以合成訊號模擬科技廠房樓地板背景微振動之研究

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摘要

Due to the highly tendency of sensitiveness to ambient vibration in high-tech factory building, the criteria of ambient vibration have extremely strict requirement in relatively. This study utilized the collected ambient vibration data to perform the Hilbert-Huang Transform (HHT) method then process the Ensemble Empirical Mode Decomposition (EEMD) technique to decompose the complicated field vibration signals. Hereafter apply the white noise to substitute the first signal then reorganized it as the source of ambient vibration signal (Synthetic signal). This Synthetic signal here is applied as the background vibration signal as the input data for SAP2000 structural analysis program which is used to perform the time history analysis of the foundation stand on the floor level. A comparison is being made between the background vibration values of on-site measurement and the analysis results. The results of this study indicate that the EEMD technology efficiently separates the major frequency from the collected signal and the wave theory effectively simulates the in-filed measured results. Besides, the synthetic signal generated from white noise can efficiently simulate the characteristic of on-site background signal and replace the in-field measured signal to precede the time history analysis of the foundation. In the future, as long as the signal characteristic database was built up sufficient from versatile activities, the ambient vibration can be controlled to fit for each base in the preliminary planning stage.

關鍵字：High-tech Factory Buildings, Ambient Vibration, White Noise, Foundation