

# Smart Ship Solutions & C-Connect





# Marine Technologies LLC

## Vision

To pioneer and innovate in the maritime industry by pushing the boundaries of vessel control, remote operation, and data collection. We aim to lead the way in providing cutting-edge technology solutions that go beyond traditional limits, ensuring safety, efficiency, and automation in maritime operations.



80+



R&D



Sales



Support



Production

## Vessels

**1 000+**

## DP Systems

**600+**

## CBM Sensors

**6 000+**

## Digital Twins

**200+**

### Dynamic Positioning



PKS  
DPO  
DP1  
DP2  
DP3  
Independent JX

### Integrated Bridge System



ECDIS  
RADAR  
Conning  
BAMS  
Heading Control System  
Track Pilot

### Remote Control & Autonomy



Pioneering Remote Control & Autonomous Vessels

### Thruster Control System



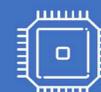
Tailored systems to each vessel  
Integrates to all makes of thrusters

### Remote Monitoring



CBM  
Vibration monitoring  
Tracking  
Fuel  
Data Hub  
CCTV etc.

### Hardware



Computers  
Panel PC's  
Monitor's  
MRU  
I/O modules  
Sensors  
Communication

### Automation



Alarm Monitoring System  
Power Management System



MARINE TECHNOLOGIES



# Smart Ship Solution

## Elevate maritime operations with C-Connect

Monitor vessel systems, critical operations, and machinery remotely, using machine learning for proactive maintenance and fleet optimization. Ensure vessel safety and uptime with online condition monitoring and digital twin technology. Streamline operations, improve efficiency, and enable secure remote operations. Plus, access comprehensive reporting on emissions, operations, and efficiency for informed decision-making at sea.



For more information:



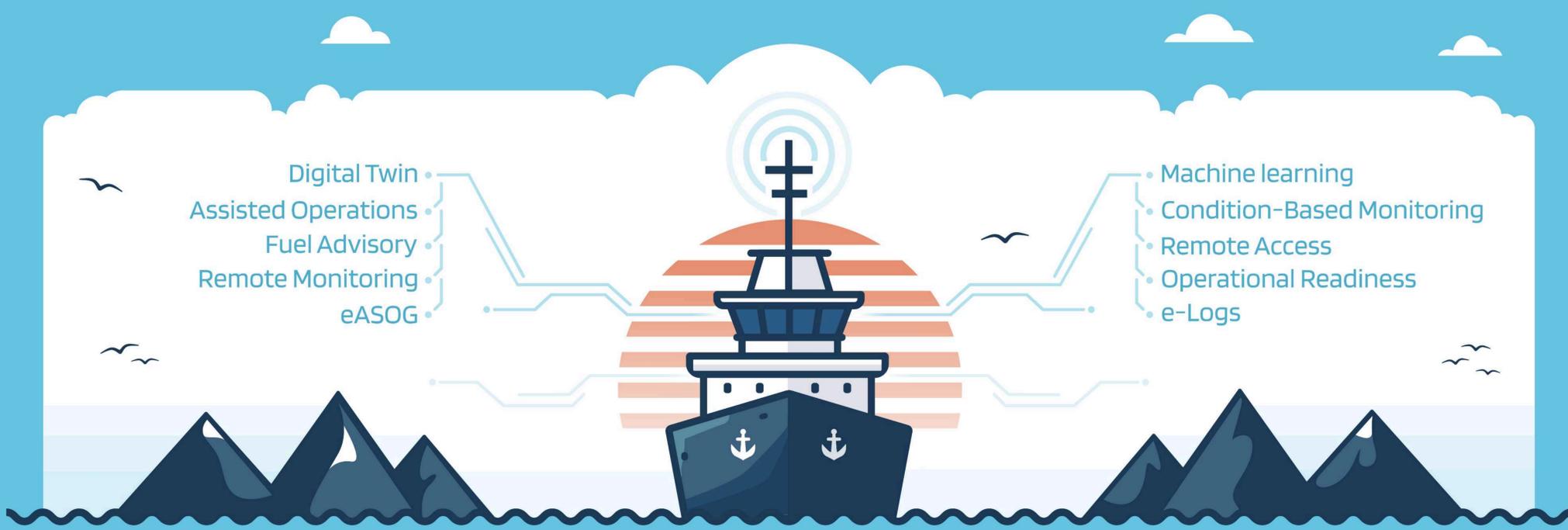
Asbjørn Bjerke Rønneberg:  
[asbjorn.ronneberg@mtllc.us](mailto:asbjorn.ronneberg@mtllc.us)  
+47 456 33 907



Frederik Thanem:  
[frederik.thanem@mtllc.us](mailto:frederik.thanem@mtllc.us)  
+47 952 79 779

Digital Twin  
Assisted Operations  
Fuel Advisory  
Remote Monitoring  
eASOG

Machine learning  
Condition-Based Monitoring  
Remote Access  
Operational Readiness  
e-Logs

