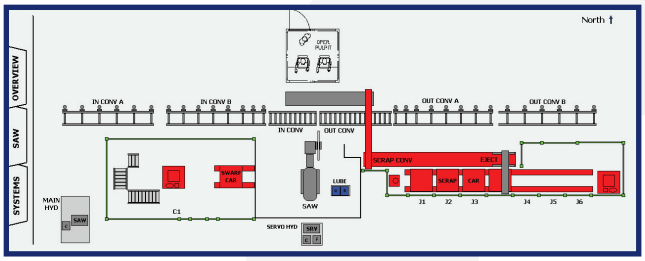


Laser Product Positioning System with Advanced HMI

Project Overview

Quantum Design worked with an Abrasive Saw manufacturer to conceptualize, design, build, program and commission a new laser based product positioning system with an advanced HMI for an abrasive saw production line.

Top 3 Most Relevant Industries

> Industrial Machinery
> Primary or fabricated metals
> Instrumentation, measurement or control systems or devices

Engineering Specialities Highlighted

> Human-machine interfaces (HMIs) and operator interfaces
> Control panels (including fabrication, installation and UL listing)
> Programmable logic controllers (including installation and programming)

Full Project Detail

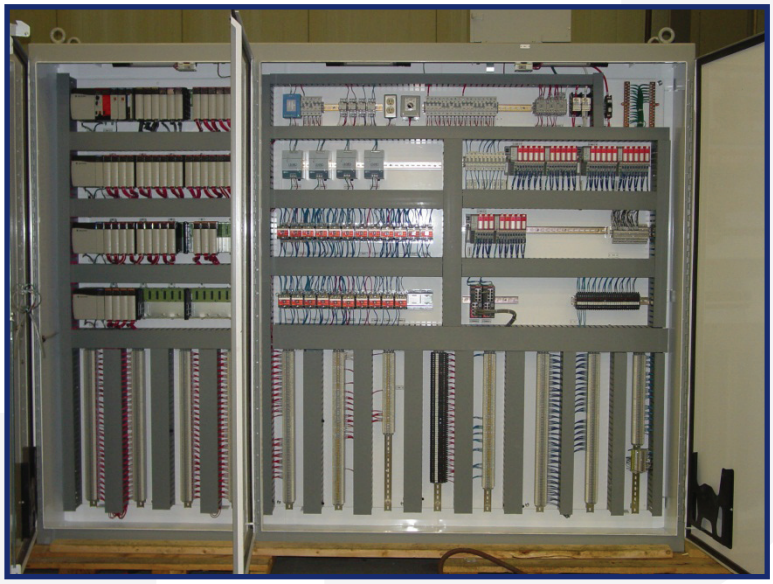
A manufacturer of abrasive saws, Centro-Metalcut, conceptualized a new laser product positioning system for an end customer's abrasive saw production line. Traditionally an Abrasive Saw measures material using a full mechanical measuring gage with hydraulics built separately as a standalone piece; usually specifically designed for the saw being built and the cutting material being cut. This is a huge additional expense for an already very expensive piece of equipment. In addition, the maintenance costs associated with this type of measuring system would be astronomical and continuous throughout the life of the machine. The customer requested a laser positioning system to reduce the overall cost of the machine and to increase efficiency thereby increasing their ROI.

The engineering team at Quantum Design was able to assist Centro-Metalcut in the design of the laser position system as well as provide the necessary services for developing the standards based design. The laser product positioning system consists of laser distance sensors mounted at opposite ends of a material handling roller conveyor. The product to be cut is placed on the roller conveyor between the two lasers. One laser tracks the position of one end of the product while the second laser tracks the opposite end.

The laser position tracking values are relative to the abrasive saw cutting wheel. Length can be calculated from the position information. The length information is then used by the roller conveyor to position the product to the required cut length. The operator interface to the laser product positioning system is human machine interface (HMI)

Project Overview Continued

based and the number of cuts and type of cut (test piece, crop, etc.) can be entered. The recipe system developed by the Quantum Design engineering team provides multiple process instructions to be entered and retrieved for each cut, allowing multiple autonomous cuts per product loading cycle. This allows the customer to enter information for different product pieces being cut and then retrieve the information later for identical product pieces meaning no delays in production and less work for the customer.



The laser product positioning system helped the abrasive saw manufacturer meet end customer safety, quality, and production requirements of the abrasive saw production line and helped the customer to cut more product, more accurately.

The Quantum Design, Inc. engineering group integrated the hardware and software into the abrasive saw production line. The integration required human machine interface (HMI) and programmable logic controller (PLC) design, development, testing, and conformance to the end customer manufacturing execution system (MES).

The engineering group at Quantum Design integrated well with the manufacturer and end customer when compiling specifications and requirements. They provided the necessary services for developing standards based design, engineering documentation, software development and testing, and customer support of the new laser system. The manufacturing services then assembled and tested the system to meet required agency approvals.

The project was a huge success not only because it was a unique engineering design for Quantum but also because the customer was extremely pleased with the results. A follow up order for 2 more additional machines was placed only a few months after assembly finished with this machine.

Visit **www.Quantumdi.com** for information on Quantum Design and the Quantum Design engineering team.
For more information on Abrasive Saws visit **www.CentroMetalcut.com.**