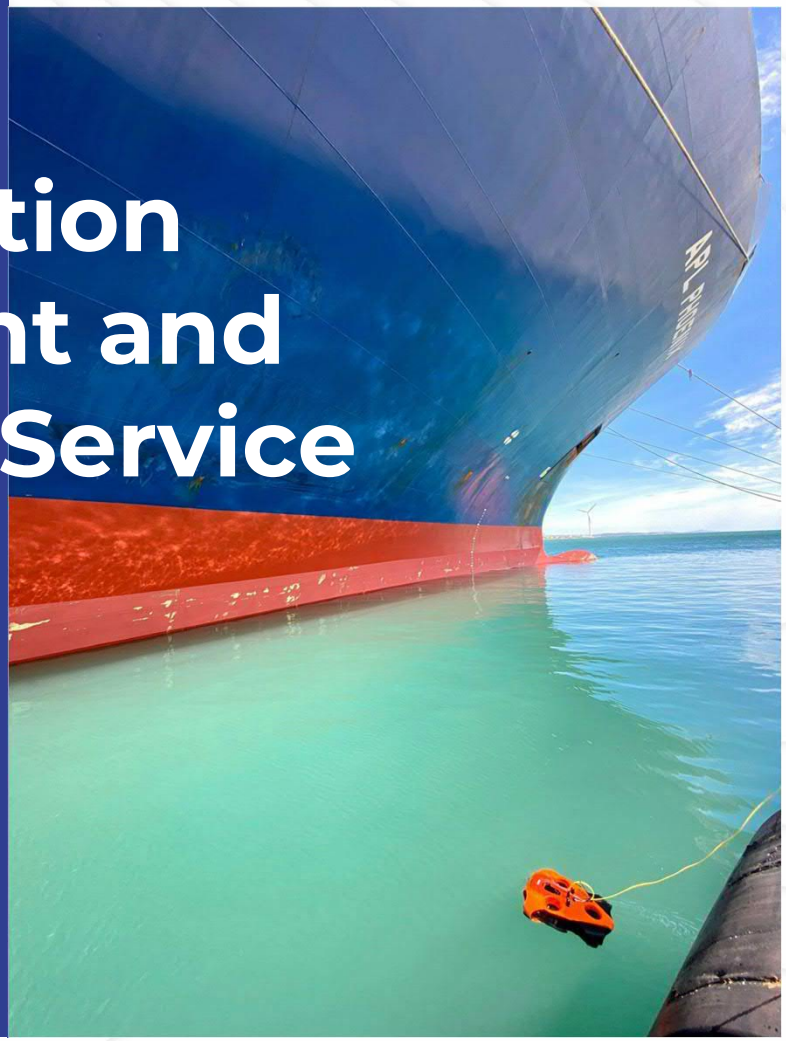
Hull Condition Assessment and Reporting Service



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Fast and dependable hull condition assessment

Argo Navis Engineers and Notilo Plus have created a Hull Condition Assessment & Reporting (HCAR) service using ROV data collection and artificial intelligence (AI) based imaging analysis. HCAR:

- Captures high quality imagery and live-streams inspections
- Creates preliminary hull inspection reports within the day
- Creates full reports that include AI-based fouling and defect assessment
- Standardizes hull condition assessment, aiding in predictive maintenance decisions

The HCAR service helps owners reduce vessel carbon intensity and achieve environmental targets.

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Pros and Cons of Diver Inspection vs. HCAR Service

Pros:

- Cost – Our HCAR service is cheaper than calling for a dedicated diver
- Response Time – A technician is always available globally and at short notice
- Reporting – Accurate inspection methodology and reports can be compared over time. One day preliminary reports generated
- Argo Navis experts on call to offer in depth energy efficiency consulting services

Cons:

- Hull inspection limited to navigation capabilities. ROV cannot be deployed in strong currents
- Divers may carry out other measurements and works, such as shaft wear down and rudder measurements, overboard valves, plugging, etc.

From PDF hull reports to smart reports

The HCAR service is able to:

- Standardize fleet reporting
- Monitor hull condition over time
- Generate vessel and fleet KPIs
- Assist in making reliable decisions
- Offer worldwide coverage thanks to the extensive Notilo Plus service network

The HCAR benefits owners by:

- Reducing fuel consumption
- Giving decision makers insight on when and where to clean
- Helping maintain environmental standards