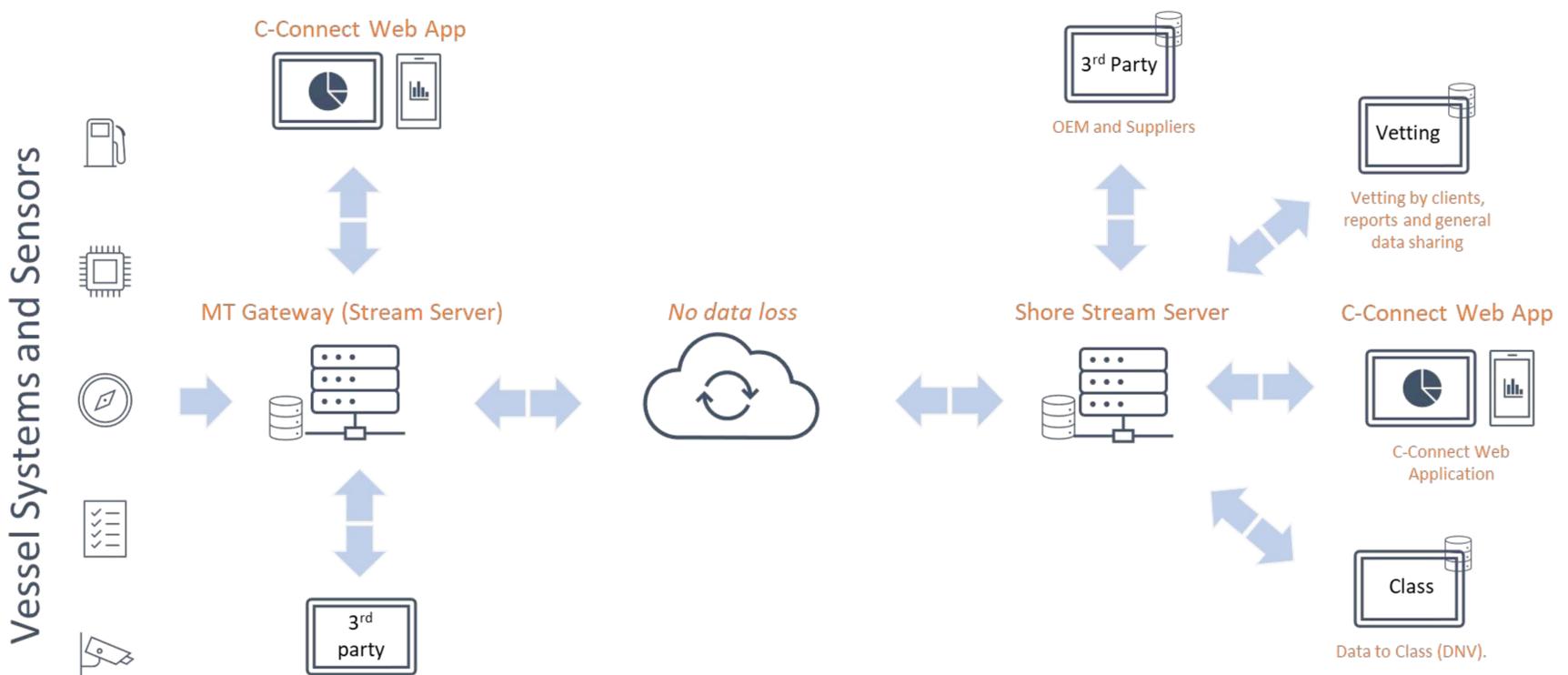




# Data Infrastructure

## C-Connect Infrastructure

The C-Connect infrastructure is robust and designed for seamless integration with no data loss. It is a scalable solution that ensures users and vessels can access data quickly, with servers in the USA, Brazil, and Norway for full data replication, ensuring proximity to the data. This setup allows for high-speed access and low latency. Data is stored for a minimum of 6 years unless otherwise required. The system also supports easy integration with third-party applications, allowing live data streaming from both shore-side stream server locations or directly from onboard the vessel for local applications. Cybersecurity and system integrity are maintained to the highest standards, ensuring secure, reliable operations.

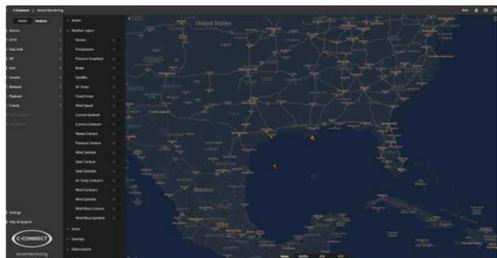




# C-Connect

## COBRAS

The COBRAS Module ensures comprehensive dependency monitoring. Detect and receive alerts for any changes or losses in dependencies, seamlessly integrated with the alarm and event module. Empower users to configure custom datasets for effective troubleshooting or advanced vessel monitoring, enhancing operational reliability and responsiveness.

