

**STOCHASTIC VARIABLES IN MODELLING OF THE WAVE LOADS ON
OFFSHORE WIND TURBINE STRUCTURES**

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ABSTRACT

Nowadays, with respect to trend of Kyoto protocol, many producers turn to renewable energy resources. That leads to a fact that more than 75% of new power capacity installations in EU in the year 2015 are renewables. The leading among the new renewable energy resources is wind energy. In the last decades, even more wind energy is accommodated by moving offshore. That brings up a problem of more complicated design, which includes new loads to be investigated and modelled. For offshore wind turbines, dominant loads are wind and wave loads. For the substructure itself, the highest impacts have wave-induced loads, as it is submerged at most of its height. As the waves are stochastic and irregular loads, in this paper it is investigated which is the best method to model the wave loads in order to achieve a very realistic load model and results. This is only some of the numerous challenges in this area of expertise, which are more accurately investigated in a research plan within the framework of the Innovative Training Network (ITN) AEOLUS4FUTURE, related to reliability of offshore wind energy structures.

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