

Industry: Metals

Application: Cut-to-Length

Metals processor achieves higher cutting accuracy and reduces scrap for real productivity savings

Profile:

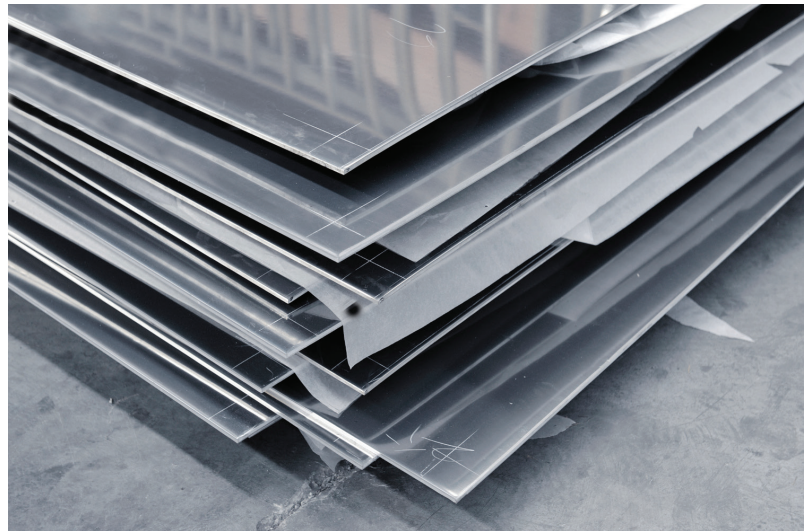
Metals Service Center

Solution:

LaserSpeed® LS Pro 9500-303

Results:

- ▶ Higher accuracy length measurements
- ▶ Precise cutting control
- ▶ Dramatic decrease in scrap
- ▶ Rugged, reliable operation in demanding environment
- ▶ Significant production savings



Processing and distribution of metals

Metal Service Centers process and distribute a wide range of ferrous and non-ferrous metal products for variety of customers. They perform various “pre-processing” operations for customers that require the metal products to meet unique size and treatment specifications. Products range in grade, thickness, and finish.

Operations include slitting, shearing, sawing, grinding, flame cutting, coating, and cutting-to-length. These Metal Service Centers handle millions of pieces of year. With the competition being fierce, the Metal Service Centers place an increased importance at looking at ways to reduce waste, improve quality, and increase productivity to remain economically competitive.

The Challenges:

A metals service center needed a more accurate and consistent way to control its cutting process and reduce material waste. On a “Start-Stop” cut-to-length (CTL) line, it used a mechanical wheel encoder to measure the length of product and control a hydraulic shear machine that converts flat rolled steel into specific-sized sheets. For example, the facility processes large coils of flat rolled products, such as cold-rolled steel, stainless steel, and diamond plate to produce sheets with lengths ranging from 24” to 192”. Anywhere from 15 to 20 rolls are processed a day at speeds up to 160 fpm or greater, depending on the application. The cut-to-length accuracy required for the end product is held to tight specifications.

Over the years, the facility experienced length measurement inaccuracies on its CTL line. The mechanical wheel encoder

would slip when making contact with the product due to the oil used on the cold-rolled steel. This oil residue would remain on the rotating wheel of the mechanical encoder, causing additional measurement inaccuracies when processing other products. The length measurement errors directly affected the cut-to-length accuracy. Measurement inaccuracies were greater than 1% and resulted in material scrap and quality issues.



Processing of flat rolled products into various sheet dimensions, such as diamond plate

The Solution:

The metals service center replaced its mechanical wheel encoder with the LaserSpeed Pro 9500-403 measurement system. This system uses an advanced, laser-based measurement technology to optically measure the length of the product. The LS Pro 9500-403 projects a unique fringe pattern on the surface of the metal sheet. As the sheet moves, this movement creates a Doppler signal that is scattered back to the LaserSpeed Pro system. This Doppler information is translated into product speed. Pulses are generated at a rate proportional to the speed and sent to the PLC that controls the cut command on the hydraulic shear machine. The PLC counts the pulses to determine the product length. With a measurement accuracy of $\pm 0.05\%$, the LS Pro 9500 enables the metal service center to hold repeatability to within .009” on a 140” sheet of oiled cold-rolled steel and .020” on stainless steel.

Critical Process Factors. The metal service center used the following key process determinants to specify the appropriate length measurement solution:

- ▶ Measure true length of product
- ▶ Provide accurate cut-to-length control

LaserSpeed® Pro 9500-303

- ▶ Withstand demanding production environment
- ▶ Reduce maintenance
- ▶ Direct replacement of mechanical wheel encoder

Installation. The LS Pro 9500-403 is mounted approximately 1 to 1-1/2 ft upstream from the hydraulic shear machine, where the original mechanical wheel encoder was installed. The system consists of a measurement gauge, power supply, and cable. The LS Pro 9500-403 is positioned at a 6-degree angle and 12 inches from the surface of the moving product. At this position, the LS Pro 9500-403 effectively produces a 1.4 inch depth of field or “measurement zone” to accurately detect product movement. The LS Pro 9500-403 can measure forward, reverse, and zero speed (no motion) which makes it perfect for start/stop measurement applications.



The Results:

While it's still early to determine the productivity results and ROI, the metals service center anticipates the following benefits from implementing the LaserSpeed Pro measurement solution:

- ▶ Accurate length measurements of flat-rolled products for improved cutting control
- ▶ Rugged, reliable operation day-in and day-out in demanding production environment
- ▶ Reduced product scrap from manual trial measurement methods and applying fudge factors, as well as from daily production length inaccuracies
- ▶ Increased productivity and cost savings



Measurement & Control

For questions or support go to: <https://ndc.custhelp.com/>

In line with its policy of continuous improvement, Nordson reserves the right to revise or replace its products or services without prior notice. The information contained in this document may not represent the latest specification and is for indicative purposes only.

Document #: M-APPL-SENS-Nordson LS Pro Metals Service Center-EN-2025MAR24
Date of Issue: March 2025
© Nordson Corp. 2025

Nordson Measurement & Control is represented in over 60 countries worldwide. www.ndc.com/betalasermike
