

Enidine by Design

Tomahawk Cruise Missile DAMSI for Vertical Launch Systems

Enidine Mechanical Shock Isolation Application

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Situation Overview

A major defense contractor and manufacturer of Vertical Launch Systems (VLS) was asked by the U.S. Navy to provide extended service life as well as a "softer ride" for the Tomahawk Cruise Missile. The shock isolators used to protect this critical weapon system were required to isolate a heavy load against shipboard shock inputs of Mil-S-901D Grade A, and vibration requirements of Mil-Std-167. The isolator needed to be a direct drop-in replacement that could handle extreme environmental conditions, including temperature extremes, high humidity, and exhaust gases.

Product Solution

Enidine developed the Double Acting Mechanical Shock Isolator (DAMSI), a purely mechanical shock isolator featuring our patented friction spring element damping. A single DAMSI replaces two liquid spring shocks while providing pre-load static support and improved near-miss shipboard shock protection. In addition, the mechanical design of the DAMSI eliminates the possibility of seal failures or leakage, effectively doubling the service life of the unit.

Application Opportunity

Dynamic modeling, design verification, medium weight hammer and barge testing have all served to demonstrate that the DAMSI has met or exceeded all of the U.S. Navy's environmental, service life, and performance requirements. Moreover, the DAMSI offers significantly reduced G-loading to the weapon during shipboard shock events, as well as a greatly improved service life. As a result of the Enidine product's ability to meet customer requirements, the DAMSI is slated for installation into the Tomahawk Vertical Launch System (VLS).

