation, in live settings where "The Marriage of Figaro" produced by artistic director Yutaka Sado was performed. Six flat-type units and two corner-type units, both available on the Japanese market, were installed in the orchestra pit. The sound of the orchestra playing with AGS units was compared with the sound without the units, both within the orchestra pit and in the audience seats. As a result, the effect was successfully recognized in both areas. For actual delivery, we custom-made products to be especially suitable for the mahogany wall color, a symbolic feature of the Grand Hall, assuming that units might also be placed onstage.

AGS customized to match specific wall colors

2. Customer's feedback

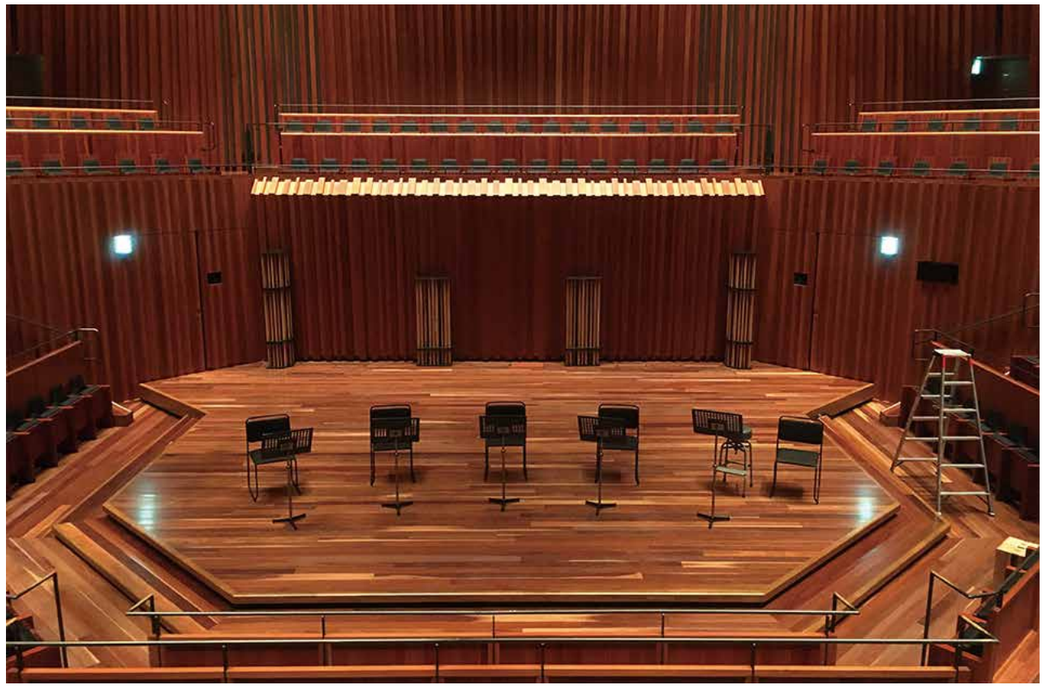
The Hyogo Performing Arts Center presents yearly opera performances produced by artistic directors. During opera performances, as you may well know, the orchestra plays music in a special box called an orchestra pit, between the stage and the audience seats about 2 m below. In the enclosed rectangular chamber surrounded by the four walls with no ceiling, sounds from the instruments continuously reflect off of the walls. In such settings, some sounds are multiplied and some cancel each other out depending on the distance between walls and sound wavelengths generated from instruments, which produces a sound different from what is actually being played. They tried various techniques in the past to improve sound quality, such as using sound absorbing materials, changing the area for reflections, and adjusting the depth of the orchestra pit. However, none of these presented effective solution.

One day, I came to know of the existence of the AGS. Originally developed for sound field correction in audio rooms or music practice rooms, it has the effect of mitigating standing waves, avoiding fluttering, and suppressing strong reflections, such as primary and secondary reflections. Furthermore, it does not have any adverse effects on sound quality or richness since it does not absorb sound. I got a hunch that they may be effective in the orchestra pit, and I asked NOE for a demonstration as soon as possible. While I was listening to the rehearsal from the audience seats, I realized that the violin section, which was a smaller group than usual, sounded much more expansive and solid. The boomy noise in the percussion instrument section, which was hard to eliminate, was now all gone, but rather a more natural sound from the instruments was sharply discernible. The Maestro's impression? ...He signaled to me "Good!" with a big smile on his face. Members of the orchestra said sounds from other members became much clearer, which helped them play more easily. I was impressed that players in the pit were even keener on the sound quality than we were.

