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Better Protection for Cargo Loading Systems

Enidine Shock Absorber Application

By William Wilk

Application Overview

A cargo loading systems manufacturer needed to protect its aircraft cargo and rail systems from damage to outboard guide rails and the aft end stop. The impact of cargo pallets and containers was damaging the system during freight loading. An ideal solution for this OEM needed to meet the following requirements:

- Maximum cargo container weight: 22,500 lbs.
- Impact velocity on energy absorber: 12 ips
- Rail displacement: 1 in.
- Constant drive force: 4,200 lbs.
- Maximum energy absorber diameter: 1.25 in.
- Required life: 2,500 cycles

Product Solution

Enidine designed and qualified a custom energy absorber, based upon our standard SH model, for this unique OEM application. The product was tested and qualified to a useful life of 25,000 cycles, ten times higher than the OEM originally thought possible. Additionally, the unit was designed to handle a second impact from a cargo pallet within one second of the previous load's removal. Enidine energy absorbers were mounted on and formed part of the cargo rail mounting brackets. They were spaced at 20-inch centers along the cargo guide rail of the OEM's system. The energy absorber was also designed to meet the following environmental requirements:

- Operating temperatures from -30º F to 160º F
- Performance in salt laden atmospheres
- Performance under conditions of airborne sand and dust, as seen in normal desert loading environments

Application Opportunity

The customer was very pleased with the Enidine solution, which exceeded their initial expectations. The cargo handling systems manufacturing industry (SIC 3535) is moving toward the trend of customization to meet the individual needs of cargo carriers. Carriers are routinely asking for systems which are both reliable and strong enough to endure their demanding environments. Enidine energy absorption products, which help protect the carrier's valuable cargo and are accompanied by full engineering support, are integral components in meeting this need.

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