

عنوان مقاله:

Using the Absorptive-Dissipative Silencer in Air Conditioning Systems of an Office Environment in Order to Provide Acoustic

محل انتشار:

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خلاصه مقاله:

Air conditioning systems are the main source of background low frequency noise in administrative buildings, restaurants, classrooms, and hotels. There are different ways to reduce the low frequency noise. Silencers are generic tools which are utilized for controlling noise produced by air conditioning systems. Sound assessment and frequency analysis were performed in accordance with standard methods to evaluate the exposure of workers in separate workstations. In the next step, an absorptive-dissipative silencer which its inner side was covered by convoluted acoustical foam was implemented in the ventilation system. The exposure of employees was re-evaluated. Moreover, Preferred Noise Criterion (PNC) and Speech Interference Level (SIL) were two acoustic indices used for assessing the effectiveness of the silencer. Before implementing the silencer, the sound pressure level in the rooms was between 57.8 and 61.1 dBA with a peak frequency at 125 Hz. The implemented silencer with dimensions of 1.4 × 1 × 1 m, and inlet and outlet area of 0.45 × 0.45 m was able to reduce the sound pressure level of about 13 to 14.2 dB. Further, the PNC and the SIL indices were reduced to 14.33 and 15.31 dB, respectively. The implemented absorptive-dissipative silencer reduced the sound pressure level of about 13.6 dBA. Moreover, PNC and SIL indices are two important indices which can be used for assessing the level of comfort in office buildings.

کلمات کلیدی:

Noise Pollution, Silencer, Air Conditioning System, Acoustic Comfort

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