



MUSIC IN PUBS AND RESTAURANTS

Acoustic solutions for music pubs and restaurant



Full blast – but no damaged hearing

Now there's proof. You can minimise the risk of tinnitus and damaged hearing even when the music rocks hard

THE ROCK AND MUSIC CLUB Roof Terrace at Henriksberg has had a new acoustics system and sound absorbers installed. The results exceed all expectations. Musicians, staff and guests – everyone's thrilled. Henriksberg's Terrace used to be like any other rock music venue. Hard walls, ceiling and floor threw off echoes, breaking down the sound into a noisy mess.

With extensive sound insulation, a better sound system and

clever loudspeaker placement, everyone's lyrical about the new music sound.

"The best place I've played"

The music sounds much better with the new sound absorbers and it is easier to regulate the sound. Music can be played flat out without risking damaged hearing.

"This is probably the best place I've played," says a delighted Sayit Dölen, freelance musician

who has played at Henriksberg since the changes were made.

"It sounds equally good all over even though it's quite a small place. You can identify the different instruments, the vocals are clear and the bass feels pure. You've got control of the most annoying sound frequencies.

"As a musician, I'm especially pleased that the monitor loudspeakers on the stage don't shriek so much now."

The music acoustics in Henriksberg's roof terrace in Göteborg are now second to none, with less risk of damage to musicians', guests' and staff's hearing. Swedish Radio interviews Overnight Sensation's bass guitarist Ken Olsson in connection with the acoustics project.

Everyone likes the new sound

Even Henriksberg's own sound man, Joakim Harström, is impressed. He says that audiences have complimented him and the musicians on the new sound.

"The amplifier sound on the stage, especially from synth and guitar, isn't so irritating now. Attempts to screen off the drums have worked well too," he says. "Before, staff could hardly hear what people were ordering, and

“Probably the best place I’ve played”

Freelance musician Sayit Dölen

you had to use earplugs to be able to work here at all,” points out Henriksberg’s marketing manager, Willy Wilhelmsson. “People complained of being tired and of a ‘buzzing in the head’ after a shift. The work environment has really improved. And yet there’s still good nerve in the music!”

Official sound requirements

According to preliminary sound gauging done on a set of drums by acoustician Per Sjösten of Sound Processing AB in Göteborg, the sound level has been reduced by 3dB(A), so the sound effect has been halved. A further reduction

of 4dB(A) was achieved by screening off the drums with a screen only 80 centimetres high.

“It’s thanks to the sound absorbers that the noise level could be reduced so much,” Per Sjösten points out. “We reckon on landing under the Health and Welfare Board’s sound level recommendations.”

“It seems as if most of the musicians are really pleased with the sound,” says acoustician Alf Berntson of Artifon AB, who calculated the positioning of the absorbers and loudspeakers.

“But some might feel unfamiliar with the new sound, since musicians can be pretty fussy...”

It is therefore possible to get an even sound throughout the whole premises and to be below the Health Board’s recommendation of 100 dB(A), equivalent sound level, during a concert.



Acoustician Alf Berntson of Artifon AB has worked with computer simulated models in order to calculate sound absorption requirements and loudspeaker placement, to get the best acoustic solution possible.



Sayit Dölen, tour and studio guitarist, plays with big names like Christopher Cross, Steve Morse of Deep Purple, Yngwie Malmsteen, Totta Näslund, Jan Johansen, Pernilla Wahlgren and many more. Here together with guitarist Tommy Denander and drummer Mikkey Dee from Motörhead.

Targeting the future

The Acoustic Project was conducted by the National Institute for Working Life and Ammot (Artists and musicians against tinnitus) in cooperation with Göteborg’s Environment & Health Administration, the Arrangers’ Association, the Swedish Musicians’ Union, acousticians and sound suppliers. The outcome of the project can decide whether live music will be allowed to be played in small music clubs, as is common now. It is now clear that it is possible – acoustically, technically and from the quality angle – to modify a club that plays live music for 200-300 people.

