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Frequency Spectrum Distribution of Common Occupational Noise in Malaysia using Fast Fourier Transform Analysis

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ABSTRACT

Determining the frequency spectrum of industrial noise is important as it can provide insights into the sources and characteristics of the noise. This helps develop effective noise control measures to reduce its negative impact on the workers' health. Understanding the frequency distribution of the noise can also assist in identifying the specific frequencies that need to be addressed in the design of personal hearing protection devices, particularly active hearing protection device. We searched the internet and edited occupational noise recordings from the top seven industries in Malaysia using Audacity. A total of seventy-two samples fulfilled our inclusion criteria and their frequency spectrum distribution were obtained via Fast Fourier Transform Analysis using the MATLAB programming. The findings were then descriptively analysed and revealed that almost 75% of the industrial noise in Malaysia consist mainly of low frequency sounds below the 1000Hz cutoff point. This finding is important in developing active hearing protection devices which should focus on reducing low frequency noise while still allowing workers to hear important sounds.

Keywords (3-6): Noise, Frequency Spectrum, Personal Hearing Protection