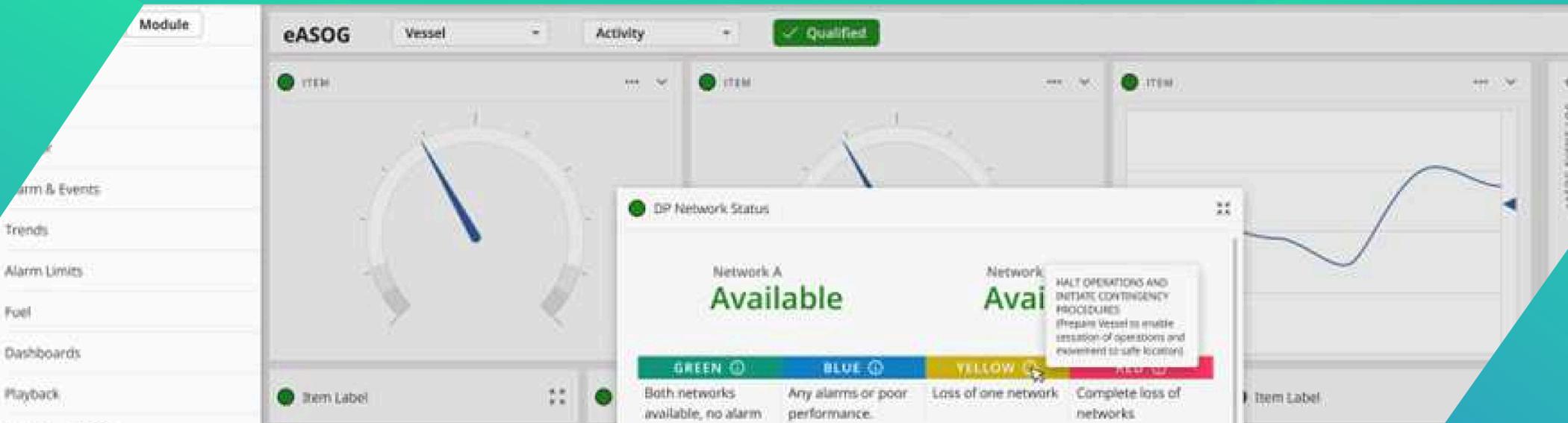


## Fuel monitoring and reporting

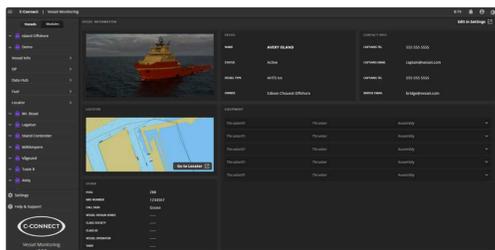
Monitor fuel consumption efficiently with advanced reporting and analytics. Generate detailed fuel reports, interactive dashboards, and insights into sustainability and environmental data.

Analyze performance across single vessels, compare vessel-to-vessel metrics, evaluate fleet-to-fleet operations, and assess hull type variations. Gain comprehensive insights to optimize fuel usage and drive sustainable maritime operations.





## C-Connect

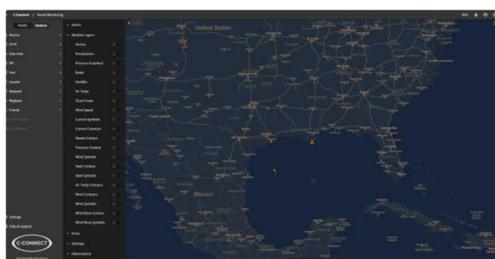


### Vessel Info

The Vessel Info Module provides a comprehensive overview of your vessel. Access vessel pictures, contact information, detailed specifications, real-time location, and a complete list of registered critical equipment. Simplify vessel management with all essential information centralized in one module.

### Locator

The Locator Module enables live tracking of your vessels on an interactive map. Enhance situational awareness with customizable overlays, including weather conditions, sea states, geofences, observations, and more. Stay informed and make data-driven decisions with real-time visual insights.



### Dashboards

The Dashboards Module offers customizable and dedicated dashboards tailored to your needs. Empower users with tools to create and personalize their own dashboards, providing quick access to critical insights and streamlined operations.





# C-Connect

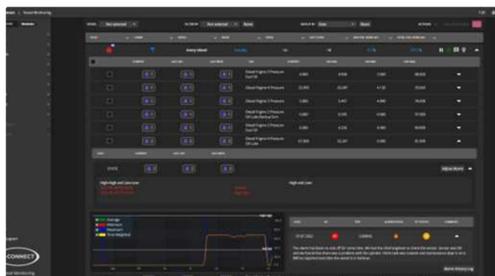
## Trends & Data Analysis

The Trend Module offers powerful analytics to track and compare any data point. Analyze trends across vessels and equipment, add comments, toggle units, scales, and alarm levels, and switch between raw and smart data. Collaborate with insights from others for smarter decision-making.



