

Performance Benefits of a Full-Car Model with Mechatronic Inerter Networks

Fu-Cheng Wang*, Hsueh-Ju Chen and Chung-Huang Yu

Abstract

This paper investigates the performance improvement by applying inerters to the full-car model. First, we introduced a mechatronic inerter network that consists of mechanical and electrical impedances. Second, we built the full-car model and introduced two performance indices that are used for performance optimization employing several suspension layouts. Third, we applied network syntheses to realize the obtained electrical networks and adjusted system performance by switching the connected circuits. From the results, the mechatronic inerter is shown to be beneficial for improving performance of the full-car mode.