



FLEET DATA

Available. Reliable. Secure.



LOW DATA QUALITY LEADS TO ANNUAL LOSS OF \$300,000 PER VESSEL

To avoid this, we provide companies with high quality data in the fields of SAFETY, COMPLIANCE, PLANNING and OPTIMIZATION. Only those who have trustful data on shore, can make the right decision on board.

WHAT DOES RELIABLE SENSOR AVAILABILITY MEAN FOR COMPLIANCE?



Los Angeles, Feb 2020 – An unnoticed tank sensor failure with serious consequences. A discrepancy of 150 MT (metric tons) was found between the manual sounding and the measured ROB (Remain on Board) by the onboard tank measurement system. An unnoticed sensor malfunction in one of the bunker tanks indicated a full tank level.

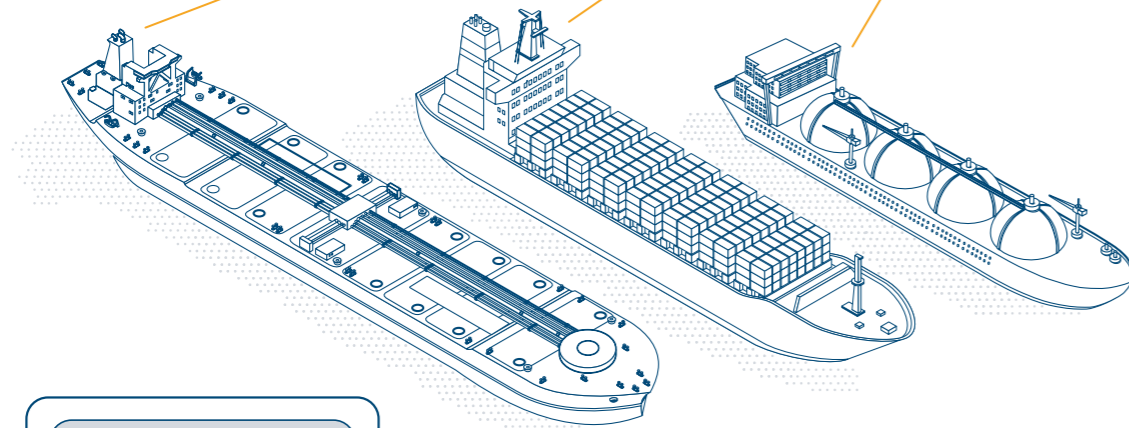
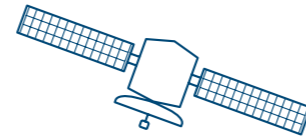
However, during the manual sounding before the bunkering in Los Angeles, which was supervised by a bunker surveyor, it turned out that one tank had a significantly lower level compared to the official target level.

Due to this significant discrepancy, the ship was refused permission to continue its journey. A fuel balancing analysis of the bunker management system revealed that a defective suction valve was the cause of the withdrawal. Lucky in misfortune for the shipping company: It was an HFO ULS tank, so the sulphur limits were met. However, due to the additional berthing time of eight days, the shipping company nevertheless incurred additional costs amounting to 300,000 dollars.

ON BOARD

STANDARDIZED DATA COLLECTION AND SYSTEM MONITORING ON BOARD

During a cargo passage, a large amount of data is generated by a ship's systems and sensors to provide information about its condition. It includes all navigational data, the speed log, the monitoring of vital functions like the ship's electric bus, the monitoring and control of the main engine operation and many more. To ensure nothing vital is missed, that the data is dependable and complies with legal requirements, all on-board sensors must be observed permanently. Hoppe Marine is your competent partner who generates and validates all necessary ship data you need for a transparent and optimized ship operation.



Name	Value
VBW Speed (TW)	18.3 kn
MWV Wind Dir True N	195.1 deg
MWV Wind Dir True V	202.4 deg
MWV Wind Speed T	8.5 m/s
MWV Wind Dir R	296.0 deg
MWV Wind Speed R	3.1 m/s
DBT Water Depth	198.76 m
RSA Rudder Angle	1.1 deg
ROT Rate of Turn SB++	-0.1 deg/min

Log

F1 F2 HOPPE F3 F4

The heart of every Hoppe system is our class approved control unit HOMIP. It is an embedded iPC for system control, including sufficient processing power, supports all common interfaces (analogue, digital, serial, Ethernet) and a 6" operational display.

