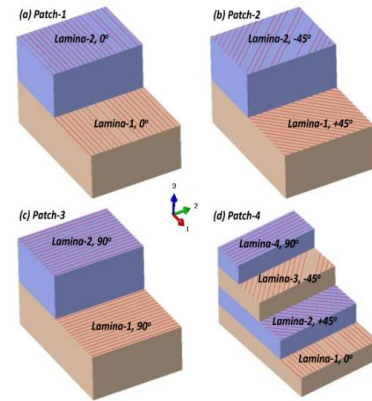




PENDING

(IN202311047884)

Laminate composite patches and use of it in shifting the natural frequencies of a structure



NEED

Unmodified structures face up to 25% higher vibration-related failure rates, causing \$3B annual damage in aerospace and civil sectors. Traditional reinforcement methods lack material compatibility and frequency control, risking safety and longevity of critical assets.

TECHNOLOGY OVERVIEW

This invention introduces a custom-designed laminate composite patch with tunable material, thickness, and fibre orientation. It optimizes natural frequency shifts in base structures, strengthening them against harmful vibrations while preserving weight, design, and operational integrity—without altering core frameworks.

TECHNOLOGY KEY FEATURES

Computationally-optimized stacking sequence, material-matched adhesive bonding, frequency-specific reinforcement, embedded nano-materials, and environmental protection barrier—all engineered to deliver tailored vibration control without structural overhauls.

[Read more here](#)

MARKET ANALYSIS

The global advanced composite materials market is expected to reach \$120.5 billion by 2033 at a CAGR of 6.2%, driven by aerospace, automotive, and infrastructure demand for high-strength, lightweight solutions. [Source: MarketsandMarkets, 2024]

Target Industries

Aerospace Structural Reinforcement, Civil Infrastructure Strengthening, Automotive NVH (Noise, Vibration, Harshness) Solutions, Structural engineering firms, composite material developers, smart infrastructure maintenance providers.

AT A GLANCE

- SDG 9 (Industry, Innovation, and Infrastructure), SDG 11 (Sustainable Cities and Communities), SDG 13 (Climate Action)

Technology is available for licensing/ co-development.

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