

Regarding mixer tables, microphones, and another studio equipment as usual it is easy to, for just these, find a good piece of advice and tips on their different functions. It is not as simple when it comes to acoustics. As one shouts sheep one answer is usually said. Does it apply indoors as well? Well, you get an answer, but how does it sound? Getting a well-balanced answer in a room is quite important for those who work with sound. When music is to be performed, it is important that this takes place in a good acoustic environment. Most instruments have been developed to work optimally during certain given acoustic conditions.

This means that the musicians are directly affected by the acoustic environment. It is easy to play where music is playing Good. The reflectors also extend the direct sound so that it sounds louder without that the level increases. It is amazing how little genuine sound can give the music a richer nuance. So good acoustic rooms are needed for both recording and listening to music. One can easily say that every local way you his special touch on the sound and a trained listener can hear in what kind of local a sound is recorded. A sound studio consists of many different parts. control room, recording room, and so-called ISO rooms with more. When constructing such a facility you need to consider both building acoustics, i.e., insulation against the environment and construction stability, as well as room acoustics that include are including eft resonance, resonance, standing waves, absorption, reflection, as well as diffusion.

From a natural soul you do not want to hear sounds from one room into the other, therefore a good insulation is required between the rooms. To a good separation of different sound sources must be achieved, special requirements specifications must also include instructions for plumbing, electricity, ventilation, acoustic constructions regarding insulation of air sounds, frame sounds, doors, and windows. Now you may begin to understand what problems you get crime with to create a good music environment. To top it all off, it is the way we are not just hear with our ears, we hear different frequencies with the whole body. We start by asking Claes what an acoustician must think about and take Consideration for the construction of sound control rooms and recording rooms?

- I always start from the customer's wishes, as everyone has different dreams which I shall realize. I think this is overly exciting and then I help the customer understand what we can achieve and how we should solve all practical and acoustic problems during the drawing construction. Personally, I always try to prioritize daylight. The building acoustics are the first important factor. This is where we lay the foundation for what we want to achieve. How to wall constructions doorways, window openings, shafts and fire ducts be? Should it be a floating construction or enough it with starting to build on existing floors and with current electricity, ventilation, and plumbing, Claes continues. We will take a closer look at four studios for you will get an insight into different studio constructions which is aimed at slightly different target groups.

Our series of articles begins with asking the owners / technicians what they have to say about their work situation, from an acoustic perspective. Studiomega the studio is housed in a large yard in Valinge where we meet Christian Silver. I start by asking what intentions they had prior to the planning of studio. Christian: At our third studio venture downstairs in Valinge we decided to from the beginning invest in good acoustics, both in the recording rooms and in the control room. That is why we contacted Claes ready in the planning stage. We wanted to prepare the control room to be able to mix in a 5.1 full-range system. Furthermore, I had and Man a requirement that our new studio should be a completely quiet, large, and airy control room with daylight free from unwanted sounds and with superb acoustics. Reach Claes, what was your first thought when you stepped into

the large empty room on the newly purchased farm in Valinge? - Yes, it was a unique scenario. That is not the case often you have to start from a completely empty building. All my dreams of being able to design a large control room almost unconditionally and a large recording room fell into place.



In addition, there was a ceiling height that contributed to the fantastic possibility. I started sketching even before I did see the premises. But, when I came down and saw the conditions, I started redrawing. One detail was that during the installation of the large monitors, we could make special concrete foundations as well as an iron construction of thick ship's sheet metal. Where springs were fitted, to reduce body noise from the speakers, to be led into the wall construction. In addition, it is not often a customer says, "do not think about what it will cost, do the best".



What is one of the most common mistakes man do as a newly established studio owner? Christian: Maybe you take the easy way out and not the right way. You might focus more on having good electronics because one usually does not have knowledge or understanding of the importance of acoustics. That was when Class helped us with an acoustic adjustment in the form of a base trap in a of my previous studios that we discovered how much better the drum sound became. Then I started understanding the importance of acoustics in the context. Today, acoustics is one of our major competitive advantages. Most of our customers play hard rock and they are amazed at how good the drums sound in both the large and the small room. But acoustically, all instruments sound good. It is about not just about the recording rooms. The control room is also extremely attractive for mixing and master in. The problem with a control room What is not properly acoustically regulated is that the sound image changes in relation to where you are in space. Which often makes it happen discussions between musicians and technicians around different levels precisely because they perceive sound different depending on where they are the room. Now that the musicians are entering ours control room, they do not have to sit in the mixing position to listen. They can sit where they want for it sounds good throughout the room. Do you have any idea how much? working time, you save on having good acoustics?



