



Welaptega Chain Measurement System

Optical caliper imaging technology for measurement and inspection of mooring chain

Applications

- In-situ chain measurement
- UWILD chain inspection
- Class survey chain inspection

Features

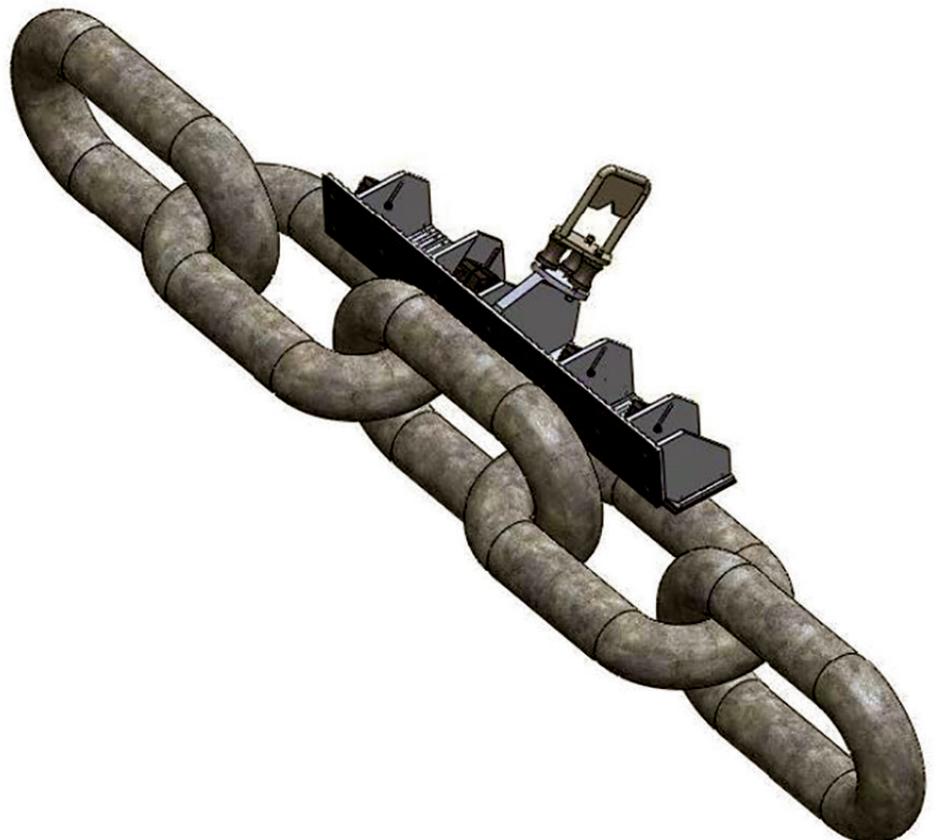
- Allows for chain measurement in water without operational interruption
- Includes data sensors to measure line angles and depth location of anomalies (optional)
- CMS is accurate to less than +/- 0.5mm
- Applicable to FPSO, FSU, FSO, SPAR, CALM Buoy, Semi-sub and other floating vessels
- Measurements compared to API standards, class societies, and regulatory guidelines
- Delivers precise, actionable data to inform the best action on moorings
- Provides highly detailed visual record of measurement locations
- CMS allows 3 measurements at once
- Measurements taken in real-time
- Close visual record

Welaptega's CMS is an optical caliper imaging technology for measuring mooring chain dimensions and viewing material condition of links. The tool is positioned on a link to capture video data which provides a record of the inspection. This data is processed to produce measurements of intergrip diameters and link length.

The CMS utilizes synchronous digital images of chains from several cameras. The images are calibrated to generate accurate measurements of chain dimensions. Measuring chain dimensions is critical to confirm that chain corrosion and wear rates are as designed for and chains maintain minimum strength requirements throughout their lifetime.

The CMS tool has no moving parts and simply sits flush against the chain to collect data. This means there is no time wasted trying to "fit" the tool onto the link. Also, moving from one measurement site to the next only requires the ROV to slide the tool down or up the chain.

Specifically designed to be capable of being deployed in high-heave environments. Most recent 2018 high-heave chain measurement campaigns: Voyageur Spirit (North Sea), Erha (West Africa)



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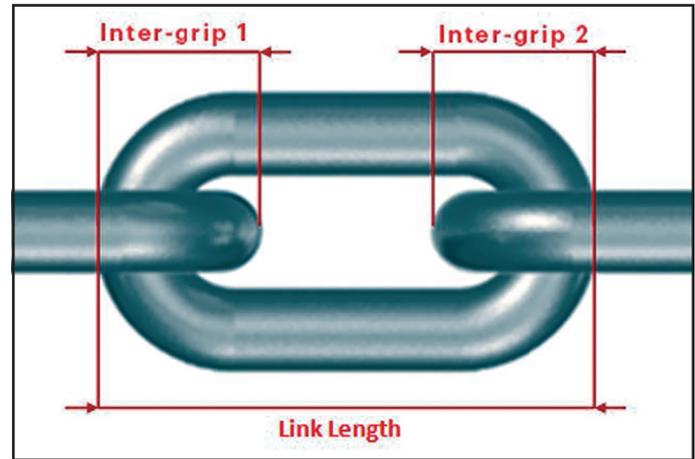
Specifications



System components	Four high-resolution video cameras depth rated for 3000m Integrated LED lighting control Topside digital recording system
Weight	Weight in air 25kg Weight in water 15kg
Chain surface preparation	Removal of bulky marine growth from links and all growth from apices Cleaning is achieved with Welaptega's Subsea Cleaning Tool
Deployment requirements	Work-class ROV Four video channels
Deliverables	Intergrip (grip zone) bar stock diameter x2 for every link measured Link length for every chain link measured Chain angle measurement (optional) Engineer's report detailing the data set and comparison to rejection criteria established by API and Class Societies Catalogue of anomalies noted during data collection



CMS deployed subsea



Chain dimensions measured

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