

## Product Innovation Is No “Amusing” Matter Enidine Rate Control Application

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### Situation Overview

An innovative amusement ride manufacturer approached ITT Enidine Inc. with an application for a self-contained, double-acting hydraulic rate control. The rate control unit needed to have an electronic signal readout locking capability. It also needed to be capable of withstanding a force of 5500 pounds in the lockout mode.

The unit would help control and lock the chest and leg restraint on an amusement ride. The industry normally uses mechanical or pneumatic or ratchet style restraints. The customer had previously designed a hydraulic cylinder with an external valve and oil reservoir. But the system was very labor intensive to install and prone to leaks. The customer needed to be in full production of the amusement ride within six months.

### Product Solution

With ITT Enidine Inc.’s existing knowledge, a design was completed and a prototype was tested in less than four months. ITT Enidine Inc. designed a self-contained hydraulic rate control that would dampen in both the extension and compression directions and provide hydraulic lockout capability with a solenoid-actuated valve. The cartridge-type solenoid valve provided the signal readout capability. An integral accumulator was also incorporated to eliminate cavitation and provide positive pressure.

The unique design enhanced reliability, eliminated extraneous piping and reduced installation time. The functionality of the unit was also smoother than the traditional ratchet design. ITT Enidine Inc.’s experience in design, test and production made the project a success.



*Amusement ride manufacturer approached ITT Enidine Inc. with a non-traditional application.*

### Application Opportunity

ITT Enidine Inc. is in production of these units, which have been specified on two new rides currently being developed by the same customer. This application has given ITT Enidine Inc. additional experience in the amusement and recreation marketplace, where safety and reliability are key drivers in product development. It has also given ITT Enidine Inc. a new product that can be used in many markets, because the unit can control a moving load in two directions and lock it in place upon command.