## Alarms & Events

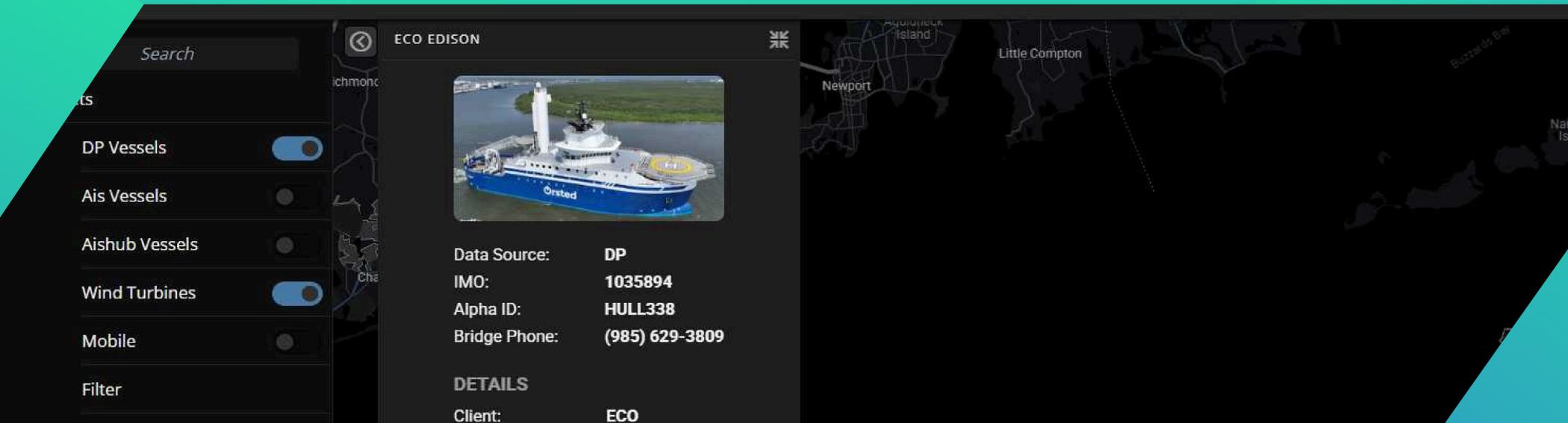
The Alarm & Events Module enables comprehensive monitoring of alarms and events, including standard alarms, machine learning alerts, rule violations, and event triggers. Users can comment, acknowledge, follow tags or events, pause vessels temporarily, or deactivate them. Designed for remote monitoring, it ensures efficient oversight and response.



## Playback

The Playback module allows users to select tags, set the timeframe and interval, and synchronize data for seamless review. Users can explore individual tags in detail or compare multiple tags in a separate view. All sessions can be recorded and easily shared for analysis or collaboration.





## C-Connect

### DP and Control System Monitoring

The DP and Vessel Control Systems module provides a live dashboard that offers real-time insights into vessel operations. It enables remote monitoring of dynamic positioning (DP) systems and any other critical vessel control systems. This ensures full visibility of the vessel's performance, allowing operators to manage and optimize performance from anywhere, improving safety and efficiency.



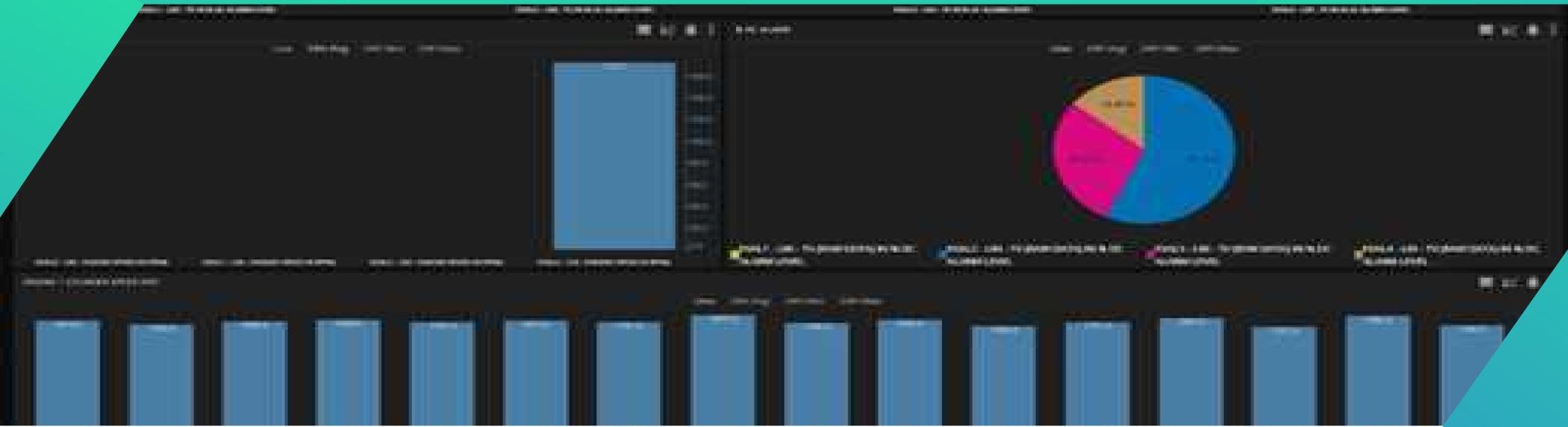
### CCTV

The CCTV module allows users to view live video feeds from any camera connected to the system's video servers. This provides real-time visual monitoring for enhanced security and operational oversight.



### Access Control

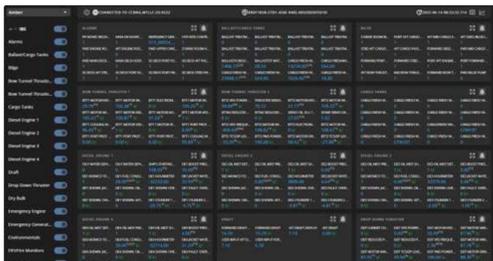
The Access Control module provides full oversight of remote access to the vessel, enabling secure management of remote troubleshooting, system upgrades, and commissioning of critical vessel systems by in-house teams, third parties, or OEMs. Administrators can control who has access and when, ensuring tight security protocols are followed. All access events are logged for complete traceability, giving you full control over vessel system access and maintaining operational security.



