

被動質量減振器應用於高科技廠房設備基座微振動之研究

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摘要

This study majorly applied the concept of passive vibration absorber in the precision equipment foundation stand inside high-tech factory. The vibration absorber comprising of a mass and a spring were installed on a foundation inside the CHU laboratory similar to the high-tech factory building. In the first stage, SAP2000 software is used to process numerical simulation in order to determine the optimal parameters of vibration absorber effects. Then based on these parameters, the most suitable vibration absorber is designed and installed onto the foundation in the laboratory for analyzing and exploring the dynamic behavior. Afterwards, apply the results in triaxial diagram at one-third octave band. From the analysis results, it was found the greater mass ratio of the vibration absorber achieves greater results. Under the practical concerns, install the vibration absorber with 1% mass ratio on the foundation to conduct experiments of ambient vibration measurement. The test results indicate in the X direction of the foundation panel, its vibration level raise its enhancement from VC-C to VC-D under general environment disturbances with its dB value reduced to 28.38%; under resonant frequency disturbances, its vibration level raise its enhancement from VC-A to VC-C with its dB value reduced to 57.52%; while in the Y direction, its vibration level cannot be raised up its enhancements under both general environment and resonant frequency disturbances, its dB value can reduce around 15%.

關鍵字：Vibration Absorber, Mass, Mass ratio, Ambient Vibration, Vibration Level.