



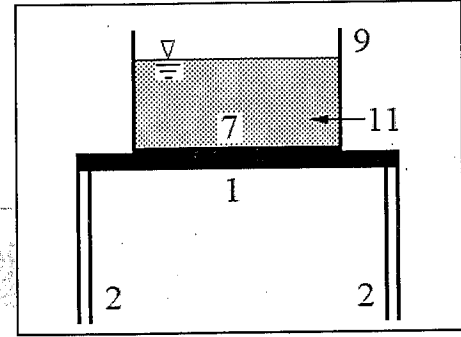
請於此欄位填寫發明名稱

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簡歷：(可列出相關連結，例如系所、研究室網頁)

台灣大學工程科學及海洋工程學系 教授



市場及需求：提供環保有效之結構減震技術

技術摘要(含成果)：本案提供「裝置多孔材質之諧調液體阻尼器」，做為一種環保、經濟、設計簡便且有效之被動式消能減震器，用於控制結構物之震動量，對象包含建築、高塔、橋樑、船舶、海域平台、設備或儀器…等。本案所謂的「裝置多孔材質之諧調液體阻尼器(以下簡稱本案)」係由一簡單形狀之水槽、槽內液體及安裝於水槽中之多孔材質(porous media)所組成。水槽形狀通常為矩形或是圓柱形，注入槽內之液體通常為水，而安裝於水槽內的多孔材質之數量、形狀、體積、安排位置可以依實際情況彈性設計。本案的最大優點為，可將被動式諧調液體阻尼器之效能最大化。根據達西定律，液體在多孔材質中流動時的能量耗損則與液體黏滯性及多孔材質之孔隙比與滲透係數有關。因此在水槽中放置適當的多孔材質，可協助諧調液體阻尼器達到最佳阻尼比。根據線性波理論可求得液體於裝置有多孔材質之簡單形狀水槽內的自然頻率。因此，可根據諧調頻率設計合適的諧調液體阻尼器。根據實際應用的要求，調整水槽的尺寸、水深、多孔材質的孔隙比及滲透係數，使諧調液體阻尼器具有諧調頻率比及最佳阻尼比，發揮最佳的結構減震效能。

優勢：環保經濟、施工簡便、維護容易、可提供最佳減振效能。

競爭產品：諧調質量阻尼器、諧調液柱質量阻尼器。

專利現況：

(1)本技術已根據相關理論基礎，建立物理模型及推導設計公式。

聯絡方式(請不用填)：

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Title of Invention

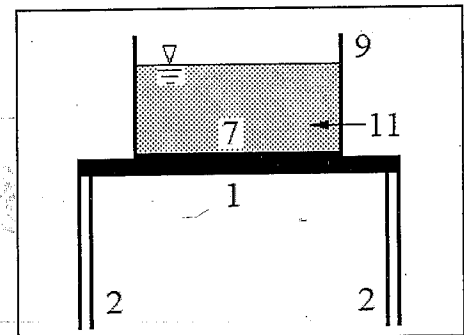
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Experience:

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Market Needs: Provide eco-friendly and effective solution to structural vibration control.



Our Technology: This invention presents the structure of the so-called “Tuned Liquid Damper (TLD) with Porous Media,” which is an eco-friendly, economical, simple-constructed and effective passive dynamic vibration absorber that can be widely applied to building, tower, bridge, ship, offshore platform, facilities, and instrument, etc. This invention is composed of a simple-shaped water tank with partially-filled fluid and the porous media installed inside the tank. According to the practical requirement, the tuned-frequency ratio and optimal damping ratio can be obtained by choosing appropriate tank dimensions, water depth, porosity and permeability of the porous media to develop the best performance in reducing structural vibration.

Strength: simple structure, easy manufacture, installation and maintenance, low construction budget, outstanding performance.

Competing Products: Tuned mass damper, Tuned liquid column damper.

Intellectual Properties: The physical model has been established based on relevant theoretical foundation, and the design formulae have been derived.

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