Demonstrating autonomous docking and mooring for the future of short sea shipping

CHALLENGE

Short sea shipping faces increasing pressure to reduce emissions, improve efficiency, and enhance safety, while operating within constrained port environments and tight turnaround windows. Achieving these goals at scale requires a step change in how vessels are guided, docked, and secured, moving beyond manual processes toward integrated, autonomous operations.

The challenge for the EU-funded MOSES project was to prove that autonomous systems could work together safely and reliably in a real port environment, not just in simulations or controlled test settings.

SOLUTION

In 2023, Trelleborg Marine and Infrastructure supported successful onsite trials at the Port of Faaborg, marking the culmination of a four-year, multi-country collaboration involving 17 partners across Europe.

The trials demonstrated three autonomous systems operating in sequence, including unmanned tugboats guiding and docking a container vessel, followed by automated mooring using a specially adapted AutoMoor system with autonomous operation capability.

Together, the integrated solution achieved TRL 5 levels of situational awareness and control, validating its readiness for real-world application. The Faaborg trials showed how autonomous docking and mooring can reduce manual intervention, improve safety, streamline vessel turnaround, and support long-term sustainability goals, highlighting a clear pathway toward the next generation of smart, low-emission port operations.

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