Article navigation
Volume 96, Issue 2
May 1974

This article was originally published in Journal of Engineering for Industry

Previous Article Next Article

https://doi.org/10.1115/1.3438373
Published Online: May 1, 1974
Article history

Views
Share
Cite
Permissions

Article Navigation

RESEARCH PAPERS

Vibration Control Using Semi-Active Force Generators

M. J. D. Karnopp, Crosby, R. A. Harwood

+ Author and Article Information

J. Eng. Ind. May 1974, 96(2): 619-626

A type of force generator which can respond to general feedback signals from a vibrating system in order to control the vibration but which does not require the power supply of a servomechanism is described. Computer simulation studies show that performance comparable to that of fully active vibration control systems can be achieved with the semi-active type of device. Physical embodiments of the concept are discussed and compared to hardware used in active and passive vibration control systems.

Issue Section: Research Papers
Topics: Generators, Vibration control, Computer simulation, Feedback, Hardware, Servomechanisms, Signals, Vibration

View full article

Sign In

Sign In or Register for Account

Purchase this Content

$25.00

Purchase

Learn about subscription and purchase options

View Metrics

Get Email Alerts

Article Activity Alert

Accepted Manuscript Alert

New Issue Alert

Cited By

Web Of Science (621)

Google Scholar

CrossRef

Latest

Most Read

Most Cited

Investigation of the Capabilities of Transverse Magnetic Field Controlled Laser-Induced Plasma Micro-Machining

J. Manuf. Sci. Eng

Mechanical Behavior of Electron Beam Powder Bed Fusion Additively Manufactured Ti6Al4V Parts at Elevated Temperatures

J. Manuf. Sci. Eng

A Comprehensive Study of Auxiliary Arrangements for Attaining Omnidirectionality in Additive Manufacturing Machine Tools

J. Manuf. Sci. Eng

Comparative study of Incremental Forming and Elevated Temperature

Incremental Forming through Experimental Investigations on AA 1050 sheet

J. Manuf. Sci. Eng

Related Articles

Suppression of Micro Stick-Slip Vibrations in Hydraulic Servo-System

J. Dyn. Sys., Meas., Control (June,2000)

Hydraulic Servo System With Mechanically Adjustable Compliance

J. Dyn. Sys., Meas., Control (March,2002)

Specified Motion of Piezoelectrically Actuated Structures

J. Vib. Acoust (April,2012)

Numerical Investigation on the Selection of the System Outputs for Feedback Vibration Control of a Smart Blade Section

J. Vib. Acoust (June,2016)

Related Proceedings Papers

A Novel Three-Parameter Tuning Method for Seismic Simulation Shaking Table

FPNI2014

Precision Grasping With Variable Compliance Using Force Sensing Resistors

IMECE2009

Sliding-Mode Control Algorithm for a Hard-Mounted Isolation System

IMECE2007

Related Chapters

QP Based Encoder Feedback Control

Robot Manipulator Redundancy Resolution

Vibration Control of the Turbine Blade Using Quantitative Feedback Theory

International Conference on Mechanical and Electrical Technology, 3rd, (ICMET-China 2011), Volumes 1–3

The ServoTeach Module

Precision Programming of Roving Robots: Project-Based Fundamentals of Wheeled, Legged and Hybrid Mobile Robots

Issues

Accepted Manuscripts

All Years

Purchase

Twitter

About the Journal

Editorial Board

Information for Authors

Call for Papers

Rights and Permission

Online ISSN 1528-8935 Print ISSN 1087-1357

device is mainly used to control the vibra-tion of the direction. Figure 1. Installation diagram of magnetic fluid damping device for machine tool. No. 8 — 2015. Therefore, through the magneto-rheological damper to the semi-active control of machine tool vibration system, taking a certain control algorithm, can adjust. the damping ratio of the system, and real-time achieve well vibration damping effect. 3. Design of Fuzzy Controller 3.1. The use of semi-active control schemes for mitigation of traffic-induced bridge vibrations has been both analytically, experimentally, and field tested. Patten et al. [20] investigated analytically and experimentally the effectiveness of a semi-active vibration absorber on a 40 feet (12.2 meter) single-lane bridge they constructed. An analytical study conducted by Christenson showed a reduction of maximum midspan displacement of 50% can be achieved with a semi-active control scheme, while only a 31% reduction was achieved using a passive damper control method [3]. Semi-active control methods for reducing vertical vibration are a promising solution that warrants further investigate and research. @article{Karnopp1974VibrationCU, title={Vibration Control Using Semi-Active Force Generators}, author={D. Karnopp and M. J. Crosby and R. A. Harwood}, journal={Journal of Engineering for Industry}, year={1974}, volume={96}, pages={619-626} }. D. Karnopp, M. J. Crosby, R. A. Harwood. Published 1974. Engineering. Journal of Engineering for Industry. 5,020,781 6/1991 Huang . 267/136 5,248,015 9/1993 Yoshioka et al. .