# C-Connect

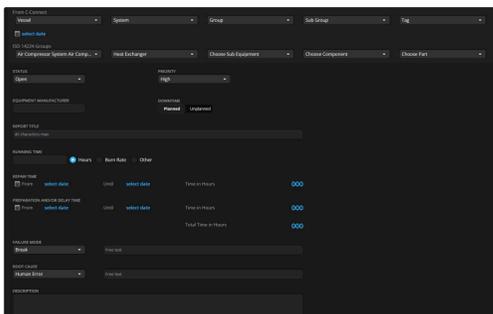
## Data Hub

The Data Hub module offers real-time access to live data as it arrives onshore via the stream server. Users can click on any value to generate trends instantly. It also displays the data package ID for tracking, along with the latest data arrival and communication status with the vessel, ensuring data integrity and system health.



## Reporting

The Reporting module allows users to add forms and templates for capturing and entering any type of information into the system, streamlining data collection and reporting processes.

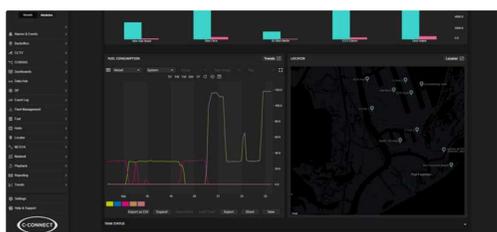


## Barrier Control

C-Connect offers fuel monitoring, reporting, and advisory services. The MT Gateway streams data from any fuel meter or consumption source, ensuring secure, loss-free data collection. Track and analyze fuel usage remotely, combining data with power, speed, weather, currents, geo-location, geo-fencing, and vessel modes for real-time insights.



## C-Connect



### My Vessels

The My Vessels module serves as a management page that provides a comprehensive summary of key metrics, including alarms, fuel levels, vessel location, actions, and tank levels. Developed and configured based on requests from vessel superintendents, it offers a customized overview tailored to the specific needs of vessel management.

### CAM & eASOG

The CAM & eASOG module integrates with metadata and allows for manual input in cases where sensors are unavailable or impractical. It captures and logs events, enabling user interaction for greater insight. Available as both a vessel edge application and a shore-side application, it ensures flexible, real-time event management across all environments.



### User Settings

The User Settings module empowers administrators to customize alarm thresholds, manage user accounts, and set secure passwords. Users can add vessels and update vessel information, while also creating user profiles with access controls to restrict visibility. This ensures that each user—whether a client, third party, or service company—can only access the data you authorize. Additionally, the module allows for the setup of automated report distribution, streamlining communication and improving operational efficiency.

# MT Gateway

## Data Streaming

The MT Gateway is more than just a data collection unit—it acts as a secure node that streams data from vessel sensors and subsystems, enabling remote login for maintenance, troubleshooting, and other tasks. Manufactured by MT, the Gateway is a compact, self-contained computer that only requires power and a network connection. It can be easily installed by most crew members without the need for MT or a service company on board. Once the Stream Server is installed, MT can remotely complete the setup.

The MT Gateway's can channel real-time data to other subsystems, software suppliers, and system providers on the vessel, enabling controlled and secure data sharing through a single hub. It streams data to shore in real time, ensuring there is no data loss—even during satellite communication outages. Additionally, the Gateway can buffer data for up to six months without the need for a local database, ensuring continuous operation.

### MT COMPUTER-600 AC SPECIFICATIONS

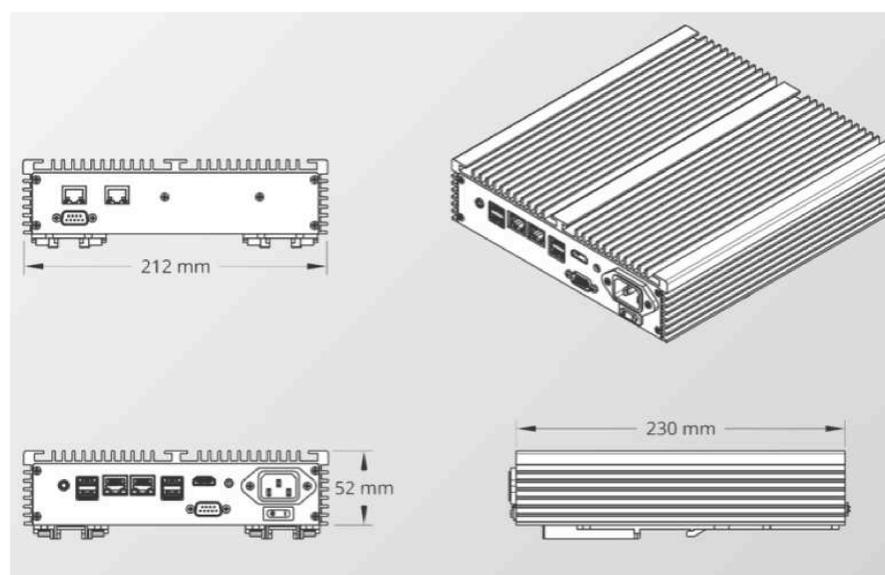
- Fanless computer with no moving parts
- Intel® Core™ i5-6360U 2.0 GHz dual-core CPU
- 128 GB SSD mSATA
- Integrate Intel® Iris™ Graphics 540 with 4K support
- 8 GB RAM DDR3L 1.35 V 1600 MHz
- BIOS: American Megatrends

