

Case study

Flying optic laser helps Iowa job shop soar

Service, support and training seal the deal

At Janco Industries in Sully, Iowa, Joel Jansen had a thriving business, making various structures in mild and some stainless steel for the agricultural, food processing, food service and construction industries. But when he visited IMTS in Chicago, he saw something that changed his view on his company and its future. That something was the ECHO III flying optic laser from Han Kwang USA, the American representatives for a fast-growing Korean machine builder.

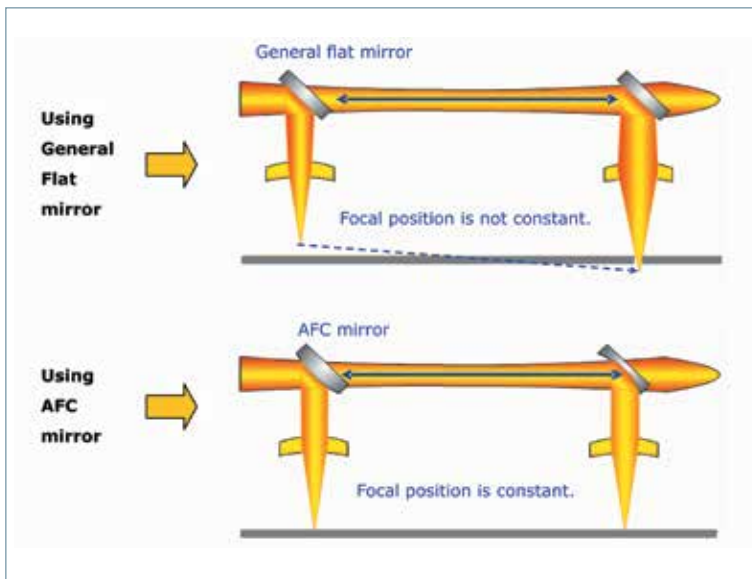
Jansen admits he had looked into laser cutting in the past, but the ECHO III had some noticeable differences from other units on the market. The Panasonic resonator, which generates the laser beam, had significant upsides in running and maintenance costs. In addition to the precision flying optics design, it could make more complex metal parts with holes and cutouts in less time with its twin linear drive motor system. The shuttle table system ran at 1200 IPM, for enhanced loading and unloading of the workpieces, a real time-saver.

The "dealmaker" for Jansen, however, was the Siemens Sinumerik 840D CNC, with a user-friendly design for PC interface, substantial 10 GB hard drive, 2 MB memory and a network-based, remote diagnostic support, which Jansen cites as an essential element in his buying decision. Training would be critical and local support a must. Since both Han Kwang and Siemens have offices and training facilities in Chicago, the decision was becoming much easier.

All these factors, combined with a small footprint, fast positioning speed, auto-focus-control for varying the beam target with high precision and, as Jansen observes, "a price that left the other players in the dust," to solidify his purchase.



The Sinumerik 840D CNC from Siemens controls all laser power, table motion, cutting bridge X-Y axis movement and safety detection system. It also enables remote diagnostics and software enhancements.



Above: Janco Industries uses laser to produce structures and components for its agricultural, construction and food processing equipment customers, working in various mild and stainless steel plate.

Left: AFC auto-focus control on-board maintains laser beam accuracy.

The advantage of the flying optic laser design are several. The optics move in the X and Y axes, thus the material remains stationary. Owing to the high precision of dual Siemens linear motor drives, the positioning is fast (170m/min or 6693 in/min) with 0.004" accuracy and the acceleration substantial (10m/sec² or 393 in/sec²) with constant inertial dynamics and therefore minimal wear on the rack and pinion assembly.

The CNC controls all of the laser power settings, as well as axis movement and feed rates. With DNC and LAN interface, the remote diagnostic capabilities allow Janco operators to quickly interact with production control or even Siemens personnel, over the Internet, for assistance and direct real-time troubleshooting.

Han Kwang's Echo III laser provides this customer auto-focus control with 9.5mm (0.375") max. focal length variation, achieved through air pressure deformation of a hard gold-coated mirror. In this 4 kW unit, material thicknesses over a wide range can be cut, ideal for a job shop such as Janco. Mild steels from 1–20 mm (0.04"–0.94") and stainless from 0.8–12 mm (0.03"–0.47") are routinely processed at Janco to fabricate the various components the shop produces for its diverse customer base.

When programming the laser, Janco utilizes its own software as well as the onboard ProDesign program, which automates the programming of sheetmetal cutting machines from CAD to the critical nesting function that directly impacts material consumption and a shop's profitability, according to Joel Jansen. Additionally, because the program allows various lead-in/lead-out settings for differing contours, more diverse parts can run simultaneously, another cost-saving feature.

The ECHO III laser at Janco can handle workpieces up to 800 kg (1760 lbs.). Software updates can also be made by direct upload from the manufacturer, thus keeping Janco equipped with the latest versions of all applicable programs.

Han Kwang operates a 412,000 sq. ft. facility in Korea and currently markets its machines throughout Asia and North America.