We conducted the same experiment in a small-sized hall. The small-sized arena-type Recital Hall is more suitable for live music performances, while narrating voices are hard to listen to, since reverberations occurring in the structure may make detection harder. Conversations exchanged during preparations are often repeated because it's hard to hear. With AGS units installed, one of the staging staff members said, "It's usually hard to hear, but today we can talk at a normal tone". Each word sounded clear. It's not that sounds have been reduced or absorbed whatsoever, but that it sounded more natural because interference from sonances were eliminated. Owing to this, a range of performances that can be held in the Recital Hall has widened.

In addition, AGS units were expected to play a crucial role in concerts performed in the lobby, which is surrounded by exposed concrete and glass walls that were full of flutters and reverberations, as well as for the space with acoustic reflectors where sound is saturated by a large number of players. This led us to decide that we would install AGS units in our facility.

We installed four corner-type units, and six flat-type units.



AGS demonstration onstage at the recital Hall

Eco Banking — Bank with good sound environment —

April 2012

1. Space with good sound

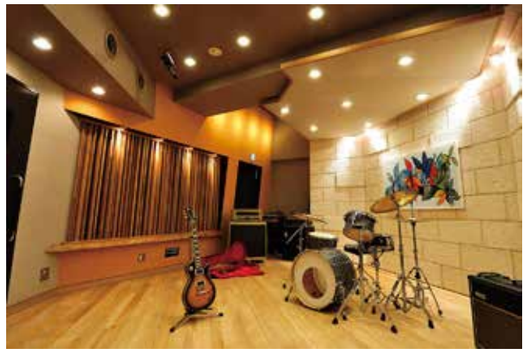
It is said that the forest, which is surrounded by trees, is an ideal acoustic space. Transparency in the low frequency range is excellent with no walls around, and a setting abundant in trees is ideal for diffusing sounds finely, which produces a meticulous acoustic quality in the middle-to-high range. A space with clear and natural sound quality was created, free from a sense of enclosure felt in a closed space surrounded by four walls, acoustic interference such as coloring or distortion caused by phase interference from mutual reflections against walls. We focused on such acoustic effects of the forest, and invented our original room tuning mechanism, Acoustic Grove System (AGS), to create a pleasant sound field free from acoustic interference.

2. AGS application

AGS products have been increasingly used not only in sound creating sites, such as recording studios or broadcasting studios, but also in acoustic spaces designed for various purposes, like audio rooms for enjoying music or practicing rooms for musicians.

Requirements in acoustic rooms vary depending on the intended use of the room. For example, in a recording studio where elaborate sounds are produced, high resolutions, precise localization of sound images, and treatment effects given by mixers or engineers must be clearly discernible. For an audio room, all the information contained in the music source must be thoroughly reproduced, a sense of width and depth of sound image must be experienced, and a change in sound volume from high to low must be smoothly discerned as a gradation. Also, being free from distortion even in high volume is an essential factor.

We have offered various solutions to create a "room with good sound" by making use of AGS products for our customers. From our users, we have received a wide variety of comments and evaluations. In addition to sound field related comments, such as "the localization of sound image is clearly discernible", "natural sound quality, sense of expansion, and sense of depth are very perceptible", we also got more general non-acoustic comments like "the room feels wider and free from a sense of enclosure", and "it is a comfortable and stress-free space, even over long periods of time". We also established our listening room called the Sound Lab, where more customers can experience the sound field created with AGS. Since its opening in November, 2009, a number of visitors came and most of them gave us roundly positive reviews. While pursuing the essence of a "space with good sound", we came to realize that there is also potential for creating a space where people feel comfortable and want to stay for a long time that functions as a living space as well as a working space.



3. Bank with a good sound environment

One day, Mr. Takayasu of Architecture Lab came to visit our Sound Lab to experience the sound field provided by AGS units. He proposed to apply for the Mitsui Sumitomo Bank Eco Banking (Bank) Office Award, called the "eco japan cup 2010", administered by the Ministry of the Environment and other agencies. His themes were

"Banks with natural sounding environment similar to a forest" and "comfortable and pleasant sound environment for both workers and customers".

