Genelec is one of the icons on the monitor market today. Lars-Olof Janflod at Genelec talks more about how everything is started and how they are used in different installations. I also take the opportunity to visit Claes Olsson, one of Sweden's most acclaimed acoustician, to hear how he thinks when it comes to installations and studio construction.

The radio companies in Scandinavia early developed a standard for how a monitor speaker would be designed and how the rooms they would be in would be built. A basic idea was that it would be possible to calibrate the monitors in the listening area. There were no speakers on the market at that time that met the new requirements. Juhani Borenius, acoustician at YLE, Finland's equivalent of SVT, came across Ilpo Martikainen.

Ilpo later founded Genelec. Ilpo had made a name for himself as a speaker designer. Not by monitors but hifi speakers. Borenius asked him if he could design a monitor for YLE. Sure, Ilpo said, I can do that, but what is it? As an engineer, Ilpo is of the opinion that you can do anything, you just specify the problem, then you find the solution. In 1978, YLE ordered 300 monitors. At this time, there was no Genelec and they had no factory but started in a basement. The focus was entirely on broadcast. They were quickly appreciated and gained customers in Europe, including Italian RAI and many of the German, French, and English broadcasters. In the 80's they also introduced themselves on the music side.

At that time, the sound requirements for SPL, i.e., sound pressure, were extremely high. But with that technology, you could not really get up to the sound pressures that you were striving for. - Genelec came up with a new solution for this called 1035 and with it you get up to 136 db.

Several large studios in England, Japan and the USA were quickly equipped with 1035s. It is probably still the strongest playing monitor on the market and with the lowest distortion, says Lars-Olof. Genelec has just released a much awaited and unique novelty, 8351, which is a member of their SAM family (Smart Active Monitor) of products.

In the center of speakers, the cabinet is Genelec Minimum Diffraction Coaxial midrange and treble elements mounted and connected to advanced waveguides (waveguide). Hidden behind this waveguide is two Acoustically Concealed Woofers (ACW) mounted. With this arrangement the vertical radiance corresponds to a dual-size monitor. A three-way system is offered in the size of a normal two-way system.

- What makes us unique is that we do not something other than just monitors. We have one high degree of continuity and are true to our original product philosophy, says Lars-Olof.

Claes Olsson started with sound technology and full-time acoustics around the end of the 80s and in early 90s. - I would rather come and look at the room to assure me how the customer wants it, but I have also built at a distance and it has gone well. But once in place, I always ask some questions that the customer has not thought of himself on. It can be about heating, ventilation and wiring which may not be the first thing the customer thinks of. These are important things when building in a little wider context.

In many cases, Claes gets contact local electricity companies and ventilation companies about how he wants them to do. When it comes to electricity, it is important how the ground cable should be laid when you do not want any earth loops which makes a noise in the facilities? Claes uses a special measurement program called *Room Capture* and it gives him information about different acoustic aspects. It is important to have this in order with length, width, and height the whole room.

- Ever since the time of the Greeks we use equations. The calculation bases themselves are constants. Because sound belongs group physics are all calculations mathematical, says Claes. He starts from something he calls King's post which is the centre of the whole room. It is especially important to achieve symmetry. The effect of height is often forgotten, and the construction of the roof can vary. Then it is easy to the reverberation varies quite a bit too much in different parts of the room.

Do you know this will come it does not happen any strange things acoustically in the room? - The most difficult tasks are completely clearly the State Church. Almost all churches are listed as cultural monuments and I always have one dialogue with any person responsible for this conservation. If I say I must drill holes in a wall to pull a cable, so it is weekend robbery for some. At the same time, it is so that one church should have light and space, which means that there will be exceptionally long reverberation times. It can be a little hard to make people understand that it is not possible to regulate acoustics anyway in a church on it the way you might want, he says. To have an orchestra that plays instrumentally in a church goes in most cases very well. But when you try to bring in the rock'n'roll gang and drive out it in a big PA, it is doomed to fail. To be able to have them in place, you are had to make so much acoustic adjustments in the church that it loses all its atmosphere. - On the other hand, when it comes to the free churches as in rule has built their churches themselves for a 10-30 years ago, there are no major problems to fix. There we can build, measure, and drive fully. The has easier to update acoustically, he says.

Global Musix's.

