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National Institute for
Working Life, Göteborg

Institution/project

Sounddesign in a typical rock club

Short description of the institution/project

The projects' main aim was to create a healthy work- and musical environment with quality sound without diminishing the musicians' or audiences' music experience. Our main goal was that the music and entertainment business should live and flourish without anyone whether employed, musician or from the audience was getting hearing disorders.

Short biographical note

Kim graduated as Ph. D. in 2002 with the thesis: "The influence of music on hearing. A study in classical and rock/jazz musicians" and has today a time limited position as assistant at the National institute for working life in Göteborg, Sweden. Her latest project the "Acoustic project" received the European "Good practice award", 2005 and a Swedish "Year of Design award", 2006. She did further receive a personal recognition by the Swedish Acoustical Society by the "Sound award" in 2006.

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Sound design in a typical rock club

Kim Kähäri, National Institute for working Life

Hearing disorders caused by high sound levels as well as the difficulties to reduce the high sound levels in a typical small live music club is a well-known international problem. Due to several factors these types of venues are particularly difficult to sound level monitor. High direct sound leaking from stage, small stage and room with lots of reflecting areas, audience standing close by stage, badly positioned monitors and amplifiers and an un-educated sound technician are some important factors. The music club is both a working- and leisure environment with two different sound regulations being activated: The sound quality and the sound level.

Our main aim was to create a healthy work- and musical environment with quality sound without messing or diminishing the musicians' or audiences' experience. Our main goal was that the music and entertainment business should live and flourish without anyone whether employed, musician or from the audience was getting hearing disorders.

Acoustical Method

Computerized sound simulation was used to calculate and to decide what different types of absorbents was most efficient to use in different locations in the concert room.

Sound level measurements and frequency spectra was measured in echo free lab to measure the acoustic radiation from drums, and the influence of different heights of polycarbonate screens on the sound levels radiating from drums.

Measurements were also made to see what affect moving of monitors/loudspeakers on stage had on the sound levels.

Dose meter measurements were made during concerts before and after the intervention.

Technical Method

A full inventory of existing technique was done before discussions between sound delivery firm, the house technician and project group formed a whole new PA system.

Questionnaire-attitudes

To measure the audience, musicians' and the employee's attitudes before and after the intervention, three different questionnaires (for each category) were formed. Questions concerned attitudes concerning sound levels, sound quality, hearing disorders, hearing protections and the work environment.

Results

Acoustical changes were made, by removing the bar from the room, rebuilding a larger stage with a non-reverberating stage floor. Absorbents were mounted in roof and on walls. Technical actions, as a new set of a 4-speaker system were mounted into the ceiling. A better placing of stage equipment was done. The sound technician was educated. Sound levels were reduced to regulated values and half reduced leaking from stage. A majority of musicians and audience acknowledged the rebuilt music club as having good sound quality without diminished sound level experience. The people working at the club got a radically improved work environment.