Enidine by Design

Missile Canister Shock Isolator

Enidine Elastomeric Isolator Application

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Situation Overview

A major missile manufacturer uses a canister to safely contain missiles for transportation and storage. The 2 X 5M canister also serves as the launch pod during combat. As these missiles are extremely expensive, the contractor wanted to reduce canister handling incidents, such as dropping, where the missile could be damaged and become non-operational.

Application Opportunity

A concept was developed to install four isolating devices, one under each corner of the canister, which would protect the system if it were dropped or impacted according to stringent government Mil-Std-810 shock conditions.

The contractor did not require a specific type of hardware to be used. Enidine identified three different options: hydraulics, wire rope isolators and elastomerics. The contractor was pleased with the number of options that he could choose from.

The customer's highest priority was to reduce the output g-load, which would affect the delicate parts of the missile if the canister was dropped. Reducing the g-load of an impact would best assure the survivability of the missile and minimize damage.

The customer also had environmental concerns such as solar radiation, fungus, ozone, snow loads, salt conditions and operation at extremely cold temperatures (-34°F). In addition, they required a solution that was resistant to many solvents found in a military environment such as acetone, jet fuel, and diesel fuel.

Product Solution

As a team, the contractor and Enidine mutually selected a metallic/elastomeric-molded configuration as the most efficient and cost-effective solution.

Enidine developed a unique elastomer called ENITEMP IV, which performed exceptionally well at cold temperatures and successfully met the environmental requirements. An engineering development program was initiated at Enidine to optimize the final configuration of the elastomer.

Project Results

Based on a successful product development, Enidine is now manufacturing production quantities of this shock isolator for three different missile programs with the same contractor. We are also working on several related programs where the same isolator may be used.

The contractor was developing multiple missile systems simultaneously. Enidine's design experience permitted us to produce a single product which could be used on these various systems which increased usage and reduced system costs. At the end of product development and performance testing, the Enidine solution was chosen, primarily due to the product's superior operating performance at cold temperatures.

Enidine worked closely with the contractor to develop a realistic, operational specification. Our solution provided substantial savings over the anticipated life of these programs and developed a unique cold-temperature performing elastomer to apply in future applications.

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