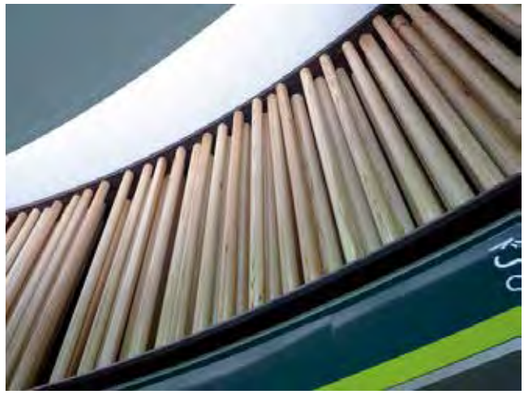
Mr. Takayasu said that the highly realistic sensation he experienced in the Sound Lab made him feel as if real musicians were playing, and he felt a limitless expanse and comfort the moment he stepped into the Sound Lab. He hoped to work in such a space and cherished the idea of applying the sound field of the forest realized by AGS units into spaces other than music specific rooms. The buzz of cicadas you hear in the busy city is just a noise hurting your ears, yet hearing them in a forest sounds more comforting and pleasant. Listening to birds sing in the forest makes you realize how beautiful they sound, and you feel as if you want to stay there as long as you like. This concept of "sound field in the forest" (the proposal from Mr. Takayasu that the sound space be created with AGS in a bank setting under the idea of "Bank in the Forest") was awarded best prize for the Eco Banking (Bank) Office award. This idea was actually adopted by Mitsui Sumitomo Bank, the sponsor of the award, and the space was implemented at the Shimotakaido branch in Tokyo and the Konan branch in Hyogo in the form of "Bank in the Forest", that is, the space created with AGS. In this proposal, of course, various factors not only in sound but in building materials, designs, facilities, etc. as well, were also incorporated in terms of a balance between energy saving from making active use of sustainable wood from thinning, and ensuring comfortableness from controlling air and light.

3-1. Shimotakaido branch

Shimotakaido branch is located just south of Keio Shimotakaido station. It is a noisy environment with a railroad crossing nearby. About 20 m away from the railroad crossing, there is the main entrance of the bank. Upon entering through the glass automatic door, you see the ATM section with a curved shape. Customers, passing through the section, are allowed to go to the bank tellers inside the building until 3 pm. We discussed with Mr. Takayasu from the Architecture Lab to determine where to appropriately place AGS units in order to form a better sound environment.

We decided to recreate a forest sound field taken from the forest in the ATM section in just a few steps from the entrance separated from the noisy world outside. In the planning, we adopted a design where an expansive space will be created to let sounds reflected off walls to be diffused, by placing slanted AGS units on the wall above the ATM section to avoid an excessive concentration of sounds prone to occur here due to its curved nature. We also installed AGS units in a focused arrangement on the opposite wall surface to simulate a forest-like sound environment surrounded by trees.

In addition, AGS units were placed in a focused manner all over the wall surface of the customer consultation section over the counter so as to foster consultation in a comfortable sound space.

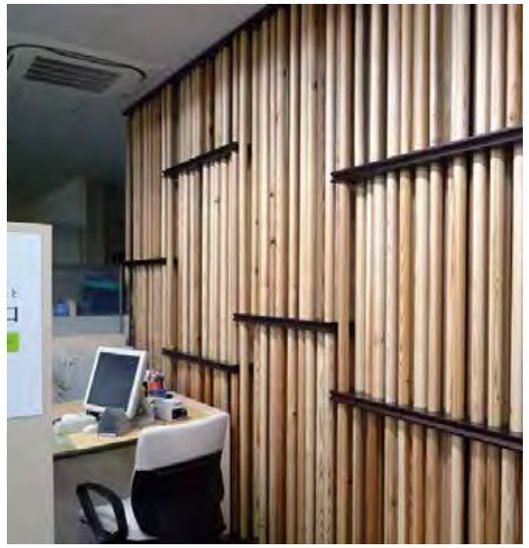


3-2. Konan branch

Konan branch is located on National Route 2 in Higashinada-ku, Kobe. In this branch, the teller counters and the ATM section are on separate floors, with the ATM section on the first floor, and the teller counters on the second floor.

