FORTISSIMO PLUS

FFPLUS SUCCESS STORY:
BUSINESS EXPERIMENTS

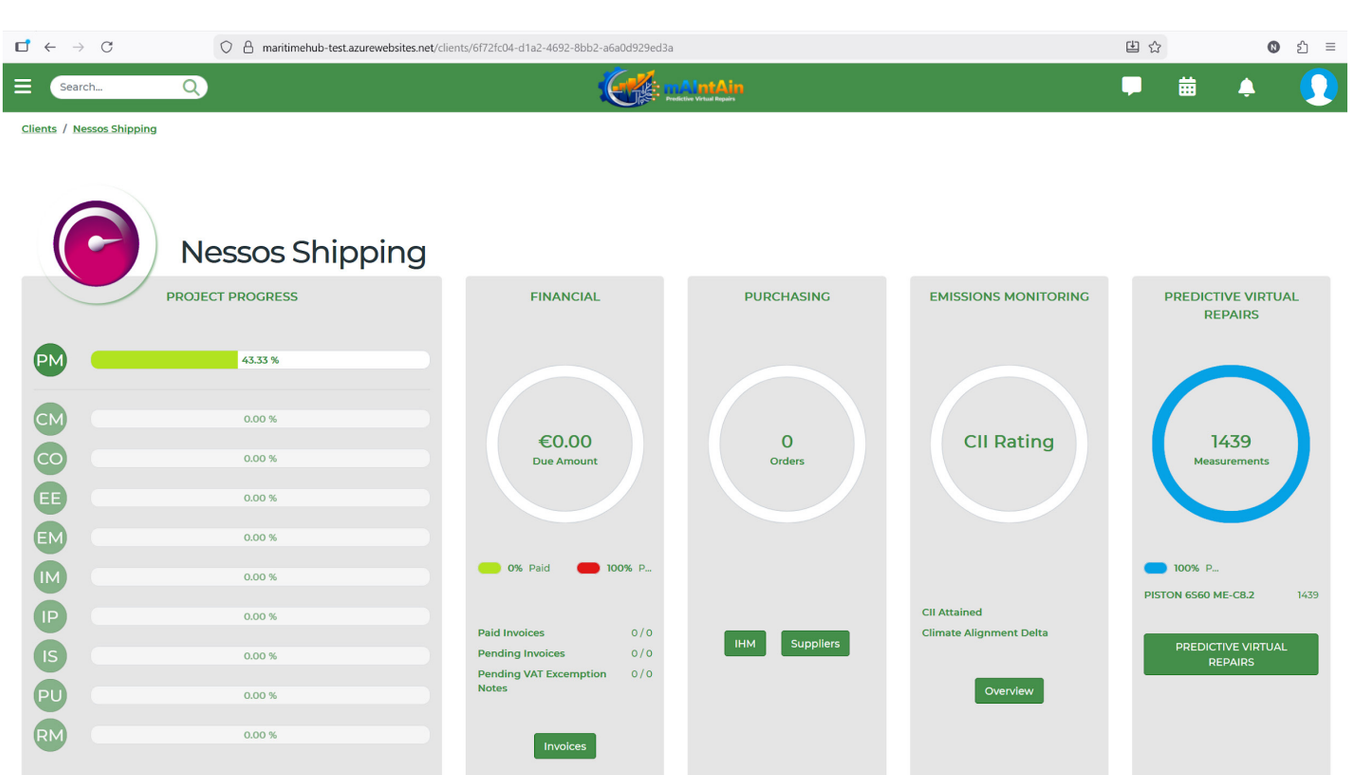
AI-ENABLED PLATFORM FOR MONITORING AND MAINTENANCE OF INDUSTRIAL EQUAIPMENT

ORGANISATIONS

Nessos is a Greek independent software vendor, specialising in cloud, web, mobile and enterprise systems. As Main Participant and ISV, it leads development and commercialisation of the mAIntAIn platform. **MGroup at the National Technical University of Athens** is the Technology Expert, providing advanced numerical modelling, physics-informed simulation and HPC expertise.

THE CHALLENGE

Maritime operators rely on complex machinery but often manage maintenance through fragmented OEM systems, monitoring tools and data pools. This limits fleet-wide visibility, slows technical triage and leaves engineers dependent on manual judgement, increasing downtime, repair costs, port delays and compliance risk. High-fidelity simulation and AI training are too computationally intensive for conventional workstations.



Technology used: HPC, ML, FEM
Industry Sector: Maritime

THE SOLUTION

mAIntAIn combines a three-tier Azure platform with HPC batch analytics. Curated equipment data feeds physics-informed digital-twin simulations using MSolve, while large parameter sweeps assess sensitivity and uncertainty.
AI workflows reduce complex model outputs and forecast equipment behaviour. HPC enables many high-fidelity models to be calibrated across configurations and operating regimes quickly, without sacrificing accuracy through simplification.

THE IMPACT

Commercialising mAIntAIn gives Nessos a differentiated offer for maritime and other asset-heavy industries, where reliability and compliance influence purchasing. Combining HPC-enabled physics models, AI and operational workflows, the platform moves beyond generic alarms to provide explainable risk, anomaly and degradation indicators. Validation with two maritime companies strengthens market readiness and supports new customers, renewals and higher-value contracts through ERP, maintenance and equipment-vendor integrations. The capability can also extend to industrial plants and energy.
For users, a unified view of measurements, diagnostics, predictive indicators and actions can reduce technical issue triage time by approximately 20-30%. HPC accelerates simulation and model-calibration cycles by approximately 5-10 times versus workstations, making repeated high-fidelity analysis practical across machinery and conditions. Earlier detection and traceable evidence can reduce unplanned downtime and maintenance costs while enabling faster, consistent and auditable fleet-wide decisions.

BENEFITS

- Validated with two maritime companies, improving commercial readiness.
- 20-30% faster technical issue triage through unified predictive insights.
- 5-10x faster simulation and model calibration than workstation processing.
- Expected to create 2-3 technical jobs across the SME ecosystem.

Funded by the European Union
EuroHPC Joint Undertaking