Room acoustic measures and new loudspeakers at Henriksberg's Roof Terrace

Ceiling absorbers

The old ceiling consisted of thin, painted, mineral wool absorbers. It is replaced by acoustic ceiling complexes of two types:

- front and 1/3 of the rear part of the ceiling: complex providing maximum possible absorption at medium and high frequencies
- 2/3 of the rear part of the ceiling: complex providing absorption at lower frequencies

Absorbers on stage walls

Double layer wall absorbing complex providing maximum absorption at medium and high frequencies

Absorbers behind mixing table

Wall absorber to avoid strong reflection.

Bigger stage

The stage has been built out with a completely straight front, giving the musicians much more space and allowing the drum set to be further from the audience.

Bar to be moved

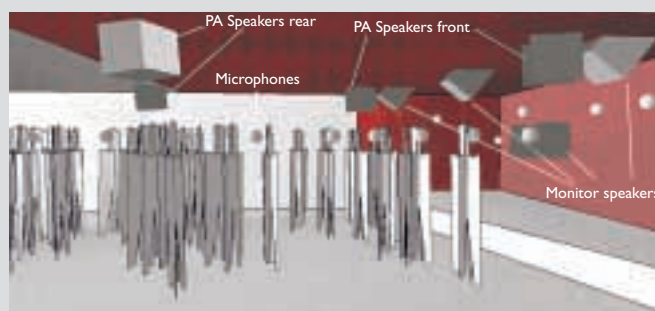
The bar will be moved to another room. At present, the bar staff work in very high sound pressure levels.

Screen for drum set

A screen has been set up beside the drums. Thanks to good sound absorption round the stage, a simple, relatively low screen has excellent effect.

PA speakers

The type and positioning of speakers were chosen to achieve the most even sound level possible over the audience. Four amps have been mounted as high as possible in the ceiling. Two of them are directly above the front of the stage. The other two are further back in the room, with sound delay, so it feels as though the sound is coming from the stage/main system. The bass speakers are built into the front of the stage.



Acoustic computer model of the room. The dark-red, front surfaces round the stage and in the front ceiling surface are 100% absorbent between 250 and 2000 Hz. The small spheres are microphone positions.

Authorities beat the drum for reduced sound levels

High sound levels are now controlled at concerts, discotheques and gyms through a national supervisory project run by the Swedish National Board of Health and Welfare. Municipal environmental and health inspectors will, during the year, increase the number of controls to check that sound levels from music are not excessive.

THE SOUND ENVIRONMENT

must not be harmful to guests or staff. Business operators are responsible for monitoring their own activities as per chapter 26 section 19 of the Swedish Environmental Code. The Code's rules of consideration mean that the business operator must have knowledge of and control over the activities. The rules also cover the property owner, tenant and

music arranger. Stricter demands will be put on business operators to monitor their own activities and certain measures must be taken by those responsible for concerts and discotheques to ensure that sound levels are reduced to harmless levels.

According to a proposal to the Dept. of the Environment, the Health and Welfare Board wants to make the requirements even



Johanna Bengtsson, responsible for the Health and Welfare Board's supervisory project for reducing music noise levels, with instructors Andreas Gustafson from SP (the Swedish Testing and Research Institute) and audiological assistant Kim Kähäri of the National Institute for Working Life.

more stringent, so that businesses with high noise levels will be classified as environmentally hazardous and have to be registered.

129 environmental inspectors from many municipalities have participated in courses in sound measurement methodology for premises where music is played, as per a new standard, SP INFO 2004:45.SP INFO 2004:45.

HIGH NOISE LEVELS

The Swedish National Board of Health and Welfare's general recommendations on high noise levels (SOSFS 2005:7) and on noise indoors (SOSFS 2005:6) can be found on www.sos.se/sosfs/search/search.asp