

Electro Acoustic Analysis in Metro Stations

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ABSTRACT

In recent years, software-based acoustic analysis in metro systems is provided. Using enhanced acoustic simulator for engineers (EASE) shows us the measurement for field and simulation results was approximately same. Due to the concourse level or platform level in metro stations, sound wave is reflected and this was caused the reverberation in metro stations. In the Turkish regulation provide us the reverberation time for metro systems shall be 1.4s – 1.6s and for platform level the sound pressure level is minimum 80-85 dBA when the train arrive.

The model of stations, can be embedded to program in two way; draw mode in sketchup or in EASE. We know that that absorption parameters of each material (wall, ceiling, floor etc.). In this way when we define the room dimension also define the absorption parameters of each faces and we can choose the Sabine or Eyring's formula for T60. Depending on the calculation, we can use stone-wool material on underplatform or some walls in concourse level. Then we can provide the required speech transmission index (STI) level (min > 0.5 in technical specifications). Also we can calculate Sound pressure level (SPL) in metro stations due to EN standards. This will show us the significant contribution for engineering analysis.

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