We placed AGS units all over the wall of the ATM section and large curve-shaped AGS units from the floor all the way to the ceiling so that they are linked together on the wide wall surface on the first floor. We also installed AGS units beside the entrance facing the shop-lined street securing the area for installation, so that customers using ATMs can experience a sense of openness from the enclosed space.

In order to improve the acoustic environment throughout the room, we placed AGS units on the glass wall surface facing the street and on the wide area of the front wall seen from the entrance stairways on the second floor, with the exception of those within the counter area.



4. In closing

People in various fields come and visit our Sound Lab to experience music in a space specially crafted to get the best out of sound. We often get into conversions regarding "what makes a space with good sound". We get a lot of comments like "Busy shops that attract many customers have a nice sounding environment", and "a lot of customers come because there is a space with a good sounding environment". We came to strongly realize that a space with good sound has potential not only in acoustic sectors such as instrument performing, audio playing or music production, but also in various spaces where people gather, work, and play. We are determined to be of some help in improving quality of life by providing environments with "good sound" through the use of AGS.

AGS application in temples
— Aiming to create more natural sound like in wooden buildings —

April 2015

1. Improving the sound environment using Acoustic Grove System (AGS)

Acoustic Grove System (AGS) products, originally developed for the purpose of improving sound field in acoustic rooms, have been now in wide use ranging from sound creating fields such as recording studios and broadcasting stations, to music playing spaces such as concert halls and piano salons, as well as personal spaces such as instrument practicing rooms, audio rooms, and home theaters, regardless of room size or purpose of the room. We received the following positive comments from users:

- Transparency in the low frequency range improved, which led to a better listening experience.
- It feels as if the level of quietness has increased and the S/N ratio has improved.
- Sounds that used to be hard to hear can now clearly be heard and the music became more dynamic.
- The sound field has been expanded so as if to discern how each instrument is arranged.
- A saturation of sounds does not occur, which prevents the listener from feeling tired even after continuous listening at a high volume.

There has been an increase in applications other than acoustic rooms. We got a lot of positive remarks from people who use areas where AGS units are installed, such as bank lobbies and meeting rooms, with many saying things like "though the space is not particularly related to music, I feel comfortable there, and I don' t get tired, even after a long day of work".
Each room has its own requirements for acoustic characteristics depending on the intended use, especially with the duration of reverberation. AGS reduces distortion caused by standing waves and phase interference and improves the quality of sound, so the above-mentioned effects are brought about regardless of how the rooms are used. We strongly believe that a space with AGS units installed will improve not only music-related activities in specific, but also the quality of the living environment in general.

2. In pursuit of a natural sounding main hall

We came across an opportunity to install our AGS units in the main hall of a temple in Tokyo. The priest experienced the effect of AGS in an audio shop, and took particular note of its acoustic effect. He contacted us last year saying "our main hall is built of reinforced concrete which makes sound hard to hear, especially at low ranges. It was so hard to both talk and hear that I was looking for some way to solve this problem. There were some children who began to cry because they were frightened by the oppressive feel of the low and muffled sounds, especially around the corner of the hall. I would like sounds in the main hall to be more natural, similar to the wooden architecture, by installing AGS units." This request was the trigger for us to get involved in this project. In the old days, temples were built with wood and had a lot of crevices, so they used to have nice sound transparency and a pleasant acoustic effect which made people feel like it was a cozy place. This notion, however, is no longer applied to modern temples, which are built with reinforced concrete. Wooden construction is not allowed for large buildings with a certain area due to restrictions under the Fire Defense Law. The main hall of this temple is constructed with solid reinforced concrete walls, which makes it hard for lower range sounds to escape, causing a high level of standing waves. Measurements and demonstrations were repeated to grasp and analyze the current situation to determine the causes and then discuss possible solutions. We asked the temple to test and experience AGS's effect for standing wave mitigation and change in audibility, using the AGS units we brought for demonstration.
The main hall of this temple is composed of the inner sanctum where the principal object of worship is enshrined, an outer chamber (space for worshipers), and side chambers on both sides of the inner sanctum. The outer chamber area is about 12.5 m wide × 5.3 m deep × 3.7 m high. The inner sanctum is 5.3 m wide × 8 m deep × 3.5 m high. In the outer chamber area, which the priest had been worried about the most, reverberation time was extremely long, around the range of 50 to 63 Hz due to the effect of standing waves. To cope with this issue, we decided to install custom-made AGS units about 140 cm × 80 cm × 225 cm high for both sides in the back corners.