### I/O INTERFACES

- Power input: 100-240 VAC
- 2 x Intel I211 Gigabit Ethernet
- 2 x Realtek PCIe GBE Gigabit Ethernet
- 2 x USB 3.0 port
- 2 x USB 2.0 port
- 2 x COM (RS232) Port
- Audio output: 3.5mm miniJack

### INTERNAL INTERFACES

- Memory: 8 GB 1600 MHz, 2 x DDR3L SO-DIMM slot, support up to 16 GB
- 2 x SATA 3Gb/s with 5V SATA power connector
- 4 x USB 2.0 (2x4 pin, P=2.0)
- 2 x RS-232 (2x5 pin, P=2.0)





## Sub Systems

### Sub Systems

As part of our Smart Ship Solution, MT offers a range of advanced subsystems, including vibration monitoring, ultrasonic monitoring, oil condition monitoring, engine bearing monitoring, engine splash oil detection, oil mist detection systems, and fuel flow sensors.

### Vibration Online

Online vibration monitoring detects machinery issues in real-time, enabling early intervention to prevent costly failures. By tracking vibration levels of critical systems like thrusters, engines, and pumps, it ensures optimal performance, extends equipment life, and reduces maintenance costs. Real-time alerts allow proactive maintenance, improving efficiency, safety, and minimizing downtime.



### Ultrasonic

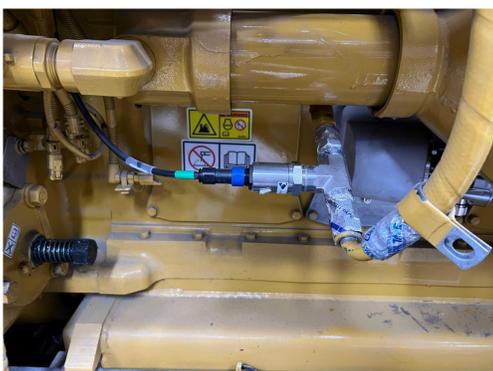
Ultrasonic monitoring detects leaks, corrosion, and mechanical issues in real-time, enabling early intervention to prevent costly repairs. It extends equipment life, reduces maintenance costs, and enhances ship safety and performance by minimizing downtime.



## Sub Systems

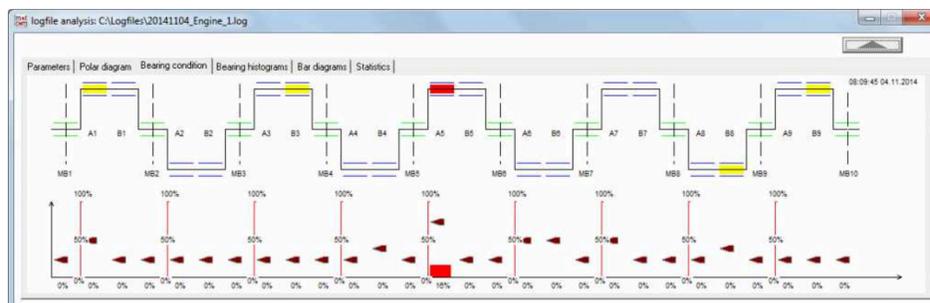
### Oil Sensors

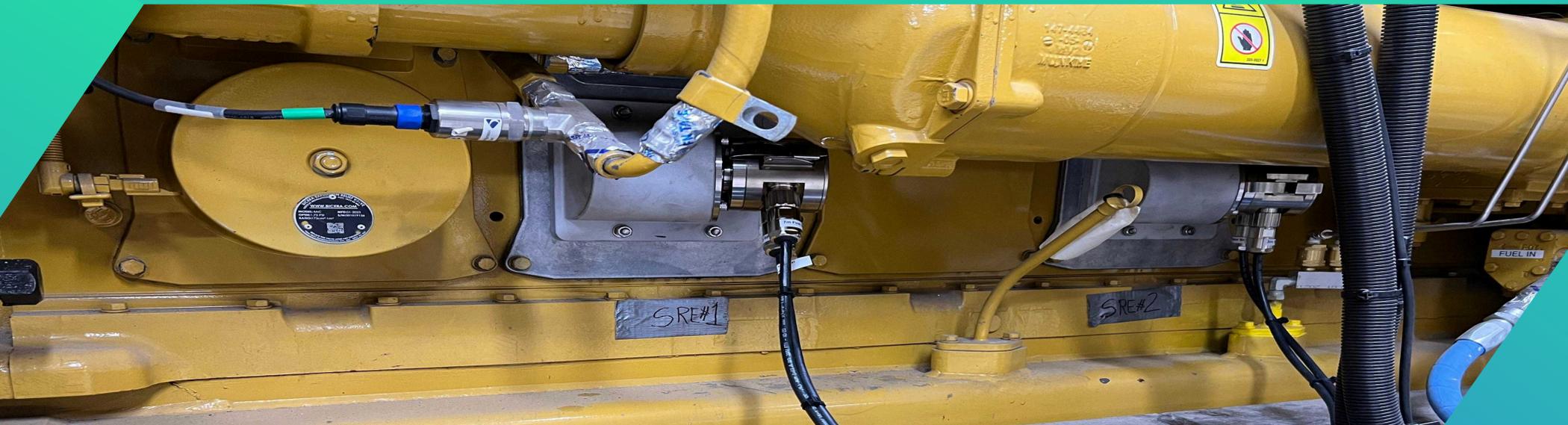
Online oil monitoring tracks the condition of engine lube oil, thruster, and gear lube oil in real-time, detecting early signs of wear, contamination, or degradation. By monitoring key parameters, it enables timely maintenance, extending oil and equipment life, and reducing maintenance costs. Benefits include optimized oil change intervals, improved reliability, and enhanced operational efficiency, leading to fewer repairs, lower downtime, and smoother vessel operations.



