

# Designing Multi-Oscillating Water Columns For Renewable Energy in South Africa

## Project Description

The coastline of South Africa has a highly energetic wave climate and this wave energy remains largely untapped. Oscillating water columns (OWCs) that are used to generate electricity from ocean waves provide a solution to this. OWCs comprise an open-based chamber that is placed in the water and as waves pass, the water in the chamber oscillates up and down. The oscillating water inside the chamber drives a reciprocating airflow through a top-mounted bidirectional turbine or pair of turbines with opposite flow directions.

This project aims to build and test a physical model of a multi-oscillating water column that converts ocean wave energy into electrical energy in South Africa.

This project will design the optimal arrangement of multiple chambers to maximise power generation. This design includes sizing the chambers to maximise power generation using the best turbine power-train and control strategies. Proof-of-concept prototypes have been developed in the past and this project aims at commercialization.

The applicant should have a keen interest in Fluid Mechanics, Mechanical Engineering and/or Electrical engineering. An aptitude for experimental work is desirable.

If you wish to discuss any details of the project you can contact Prof Dave Dorrel ([dorrelld@ukzn.ac.za](mailto:dorrelld@ukzn.ac.za)) or Dr Justin Pringle ([pringlej@ukzn.ac.za](mailto:pringlej@ukzn.ac.za)).

## Entry Requirements

Candidates should have a BTech (Mechanical/electrical/civil) or BSc ENG (Mechanical/electrical/civil). The candidate will also have the opportunity to use the project to obtain his/her MSc ENG. Current undergraduate students wishing to obtain an MSc ENG but do not as of yet have BSc ENG/BTech degree will also be considered based on their academic performance.

## Funding

The project is funded from Technology Innovation Agency of South Africa and UKZN InQubate. The candidate will be paid based on meeting certain objectives of the study as follows. This could amount to R10 000.00 pm.

## How to Apply

Interested candidates should email [pringlej@ukzn.ac.za](mailto:pringlej@ukzn.ac.za). Applications should include:

- 1) CV
- 2) Degree Transcripts to date.

## Closing Date

Applications should be received no later than 31 July 2020. However later applications may be considered depending on funds remaining. The successful applicant will be notified latest by 31 August 2020.