Figure 1. Scene while measuring

Figure 2. AGS installed in outer chamber
(in right rear, facing inner sanctum)

Installing AGS units made a big difference, making the area feel more expansive. Figure 3 shows reverberation time data measured before and after AGS installation. An exceptionally long reverberation time ranging from 50 to 63 Hz was dramatically shortened, which eliminated the feeling of muffled sounds in the low frequency range, one of the halls main concerns. The frequency property has been adjusted, and reverberation quality improved, which made vocalization more discernible. The swells that clutter the low frequency range of sounds from the wooden fish block and bell were eliminated, which made the middle-to-high range sound more pleasant. The priest gave high praise for the effects of the installation, noting a change in atmosphere which made it a more comforting space.

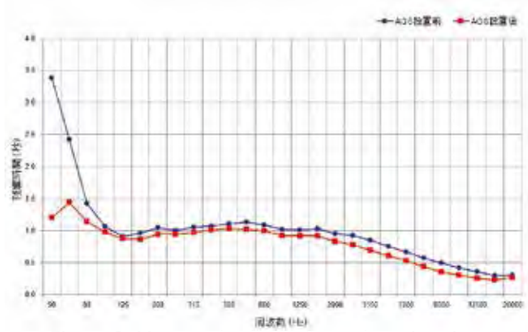


Figure 3. Measured values of reverberation times before and after AGS installation

We learned from this project that in a space like a temple main hall, which is not really an acoustic room for music listening, the quality of reverberation is an important factor. We are determined to go on with research and development so that AGS may help improve quality of life in the future.

3. Customer's feedback

With the installation of AGS, we were able to enter the main hall comfortably. Before, I felt the low range sound muffled around my body and my voice reverberated over the hall. And I had to control my voice volume to avoid the unpleasant feeling of hearing. After installing the AGS, I was able to vocalize loudly without any restraint and I could hear more clearly. I used to involuntarily voice from my throat, and now I can vocalize from the depths of my belly, so to speak. My voice can now be heard more naturally, and the sounds from the wooden fish block and bell are more innate, as if they were struck in an open space with no walls. The AGS was effective in creating a space where natural acoustics and quietness could be experienced even within reinforced concrete, making it sound like the inside of a wooden house.

Relaxing space with superior room acoustics for enjoying coffee

October 2015

1. Project summary

"Cafe NESCAFE HARAJUKU" run by Nestle Japan, temporarily opened a café for eleven days (July 16-26) called "Kokufukaki Rakuen Cafe with Nescafe Gold Blend Kokufukame" where the great nature of Iriomote Island, Okinawa was recreated. To make you feel as if you were there, the space was staged with 40 speakers placed throughout the shop to recreate the sound space (AWAKEN) of Iriomote Island. Some of the challenges in producing the sound field were creating a sense of depth, localization, and quietness, etc. For this project, our AGS (Acoustic Grove System) units (32 of them) were installed, and we received complimentary remarks saying that they created vast expansive atmosphere and quietness in a great natural environment. Boomy noise was not observed in spite of three walls of glass, and the sense of localization of the recorded natural sounds was faithfully reproduced.

Inside cafe

AGS units installed all around

2. Customer's feedback

In a modern society full of various noises and stresses, we recommend creating an indoor space where you enjoy your time and encounter your true self. A space where all of your five senses are fully activated under the concept of "providing a truly relaxing and comfortable time and space". The DSD 11.2MHz 40ch multi-tiered surround sound field helped create the vast area in which the pristine nature of Iriomote Island was recreated. A cafe space where customers can relax with a feeling of a peculiar southern island's flow of time was produced here by combining high definition videos with still images to make them into 4K videos with a variable frame rate.

A typical morning in Iriomote was simulated in Harajuku. During both the daytime and evening, clouds floating in the air, tides changed, and the calls of birds and insects were programmed to change over a period of one hour, attracting repeat customers who wanted to enjoy different time zones. I think that the theme of recreating a specific space bore fruit in a good manner.

The cafe was enclosed by three glass walls, adjacent to Harajuku Station's JR Yamanote line platform, and completely exposed to mechanical city noises. However, AGS's excellent transparency in the low frequency range is extremely effective, and it was a big surprise to be able to hear insect calls at night even with four train lines, Yamanote (going both ways), Saikyo, and Shonan-Shinjuku, are all operating together, with the help of the high resolution of the diffused sound field.