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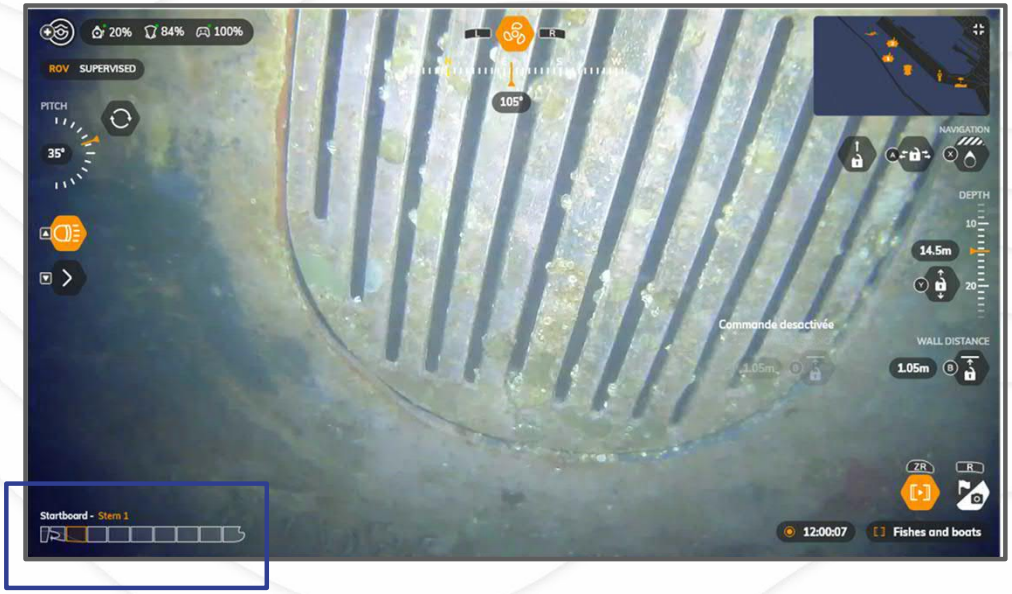
Make the right decisions on the spot

What makes our HCAR solution unique:

- Live streaming of inspections using Microsoft Teams or Google Meet
- Generation of preliminary reports within the day, featuring images and selected points of interest



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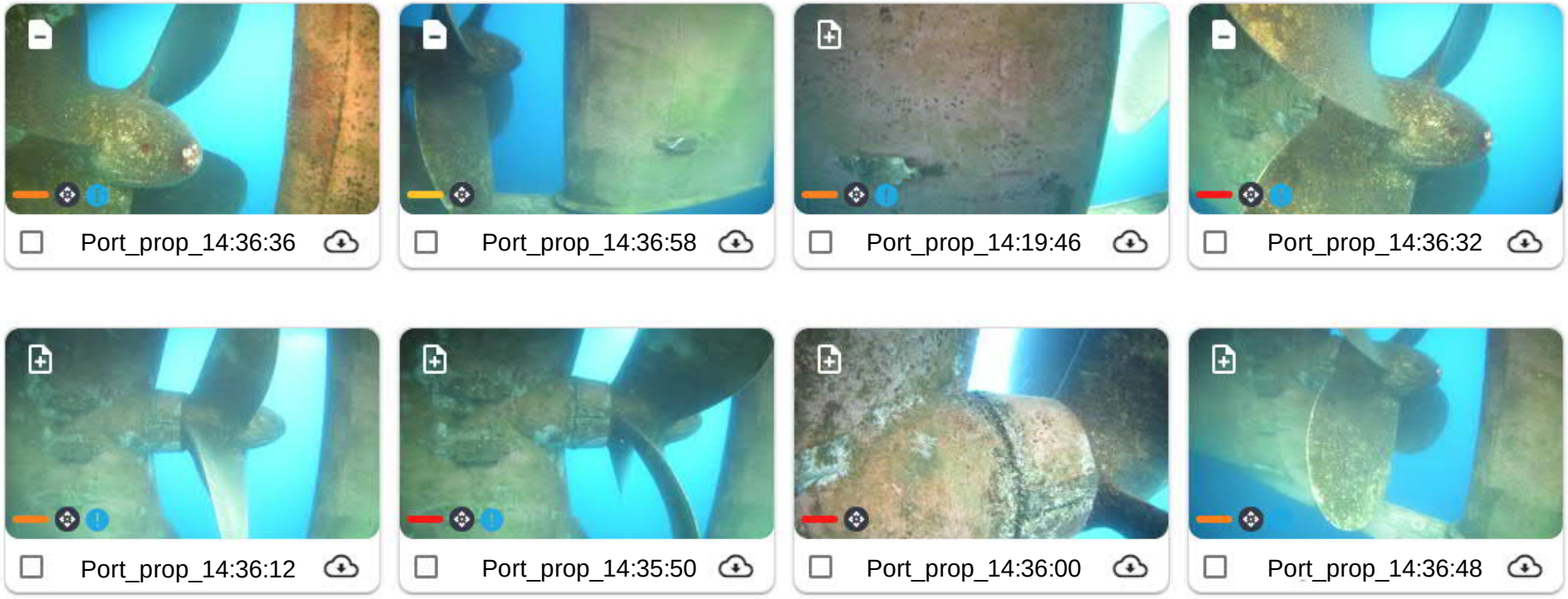
How the HCAR AI system works

