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INTELLECTUAL CAPITAL FOR LEADERS

Real Time Monitoring Unlocks Immediate Savings for Shipowners

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The pressure to meet decarbonization targets has never been higher for the shipping industry, which accounts for about 3% of global greenhouse gas (GHG) emissions. In addition to tightening regulations from bodies like the European Union and the International Maritime Organization, proving strong ESG performance is becoming vital for accessing capital and gaining stakeholder trust.

However, there is a growing gap between these increasingly stringent requirements and shipping companies' ability to keep up, leading to confusion, ambiguity, and unforeseen consequences. While daunting, this gap can be successfully bridged through emerging technology—such as the new active emissions monitoring system developed by Cyanergy, which will transform emissions tracking and reporting for the shipping industry.

The Complexity of Compliance

The International Maritime Organization (IMO) took early leadership in the decarbonization of the shipping industry. In 2018, it established a comprehensive decarbonization strategy with a goal of reducing emissions by at least 50% by 2050. It also created the Carbon Intensity Index (CII) to track the progress of reducing greenhouse gas emissions and to align the shipping industry with the global efforts to reduce climate change.

Around the same time, the European Union began rolling out the fourth phase of its Emission Trading System, which was applied to the maritime industry in 2024 and requires ships to purchase carbon allowances for their emissions when docking or traveling through EU ports.

While the IMO and EU decarbonization efforts are well-meaning, the shipping industry is dealing with conflicting priorities in meeting these standards, including:

Administrative Burdens

Complying with new requirements creates an increased administrative burden, and many shipping companies are faced with limited financial and human resources. Companies must continuously monitor their CO2 emissions and submit regular emissions reports to the relevant authorities. This requires detailed record-keeping and compliance with specific reporting standards, and these reports must be verified by accredited third-party auditors. In addition, many companies must invest in specialized IT systems to manage emissions data, calculate allowances, and ensure compliance.

Inaccurate Measurements

A significant barrier in assessing the effectiveness of the IMO's decarbonization strategies is the reliability of the data. Achieving emission reduction targets will require ongoing improvements, but these efforts are only as effective as the accuracy of the data they are based on. When baseline measurements or reported figures rely on assumptions or estimates, it raises the question: how can we be certain that we're truly making progress? Shipping companies face penalties for non-compliance, which heightens the need for detailed and precise record-keeping.

Varied Methodologies

Another major challenge facing the shipping industry is the lack of a unified emissions accounting system to comply with the Well-to-Wake (WtW) approach. There is no globally accepted framework, and different organizations and regulatory bodies use varying definitions, methodologies, and reporting standards. In addition, there are fragmented approaches and regional differences in emission accounting requirements, making it difficult for global companies to adopt a single system for compliance. This results in patchwork compliance efforts that sometimes underreport or overreport actual emissions.

Future Visibility

The pricing of GHG emissions is complex and creates uncertainty for businesses and policymakers to forecast future carbon costs. The lack of visibility makes it difficult to make investment decisions in emissions reduction projects and clean technologies. Without a reliable emission baseline, it becomes challenging to measure the incremental benefits of new technologies, and difficult to discard any projects that may not be effective.

The Need for Reliable, Real-Time Data

Without accurate data, shipping companies can not reliably assess whether their emissions reduction strategies are working and risk under-reporting or over-reporting their emissions. This poses significant financial, legal, and reputational risk. Assumptions and estimates, while useful, fail to provide the level of precision needed to make informed decisions about the effectiveness of decarbonization technologies and strategies. This is where technological innovations such as active emissions monitoring software become critical.

In response to these challenges, Cyanergy has developed a low-cost emissions monitoring system designed to help shipping companies measure, report, and verify their decarbonization efforts.

How Cyanergy's System Transforms Emissions Monitoring

Cyanergy's system automates data collection, eliminating manual inputs and reducing the risk of inaccuracies. By centralizing this data, it becomes easily accessible to stakeholders, including

operational personnel, auditors, and owners. The system measures the actual mass of greenhouse gas (GHG) emissions in real-time using stoichiometric calculations, ensuring precise data that complies with global and regional regulatory requirements, including the Well-to-Wake (WtW) approach.

This technology tracks multiple GHGs, allowing companies to streamline their emissions accounting processes, regardless of the region they operate in. The real-time data helps crews improve ship efficiency by identifying issues that may negatively impact CII ratings, enabling shipping companies to align operations with decarbonization goals over specific timeframes like journeys or financial reporting periods.

Additionally, Cyanergy's system integrates seamlessly with operational and financial systems, helping companies accurately calculate their carbon allowances and providing valuable forecasting tools. The system also mitigates the risk of technology investments by validating returns on new equipment or alternative fuels, ensuring that emissions reduction efforts are both effective and financially sound.

Shaping the Future of Sustainable Shipping

Decarbonizing the shipping industry is a monumental task, but with the right tools and data, it is achievable. Cyanergy's real-time emissions monitoring system offers shipping companies the insights they need to make informed decisions, reduce emissions, and stay ahead of regulatory requirements. By embracing technology and data-driven solutions, shipping companies can not only meet decarbonization targets, but also position themselves as leaders in global sustainability.

This article is sponsored by Cyanergy, leading the way in innovative and high ROI solutions for reducing emissions. Learn more about their groundbreaking technology here.

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