

Electronic Amplifier Assembly Plant Silences Quality and Conveyor Problems With Non-Metallic Belt Splicing

Industry

Electric guitar and keyboard amplifier manufacturing

Application

Automated indexing assembly-line conveyor belts

Product

Alligator® Plastic Rivet Fasteners

Objective

Protect finished product from scratching and minimize belt maintenance downtime

Conveyor Details

Belting: PVC in 457 and 762 mm (18" and 30") widths, 3.2 mm (1/8") thick

Belt Lengths: Four 15 m (50') final assembly belts, two 12 m (40') chassis assembly belts

Configuration: Horizontal, flat belts on roller beds, microprocessor-programmed to pause at each assembly station while work is performed, then advance to the next station

Typical Load: Finished amplifiers on final assembly lines, electronic sub-assemblies on chassis assembly lines



Problem

Electronic components are fragile and susceptible to scratching. The conveyor system automatically indexed products from one work station to the next. At the work station, the operators would continually turn, slide, and flip the products to install various parts. The belts were connected with a metallic wire hook splice, which functioned well, but could cause scratches to the fragile and expensive products. Damage to the product resulted in reworked or scrapped product, both of which were very costly. Trying to improve the situation, the user installed an epoxy splice covering to prevent scratching, but it proved difficult to separate the belt splice if maintenance was needed on the system. Vulcanizing was ruled out as well because of the time and cost involved.

Solution

Alligator® Plastic Rivet Fasteners offer an economical, non-metallic, and non-magnetic alternative to light/medium-duty metal splicing. Molded of nylon, each fastener segment consists of a single molded piece 25 mm (1") wide, with hinge loops at the end. Molded into the upper plate are two rivets that align with holes in the lower plate. After holes are drilled through both belt ends, as guided by a special locating templet, fastener segments are snapped into place across the width of the belt by inserting their molded rivets through the belt holes. Each fastener segment then is compressed into the belt cover by the Alligator Spin-Set™ installation tool, which resembles a small drill press. The tool's special curling bit, rotating at high speed, locks the compressed plates in position by spin forming the rivet heads into countersunk pockets molded into the fastener's lower plate.

Result

Damage from metallic splice scratching was eliminated, with no loss of splice performance and service life. As with wire-hook splicing, belts remain easily separable for conveyor maintenance by pulling the splice's hinge pin. When splice replacement is necessary, downtime is minimized as Alligator Plastic Rivet Fasteners are installed in a 762 mm (30") belt in about 30 minutes, and can be pre-installed in spare belts.