ON SHORE

DATA MAINTENANCE AND OPEN INTERFACE WITH DATA QUALITY ON SHORE

Depending on your needs, Hoppe offers you many possibilities to use the operational and performance data of your vessels. After transmission from ship to shore, all data is processed and stored in a secure data pool. You can access this pool at any time via a standardized

API to use it according to your needs and also to make it available to your external service providers. Internal services and analysis by Hoppe staff can assist you with a complete fleet performance optimization. Thus offering all services under one roof.



All services under one roof: from data acquisition on board to validated data on shore.



Sensors



On board data acquisition



Data integration and Database



Monitoring and control



Data storage



Data processing



Data analysis



Data maintenance and API with qualified data

DATA BUTLER

Whether your ship's data is fed to the internal data warehouse, provided to a fleet management system or even exported as high-resolution data for specialized analysis, the Hoppe Data Butler provides customer oriented and tailored solution that fit your needs. All data is fully encrypted in transport, as well as at rest in the data-pool.

Depending on the package, the Data Butler provides important information about data quality – which is the basis for further optimization and benchmarking. The development platform docs.hoppe-sts.com with detailed API documentation helps you to provide easy access to the data ashore.

PROVISION OF EXCELLENT SHIP DATA

The Data Butler is a cloud based service to provide ship/fleet data to you via standard interface for further processing. Different service levels are available, from high resolution data provision on demand up to full data quality information.

- Provision of ship data with easy access
- Full system responsibility
- Unlimited cloud based data storage – with 24 / 7 access
- Focus on cyber security – encrypted ship-to-shore data transfer
- Remote service, updates and customer specific configuration

DATA INSPECTOR

For any kind of optimization regarding vessel operation or performance, the underlying operational and nautical data needs to be absolutely reliable. For example, if a speed log does not measure correctly, any usage of related KPIs or further operational optimization is not possible, because it would be based on unsound data.

This is where Hoppe Marine's Data Inspector excels, it will not just collect data and send it ashore – detect, analyze and verify low quality data. It will also take actions to eliminate wrong readings, calibrate sensors and make sure that your data is back to a high quality level. Unclean data can significantly lower the potential for optimization and might even lead to disadvantages in vessels operation.

ENSURE DATA QUALITY

The Data Inspector is an additional service to the Data Butler. It contains daily data checks, fleet data quality reports and troubleshooting measures and thus provides the data basis for optimized fleet planning and vessel operation.

- Ensured data quality as a precondition for compliance, planning and optimization
- Continuous system health check and daily data evaluation by qualified service technicians, analysts and marine engineers
- Fleet data transparency by automatic reports, including system health, quality KPIs
- In-depth evaluation of primary signals to detect implausibilities, drifts and offsets
- Fast response – (remote) service attendance reduces downtime to a minimum



DATA TRANSFER

EXAMPLE CALCULATION

240 values | 60 tanks (height, volume, mass, density):
Logging 1 min = 240 values / 60 sec.

- 40x GPS, wind, speed, heading... = 40 values / 60 sec.
- 50x ME, data, RPM, torque, power, 12x TC RPM, 12x exhaust temp, 12x others = 50 values / 10 sec.
- 20x high-resolution vessel motion data = 20 values / 1 sec.

