Enidine by Design

Special Pressure Sensing Shock Absorber Provides Emergency Shutdown

Enidine Shock Absorber Application

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Situation Overview

A designer of material handling equipment for mail sorting developed a new system that incorporates a mechanism similar to an overhead crane. It sorts the mail using a robot that travels along an overhead rail at speeds up to 120 in/sec. As the robot travels, it can pick up and place loads of mail as heavy as 1000 lbs.

In a typical crane application, shock absorbers are located at the end of the rails to decelerate the crane in the event of a runaway condition. In addition, emergency stop buttons are often used to enable the operator to manually shut down power to the drive motors.

Product Solution

Due to space limitations and congestion created by the components that operate the system, the designer wanted to eliminate the stop buttons. This required a shock absorber capable of sending an electrical signal to trigger an emergency shutoff that would decelerate the robot.

The shock absorber sized for the application was a modified standard PM 2150 shock with an integral pressure sensor. The sensor monitored dynamic pressure in the shock absorber and was electrically linked to the drive system of the mechanism.

In the event of a failure or a runaway condition, the pressure surge created at initial impacts sends a shut down signal to the drive motors. With the drive motors shut down, the shock absorber dampens the remaining energy and lets the robot stop safely.

Project Results

The customer is abel to operate this new material handling system at maximum speeds and loads, making the machine more competitive and desirable to the companies that purchase it.

A quick response in developing this unique solution saved the manufacturer valuable design time and solved several problems in an economical way. Material handling equipment (SIC 5084) has always been a prevalent industry for shock absorbers and air springs. Enidine's ability to add sensor technology to its shock absorber products is a unique advantage.

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