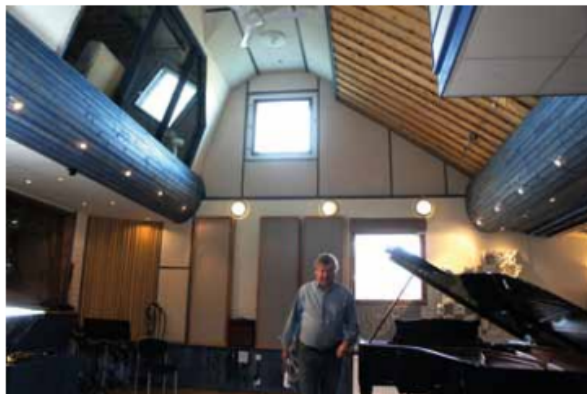
-Christian: Yes, I find quite a lot faster both in the recording room and in the control room. I can also work with power volume and trust that it will be right. I also think the low the volume means that you do not get tired as quickly and can maintain high concentration for longer. What is your future for? the acoustic development in the studio? - We want to make a complementary acoustic regulation in our control room B and if the demand is larger at 5.1, we will install it because the control room is already prepared. How much have you invested to get good? acoustics? - 11 years ago, when we started here it was enough about eighty to ninety percent of the facility's total cost at the time.

Good equipment is easier to supplement gradually than correctly built premises. It can be much more cumbersome and more costly to readjust acoustics than to change out a gadget. It is important to fix it from the beginning weakest link, which is usually the room you are sitting in. I prefer to mix with a little worse speaker in a good one room than the other way around, Christian concludes.



Do customers care about your acoustic control?

-Anders: Although many customers look at what electronic equipment we have and maybe not so much on the acoustic design, so notice they soon that the workflow goes much faster. They also notice that you get the right sound in a shorter time. You set up a mix so much faster and customers are often satisfied with the first or second mix. Time is money for customers. Even though we record most hard rock, acoustic instruments and other genres have worked well. What remains is to make some adjustments in the recording rooms. Have you invested a lot of money in your acoustic design?
 Anders: The costs of acoustic regulation is at about ten to fifteen percent of the studio's total investment, and then we have come to one quite high acoustic level. The low cost is largely since we ourselves have been craftsmen. It does not have to lose a lot; it is important that we have access to the right knowledge. It is important to take the right measures.



Nilento Studio We meet Lars Nilsson, CEO, and producer at Nilento Studio in Gothenburg, who tells us that the house from the beginning was only a barn on two floors. What did you know about acoustics when you started? this project? Lars: I knew nothing about studio acoustics though as a trumpeter, you develop a sensitivity for acoustic environments. When I went to music school, there were only two rooms I could practice in. I did not get access to any of them, where I could find my sound, so I ignored to practice. I have always been interested in instruments sound. I have twenty different mourning's to be able to get the right sound in the right context. I have and with

interchangeable watches on my trumpet to fit. But I have also gotten a lot of work done that I have been careful with the sound. First, I had contact with Åke Eldsäter who helped me with acoustics, but he moved from Gothenburg and in that joint was taken over by Claes. Claes has together with the studio owner Lars Nilsson upgraded the studio many times. Lars has over the years developed into a very skilled sound engineer and producer. This has meant that the list of requirements for acoustics has been constantly upgraded at the same time as the addition of rooms was added. This has been very developing for both partners.

How did you approach this project?

-Claes: The basic construction included insulation between rooms, ventilation, listening and that they wanted the musicians to be able to make eye contact with each other from the different rooms. All as need has arisen, every room today has in principle received its own sound and acoustic treatment. To achieve these different sound ideals, I have worked with three important factors. Absorption, reflection, and diffusion. Today there are conditions for record everything from singing to large orchestra in the right acoustic environment. To maximize all the different acoustic preferences, there are also great opportunities to change on reflexes and diffusion in all rooms through to move walls and acoustic constructions.

-Lars: Yes, after the last adjustment in the control room, we found the right one. The control room is today one 5.1-based room with basically straight frequency response from bass to treble fixed with a little longer after sound in the bass register. In one of the recording rooms which were small, real base traps were needed. It did that we had to build them along the wall, in the lower part of the room. In the upper part of the room, we placed perforated bricks.

What makes a customer choose Nilento?

-Lars: The sound quality, and they Acoustic conditions play a major role in those contexts. Today we have seven rooms that we have continuously worked on to develop the sound. In some of the rooms we have deliberately developed one amplification of certain frequencies to be able to achieve what I want as a result.

Claes is a fantastic ballpark that has not only come here, done a job, and then gone. He has committed to the result and helped me with more than acoustic issues. Is there any type of music that fits better here?

-Lars: Because I have so many rooms with me different acoustic preferences, then here are all the possibilities for different genres. Three of the small rooms can be a big one. For example, my birch room is specially designed for double bass and its design is based on 10 years of experience. Claes had their measuring equipment standing here, and we measured after every plank that was set up to get it perfect.

