# ID13- ECODRAGA: A DREDGER SHIP THAT OVERCOMES THE ENVIRONMENTAL IMPACT OF THE DREDGING ACTIVITIES

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*Abstract – Currently, dredging processes are a necessity for a proper marine and river resources exploitation: construction and maintenance of port infrastructure, improving navigability... However, current dredging techniques can cause serious problems to the environment. ECODRAGA brings a solution to make compatible the need of dredging processes with the need of the natural environment protection.*

*Keywords – Dredge, environmental protection, contamination.*

## INTRODUCTION

Dredging needs and environmental effects

Dredging is a critical maintenance activity of navigation channels and ports. Associated to dredging activities is water turbidity causing an important environmental impact. When dredged materials are brought to the ship or put back, the water flowing out disperses the contaminants, being introduced in the trophic chains.

From 2012 to 2014 we have developed industrial level prototypes positioning Ecodraga technology as one of the most promising worldwide.

## ECODRAGA FUNDAMENTALS

1.- Ecodraga collects the water overflowing from the hopper and brings it with a pipe located parallel to the suction pipe to the suction point in the seabed. This dirty water is put very near the suction point in order many of this water to be picked again to the hopper (Fig 1). What happens is that the environmental effect is reduced to almost zero in the point of dredging.

***Two different discharge solutions***

2.- If the dredge hopper is a full aperture opening, we use a geotextile canvas sheet covering all the hopper before the dredging process (Fig 2). In the seafloor the materials and the geotextiles accumulate over the previous deposited materials and they are finally covered with clean sand over which new marine life can grow.

3.- Some dredge chips empty the hopper through a pipe. For this type of dredgers Ecodraga uses a monobuoy located in the dump point and having a pipe from the monobuoy to the seafloor and a system to locate the pipe from the dredge.

***Dredge efficiency increasing***

Actual dredgers spend the most of the time going and returning from the dump point and only a small part really dredging. Ecodraga incorporates the possibility of separating the dredger ship to its hopper allowing simultaneous operation of dredging and carrying hoppers to the dump point.

RESULTS

What showed here has been developed in an INNTERCONECTA Project (ITC-20113086) "Diseño y desarrollo, estructural y de sistemas, mediante el uso de herramientas CAD, FEA y CFD, de un prototipo de draga ecológica para la limpieza por succión de fondos marinos".

Results have been completely successful in the overflow recirculating part and quite good in the geotextile part.

Furthermore to the mechanical aspects, a Supervising Dredge Equipment has been completely developed allowing the real time control of the dredge processes and its environmental effects.

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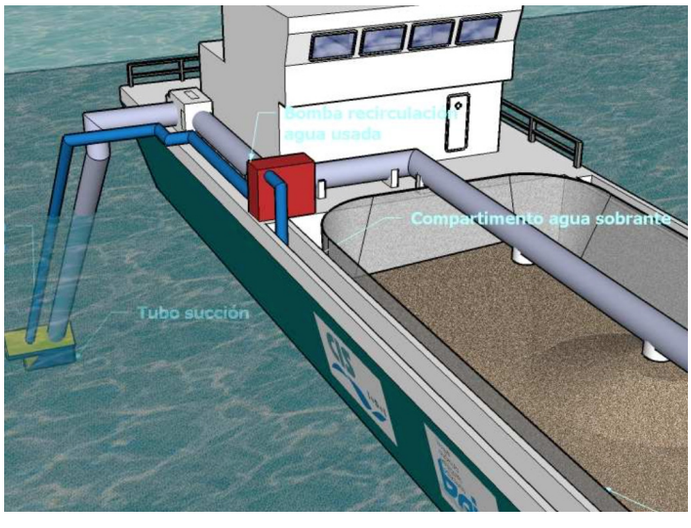


***Fig. 1: Recirculating the water overflow of the hopper. All the dirty water is left in the suction point in the seafloor thus avoiding turbidity.***

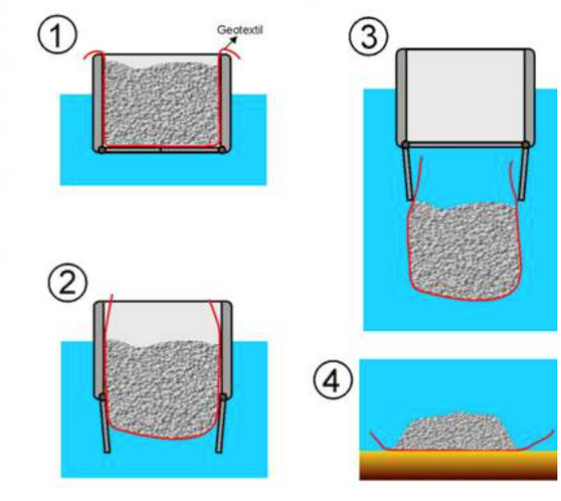


***Fig. 2: Geotextile covering the hopper and how it wraps the materials when dropping them in the dump point.***