



## APPLICATION NOTE / MARINE DIMENSIONAL INSPECTION

### Overview

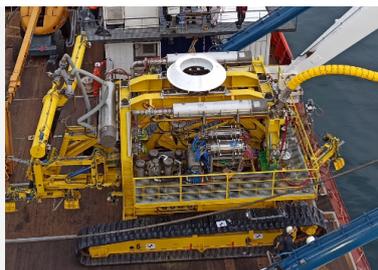
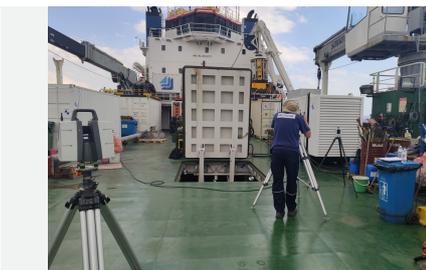
The main scope of this project is the geometric and dimensional inspection (DimCon Survey) of critical sensors which were positioned on a vessel. All sensors of interest were inspected in terms of position, direction, and inclination compared to the main vessel and equipment datums. The measurement collection was conducted using state-of-the-art instrumentation such as industrial total station Leica TDRA6000, Leica ScanStation P40 and Leica RTC360 laser scanners with relevant accessories. Our engineers used a combination of traditional surveying and modern laser scanning techniques.

### Benefits

- Time-saving
- Increased productivity
- Cost efficiency

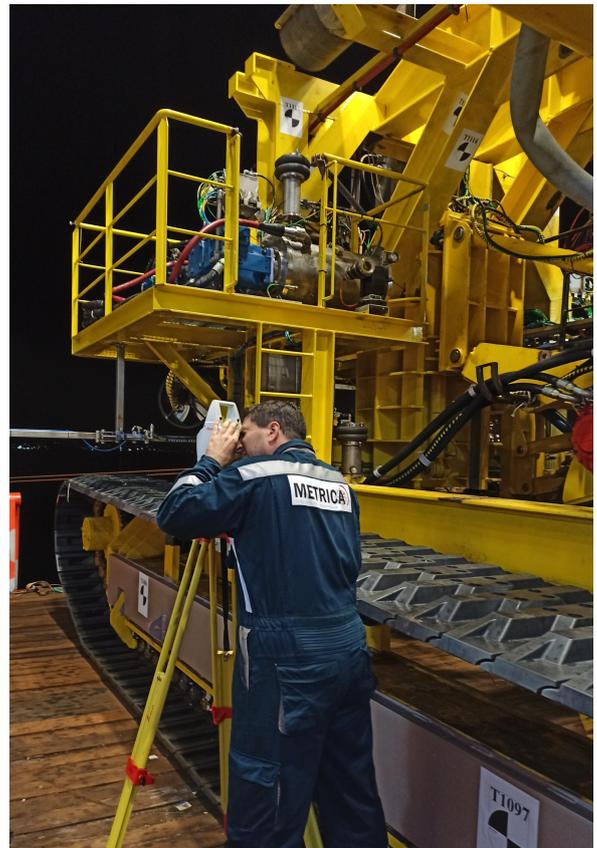
### Challenges

- High precision-quality result with detailed documentation
- Complex geometries and unique principles of operation to examine
- Tight schedule for fieldwork and office work
- During the measurement service, the vessel was under afloat conditions

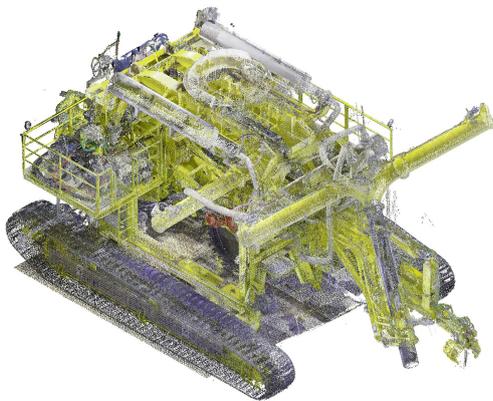


## Methodology

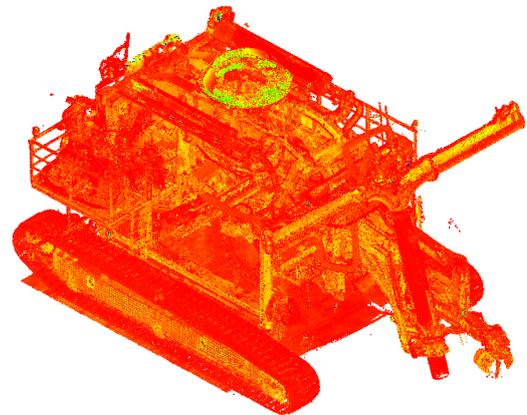
Our team collected, imported, processed, and presented geodetic observations and point clouds using state-of-art sensors and software/hardware resources. Our engineers used terrestrial laser scanning technology, Leica RTC 360 and Leica ScanStation P40 laser scanners, combined with conventional surveying techniques with industrial total station TDRA. Office work: Before any registration attempt, all raw point clouds were filtered – cleaned from noise and other reflections, such as moving or/and afloat objects, personnel, abnormal material responses Etc. Scan setups were registered into one final scan dataset using cloud and target constraints on Leica Cyclone Software. After the registration process and the approval of the final statistical results, our team inspected all point clouds so that there were not any visually cross errors or any remaining remarkable gaps. Because of the resulted large number of points, it was necessary to decimate the final dataset. The unification process reduced the size of the point cloud, helping performance quality degradation of the final dataset and generally led to better manipulation and usage during the evaluation of sensor positions. Finally, the unified point clouds were aligned to the best approximate ship coordinate system. After that, our team created a detailed presentation with summary tables for all vessel's examined sensors.



Laser scanner targets were surveyed during the measurement of control network



Point cloud (True color)



Point cloud (Intensity color)

### Instrumentation / software

Leica RTC 360 Laser Scanner  
Leica ScanStation P40  
Industrial Total Station Leica TDRA6000  
Leica Cyclone Field 360  
Leica Cyclone / Cyclone Register 360

### Deliverables

- Summary tables with the dimensional and geometrical results for all vessel's sensors.
- Detailed presentation of examined sensors