

Application Brief:

MATERIALS HANDLING

CRANE POSITION MONITORING

INDUSTRY: Materials handling

APPLICATION: Overhead crane position monitoring and multi-axis zone protection

SUMMARY: DIMETIX USA provided a crane position and collision monitoring system to KoneCranes for installation on an overhead crane at an auto manufacturing facility in Tennessee. The Crane Sentry® system supports two lasers per controller, has warning, slow, and stop relay outputs, and displays live distance readings on the system controller touch screen interface. The system not only provides position and collision monitoring, but also uses relay logic functions to provide multi-axis zone

Overview

Challenge

Overhead bridge crane collisions are costly, reduce productivity, and can cause structural damage, derailing, and girder collapse requiring shutdown, or worse, worker related injuries.

An auto manufacturer in Tennessee wanted to prevent the trolley of an overhead bridge crane from passing through a restricted zone. As the crane bridge approached the edge of the restricted zone, movement of the bridge and trolley remained unconstrained as long as the trolley was in a position to the left of a predefined setpoint. If the bridge approaches the edge of the zone with the trolley in a position to the right of the setpoint, the trolley's ability to move to the right is disabled until the trolley clears the restricted zone.

DIMETIX USA provided a modular, easily configurable and economical approach to monitoring crane position, detecting potential collisions, and controlling stops and speed. **NOTE: The collision monitoring solution is NOT a crane collision avoidance system.** The system should be used to complement, NOT as a substitute for, compliance with industry standard best practices and applicable safety regulations.



Collision monitoring controller:

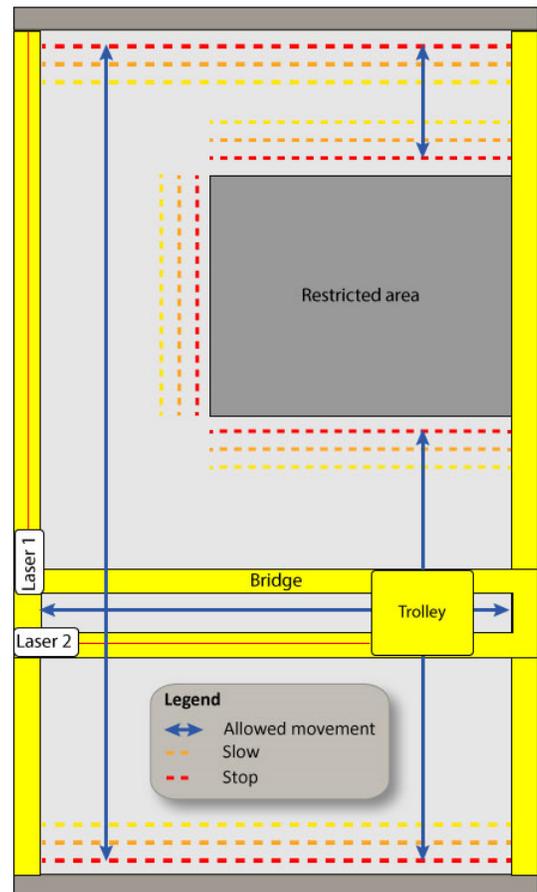
- ▶ Color touchscreen data entry & display
- ▶ Teachable set points
- ▶ Data logging via data tables
- ▶ Six configurable outputs
- ▶ Multiple communications options
- ▶ IP66/IP65/NEMA4X rating

Dimetix Laser specifications:

- ▶ 0.05-500 m range
- ▶ 0.1 mm resolution
- ▶ Up to 1.0 mm accuracy
- ▶ Serial/digital/analog outputs
- ▶ Class II eye-safe laser
- ▶ IP 65 protection class

Solution

In this instance one laser was aimed at a fixed target at the end of the runway, the other laser was aimed at the trolley. Three sets of alarms were configured to control Bridge Forward, Bridge Reverse, and Trolley Forward. The relay outputs were wired in parallel to ensure movement was restricted only when the bridge AND trolley passed the predetermined setpoints defining the restricted zone. The Dimetix laser sensors at the heart of the system offer long-range (0.05-500 meters) capabilities and highly accurate, non-contact distance measurement in a compact, IP65-rated package. They can communicate with a wide variety of devices to display status, provide warnings, and control movement in a complex system. Because measurements are taken by a class II eye-safe laser, there are no mechanical parts, strings, or cables to wear, break, or stretch. The lasers also provide precise readings where other technologies cannot—in difficult-to-access locations or harsh outdoor environments, allowing for exceptional flexibility in placement and use of the laser sensor solution.



Key Application Notes

- ▶ Simple installation, low maintenance
- ▶ Color touchscreen data entry & display
- ▶ Teach or manually enter set points
- ▶ Six configurable relay outputs
- ▶ Multiple communications options

Results

Without slowing down the operation, the DIMETIX USA solution monitored crane position and detected potential collisions while preventing the crane from entering the restricted area. For more information on our overhead crane position and collision detection monitoring systems, or anything else regarding Dimetix laser distance sensors, please visit us at www.dimetix-usa.com, call 484-212-0636, or email us at info@dimetix-usa.com.

Restricted Zone-Motion Control. One laser aims at a fixed target, the other laser aims at the trolley. Three sets of alarms control Bridge Forward, Bridge Reverse, and Trolley Forward. The system relay outputs were wired in parallel to ensure movement was constrained only when the bridge AND trolley approached the predefined restricted zone, preventing the crane from entering that area.