DIMETIX APPLICATION EXAMPLE **AE-0211**

Inspection of the deflection of crane rails

Industry: Crane
Application type: Monitoring of crane

Description

Fig 1: View of crane installation

The Swiss engineering company Schneider Ingenieure AG in Chur focuses, among other things, on special surveys. For the task of determining the deflection of the 65-meter-long guide rails of a crane (Fig. 1) under load, a precise solution with four Dimetix laser distance sensors was chosen. For this purpose, the guide rails of a crane were measured in operation over the course of a day. The decision to use laser sensors was made to ensure precise measurements. The following installation configuration was used for mounting the 4 Dimetix sensors:
Sensors 1, 2, and 3 (see Fig. 2) were placed to detect potential deviations. Sensor 1 was specifically aligned with the critical point MP1, as the greatest shear was expected here (see green line in Fig. 2). Sensor 4 served as the reference measurement to ensure that the middle rail did not move.

Dimetix DPE-10-500 sensors were used, as they allow for a precise analysis of the behavior of the guide rails under load down to the millimeter. Other reasons for choosing this type of sensor included challenges such as:

- Intense solar radiation
- Large temperature fluctuations
- High accuracy requirements
- Measurements on natural and also high shiny surfaces

The benefits of Dimetix laser distance sensors are not limited to their accuracy alone, but also to their ability to measure natural surfaces up to 100 meters without additional reflective foil. The distance to be measured extended over 27 meters and mainly comprised metallic, lightly reflective areas, with some measurements also taken on darker surfaces in certain cases. The Dimetix Sensor DPE-10-500 proved to be extremely suitable for meeting these diverse requirements. After completing the measurements, a clear result could be presented to the customer, providing insights into the behavior of the guide rails under load. The precise and reliable measurements enabled the exact analysis of potential movements of the guide rails and adjustments to be made as necessary.

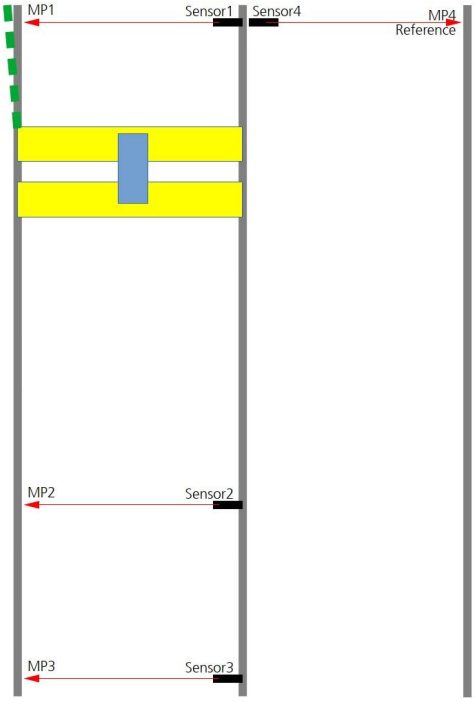

Fig 2: Schematic overview of the system

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Customer advantages

- Easy installation thanks to visible laser beam
- Operating in the largest temperature range (-40...+ 60°C) possible
- Maintenance-free operation
- Control/reading possible via various built-in interfaces

Dimetix Sensors – the solution for applications with high precision requirements

Thanks to the clear product portfolio, evaluating a suitable Dimetix distance laser sensor is simple and straightforward.
Dimetix sensors offer numerous features that are integrated as standard in every device. These include various interfaces such as SSI, RS-422/485, RS-232, and 2 digital outputs. Optionally, Industrial Ethernet interfaces PROFINET, EtherNet/IP, and EtherCAT are also available. Furthermore, all sensors are IP65 protected and boast a weight of less than 500 grams.

	DPE-10-500	**DPE-30-500**	**DEN-10-500**	**DEH-30-500**
PARTNUMBER	500630	500636	500637	500638
SPECIFICATION				
Typical accuracy $\cong \pm 2\sigma$	± 1 mm	± 3 mm	± 1 mm	± 3 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 @ ± 2s	± 1 mm	± 1 mm	± 3 mm	± 5 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