

Bulk Carrier Ship Lines & Geometrical Inspection of Keel Line

Overview

METRICA S.A. fulfilled 3D Scanning measurements and ship's lines production of a Bulk Carrier in Quindao Beihai Shipyards China. The ship's geometry was captured through detailed 3D scanning from every possible measurement position and allowed us creating a unified point cloud of almost a billion points.

For the measurements, our team used Leica ScanStation P20. Point clouds were registered with the use of targets and cloud constraints. Coordinates of the targets were measured using the total station Leica TS30.

Challenges

- Tight schedule
- Large number of surfaces & areas
- Complex geometries



Fieldwork: 2 days, 2 staff members
 Number of setups: 130
 Office work: 5 days, 1 staff member

Benefits of methodology

- | | | |
|--------------------------------------|----------------------------------|------------------|
| ▪ elimination of field interferences | ▪ increased productivity | ▪ cost reduction |
| ▪ less rework | ▪ fewer requests for information | ▪ time-saving |



Leica ScanStation P20 in action.
Scans were mainly taken during night hours

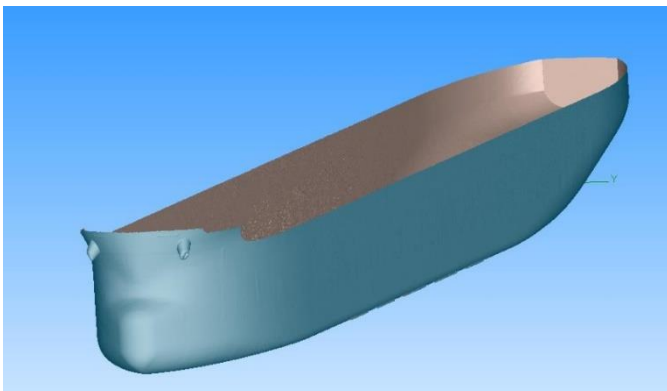


Total Station leica TS30 in action.

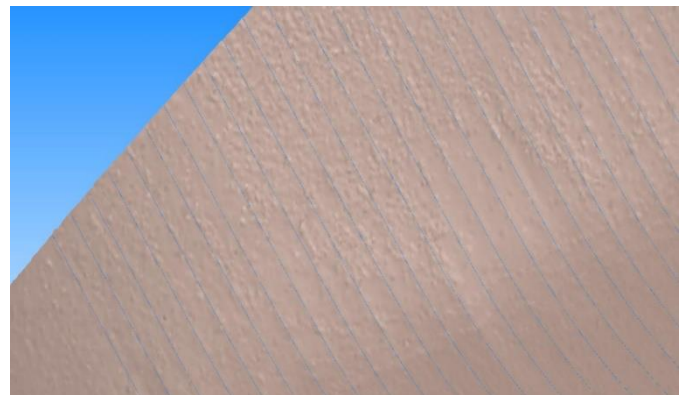
Fieldwork

METRICA team used Leica ScanStation P20 for gathering the raw data. For the registration of the point clouds, targets were placed and measured with total station Leica TS30 for more accurate results. It took 130 setups and only two days of measurements to cover the entire ship.

In the office, we used Leica Cyclone software for the registration of the point clouds. Then the points of interest were separated from irrelevant objects. After that, with the use of Leica XYZ software, we established the coordinate system of the ship. Finally, using 3D Reshaper software, the registered point cloud was converted to mesh, to produce all the essential geometrical inspections (keel line deflections) and final ship lines.



Model of the ship as a 3D mesh derived from the point cloud



Mesh with the superimposed sections. Anyone can observe the closeness between the discernible frames of the mesh and the section lines (at the nominal frame spacing)

Instrumentation / Software

- Leica ScanStation P20
- Leica TS30
- Leica Cyclone
- Leica Axyz
- 3D Reshaper



Deviverables

- Point cloud of ship's hull
- Ship mesh
- As-built Ship lines extraction
- Technical report

Do you have a similar project?

Contact our team at info@metrica.gr