



## **ACADEMIC YEAR 2013 – 2014**

### **TITLE OF DIPLOMA THESIS:**

Exploitation of the energy of overtopping waves type SSG

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### **ABSTRACT**

In view of the climatic change and the need of redefinition of the port projects, subject of the current dissertation is the energy evaluation of a provisional exploitation of the energy of overtopping waves, type SSG (energy breakwater). In the study of the ability that the renewable sources of energy can provide in the Hellenic area, the theoretical application of the provision was studied in the port of Heraclion because it is an island of the non-connected network. All the parameters that affect the manufacture of the energy breakwater were studied and assessed, and the prices that will give the highest energy production annually were chosen. The provision will have total length 100m, inclination 16° and will be arranged in three containers with total height 5m from the sea surface. According to the geographical characteristics of the provision SSG and the wind data of the area of the Heraclion port, it is achieved in an annual basis a production of energy equivalent to 2.047,9 MWh /year, which is connected straight to ΔΕΗ. According to the cost estimation that was conducted that includes the costs from the study of the project until it's function, the amount is 1.806.687, 40 €.The study of the economic viability of the coastal installation for 20 years followed and in case of exploitation of own capitals it was proven as a beneficiary provision for the area of Heraclion.In conclusion, the energy breakwater is a technology that could be defined with relatively low cost in the coastal projects apart from protective and anti-corrosive function, energetically as well.

### **KEYWORDS**

Overtopping wave energy converter, Sea wave Slot cone Generator (SSG), Energy breakwater, Coastal project, Renewable source of energy