

Intelligent PREdictive Maintenance for Aquaculture Systems (ERA-Net MarTERA)

About iPREMAS

Intelligent PREdictive Maintenance for Aquaculture Systems is a research project aiming to improve the performance of aquaculture farms by introducing a novel platform and service for Intelligent predictive maintenance. The platform is based on innovative monitoring systems and smart infrastructure, relying on machine learning (ML) and artificial (AI) intelligence techniques. The platform measures key parameters in real time introducing innovative multi-sensor gauges which feed a chain of ML models for Time Series Forecasting (TSF), Anomaly Detection (AD), Fault Classification (FC) and Remaining Useful Life (RUL) estimation.

The measurements give the current health status of the farm site while the forecasts provide a glimpse of future status; analysis of the predictions allow to identify the potential need of preventive/corrective maintenance. A cloud-based integration of the different components of the platform allows to improve connectivity and safety while optimizing the business process which lets the farmers benefit from a tailor made Software as a Service solution.



EU Budget: 335000 €

Duration: 30 months

Coordinator: HAEDES BV

Consortium: HAEDES BV, BEIA, NILPR

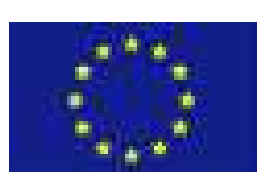
Objectives

- 01** To develop a platform and service for Intelligent predictive maintenance of aquaculture systems relying on machine learning and artificial intelligence techniques. The proposed predictive maintenance will be based on IoT and AI (i.e. sensors integrated "in" the structures), relying on new generation sensor technologies that allow redundant and robust monitoring of the status.
- 02** To evaluate and develop sensors/probes adapted to distinct features required for aquaculture farms (optical sensors, acoustic tools). The tools employed to assess underwater acoustics are customized hydrophones and microphones. Expected key features to extract and apply are the Fourier power spectrum and sound loudness.
- 03** To test and validate the project solutions in various environments and different scale of applications. Three different test pilots for different applications are foreseen. The collected data will help the farmers to reduce the maintenance and operation costs represent at the end of the day a direct increase in year profits. Real time monitoring will reduce risks to the production and to the environment.

Results

- R1** A platform and service for Intelligent predictive maintenance of aquaculture systems using AI algorithms
- R2** Sensors/probes adapted to distinct features required for aquaculture farms
- R3** Farmer Support Service allowing the aquaculture sector to operate and control remotely

Consortium



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