During this campaign, the area was hit with sudden evening showers under the fierce heat of the season. One day, a local downpour hit the area so heavily that Shibuya Station's underground shopping arcade was flooded with rainwater for several hours. People said to me, "it must have been tough to deliver performance in such a bad storm". It was then that I realized that the concept of "wall", a boundary that divides outside and inside, was destroyed by the idea of "a group of columns".

It was taken for granted before that the sound field outside, which is full of various noises, should be perfectly isolated from the redesigned sound field inside. However, based on our observation that noises from the Yamanote Line trains are diffused by the forested space around Meiji Shrine and mixed well with the DSD stereoscopic sound field from Iriomote Island within the AGS diffused sound field, I realized for the first time that we could create a comfortable space that coexists with city noises.

As seen in the photo, all glass surfaces were covered with special cloth material printed with large 35 m panoramic photographs in order to take in outside light from Harajuku every hour while diffusing color temperatures. The term "indirect lighting" has been well accepted for quite a while now. A sound source is limited to just one point, as opposed to a light source called illumination. By not being limited to a single sound source, the AGS sound field appears to have an infinite potential since it diffuses energy generated from multiple sources of sound, such as from a gathering of people.

We are determined to continue to play a contributing role in creating a pleasant and comfortable society by making various experiments from a scientific point of view.

We extend our gratitude to the AGS development team for their excellent inventiveness, and their ability to plan and execute powerful and stylish products, sincerely asking for everlasting cooperation.

Overview image

Measurement landscape

Open space for babies, "Mori No Stage (stage in the forest)" at Nichinan city child care support center "Kotokoto"

October 2017

1. Summary

"Mori No Stage (stage in the forest)", an open space for babies opened in Nichinan City's Child Care Support Center "Kotokoto", established as a vitalization project for the city's central urban district. In this space, AGS (Acoustic Grove System) products were installed.

The "Kotokoto" stage, full of goods made from Obi cedar, a symbolic local product, was designed with the hope that children of future generations will grow well from this open space. "Mori No Stage (stage in the forest)," where AGS units were installed, is located as part of the open space for babies in the center of the facility. We were involved in the designing process. This open space is usually used as a playground where parents and kids can freely play together, and also as a venue for holding events like seminars about raising children. We received comments from visitors of the facility saying, "it's easy to hear people speak," "the babies' cries are softened," "the children's voices reverberate creating environmental sound," "the image of forest is relaxing," etc.

2. Designer's remarks

The open space for babies, the central area of "Kotokoto", was surrounded by "Obi sugi no mori (Obi ceder forest)", which fully uses Obi cedar in Nichinan. The unpleasant sounds of babies crying and screeching can be mitigated by making use of technology of Acoustic Grove System. Lumbermill and furniture shops in Nichinan got engaged in building the space, and it is now a place that children from all over Nichinan (spirits for uniting local people) brag about.

Workspace in Tokyo Metro Tameike-Sanno Station

March 2017

1. Summary

An experiment was made to test the installation of the Acoustic Grove System (AGS) technology in work spaces where busy business people in Tokyo can spend their subway transfer time in a comfortable and convenient environment. While on the go, you may want to take notes while talking on the phone, or even open your PC. It would be great if a little workspace was available. Convenient booths that uses the effect of AGS are now available in order to provide open spaces rather than closed spaces like telephone booths, making it easier to have phone conversations even in the presence of noise from loud trains. This booth is equipped with a little table with a receptacle outlet and an LED light so that you can recharge your cellphone battery or connect your PC for operation. This is like an oasis in the train station, so to speak. This facility was installed for testing purposes in Tokyo Metro Tameike-Sanno Station for a limited period of time (already removed at the end of December, 2016). NOE had gotten involved in designing the facility. Since this was a public space, we selected fireproof treated wood materials, and the central booth among the triple set is equipped with an array of AGS units.

2. Feedback from passengers

It was positively accepted with comments like "when I got in the booth, I felt a sense of safety, and it was easy to talk over the phone", and the people at the receiving end of the calls also reacted favorably to the easy listening, which was remarkable considering how noisy it was on the station platform.

Front View

Rear View

https://www.noe.co.jp/en/

【Notes】

● Acoustic Grove System is copyrighted in registered design, trademark and patent.

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