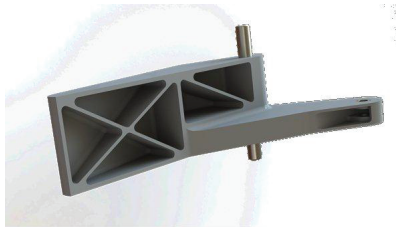


Globe's All-Composite Diverter Arm



See the high-speed diverter arm in action!

Situation

This customer uses motor-activated diverter arms to push packages and non-standard objects off high-speed belt conveyors into delivery chutes at two of its largest distribution centers. They have approximately 5,000 diverter arms in operation. Collectively, these two facilities handle over 350 million packages per year.

These diverter systems are critical to the sorting operation during peak periods and downtime is expensive and disruptive. Each package can weigh up to 80 lbs. and the diverter arm actuates in less than 1/3 second, thereby placing incredible stress on the diverter arms. The diverter arms used by the customer were made of reinforced aluminum and steel or rigid plastic and steel. Over time, the aluminum diverter arms would deform from the repetitive stress and the plastic arms would crack. Additionally, the metal attachment arm connecting the diverter to the motor would crack from force and inertia of the arm when actuated. The customer has tried numerous enhancements over the past several years to extend the life of the diverter arm, but these efforts have been expensive and unsuccessful.

Globe's Solution

Globe designed a one-piece diverter and attachment arm (both left and right-hand versions) made of lightweight, impact resistant **Brandonite® 1000-75D**. The 15% reduction in weight and the impact absorbing properties of the composite material practically eliminated the potential for bending, deformation, and failure. The arm was independently tested under the most adverse conditions for over 2 million cycles and did not show signs of stress, wear or degradation. Also, this part is 25% more cost-effective than the current aluminum or plastic part since the composite diverter arm is cast into its final net shape, thereby eliminating costly secondary machining operations.

Benefits & Results

An estimate of approximately \$1.1 million will be saved over the next 3 years in replacement costs by the customer using Globe's all-composite diverter arms over the plastic or aluminum models.

Material

Brandonite®1000-75D is a liquid-cast, thermoset material combining the properties of high tensile strength, outstanding low-temperature flexibility, elasticity, and excellent resistance to wear and hydrolytic degradation. It is V-0 flame rated, RoHS compliant, possesses high shear strength, and is transparent to radio-frequency waves for RFID applications as well.

Development Time

Total development time for this product was 12 months. Since Brandonite® 1000-75D has been used by Globe for several previous applications, the actual product development cycle took only 5 months from concept to internal prototype testing. Given the critical performance requirement for the diverter system, the customer tested at the facility for an additional 5 months prior to going into production.