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Abstract: One of the prongs in the attack on climate change is the development of alternative, non-polluting sources of energy. Wave Dragon is a device at the forefront of this field of development, converting the energy of ocean waves into electricity.

A comprehensive record of the process Wave Dragon has undergone to develop from an inventor's concept to a serious contender in the wave energy industry is very valuable. This shows the gradual steps of development testing, increasing in scale and complexity, in parallel with the growth in the organizational structure behind the device. The current high-point of this, the autonomously operating prototype, is presented in detail to show the operating methods, instrumentation and the challenges experienced during its lifetime.

The purpose of the Wave Dragon is to produce electricity. Therefore at each increment in scale the first question asked is: "Does it produce as much as expected?" To answer this question results are presented from testing of the prototype device. This has given the broad answer "Yes", although the answer must be qualified by discussing operation away from the optimal configuration, and methods to scale the expected performance. Wave Dragon belongs in the family of overtopping wave energy converters. The energy is captured by waves running up a ramp and overtopping the crest into a reservoir. This stored water, at a higher level than the sea, is returned through lowhead turbines powering electrical generators. To improve the quality of modeling of these devices, the short-term characteristics of this overtopping flow are presented based on measurements taken on the prototype.

Supervisor: Associate Professor Peter Frigaard, and Assistant Professor Jens Peter Kofoed.

Opponents: Professor H.F. Burcharth (chairman), Associate Professor Hans Chr. Sørensen and Associate Professor José Gregorio Iglesias Rodríguez

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Employment after PhD: ESB International Limited., Ireland