

Designing and Testing a Hydraulic Inerter

Fu-Cheng Wang, Min-Feng Hong and Tz-Chien Lin

Abstract

This article proposes a novel hydraulic inerter and experimentally verifies its properties. The inerter is a true two-terminal mechanical network element, which was invented to substitute for the mass in mechanical/electrical analogies. Previously, inerter concepts have been realized by rack-and-pinion and ball-screw devices. This article introduces a new hydraulic inerter device in which the forces are translated by hydraulic means. The dynamics of the device is discussed and experimentally verified. On the basis of the results, the proposed hydraulic inerter is shown to be effective.