APPLICATION NOTE / MARINE / **YACHTING**

M/Y Yacht Ship Lines and 3D model Extraction

Overview

The main scope of this project was the detailed scanning of the external hull surface of the motor yacht and the extraction of ship lines and 3D models. The application was fulfilled via the usage of terrestrial laser scanning and industrial total station technology. As a result, our engineers used the dense point clouds, the 3d model and the as-built sections, to create buttocks and waterlines of the yacht.

Challenges

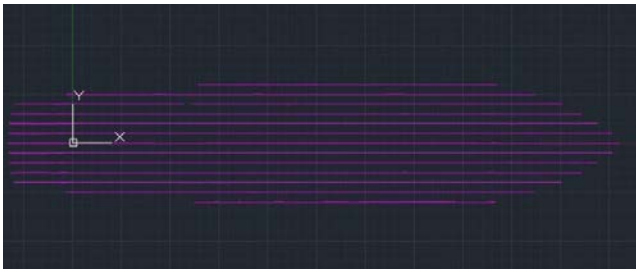
- Tight schedule for fieldwork and office work
- Numerous surfaces to be captured
- Complex geometries and details

Benefits

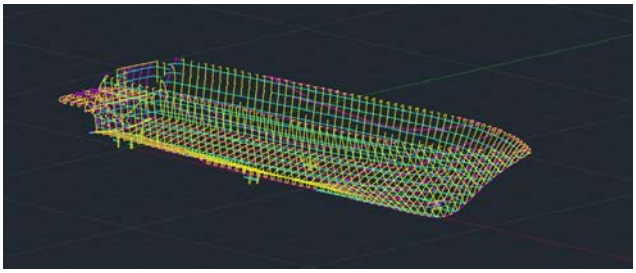
- Time-saving
- Increased productivity
- Less rework
- Cost reduction

LEICA RTC360 LASER SCANNER

The Leica RTC360 3D reality capture solution empowers users to document and capture their environments in 3D, improving efficiency and productivity in the field and in the office through fast, simple-to-use, accurate, and portable hardware and software.



Buttocks

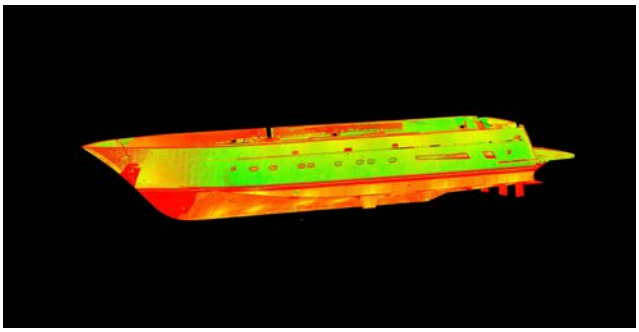


Lines in CAD

Methodology

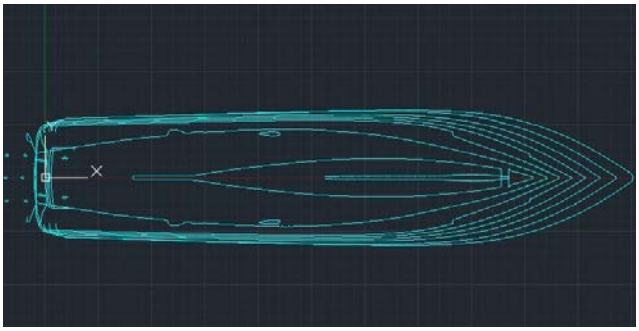
The team used terrestrial laser scanning technology combined with other classic geodetic techniques to capture every hull detail. Leica RTC 360 laser scanner, ultra-high-speed pulsed time-of-flight scanner, and Leica TDRA 6000 Industrial Total Station enabled the detailed and accurate description of the mold geometry.

Office work: All point clouds were registered and unified to a final point cloud using cloud and target constraints on Leica Cyclone Software. After that, the final point cloud was georeferenced to the ship's coordinate system, and we created the 3D mesh model using Leica 3DR software. Finally, from the 3D mesh, sections, buttocks and waterlines were extracted (X, Y and Z axis). The sections were designed every 0.5m and were finally delivered in CAD format.

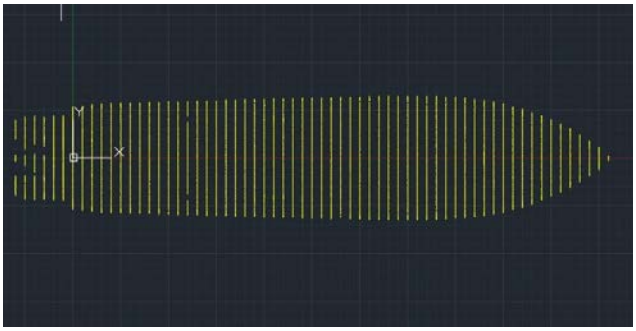


Point Cloud Intensity

Point Cloud True color



Waterlines



Sections

Instrumentation / software

Leica RTC360 Laser Scanner
Leica TDRA 6000 Industrial Total Station
Leica Cyclone
Leica 3DR

Deliverables

- 3D mesh
- Sections, buttocks and waterlines in .stl and .dxf file format