

Optimization Design of Superposition Wave Form Automotive Exhaust Bellows Structure

Authors : Zhang Jianrun, He Tangling

Abstract : Superposition wave form automotive exhaust bellows is a new type of bellows, which has the characteristics of large compensation, good vibration isolation performance and long life. It has been paid more and more attention and applications in automotive exhaust pipe system. Aiming at the lack of current design methods of superposition wave form automotive exhaust bellows, this paper proposes a response surface parameter optimization method where the fatigue life and vibration transmissibility of the bellows are set as objectives. The parametric modeling of bellow structure is also adopted to achieve the high efficiency in the design. The approach proposed in this paper provides a new way for the design of superposition wave form automotive exhaust bellows. It embodies good engineering application value.

Keywords : superposition wave form, exhaust bellows, optimization, vibration, fatigue life

Conference Title : ICAMAME 2024 : International Conference on Aerospace, Mechanical, Automotive and Materials Engineering

Conference Location : Havana, Cuba

Conference Dates : February 01-02, 2024