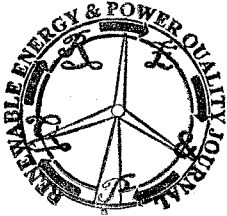


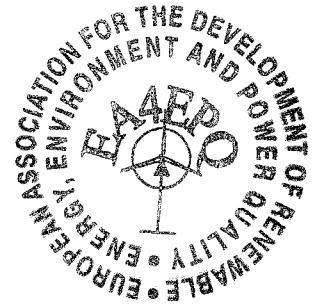
Wave energy and supply chain opportunities

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Abstract. The evolution of research and development for the energy use of waves is deeply related to the energy crisis. Currently these technologies, which come from abundant and domestic natural resources, are gaining in importance due to the evident global warming effects and the urgent need to find sustainable solutions.

On another hand, objectives relating to installed capacity have already been presented for this incipient industry, not only by private organizations, but also by public authorities. Consequently ocean energy systems will have to be fabricated, transported, installed, operated and maintained. Therefore, at the present stage, it is fundamental to visualize and map the supply chain opportunities, while achieving a general view of all actions required to bring into operation an installation to harness wave energy.

By analysing previous reports, the present paper aims at offering an overview of the different systems developed for wave energy use and analysing the supply chain opportunities for such technologies in experimental phase.

Key words

Renewable marine energies, waves, wave energy converter (WEC), supply chain.

1. Introduction

In the globalized world, characterised by regional societies, economies and cultures integration, one of the major problems is the increasing energy demand. Nowadays, even the simple act of squeezing an orange implies the use of electricity, by means of a juicer. The trend towards achieving maximum comfort goes through huge power consumption due to process automation.

In recent years, governments are aware of the significance of protecting and preserving the environment. The energy production and the use of fossil fuels, to a great extent the origin of main problems facing

society, raise environmental concerns. Then, it is important and urgent to find a solution to climate change and greenhouse gases emissions.

Considering the above-described framework, the present paper aims at offering an overview of the different systems developed for wave energy use and analysing the supply chain opportunities for such technologies in experimental phase.

2. Wave energy

Waves are generated by the wind; their height and mass grow as the wind speed increases. When it violently blows, they reach considerable size and swiftly travel over the surface of the sea, discharging their power over the obstacles on their way.



Figure 1: Waves formation at sea
Source: Aquatic Renewable Energy [1]

The effects of these collisions, as well as the amount of dispersed energy, are considerable and their consequences are visible at ports and breakwaters. For instance, it is worth mentioning that concrete blocks over three tonnes have been lifted and thrown away several metres off their initial location.

Throughout history [2, 3, 4] many devices have been designed to make use of wave energy. However, none of them has so far produced practical results. This is why wave energy harnessing is still, at present time, in experimental phase.