

Ladle Truck Positioning

Industries: Steel
Application type: Positioning

Description

The ladle truck positioning project, conducted by a Chinese steel manufacturing facility, was initiated to enhance the precision and safety of aligning ladle trucks with the steel outlet for molten steel transfer. Accurate alignment is crucial in steel manufacturing to ensure seamless operations and reduce risks during the transportation of molten material. Dimetix Laser Distance Sensors were selected as the core technology for this project due to their exceptional accuracy, robust performance, and reliable operation under demanding industrial conditions.



Fig 1: Dimetix Sensor Installation

The sensor enables continuous, real-time monitoring of the ladle truck's position by targeting its front with a highly precise laser. Offering an impressive **one-millimeter accuracy**, the sensor reliably measures distances of up to **100 meters** on **natural surfaces**. For longer distances of up to **500 meters**, the use of a **reflective foil** is required.

It can be seamlessly integrated into the plant's systems via various built-in interfaces and delivers consistent, high-performance operation. The sensor is installed at the end of the rail on which the ladle car moves and is housed in a robust protective enclosure (Fig. 2) that ensures its durability under harsh industrial conditions – including high temperatures, dusty environments, and strong vibrations.

This installation significantly improves the precision and reliability of ladle car positioning and contributes to safer and more efficient operations.

By integrating a Dimetix Laser Distance Sensor into the ladle truck positioning system, the steel manufacturing facility has achieved a higher level of operational safety, accuracy and efficiency. The sensor's advanced capabilities and durability demonstrate Dimetix's commitment to providing industry-leading solutions that meet the unique demands of complex industrial environments.

System Overview

To achieve accurate tracking, a Dimetix Sensor was installed at the starting point of the ladle truck's track (Fig. 1). This state-of-the-art

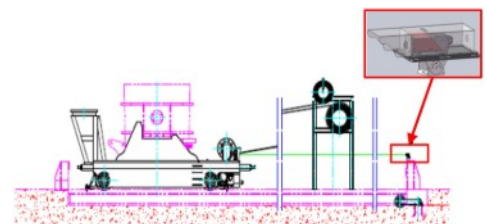


Fig 2: Dimetix Sensor (red marked) at rail endpoint for ladle car positioning

Customer Advantages:

Exceptional Precision: Delivering +/- 1mm accuracy for highly precise positioning.

Versatility: Effective also on natural surfaces without reflectors.

Reliability: Maintains accuracy despite significant temperature variations.

Enhanced Safety: Enables real-time tracking, reducing safety risks.



DIMETIX APPLICATION EXAMPLE

AE-0408

Dimetix Sensors – the solution for applications with high precision requirements

Thanks to the clearly arranged product portfolio the evaluation of a suitable Dimetix Laser Distance Sensor is simple and uncomplicated.

Dimetix Sensors offer numerous features, which are integrated in each and every device as standard, including, among others, various interfaces like SSI, RS-422/485, RS-232 and 2 digital outputs.

Optionally, the Industrial Ethernet interfaces PROFINET, EtherNET/IP and EtherCAT are also available. Furthermore, all devices are IP65-protected and impress with a weight of less than 500 grams!

Particularly noteworthy, however, is the accurate measurement of 1 millimeter over distances of up to 500 meters, even under the most extreme conditions. This is possible with the sensors of the types DPE, DEN and DEH.

No less interesting are sensors of types DAE, DAN and DBN. Preferably, they can be used for projects which do not require a range over 500 meters or are cost-sensitive.

	DPE-10-500	DPE-30-500	DEN-10-500	DEH-30-500
PARTNUMBER	500630	500636	500637	500638
SPECIFICATION				
Typical accuracy $\cong \pm 2\sigma$	$\pm 1 \text{ mm}$	$\pm 3 \text{ mm}$	$\pm 1 \text{ mm}$	$\pm 3 \text{ mm}$
Mensurierung range on natural surfaces	0.05...~100 m	0.05...~100 m	0.05...~100 m	0.05...~100 m
Measuring range on reflective foil	~0.5...500 m	~0.5...500 m	~0.5...500 m	~0.5...500 m
Max. measuring rate	250 Hz	250 Hz	100 Hz	100 Hz
Operating temperature	-40...+60°C	-40...+60°C	-10...+50°C	-10... +60°C

	DAE-10-050	DAN-10-150	DAN-30-150	DBN-50-050
PARTNUMBER	500633	500632	500634	500635
SPECIFICATION				
Typical accuracy $\cong \pm 2\sigma$	$\pm 1 \text{ mm}$	$\pm 1 \text{ mm}$	$\pm 3 \text{ mm}$	$\pm 5 \text{ mm}$
Mensurierung range on natural surfaces	0.05...~50 m	0.05...~100 m	0.05...~100 m	0.05...~50m
Measuring range on reflective foil	~40...50 m	~40...150 m	~40...150 m	
Max. measuring rate	100 Hz	100 Hz	100 Hz	10 Hz
Operating temperature	-40...+60°C	-10...+50°C	-10...+50°C	-10...+50°C