



Pacific Scientific helps USPS vendor build faster mail sorting machinery

In the ever-increasing competitiveness in the document delivery business, machine speed and reliability are critical to success. With so many choices of delivery services, competitors need to ensure that they deliver the highest levels of service and value to their customers. That's why the United States Postal Service uses the latest in high-speed document sorting machinery.



A Texas manufacturer of high-speed sorting equipment previously used a mechanical clutch-brake to drive the document infeed on one of their large sorting machines for the postal service. The mechanical clutch brake system had to be replaced sometimes in as little as every few days, incurring an

enormous amount of machinery downtime. Reliability problems and maintenance issues with the near-constant adjustments led the manufacturer to seek an electro-mechanical solution to this motion control problem.

Their pursuit of a suitable replacement technology led them to Pacific Scientific, who presented the SC403 velocity servo amplifier as a replacement to the clutch-brake system. After a rigorous search and exhaustive set of product trials, Pacific Scientific was selected to supply the amplifiers, based on performance, value, delivery and level of support.

Document Handling Industry

The Problem:

A mechanical clutch-brake was limiting machine throughput and breaking down prematurely, causing serious downtime problems.

The Solution:

After an intensive search, Pacific Scientific was selected to provide servo amplifiers for velocity control, to eliminate the clutch brake assembly. As the business partnership evolved, Pacific Scientific also collaborated on the design of a new feed mechanism and a tuning aid, maximizing the value they delivered to their customer.

Pac Sci Products:

SC403 Servo Amplifier
R46G Brushless Servomotors
with integral swingarm
belt-drive mechanism
Custom servo loop compensation device

Design Considerations:

SC403 Velocity Controller

- Clutch-brake style interface
- Easy analog interfacing
- Integral power supply

R46 Servomotors

- High acceleration, fast response
- Custom shaft modifications available for application flexibility

Custom Servo Loop Compensator

- Tailored for specific application
- System tuning simplified



888-4PACSCI
(888-472-2724)

www.pacsci.com



for the high-performance REGAL motors and the robust SC403 amplifier.

As these new-generation sorters were delivered and placed in use, the Postal Service approached the vendor of the sorting equipment with a request for a simple means for the Postal Service maintenance staff to set up and tune the SC403 servo system for optimum operation. Pacific Scientific designed and implemented a compensation device that allows the technician to tune the system for maximum performance using a simple electronic device that plugs into the servo loop and reduces tuning to a go/no-go decision.

The equipment manufacturer found themselves able to produce a machine that could sort higher volumes of mail per hour with virtually no down time, due to the installation of the high-speed servo feeding mechanism.

As this business partnership evolved, Pacific Scientific was called to collaborate on a redesign of a system element that was causing difficulties. The old system used a belt-drive swingarm that they affixed to a custom extended-shaft version of the REGAL R46 motors from Pacific Scientific. Reliable operation of this drive mechanism is critical for high speed mail sorting. Problems with failures of the coupling between motor and feed mechanism led to Pacific Scientific customizing the motors further with the feed mechanism incorporated as an integral part of the motor's design. This collaboration of customer and vendor has led to a dramatic increase in machine uptime, as well as greater speed of the machine.

The US Postal Service remains competitive in the document delivery business thanks to commitment from its supplier chain. The partnership between the sorting equipment manufacturer and Pacific Scientific has led to increased throughput and efficiency for the end customer.

The high dynamic response of the REGAL R46 motors, with their high torque and low inertia, allows them to feed documents into the sorter one at a time at a rate of upwards of 40,000 pieces per hour! Typical use of the sorters by USPS personnel keep the machines running in multiple sorting schemes for most of the day. Starting and stopping reliably at that rate is no problem

**PACIFIC
SCIENTIFIC**
HIGH PERFORMANCE MOTORS & DRIVES
888-4PACSCI
(888-472-2724)
www.pacsci.com