ONLY 4 MB / DAY

of compressed data

CHOOSE YOUR PERFECT FIT – OUR DATA PACKAGES

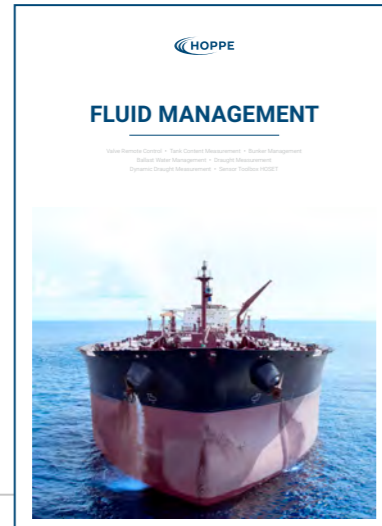
	DATA BUTLER		DATA INSPECTOR	
	Basic Data	Quality Data	Maintenance	Analyzer
ON BOARD				
Ship data server application incl. configuration	•	•		
WEBBASED DATA TRANSMISSION SOFTWARE Configurable bandwidth limit detection prevents any transmission, in case the risk of a weak transmission is detected.	•	•		
COMPLETENESS CHECK FOR DATA TRANSMISSION *SatCom Hardware and Airtime not included	•	•		
CLOUD BASED DATA HOSTING				
BACKUP PROTECTION Data Hosting on EU Server centres with 6 backup copies	•	•		
UNLIMITED DATA STORAGE VOLUME	•	•		
FULL ACCESS TO RAW DATA Further information on our API Developer Portal	•	•		
FLEXIBLE CONFIGURATION OF VESSEL DATA Free remote update of configuration, logging and export configuration			•	
DATA QUALITY API Quality Data via API with quality information for single variables			•	
DAILY CHECK Routine work is performed every regular working day by a service technician				
DAILY SYSTEM HEALTH CHECK • Check if monitored • Hoppe system are online • Logging device active • Completeness-check for data transmission	•	•	•	•

	DATA BUTLER		DATA INSPECTOR	
	Basic Data	Quality Data	Maintenance	Analyzer
FLEET DATA QUALITY TIMELINE See description in glossary		•	•	•
TOTAL FLEET DATA QUALITY TIMELINE See description in glossary		•	•	•
CHECK DATA FOR VALIDITY AND THRESHOLD EXCEEDANCES • The availability and validity of all signals acc. to the agreed on signal list will be checked. • All signals are checked against physical thresholds for a plausibility check			•	•
FLEET DATA SUMMARY See description in glossary			•	•
PROFOUND VALIDATION AND TROUBLESHOOTING Validation chapter of Data Analysis Catalog will be carried out – quarterly				
MEASUREMENT DEVICES Profound validation of the following devices will be carried out: Shaft Power Meter, Speedlog, all Flowmeter and Draught Sensors.				•
DOWNTIME ANALYSIS For Systems and Signal				•
PRIMARY SIGNALS CORRELATION MATRIX Correlation and time series evaluation of ISO19030 primary signals to detected specific behavior, sensor errors and offsets.				•
TROUBLESHOOTING ANALYSIS One individual troubleshooting per vessel and year according to vessels under contract. Use cases for an evaluation are Data Gaps, Speed Claims, Groundings and Bunker Claims. • The user can choose from more than 100 plots and visualizations. • The user specific selection of the Analysis Catalog will be evaluated.				•
SERVICE LEVEL AGREEMENTS				
BASIC (TIER I) • 48 h e-mail Response / Notification • 1 h Service Inhouse (SIH) per Vessel and month for general troubleshooting included (e.g. 20 vessel = 20 h included)	•	•	•	
ADVANCED (TIER II) • Technical Service Hotline – Working Day 9 am – 5 pm • 24 h e-mail Response / Notification • Remote Maintenance • Accounting via SIH, in case of not caused by Hoppe or within warranty				•

COMPACT OVERVIEW

Fluid Management

- Valve Remote Control
- Tank Content Measurement
- Bunker Management
- Ballast Water Management
- Draught Measurement
- Dynamic Draught Measurement
- Sensor Toolbox HOSET



Motion Control

- Heel Control
- Trim Control
- Roll Damping
- Load Moment Control
- Dock Control
- Tailored Control Systems
- Monitoring
- Electronic Inclination
- Engineering Service

Ship Performance

- Main Shaft Power Meter
- Fuel Consumption Measurement
- Dynamic Draught, Trim and Motion Measurement
- Performance Monitoring
- Fleet Data Quality
- Analysis Catalog



Fleet Services

- Technical Support
- Spare Parts
- On Board Service
- Retrofit
- Fleet Data
- Hoppe Global Service Points

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