ID44- COMMON SENSE PROJECT: A STEP FORWARD TO IMPLEMENT MSFD

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The COMMON SENSE project will contribute to support the implementation of the Marine Strategy Framework Directive (MSFD) and other EU policies (e.g. Common Fisheries Policy), providing easily usable across several platforms, cost-effective, multi-functional innovative sensors to detect reliable in-situ measurements on key parameters by means of methodological standards. This project will focus, by means of a multidisciplinary and well-balanced consortium on eutrophication, contaminants, marine litter and underwater noise descriptors of the MSFD.

This project will first provide a general understanding and integrated basis for sensors cost effective development (WP1 and WP2). Within the following WPs (5-8) the project will design and develop new generation sensors focused on the detection of: (1) nutrient analytes by utilising well-established colorimetric chemistries for phosphate, ammonia, nitrate and nitrite (2) low concentrations of heavy metals (Pb, Hg Cd, Zn and Cu), (3) surface concentration of microplastics (4) underwater noise by means of a bespoke acoustic sensor pod. These sensors, developed onto modular systems, will be integrated into multifunctional packages (WP4). Innovative transversal sensors (e.g. temperature, pressure, pH and pCO2) will be also integrated to provide the variables with a comprehensive reference frame. The Common Sensor Web Platform will be created (WP3) aiming at bringing a more sophisticated view of the environment implementing the sensor web enablement standards but optimising e.g. data acquisition, access and interoperability. The sensors developed will be interoperable with existing and new observing systems and they will also be field tested (WP9) by means of different platforms (e.g. research vessels, racing yachts, buoys). Dissemination and exploitation activities (WP10) will enable to transfer knowledge and technology resulting from the project to be used with commercial, scientific, conservational and strategic purposes.

ID45- NONLINEAR FINITE ELEMENT METHOD IN CABLE MARINE STRUCTURES. APPLICATION ON FISHING CAGE

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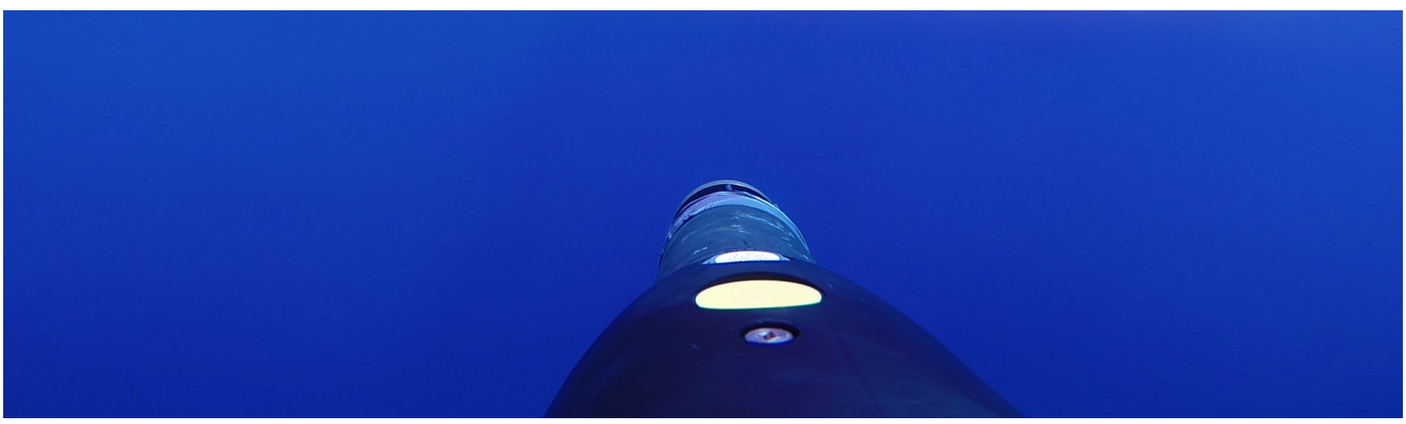
Keywords: Nonlinear Finite element, Cable structures, Mooring, Fishing cage

Summary:

There is no doubt that offshore technology has great relevancy. This leads to develop new techniques and methods to solve dynamics of devices which are placed on sea. Cable dynamics can be considered as special key into marine technology. Several structures are formed by cable. For instance, moorings allows to maintain floating offshore structures to be placed on a fix location into the ocean. Numerical methods are required to solve the nonlinear dynamic behaviour of cables. Mooring analysis can be considered as structural dynamic problem. Classical models which used quasi-static modelling based on catenary lines to solve dynamics. This work presents a strategy for solving the non-linear cable behaviour, based on Non-Linear Finite Element Method (NFEM) approach. Afterwards, formulation for first-order wave diffraction-radiation problem is described. A procedure for solving the coupled model between the wave loads and cable reaction forces is then described. Finally, an application on fishing cage simulation is performed several using fully coupled simulations. Some relevant conclusions will be obtained.



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