Claes moved the wall another 4 meters. He created a CAD drawing with millimeter precision and the construction itself took almost two years. –

It is the boys themselves who have built it here and I have had a watchful eye over them continuously. It may not always have been that easy when I one moment said it was two millimeters wrong there, while in another context it does not be so careful, says Claes. -

We have driven with a laser completely according to the drawing. Should it be 363 mm, it has become the phase363 mm. Take for example the front wall, it has exactly 7 degrees inclination, says Jarl. The slope is partly to get the monitor up and bring up the base. Then the reflex does not come in the floor so fast. There are often a lot of screens and technology at the mixer so by get the monitor up and it will shoot over all of these. However, if you lean the wall too much, so the sound will shoot down into the mixer. - Seven degrees, it is perfect here, says Claes.

Vibrations emit sounds that can disturb them the sound will shoot down into the mixer. - Seven degrees, it is perfect here, says Claes. When he mounted the monitors, he was carefully mount them floating. If they are screwed on, so the vibrations come from monitor to go out into the wall.

. It comes in its own lucky to generate a lot of sound waves like man do not want. - Vibrations emit sounds that can disturb them sound that the speaker delivers, Claes explains.

The holes in the stone wall had to be hand sanded to get in Genelec 1037: or. It is two millimeters split around the monitors. There are four layers plaster and stone on top of it, so it is quite thick. The monitors are mounted on four special springs sitting on a console that goes down into the ground and which in turn is stuck in the ground in a steel plate.

- If we go under the base trap, we can adjust the whole position as they stand, says Jarl There is a little too little ceiling height in the mixer room, so there had to be diffusers in the ceiling also. A diffuser spreads the sound energy and thus, reducing the sound pressure of the reflectors. - You should know that in a hard material, one hard flat wall, ceiling, or floor, where can the reflex become up to 6 dB louder than the direct sound, says Claes.

The technology park is extensive. They drive among another Mac with Pro Tools hex audio system with Pro Tools 10 software to be updated to version 11. The mixer table is Avid Icon D-Control ES. Samples are run from one PC so as not to load the Mac so hard when recording.

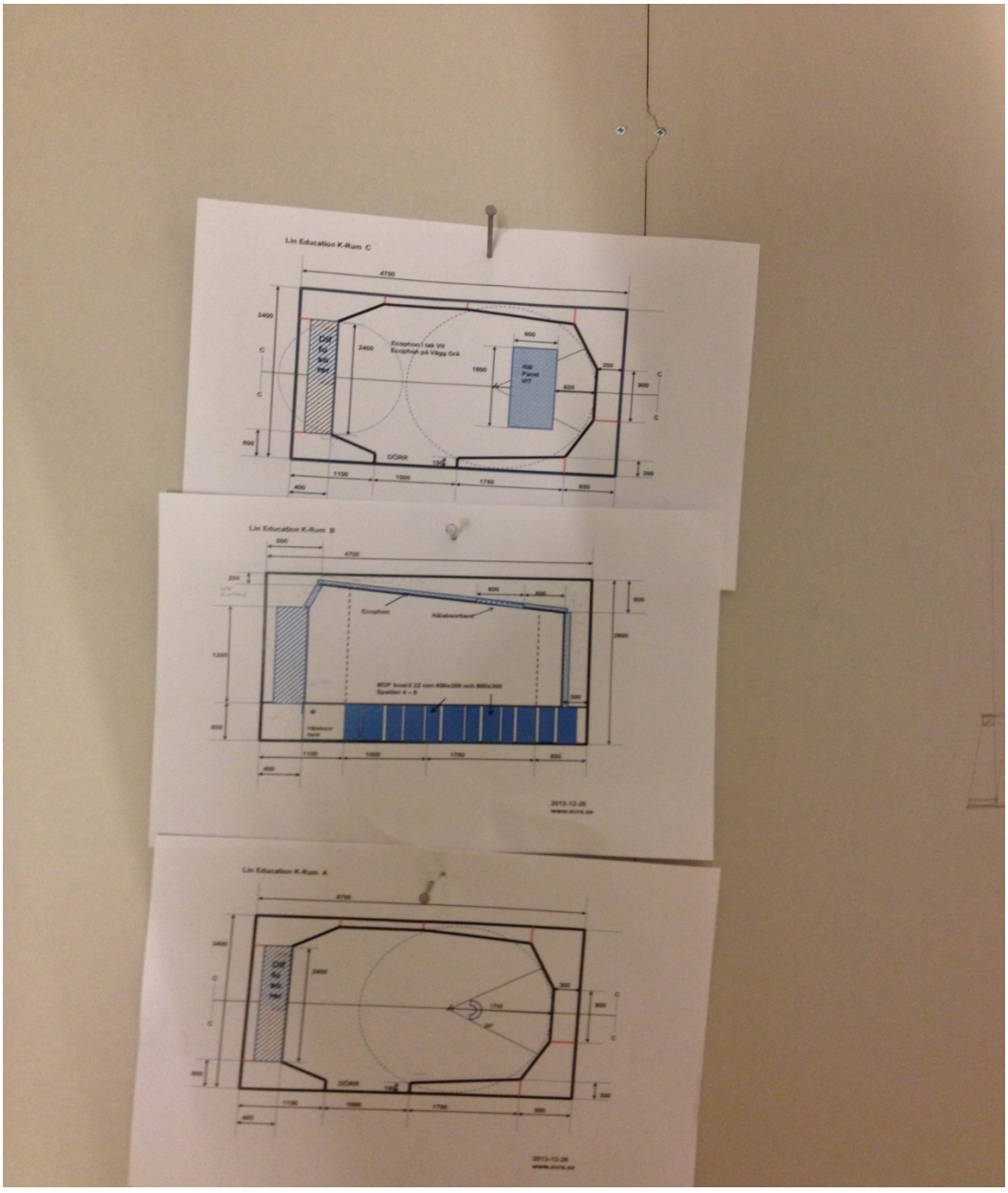
They also have a reverb from TC Electronic 6000 mk ll that can mix in Dolby surround. A pair of Avid 192 8x8x8 sound cards which has 8 analog, 8 digital inputs and 8 analog outputs. Two mic preamps with each 8 inputs. Finally sitting an Avid x-mon device that connects.

