GEAR PRODUCT NEWS
www.gearproductnews.com

CASE STUDY

Metal-to-Plastic Conversion

REDUCES COST, NOISE IN PACKAGING EQUIPMENT

Seeking a lower-cost alternative to anodized, machined aluminum pulleys for its high speed PouchPlus® Inserter, Unique Solutions Inc. sought design and manufacturing assistance in converting all pulleys in its Model US622 inserter to FDA-approved N6650 nylon.

The inserter has a drive mechanism, which requires several precision timing pulleys. The original design used pulleys machined from aluminum bar stock and hard-coat anodized. However, this approach had significant drawbacks.

The pulleys were costly to manufacture, and the inconsistent thickness of the hard-coat anodized finish created a host of fit and tolerance problems.

Unique Solutions turned to Torque Transmission for help. Torque Transmission adapted Unique Solutions' design so the pulleys were economically manufactured using plastic injection molding.

The nylon pulleys are easier to assemble during production, they reduced the inserter's weight, and the finished product operates more quietly, says Norm Hendle, manufacturing manager for Unique Solutions.

Initially, the company had some concern about the moisture absorption of the nylon pulleys. In one case—a high humidity environment—the company experienced some problems with the new design. However, Torque Transmission continues to work closely with Unique Solutions to determine if this was an isolated incident or if material modifications are needed.

"Replacing our aluminum internal pulleys with molded nylon proved to be a smart move," Hendle says. "We saved significant money. In fact, all the tooling and engineering was paid back in just the first production run—that's a huge ROI."

The original production run was for 3,000 pulleys, manufactured in batches of between 200 and 800 pieces.

In addition to the cost savings, the molded nylon pulleys run quieter than aluminum. And, the injected molded plastic offers consistency from batch to batch and pulley to pulley, eliminating the frustrating and time-intensive fitting issues inherent with the anodized aluminum pulley.

Unique Designs has not performed a quantitative analysis of the tolerance differences between aluminum and plastic. As far as strength is concerned, Hendle says they were happy with the end result.

"Obviously, the plastic pulleys are not as strong as the aluminum pulleys were. However, because our inserter is a belt-driven system, not a direct drive system, this sacrifice in strength is not a factor at all," he says.

John Rampe, president of Torque Transmission, says Hendle's thoughts have been echoed by many of Torque Transmission's clients.

"More and more, we're helping customers reduce costs and improve performance through innovative design and precision manufacturing. Our highly skilled engineers combine their application-specific expertise with finding the right combination of high-strength, low-cost materials to meet or exceed the customer's requirements." ■

For more information:

Torque Transmission
1246 High St.
Fairport Harbor, OH 44077
Phone: (800) 544-6642
E-Mail: *sales@torquetrans.com*
Internet: *www.torquetrans.com*

Unique Solutions
550 E. Main St.
Lake Zurich, IL 60047
Phone: (847) 540-1200
E-Mail: *info@unique-solutions.com*
Internet: *www.unique-solutions.com*