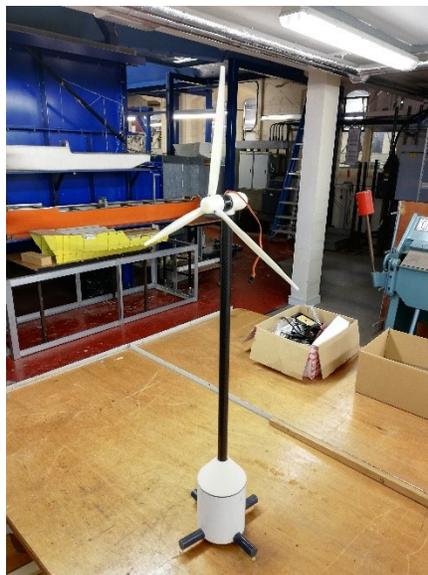


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## AMAC-UK Nenad Bićanić Academic Award Report on a research visit to the Newcastle University

The AMAC-UK academic award enabled me to visit the Newcastle University in November/December 2018 and carry out a joint research focused on offshore energy structures. The experiments were conducted in the unique Wind-Wave-Current (WWC) Tank at the Newcastle University (UK) to investigate concurrent wind, wave and sea current loads and their combined effects on the structural response of an offshore floating wind turbine (OWT) model. The preparation of the small-scale experimental model was carried out in the WWC laboratory during my stay, Figure 1.



*Figure 1: Small-scale model of the offshore wind turbine*

A motion capture system was used to obtain a dynamic response of the OWT model (displacement and rotation in three axes with respect to time). The wave probe that measures wave properties was placed next to the OWT model, while the environmental loads on the OWT model were measured using load cells. The results were obtained for various conditions of flow and current velocity, wave height and frequency. The OWT model placed in the WWC Tank and subjected to the airflow and the current is shown in Figure 2.



*Figure 2: Offshore wind turbine model placed in the WWC Tank at the Newcastle University*

It will hence be possible to use the obtained results to determine structural loads and fatigue of OWTs that will allow for calculation of structural stability and feasibility of investing in those structures.

The obtained results are currently analysed and the drafts are prepared together with the UK colleagues for a possible publication in some of the leading international journals; in those publications the AMAC-UK Association will be accordingly acknowledged.

Aside from the academic part of my stay, I had a pleasure to shortly become a resident of the charming city, embrace its culture and enjoy its architecture, Figure 3.



*Figure 3: Newcastle upon Tyne, UK*

This grant was used to cover my travel and stay expenses at the Newcastle University and to carry out the outlined experiments. I would like to express my sincere gratitude to the AMAC-UK Association for providing me this grant, as investigation of these phenomena further boosted my doctoral studies research, provided me an incredible opportunity to work in this high technology facility and to shortly reside in this lovely city.

Andrija Buljac

A handwritten signature in black ink, appearing to read 'Andrija Buljac', written in a cursive style.