He wants to show me two different types of projects he worked with and we first go to Global Musix Studio where we meet Jarl Westergren who runs the studio with his brother? Eddie. - We wanted a simple, go and sun kissed rehearsal room with a wonderfully worn Manchester sofa as one had in the good old days. After for a while we even thought about building a simple one mix room. A friend came here and thought that this was not a simple rehearsal room. He thought that we had managed to create a fantastic recording room, and gave us the phone number of Claes Olsson, says Jarl. Claes explained in more detail how sound works for them and that the control room they wanted was far too small. He wanted to go out the room several meters. - Then the planned changing the room, and sauna would smoke! We discussed a bit later and back. In the end we said shit the same, drive on Claes, says Jarl. The mixer table with the computer.

We are leaving Global Musix's large studio to check out **Lin Education**, another of Claes's project.

Ken Olsson, sound designer at Lin Education, imagined a green screen studio for filming where sound can be recorded at the same time. It would be easy to work with boom and record speech directly without having to dub. The world largest speaker box simply and a mixer room to it. - We do not have surround here so we cannot mix feature film but for stereo listening it is cannon, he says. A common problem that can occur at one studio construction is crosstalk when the sound propagates

from one room to another. To prevent sound from outside into the movie studio and from the fact that sound leaked out, they simply built the whole large room in a so-called floating construction. The walls became 70 cm thick. - The result is exactly right. If it is too subdued, you do not notice movements in the actor and you want to include it to get a depth in games and in the pictures, says Ken. In his relatively simple and clean mixer room, Ken drives with an iMac, Pro Tools, nothing mixer table and Apogee Duet, a professional audio interface. In the studio it will be the most DPA microphones and a Sound Devices 788T-SSD.



When Claes builds a studio or a control room, the customer has often already decided for which monitors they want. Claes has been working with Genelec since the early 90's and can these good. - Now I will be honest and say that Genelec is not alone, there are others good monitors. But the very concept of Genelec offers allows me to build everything from small control room up to large studios. The models Ken listens with here is HT 208 B and a SUB 7060. There is plenty of room in this room, says Claes. - "Sweet spot in" would have been weird if we had had a pair of 15-inch points pointing straight into the ears.

In a small room where you sit close then there is a risk that you hear the bass more than you hear the treble, says Ken. During all the years that Claes has been doing that build these types of premises, he has acquired a kind of basic concept of how he wants work with sound, how he wants it to sound. - Tips for hugged studio builders? There are really three simple rules: money, more money, and high ceilings. Jokes aside, it is particularly good to get in touch with a professional when you are going to do something bigger and professional, says Claes.

What is created in the studio must come out of the speakers, nothing else. Point.