

»The pressure is higher than ever«

There's no way around it: With ambitious climate goals to reach by 2050, shipowners need to set their sights on new technologies. According to data specialists at NAPA, one highly useful tool is optimizing voyages – cutting down on both fuel costs and emissions

What are the key challenges shipowners face today from NAPA's perspective?

Pekka Pakkanen: From NAPA's perspective, the key challenges for shipowners include: meeting decarbonization targets, managing operational costs, and ensuring compliance with evolving regulations. The pressure to reduce greenhouse gas emissions is higher than ever, requiring shipowners to adopt innovative technologies while maintaining profitability and safety. NAPA's comprehensive suite of solutions helps shipowners navigate these challenges by providing data-driven insights, optimization tools, and regulatory compliance support.

How has the demand for performance monitoring evolved in recent years?

Pakkanen: The evolution of performance monitoring has been driven by the need for greater transparency and accountability in maritime operations. EU ERV and IMO DCS requirements made the collection of data mandatory, which really accelerated the demand. Shipowners are increasingly relying on advanced monitoring tools to track fuel efficiency, emissions, and overall vessel performance. NAPA's state-of-the-art tools provide accurate, real-time data and analytics, empowering shipowners to make informed decisions and stay ahead of evolving regulations.

How do shipowners and operators benefit from voyage optimization?

Pakkanen: Modern voyage optimization algorithms go beyond traditional weather routing by finding the most fuel- and time-efficient route while balancing external factors like winds, currents, waves, and fuel costs. It's about strategic decision-making—sometimes choosing a longer route with favorable winds can result in lower fuel consumption and emissions than a shorter, more resistant route.

By leveraging NAPA Voyage Optimization solutions, shipowners can reduce fuel costs, minimize emissions, and im-



Pekka Pakkanen
Executive Vice President Shipping Solutions
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prove operational efficiency. The ability to plan for optimal routes, avoid adverse weather, and adjust speed dynamically ensures not only cost savings but also timely arrivals and enhanced safety.

What impact does voyage optimization have on fuel consumption?

Pakkanen: Voyage optimization has a direct and measurable impact on fuel consumption by minimizing unnecessary detours, optimizing vessel speed, and leveraging favorable weather conditions. The extent of savings depends on vessel type, route, season, and operational strategies.

On short sea shipping with skilled masters, algorithmic route optimization can bring only a benefit of 1–2%, whereas on Pacific or Atlantic voyages in winter time, optimizing against the shortest route, the savings are typically over 10%. NAPA's solutions enable shipowners to maximize these benefits by continuously refining voyage plans based on real-time data and predictive analytics.

How does NAPA help shipowners stay competitive, especially regarding IMO's climate goals?

Pakkanen: With NAPA's solutions, shipowners can seamlessly align with regulations while also unlocking per-

formance gains that set them apart in the market.

NAPA's suite of products is designed to help shipowners navigate the complexities of IMO's climate goals, offering advanced performance monitoring, voyage optimization, and emissions reporting tools that ensure compliance and operational excellence. Our EU regulatory reporting tools, such as the EU ETS and FuelEU modules, provide shipowners with the ability to quantify and anticipate the cost of carbon, both for EU-related voyages and potential global applications. By turning compliance into an opportunity for optimization, NAPA helps shipowners maintain profitability while preparing for a low-carbon future.

What role does Artificial Intelligence play in your sector?

Pakkanen: Artificial Intelligence is transforming maritime operations by making existing processes more efficient. While traditional methods can handle many tasks, AI can offer improvements e.g. in predictive maintenance and real-time performance monitoring.

NAPA utilizes AI to enhance our performance monitoring and voyage optimization solutions, providing shipowners with the tools they need to optimize operations, reduce costs, and meet regulatory requirements.

Could you share a specific success story?

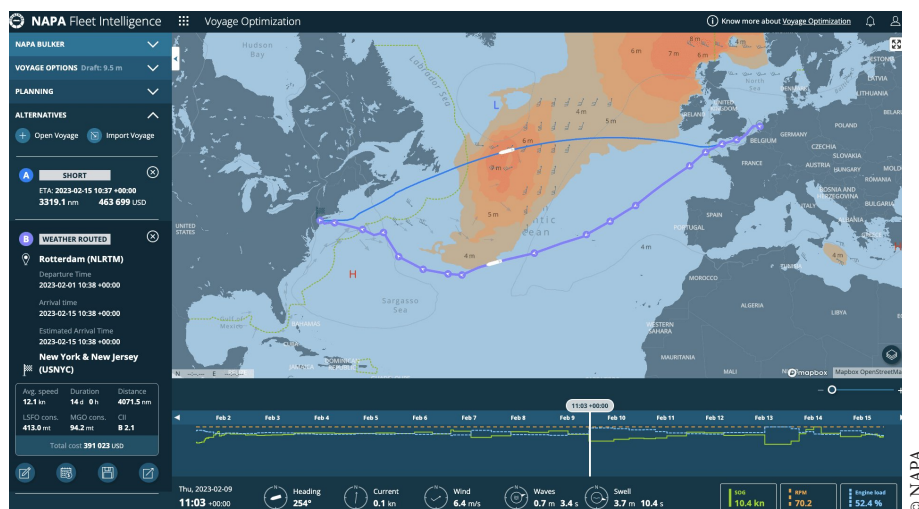
Pakkanen: There's actually three cases that come to mind, all of which can be viewed in detail on our website napa.fi.

1) An earlier simulation study led by NAPA with Sumitomo and Norsepower found that combining rotor sails and voyage optimization can reduce emissions by up to 28% on average, with 12% attributable to weather routing.

2) NAPA collaborated with IINO Lines and Norsepower on a study to evaluate the performance of rotor sails using NAPA Voyage Optimization tools. The study involved equipping IINO's vessels with Norsepower rotor sails and utilizing

About NAPA

Headquartered in Helsinki, Finland, NAPA is a maritime software and data services provider for ship design with over 35 years of operational experience. The company employs 210 specialists, combining expertise in naval architecture, fleet operations and digital services. NAPA operates globally, with a presence in Japan, Korea, China, Singapore, the USA, Germany, Greece, Romania and India. With over 90% of new vessels built yearly by NAPA customers, NAPA's ship design software has become the global de facto standard in shipbuilding.



An illustration of NAPA Voyage Optimization comparing the shortest navigable route (above) with the weather routed voyage (below). Optimizing a ship's voyage can reduce emissions by 7.3 %, a study from 2023 found

NAPA's advanced solutions to analyze the systems's impact on fuel consumption and emissions. Initial studies demonstrate that both vessels can achieve about 3–4 % fuel consumption and CO₂ emissions reductions, respectively, using NPRS alone. When combined with NAPA Voyage Optimization, these reductions can be further enhanced, reaching an additional 3–10 %.

3) Joint NAPA-ClassNK research with Marubeni finds that voyage optimization can reduce emissions by 7.3 % and extend CII compliance by up to three years.

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Pekka Pakkanen

What new trends do you expect to shape the industry in the next five years?

Pakkanen: Decarbonization and sustainability will be key trends shaping the maritime industry in the coming years.

We anticipate increased adoption of energy-efficient technologies, advanced performance monitoring systems, voyage and port arrival optimization solutions. Also, the uptake of biofuels and alternative fuels will create new operational challenges for shipowners.

NAPA is committed to supporting shipowners in navigating these trends by offering solutions that enhance efficiency, sustainability, and regulatory compliance.

Interview: Jannik Westerkamp

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