



# European Project Semester

## PROJECT OUTLINE

**Project dates:** March - June 2020

**Title:** Design of mobile underwater robot for autonomous cleaning of large water reservoir

**Project activity areas:**

*Automatic cleaning, robotics design, energy management, ecology*

**Keywords:** Mobile autonomous robotics, design, mechatronics.

**Tutor's name and coordinates**

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**Project origin**

Research, innovation

**Project technical background:**

Artificial water reservoir is often used as supplementary water storage to a groundwater. However, this storage requires a regular cleaning to keep water in a good condition and quality and to avoid algae blooms. Usually, human workers make this cleaning manually, when the storage became empty, which represents tedious tasks. Therefore, an automatic and autonomous cleaning based on mobile underwater robotics can be explored to maintain a continuous cleaning over time.



Figure 1: Underwater robot used for cleaning seabed

Based on previous EPS project about this subject, the purpose of the current project is to continue and design an underwater robot for autonomous cleaning. Several steps should be explored to reach that purpose. First of all, the previous project should be studied and analyzed by considering issues related to robotics used in these conditions (underwater condition and sealing, energy autonomy, navigation strategies, waste management, ... etc).

Then, based on objectives and constraints, this project should establish a design of a robotics solution, which includes the different functional parts such as, the actuation, the cleaning, the waste storage and the calculation system. This study should take into account the cost aspect of the solution and define the existing spare parts for realization.

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**Studied topics:**

- Study and analysis of previous EPS work about this subject
- Define technical requirements and establish the robotics solution
- Design the robotics solution by establishing all functional parts
- Establish the list of the existing spare parts
- Estimate the cost and benefits of this solution