After uploading inspection video, the Notilo Plus AI system automatically extracts and classifies images according to Niche Areas (ex. Propeller) or Locations (ex. Midship)

Propeller

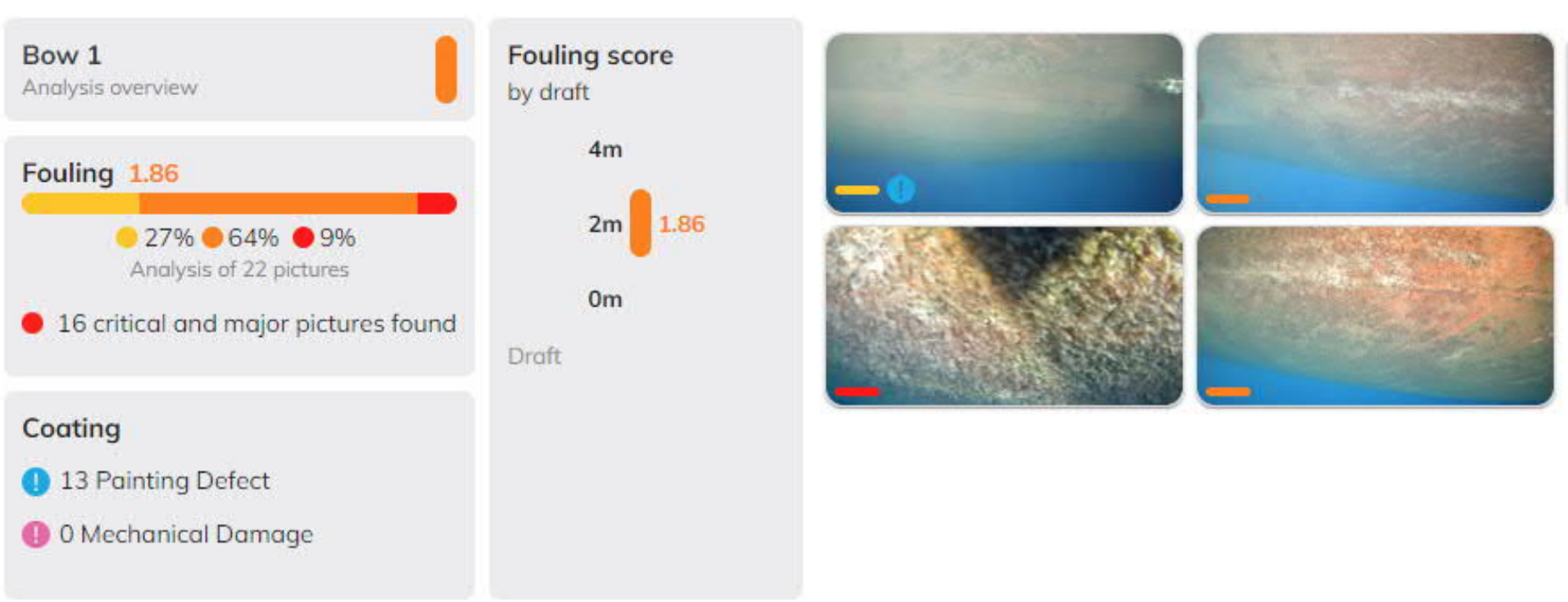


How the HCAR AI system works

Each video excerpt selected by the AI system is assigned characteristics which can also be overwritten by the user if deemed necessary.

How the HCAR AI system works

A fouling score is given for each zone, while coating and mechanical defects are identified automatically. Indicative pictures picked by the algorithm can be viewed.

