

Jack-Up Barge Leg Extension Measurement

Industries: Hydro-Tech
Application type: Monitoring

Description

A UK-based company operating in near-shore and inland waterway construction environments offers a modern, purpose-built fleet of specially designed boats and floats.



For this application, a reliable method was required to measure the leg extension of a jack-up barge. It is essential for the bargemaster to know at all times the exact amount of leg below the barge hull when the barge is elevated. A roller encoder system had previously been used; however, occasional slippage resulted in inaccurate measurements, and mechanical wear led to increased maintenance costs over time.

Four Dimetix Laser Distance Sensors DPE-30-500 units were selected and installed together with numeric displays to provide reliable and repeatable measurements, even under arduous operating conditions.

Additional reasons for choosing this sensor included:

- Easy integration with numeric displays
- Reliable operation under intense solar radiation
- Capability to measure on natural surfaces
- No moving parts, reducing wear
- Easy replacement in the event of a fault

Before committing to this solution, two main issues needed to be addressed.

Challenge: The Laser Distance Sensor needed to point upwards, creating challenges related to weather exposure.

Solution: A special anti-reflection glass was installed at an angle of 3–5 degrees to prevent rain pooling and to reduce solar radiation entering the receiver.

Challenge: Each leg can rotate, making accurate laser targeting difficult.

Solution: A large “top-hat” target plate was installed around the full circumference of each leg at the top.

The four DPE-30-500 Laser Distance Sensors and numeric displays have now been installed on the barge, and testing has proven the solution to be successful.



DIMETIX APPLICATION EXAMPLE

AE-1203

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 $\cong \pm 2\sigma$	± 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 $\cong \pm 2\sigma$	± 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