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# Analysis of Noise Environment and Acoustics Material in Residential Building

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**Abstract :** Acoustic phenomena create an acoustic interpretation condition that describes the characteristics of the environment. In urban areas, the tendency of heterogeneous and simultaneous human activity form a soundscape that is different from other regions, one of the characteristics of urban areas that developing the soundscape is the presence of vertical model houses or residential building. Activities both within the building and surrounding environment are able to make the soundscape with certain characteristics. The acoustics comfort of residential building becomes an important aspect, those demand lead the building features become more diverse. Initial steps in mapping acoustic conditions in a soundscape are important, this is the method to determine uncomfortable condition. Noise generated by road traffic, railway, and plane is an important consideration, especially for urban people, therefore the proper design of the building becomes very important as an effort to bring appropriate acoustics comfort. In this paper the authors developed noise mapping on the location of the residential building. Mapping done by taking some point referring to the noise source. The mapping result become the basis for modeling the acoustics wave interacted with the building model. Material selection is done based on literature study and modeling simulation using Insul by considering the absorption coefficient and Sound Transmission Class. The analysis of acoustics rays is ray tracing method using Comsol simulator software that can show the movement of acoustics rays and their interaction with a boundary. The result of this study can be used to consider boundary material in residential building as well as consideration for improving the acoustic quality in the acoustics zones that are formed.

**Keywords :** residential building, noise, absorption coefficient, sound transmission class, ray tracing
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