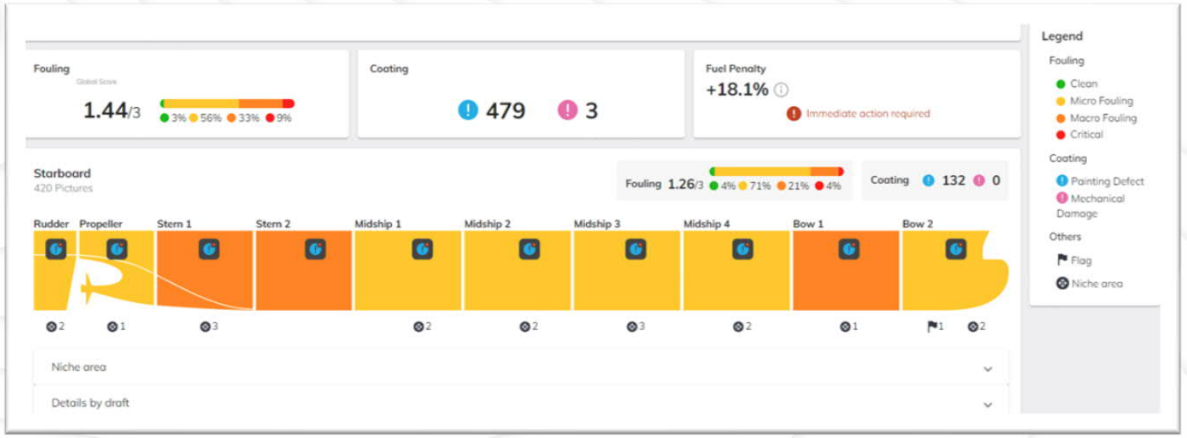


How the HCAR AI system works

A final report is automatically generated and includes:

- Global vessel fouling score
- Fouling scores for each hull zone (Port, Starboard and Flat Bottom) or niche areas
- Analysis of hull condition according to depth
- Coating and mechanical defects
- Fuel penalty (as a %) compared to a clean ship hull

The report is downloadable as a PDF or available on the Notilo Plus website client's area.

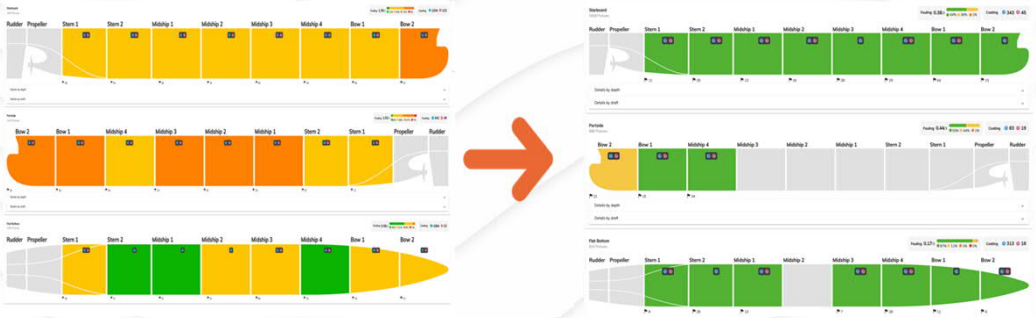


A single platform to monitor your fleet over time

1. Standardize

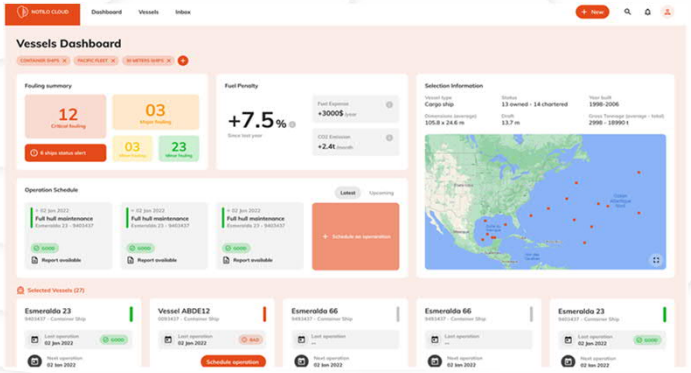
AI-based condition analysis of vessel hulls allows decisionmakers to:

- anticipate when to clean
- decide which hull zones to clean
- track defects over time by comparing standardized reports



2. Centralize

The back-end system allows decision makers to manage their digital fleet and import data via our API and straight into their company's own Performance Monitoring System



3. Anticipate

Move to predictive maintenance and proactive cleaning and meet the requirements of classification societies

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The HCAR assessment timeline

Inspection Timeline

Assessment Timeline

Expect 3 hours for a 200m vessel
Operated by only one user
Manual location and annotation

Receive screenshots instantly
Access videos directly while still dockside

AI analysis of fouling and paint condition:
Fouling Score given
Full PDF report generated

Inspection

Get pictures

4h : Full report

Live-streaming

Within the day : Preliminary report

Long-term tracking

Follow inspection live from anywhere
Decision makers can comment and direct inspection as needed

Preliminary report categorizing images by niche area
Images selected by our operator without AI

Fleet performance:
Analysis and comparison
Cleaning forecast
Fuel consumption estimate

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Monitor performance

Make informed decisions

Monitor your hull condition

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