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Room acoustics enhancement system in a Multifunctional Cultural Centre

Géza Balogh, Jr. and Géza Balogh, Dr.
Interton Electroacoustics, Major u. 63, H-1119 Budapest, Hungary

In the lecture, we present our system called DCR (Digital Control of Reverberation), which is capable of changing the reverberation of a room by means of electroacoustical devices. Using the DCR system, we are able to change the enclosure, i.e. we create an electroacoustical enclosure on the walls and on the ceiling. The parameters of the electroacoustical enclosure can be changed in several steps. The system was installed in Hungary for the first time in the city of Debrecen, in the Kölcsey Cultural Centre. The principle of the DCR and the problems and their solutions will be presented via this specific installation. We study the effect of the distance between the microphones and the loudspeakers, and the factors that influence this effect. We also analyse the room acoustics parameters in respect to the frequency, in the different status of the auditorium. Our room acoustics enhancement DCR system is based on the non-inline principle, thus the room acoustics of the large auditorium (1100 seats) of the Kölcsey Centre remained absolutely natural. We use several numbers of independent digital channels in the system, and each channel consists of one microphone, one or two loudspeakers, a power amplifier and a DSP.