### Engine Bearing Monitoring

Online bearing condition monitoring solution specifically designed for engine journal bearings. It helps prevent major part damage, minimizing downtime and costly repairs. By continuously measuring and analyzing the condition of bearings and slip surfaces, the system enables early detection of potential failures, allowing for proactive maintenance before issues escalate.





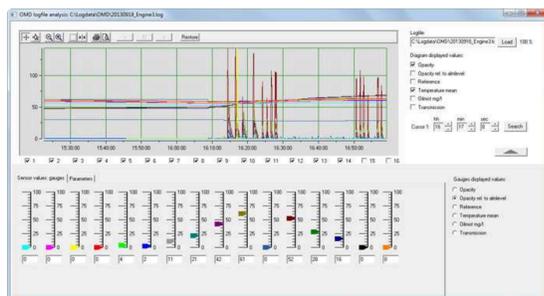
## Sub Systems

### Engine Oil Mist & Splash Oil

The all-in-one sensor provides both Engine Splash Oil Monitoring and Engine Oil Mist Detection, offering a seamless solution for engine compartment monitoring. Easy to install—one sensor per engine compartment—this system requires minimal maintenance and no calibration.

Engine Splash Oil Monitoring continuously tracks the condition of engine splash oil, detecting abnormalities such as contamination, temperature fluctuations, and oil degradation. By monitoring key parameters in real-time, it ensures optimal lubrication, prevents engine component damage, and enables early issue detection, reducing maintenance costs and downtime.

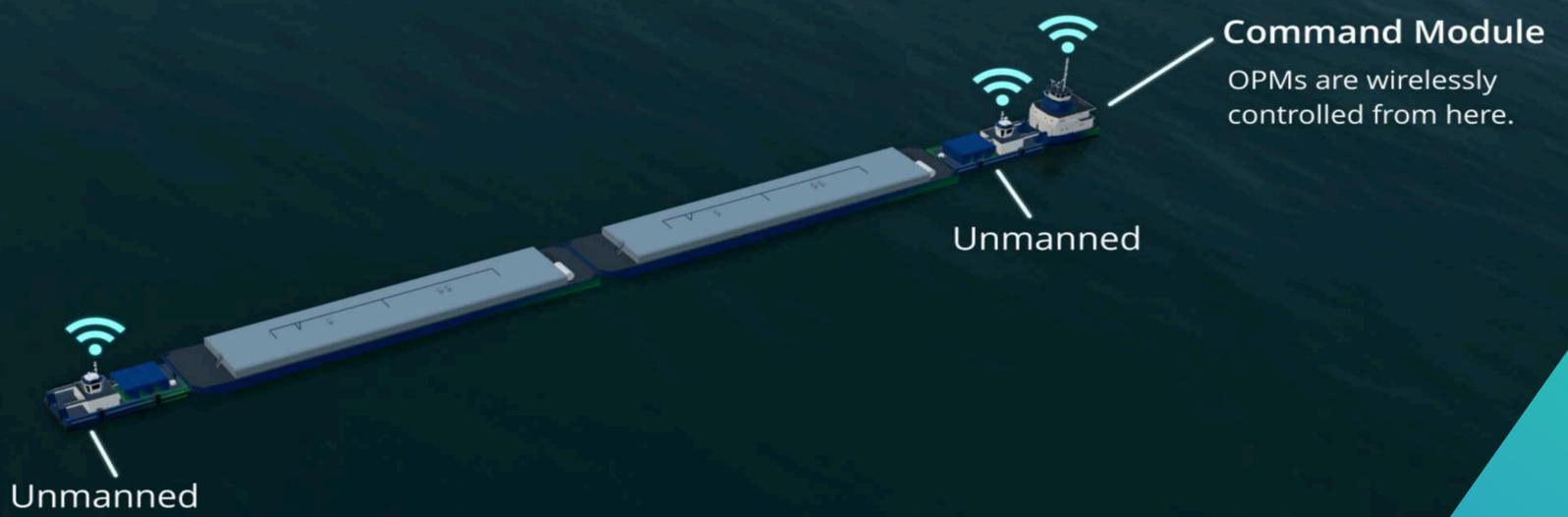
Engine Oil Mist Detection monitors oil mist levels in the engine compartment, providing early alerts for potential leaks or lubrication issues. This helps prevent fire hazards, reduces the risk of engine damage, and allows for timely corrective actions, ensuring safety and maintaining optimal engine performance.