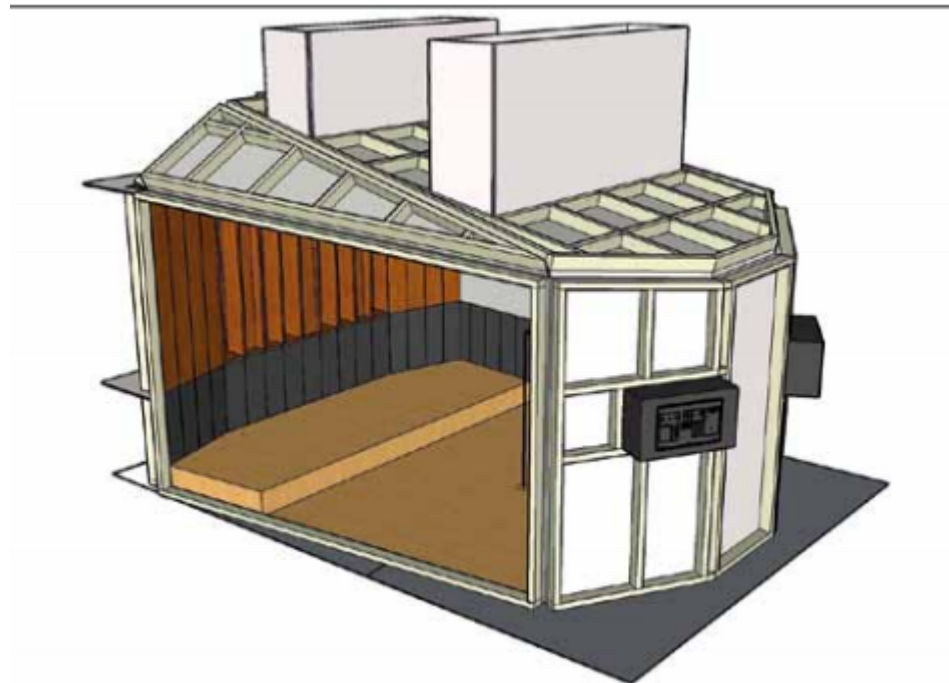
Now that all the rooms are ready, and I know how I am should handle them so I EQ basically nothing. I color the sound by placing more micks. The current acoustics save a lot a lot of time. Fixed on the wish list is further one more large room to get even more volume and, in this way, longer sound. Today I get a place max 15 strings.

-Claes: Lasse has been a lot over the years demanding customer. He could call and say, "I. want a little more of 200-300 Hz in a room". Then is it just to go there and fix it.

-Lasse: When, for example, you dub and do in a room that does not sound right, you add simply wrong frequencies all the time. Do you have access to good acoustics you can work much more? creatively with ambience jewelry and I like that. In fact, it has been well worth investing about thirty-five percent of the studio's investment in that to get the acoustic environments I want to work in.

Lin Education Here you produce film that is part of one software included in digital learning circles. Here we meet Ken Olsson who has his background from SVT and in film contexts. The facility is built in a large industrial premise on Lindholmen.

-Claes: In the premises there were basically all possibilities with ten meters ceiling height and large areas. Because the staff who would work with sound and picture were very experienced, so we helped each other with the floor plan and all the wishes that would meet. It became a big task, where the order was a room for filming, as well as one image and a sound editing room.



The result was a large movie room, of about 80 square meters with a ceiling height of just over four meters with a relatively short reverberation. The whole room has a floating construction because the requirement is to be able to record audio and video at the same time. The room very even frequency response and reverberation time means that you get close-up of the sound with the microphone up to three meters from the sound source. Since a movie studio uses highly portable light, a construction of so-called raw (consisting of tubes) was built as hanging from the ceiling. The entire roof structure is held together with glulam beams to withstand all loads. The sound control room was planned for film with 5.1 speakers. Because a subwoofer was required, I did Helmholtz calculations down to twenty hertz. Great consideration was also given to all passages of cooling, ventilation, electricity, and multi-cables.

Ken: There are few environments in film contexts like works well acoustically and it is not that common with screen studios where the sound works Good. But our customers are impressed by both the possibilities and results of our recordings. This has not been free, I guess.

Ken: No, in this facility, acoustics have cost more than technology. But working hours saving on working in good acoustics is great. IN drama context, it is common to get about fifty percent of the

sound. Can if you then use the original sound, it is very a lot of time saved for both technicians and actor. Claes: Well, the control room became quite small, but I am no longer afraid to create small control rooms. I have found calculation methods like works well in these contexts. The small room does not feel too tightly dampened but provides a natural reflection of speech and music. The room manages also by handling the installed subwoofer. Here, too, it is prepared for 5.1 that can be installed when demand increases. What is it like to work in the big movie room?



Ken: Well, it is going very well. You can record speech in the room at several meters distance. Both rooms have become particularly good and I avoid a lot problem I had before. Over the years has it has not always been easy as an audio guy to explain their problems for image people. When you tried to get a hearing for your sound problems, you got it hear that not many people go and listen on a movie (because my problems do not appear in the picture). But then I replied that it is not so popular with silent film longer either.

-Finally, I ask Claes if he has any overall advice to give? - When you are planning your studio or recording room, it is well worth the money to ask one professional for advice. If you are a little handy or know someone who is, you can build a lot yourself when it comes to acoustics. What does the room look like? intended for use, length, width, and height, in which direction do you intend to place your equipment? Where are the windows, doors and is it possible? to get symmetry between left and right side? It is important to keep in mind: crosstalk between room, insulation against neighbors, power supply, and if there is ventilation that does not hum and noise. What type of acoustic material should be used and how should it be used? Learn to listen actively, analyze all the time and practice, practice, practice on to listen. For this with creating and learning is one fantastic process. Good luck.