

Well, duh!

by Alexa Ivy

Be ready to pick your jaw up off the floor as NAVTOR's Chief Sustainability Officer Bjørn Åge Hjøllø explains how the Green AI for Sustainable Shipping (GASS) initiative promises to transform the ability of shipowners and operators to slash fuel consumption, emissions, and operational expenses (OPEX), ushering in a smarter, greener, and more connected maritime future. Sorry, what did you just say? Hjøllø smiles in recognition of the apparent disbelief. He tries again: "I said that this project has the potential to cut 1% of all global emissions." Do you mean 1% of all *shipping* emissions? "No, 1% of total *global* emissions... For everything!" Sorry. What?!

This may be the first, but it won't be the last time Hjøllø is met by someone who needs to reboot their brain while struggling to come to terms with the ambition of the Norwegian government-backed **GASS** research project.

Led by NAVTOR, the initiative is a partnership with Grieg Star, Maritime CleanTech, Scandinavian Reach Technologies (ScanReach), Simula Research Laboratory, SinOceanic Shipping, and Sustainable Energy/SIVA, with support from the Norwegian Research Council, Innovation Norway, and SIVA.

Over the next three years, it aims to champion what Hjøllø calls a "data-driven approach to decarbonization," enabling shipping companies to identify, analyze, and address inefficient energy use on any vessel, in any location, in any weather conditions, in real-time.

Powered by machine learning algorithms, digital twin technology, and a constant stream of high-quality data, the result will be, says Hjøllø, "a simple, powerful decision-making tool that allows users to maintain competitiveness, achieve regulatory compliance and, in short, unlock more sustainable shipping."

Although he makes it sound 'easy,' there's much hard work that needs to be done first. And this is where the partnership model comes in.

Teamwork makes the dream work

As in any ambitious team, each GASS player has clearly defined roles. NAVTOR is the world's leading supplier of maritime

technology for e-navigation and performance solutions, with products and daily services on over 18,000 vessels in the world's fleet. With expertise derived from building and continually developing an integrated digital 'ecosystem' connecting ships, fleets, and entire organizations, it is well placed to design, integrate, and eventually bring this type of innovation to market.

Grieg Star, SinOceanic Shipping, and Sustainable Energy/SIVA provide both invaluable domain expertise and the crucial test vessels required to build, run, and constantly refine the solution for real-world operations.

Meanwhile, ScanReach offers a unique wireless Internet of Things platform that connects sensors, equipment, and systems across complex steel vessel environments to harvest the data needed for GASS' high-power processing engines.

Simula's role sees the team leveraging their renowned developer experience to create the machine learning and digital twin back-end to empower the front-end benefits.

Finally, Maritime CleanTech is on hand to disseminate information and encourage interaction with another potential 150 partners through its future-focused industry cluster.

So, that's the Big picture, but we have to zoom in to see how this will work in reality. Hjøllø is happy to 'go granular.'

Richer data = cheaper operations

"At present, there are no systematic data-driven solutions for improving energy efficiency onboard, and GASS aims to address

that," he says. "We want to capture granular information from a very wide range of high-frequency data that basically allows us to predict what a vessel's fuel consumption should be, regardless of ship type, location, weather, and so on. That means integrating precision data from vessel operations and exact operating environments – combining metocean condition and forecast data, automatic identification system data, and a whole range of reporting & performance data gathered in real-time, all the time, from sensors. That can span anything ranging from propeller information to engine revolutions per minute, navigational data, speed, and the like."

Once they have this building material, Hjøllø explains, it can be used to craft a digital twin of any vessel that, regardless of operational parameters, can be used to demonstrate optimal fuel consumption. If the 'real world' ship is failing to live up to its virtual sibling's performance, then the data can be instantly analyzed to find out why. "Maybe there's an issue with the trim of the vessel, or a problem with fouling, or perhaps the auxiliary engine has been used in a congested area, so it's still running when there's no need," he says.

"With much richer, real-time data than ever before," Hjøllø furthers, "we can unlock up-to-the-minute awareness and performance analytics that enable dynamic voyage optimization – as opposed to today's 'static' standard – and allow onshore teams and onboard crews to address issues/deviations from plans as they actually happen. That's an incredibly powerful advantage to have,



Photo: NAVTOR

especially in the new regulatory reality of Carbon Intensity Indicator ratings and the EU Emissions Trading System, for example, and the associated costs and investments associated with compliance.” In other words, he says, “This could be huge!”

Once extensive testing and validation have been completed, the AI module will be integrated into NAVTOR’s existing joined-op portfolio. Although it’s early days, Hjøllo suggests that this would be on both NavStation (the company’s onboard digital chart table/planning system) and NavFleet (a shore-based management, monitoring, and optimization solution), allowing both vessel and office teams to make the most of up-to-the-minute insights and enhance decision making.

“We’ve always been focused on developing innovations that simplify life at sea for our customers,” Hjøllo states. “This is the epitome of that: gathering and utilizing vast amounts of complex data to deliver straightforward, actionable, and powerful recommendations. It’s an advisory functionality that we’re constantly building, helping deliver added value for anyone that’s looking to gain advantage.”

As his job title suggests, the key advantages Hjøllo is setting his sights on revolve

around sustainability, which, as he rightly points out, goes hand in hand with commercial benefits. “If we can dynamically optimize voyages and energy consumption, we can also, by extension, dynamically optimize costs,” he says, “helping owners around the world cut down on their greatest OPEX outgoing.”

“But, as you might expect, it’s the impact on emissions that should create the greatest excitement,” Hjøllo notes. That brings us back to the 1% figure. How is that even possible?

No roadblocks

Hjøllo admits that the number is both a best- and worst-case forecasted scenario. Here’s how the GASS partners arrived at it: today, worldwide shipping accounts for nearly 3% of greenhouse gas (GHG) emissions. However, widely reported research suggests that it could reach as much as 17% (you read that right!) by mid-century as global trade expands while other industries cut their emissions faster than maritime. GASS expects that a machine learning application that dynamically optimizes vessel energy use should be able to reduce consumption, and therefore GHG emissions, by 20%.

So, when the 30%+ of vessels in the world fleet that use NAVTOR products have their breakthrough AI technology powered up, that translates to over a 5% cut in all of the shipping emissions and, assuming the 17% figure, a 1% cut in total global footprint.

Hjøllo can’t suppress a smile but is cautious enough not to get carried away. “I think the important thing is there’s nothing to suggest we can’t do this – we, and our partners, have the track record, technology, and domain expertise to succeed here. The 1% figure obviously depends on a lot of variables that are beyond our control, but the 20% reduction per vessel doesn’t. That is a very realistic target.”

He concludes: “If we can play a part in reducing energy use and emissions by one-fifth on every vessel we serve – regardless of type, age, location, weather, whatever! – imagine how powerful that could be. Imagine the difference environmentally, from a regulatory perspective and commercially. In an industry and a world where every marginal gain is a major win, this is... Well...”

He shrugs his shoulders, temporarily lost for words. Even Hjøllo, it appears, needs to reboot sometimes. ■



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