### Fuel Sensors

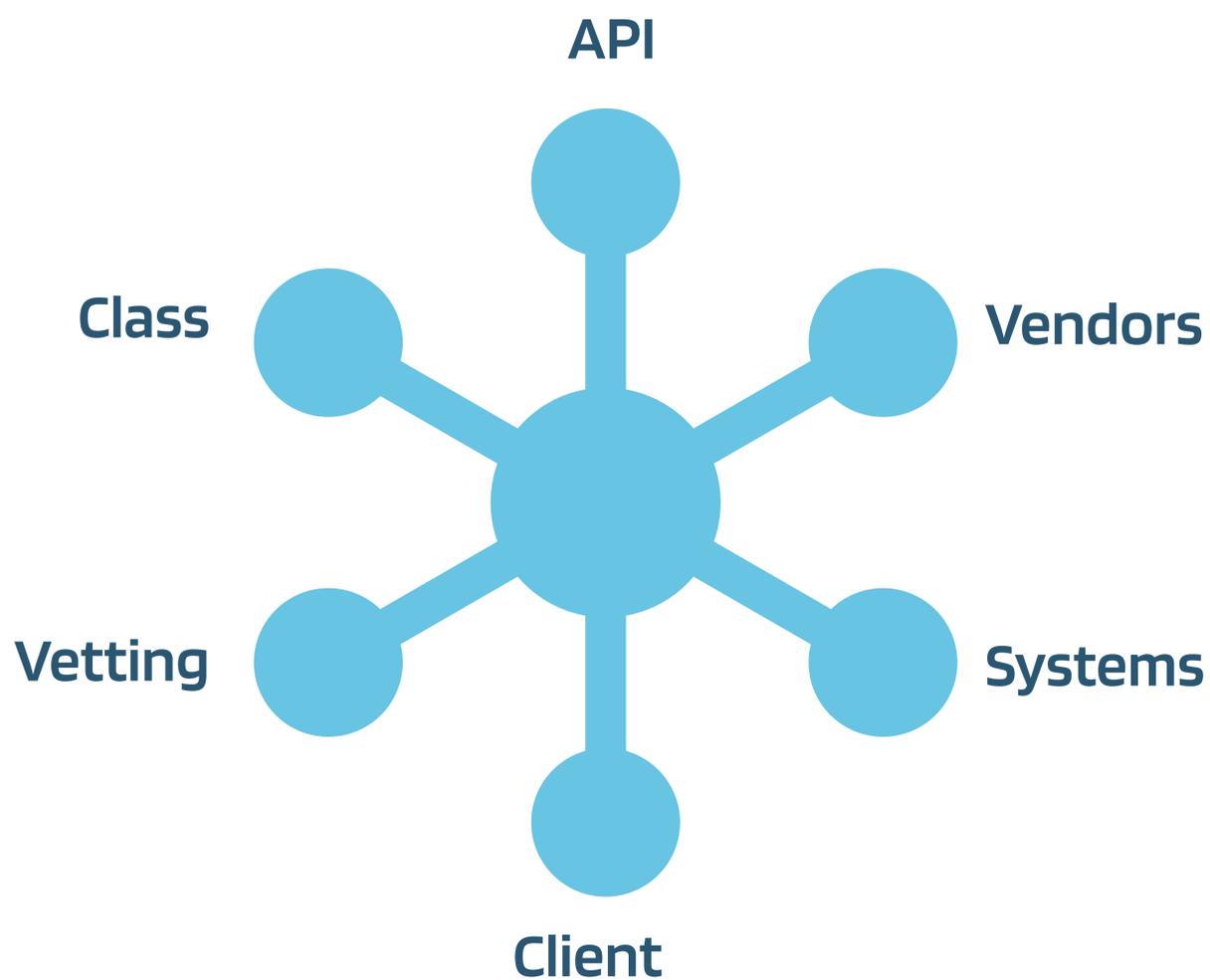
The Engine Fuel Sensor is available in two versions: Coriolis and Positive Displacement sensors. Each version is designed to meet different application needs and budget requirements. The Coriolis sensor offers highly accurate, real-time mass flow measurement, while the Positive Displacement sensor provides reliable volumetric flow data. Both options deliver precise fuel monitoring, helping to optimize fuel consumption and enhance operational efficiency.





## Integrations

The C-Connect Platform is highly versatile and can integrate with any system or software provided by classification societies or other system suppliers. MT can facilitate connections to classification societies such as DNV for fuel reporting, as well as systems like Naut Connect, Thruster Connect, and other digital class notations offered by class. Depending on the classification society, application, and data infrastructure, MT will assist in seamless integration to ensure optimal functionality and compliance.



**Machine Learning** Decision Support

Digital Class Integration **Fuel Monitoring**

Remote Monitoring **AI** Remote Access

Digital Barrier Control **Fuel Advisory**

**Dynamic Positioning**

Thruster Control Systems **eASOG**

**Smart Ship Solutions** eCAM

Operational Readiness **Digital Twin**

**Condition Monitoring** Automation