


OWEMES special edition for Wind Engineering

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The exploitation of energy potential of the surrounding ocean and seas is a primary goal of the European Union. The Europe 2016 cumulative power is equal to 12,631 MW from 3589 grid-connected wind turbines in 10 countries. With average new installations of 3.1 GW/year, offshore wind will represent about one-quarter of the total new installations. Most of the installations are bottom-fixed offshore wind (BFOW): 80% monopiles, 9.1% gravity foundations, 5.4% jackets, 3.6% tripods, and 1.7% tripiles, with the average water depth of 27.1 m and the average distance to shore of 43.3 km.

Floating offshore wind (FOW) is complimentary to BFOW and holds the key to an inexhaustible resource potential in Europe as 80% of all the offshore wind resource is located in waters 60 m and deeper, where traditional BFOW is not economically attractive. On the contrary, FOW technology, previously confined to R&D, has developed significantly in recent years, and it is now ready to be integrated into the energy market. Europe will take advantage of technologies and cost reduction techniques developed in BFOW. There are currently four substructure designs for FOW: barge, semi-submersible, spar buoy, and tension leg platform (TLP). The first three are loosely moored to the seabed, allowing for easier installation, while the TLP is more firmly connected to the seabed assuring more stable structure. The technology readiness level (TRL) related to semi-submersible and spar buoy substructures has entered a phase (>8) with technology appropriate for launch and operations. The barge concept could reach this stage in the coming years, while the TLP could be closer to exploitation. At present, Mediterranean countries, except France, have had a reduced R&D and demonstration planning on offshore wind because of lower wind regimes, high coastal water depth and claimed ambient, social impact (tourism, fishing, etc.). However, experts of France, Greece, Italy, and Spain have shown that optimized FOW system with lower but regular wind and wave regime could exploit a significant potential.

The OWEMES Association (www.owemes.org), founded in 2006, has been the active promotion body for marine renewable energies in the south Europe. The main aim is to diffuse the international research, technology, financial, and market results in the Mediterranean area to promote applications and foster R&D and industry to enter in these promising sectors. Such promotion analysis is carried out through organizing triennial and at present biennial technical events as the European Seminar OWEMES 2017 (www.owemes-2017.eu), held in Bari, Italy, 11–13 October 2017. The Conference was held in the Politecnico di Bari with the scientific support of Dipartimento di Ingegneria Meccanica e Aerospaziale, Sapienza Università di Roma and the infrastructural support of Aires Tech Srl. The event was sponsored by Italian Minister of Environment, ATENA Association, Club per l'UNESCO Bari, and *Qualenergia Magazine* acted as media partner.

The specific goal of OWEMES 2017 was to present the state of art in Europe on offshore wind and ocean energies, the R&D activity, and demonstration projects in the Mediterranean area. More than 35 papers, from several countries in Europe, were presented, giving a wide overview over the new trends and technological perspectives for Marine Energies in Mediterranean Sea. During a Round Table, experts, researcher, and stakeholders were stimulated to indicate new actions to be promoted in Italy and in the South European countries for developing the Marine Energy sector. The main outcomes were disseminated at National and European Level.

This special issue of Wind Engineering contains a selection of papers presented at OWEMES 2017 and focused on Offshore Wind Engineering. Numerical and experimental studies on producibility, wear problems due to aggressive environment, mooring design, controls, and testing are presented and discussed in this Special Issue.

The editors believe that this publication will serve as a valuable resource to stimulate the discussion about FOW applications for Mediterranean Sea in the Scientific Community, as well as to inspire new advancement in the field of development of innovative floating platform concepts or wind turbine.

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