Beloit Precision, Inc.

CASE STUDY

Stratos International, Inc.

Project: New cage versions for small form-factor pluggable (SFP) optical transceivers.

Goal: Give OEMs more manufacturing options, potential cost savings and increased packaging flexibility when designing and building systems that employ SFP transceivers.

Results: Widely regarded within the computing equipment industry as the highest quality SFP cages available.

Stratos International is a leading supplier of optoelectronic, fiber optic, radio frequency and microwave components, subsystems and interconnect products. Its broad range of products are utilized in the telecommunications, enterprise, military and video markets. A pioneer in developing optical devices using innovative form factors, the company holds more than 100 patents.

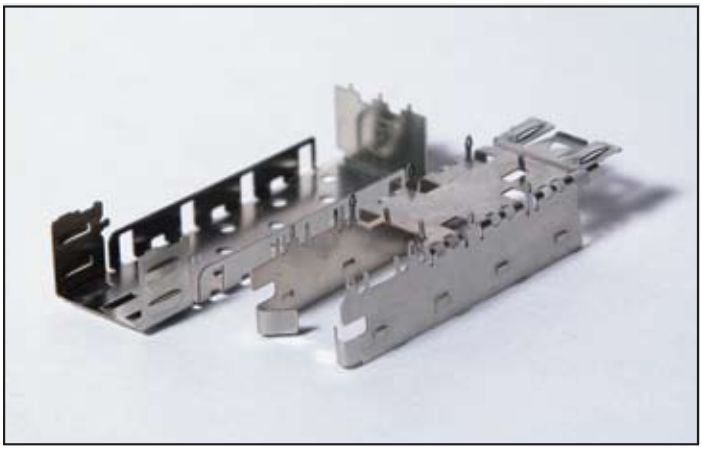
Stratos was looking to introduce a new line of SFP cages. The cages are used for electromagnetic shielding of copper and optical pluggable tranceivers when plugged into host equipment, including network switches, routers, servers and storage devices. SFP cages can be manufactured via one-piece or two-piece construction and comprise standard SFP, press-fit and PCI versions.

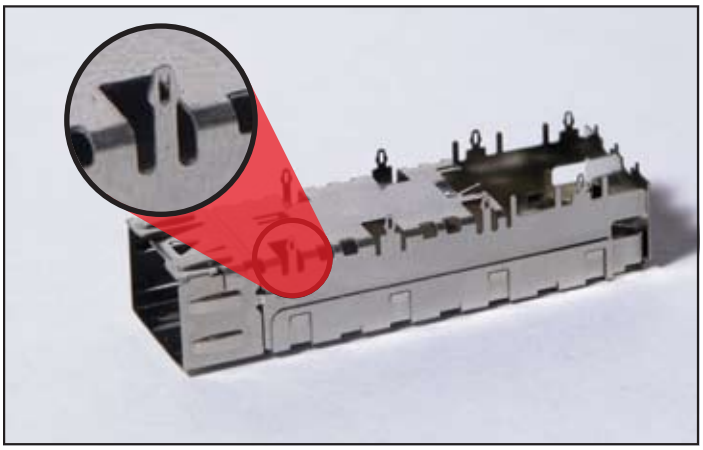
Stratos put the project out for competition, with the idea that the first of four competing firms to bring the product to market would earn the lion's share of the manufacturing business. Beloit Precision not only delivered the new SFP cages ahead of the competition, but also delivered a product that outperformed the rest. To accomplish this, we developed special punching and welding processes to meet the company's exact specifications and application requirements.

From a prototyping standpoint, the most challenging offering in Stratos' new lineup incorporated a press-fit design. The advantage of this design is the cage attaches to the circuit board without the need for soldering. Special diamond-shaped tips on the cage legs press-fit into openings on the circuit board, locking the cage securely in place.

The press-fit version of the SFP cage is configured with four side plates, a rear plate and a rectangular opening in the front. Among the prominent features of the design are guide rails located on all four sides. Each of three guide rails on the top side has a hole of a prescribed diameter located at a prescribed distance from the front opening.

The specially designed press-fit leads located on the bottom side for mounting the cage to the circuit board resemble tiny slotted diamonds or eyes of needles. Because the tiny slots





Stratos Optical
Connectivity Solutions

exceeded the punching limitation of the material, Beloit Precision devised a new punching process that could accommodate the tiny slots without interrupting cage production.

Stratos originally specified two-piece construction involving snap-on assembly of the top and bottom pieces of the cage. It was later determined that constructing the cage in one piece afforded greater reliability and protection from accidental jarring or dropping of the computing equipment during usage. Beloit Precision developed a method to spot weld the cage in one piece. As a result, we were able to reduce assembly time and processing issues.