

Application Brief:

SAW BLADE ALIGNMENT

GANTRY PLATE SAW IN A FABRICATION ENVIRONMENT

INDUSTRY: Steel, lumber, fabrication

APPLICATION: Saw blade alignment

SUMMARY: Large saw blades used for cutting different materials frequently shift out of alignment, resulting in cuts at the wrong angle and unnecessary reworking and scrap. A maintenance free laser distance sensor saw blade alignment system provided a reliable, repeatable, and cost effective means of improving production quality and eliminating unnecessary scrap.

Overview

When using a large saw blade for cutting different materials, the blade frequently shifts out of alignment for a number of reasons, especially when squaring the heads while making an adjustment or changing the blade. As a consequence, cuts are made at the wrong angle, often resulting in unnecessary reworking and scrap.

Solution

In this application two laser distance sensors were mounted on each end of an extrusion to measure the difference in distance to the saw blade. A micro controller recorded the distances and provided a quick and easy display of the front to back alignment for re-view as desired. The system includes misalignment tolerances to trigger an out of tolerance condition for the operator.

These principles could easily be applied to any alignment application. By using at least three sensors, target straightness could also be monitored. The range of the available Dimetix laser distance sensors enables measurement from a few inches up to 500 meters.



On the micro controller screen shown here, two distances are displayed on the top line of the interface. The alignment dimension is shown below. The check mark indicates the measurement is within tolerance.



Key Application Notes:

- Production quality improved and scrap reduced
- Non-contact, eye-safe laser measurement
- Measurements can be acquired by a PLC or PC
- Maintenance free — no breakable moving parts
- Economical, rugged, and compact package

Communication & Interfaces:

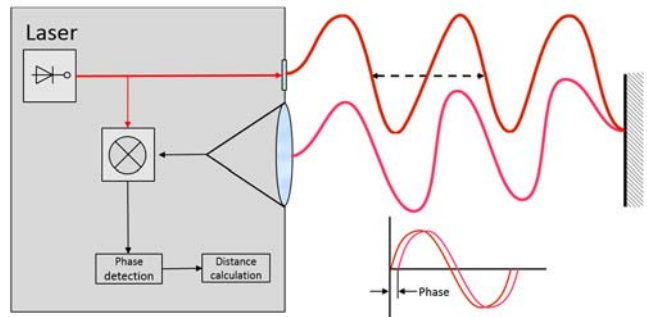
Dimetix DLS and FLS series laser distance sensors include serial and analog outputs with digital inputs and outputs available for alarming and triggering. The serial interface permits simple remote monitoring. As an example, the laser sensor can be configured to output a simple ASCII numeric string that is readable by this simple serial panel display.



Each laser ships with basic utility, and standard terminal programs such as Hyper Terminal can also be easily used. Communications with PLC hardware that does not have RS232 or RS422 serial capability can be accomplished via special gateways. As an example, gateways are available that support Device Net and Ethernet IP for integration with Allen Bradley control logix and compact logix PLC platforms.

Performance technology

The DLS-B series laser distance sensor operates on a principle called phase shift. The laser signal is reflected directly back to the device. This technique provides high accuracy at a significantly lower cost than traditional laser triangulation methods and is generally more accurate than simple time of flight methods. Since the transmit and receive signals come back straight to the device, the laser can be mounted in tight spaces, making retrofits simpler. The device is also capable of measuring with 1.5 mm accuracy, even up to 500m. Distances over 65m usually require a special reflective plate affixed to the target.



Please [contact](#) Dimetix USA today to discuss your next application.