

Pioneering Rail Damper – An Invention in Hong Kong

Jointly Organized by: Hong Kong Institute of Acoustics &
Department of Mechanical Engineering, Hong Kong Polytechnic University,

Supporting Organizations: HKIE(MMNC) & HKIEIA

Speaker: Mr. Wilson Ho (Director of Wilson Acoustics Limited)

Venue: Room N002, Main Campus, The Hong Kong Polytechnic University, Hung Hom

Date & Time: 25 Apr 2018 (Wed), from 18:30 to 20:30 (reception at 18:15)

Abstract

Multi-Directional Tuned Mass Damper (MDTMD) was invented in Hong Kong for railway noise control and patented in a few countries in 2008. It uses thin rubber layers to perform shearing direction Tuned Mass Damping (TMD) for both vertical and lateral rail vibrations. It provides >10dB vibration reduction and 3 to 6dB(A) noise reduction subject to other noise sources. This invention provides a breakthrough to control high-frequency TMD (>300Hz). In addition, MDTMD is the world's only damper able to slow down corrugation growth rate by half when corrugation frequency is matched with the TMD frequency. Five damper generations with different designs on mounting structure, interface layer and oscillation mass have been tested since 2010. For optimization on installation, maintenance, durability, manufacturability and performance, the 5th generation employs 10 circular-shape oscillation masses.

For cyclic-motion vibration, TMD is employed to dissipate vibration energy with loss factors between 12% and 25%. Recent test indicates that half damper installation MDTMD (1 damper per 2 spaces) can also provide noise reduction of 3 to 6dB(A), which would be the 1st report on noise reduction performance of half damper installation. Besides, the 5th generation MDTMD has a variation design for light rail noise reduction and half damper installation on light rail will be installed and tested in Zurich in summer 2018.

Speaker

Wilson Ho is the founder of Wilson Acoustics Limited, specialized in railway trackform noise and vibration control, TBM groundborne noise assessment, construction noise control, PA system acoustic design and acoustic expert witness. He invented MDTMD in 2008 for railway noise control and retractable noise barrier in 2014 for construction noise control. He has made significant contributions to the noise control development of the new railway lines in Hong Kong.

Registration (first-come first-served)

Please register before 23 April 2018 via the link <http://www.wal.hk/hkioa/raildamper>. The seminar is free of charge for HKIOA members, PolyU students and staff, and members of the supporting organizations. Other interested persons could attend the seminar by paying HK\$100 registration fee.

Activities Sub-committee of Hong Kong Institute of Acoustics