

Medida / SAICT - Projetos de IC&DT

Designação do projeto / ROSM: Sistema robótico de mitigação de derrame de crude

Acrónimo / ROSM

Código do projeto / NORTE-01-0145-FEDER-024055 - SAICT-POL/24055/2016

Região de intervenção / REGIÃO NORTE

Entidade beneficiária / INESC TEC

Data de aprovação / 10-07-2017

Data de início / 01-10-2017

Data de conclusão / 02-10-2019

Custo total elegível / 149.530,62 €

Apoio financeiro / FEDER: 127.101,03 €

Custo total elegível INESC TEC / 29.795,35 €

Project Description and Objectives

The overall aim of the ROSM project is the implementation of innovative first-line responders to pollution incidents (in particular, oil spills). These solutions will be based on the production of native microbial consortia with bioremediation capacity, and the adaptation of unmanned and autonomous vehicles for in-situ release of autochthonous microorganisms (bioaugmentation) and nutrients (biostimulation), and their use combined with an automated autonomous systems response, that can combat pollution in a more cost-effective manner, without risking human lives. By doing so, these systems can be used as first line intervention to pollution incidents in a fast, efficient and low cost way. Such innovative solutions aim to:

- be environment-friendly, by using native organisms to naturally degrade oil spills, and thus avoiding the introduction of additional chemical or biological additives;
- integrate first line responses to oil spill incidents, by using unmanned autonomous vehicles (aerial and surface), which are able to operate under unfavorable and harsh conditions with low human intervention;
- set-up holistic pollution combat missions, by jointly combining air and surface autonomous vehicles in a cooperative coverage strategy;
- increase the overall efficiency of the oil spill combat missions, by acting on defined targets and areas;
- offer valuable data, by equipping the vehicles with sensors, which can perform environmental monitoring (before, during and after oil spill combat missions);
- improve the overall time to reaction and mission costs, by using unmanned and autonomous vehicles, whose deployment is faster and less costly than using boats and planes.

The scientific strategy of the project includes a comprehensive set of tasks addressed to attain the following specific objectives:

- To produce a georeferenced microbial consortia bank at a pilot scale. The native consortia with high ability to degrade petroleum compounds will be viably preserved for future biomass production and application at the native geographic region from which the microbial consortia has been obtained;
- Specify, develop and deploy the containers and release systems for microorganisms and nutrients, which will be coupled to three different types of unmanned systems;
- Specify, develop and deploy the application for planning and controlling the oil spill combat mission, and for data acquisition and processing;
- demonstrate the full air/water semi-autonomous in-situ oil spill combat system at a quasi-real application scenario (without real oil spill);