Newcastle University

School of Engineering

Electrical Power Research Group

Marinisation and upscaling of All Electric Drive Train

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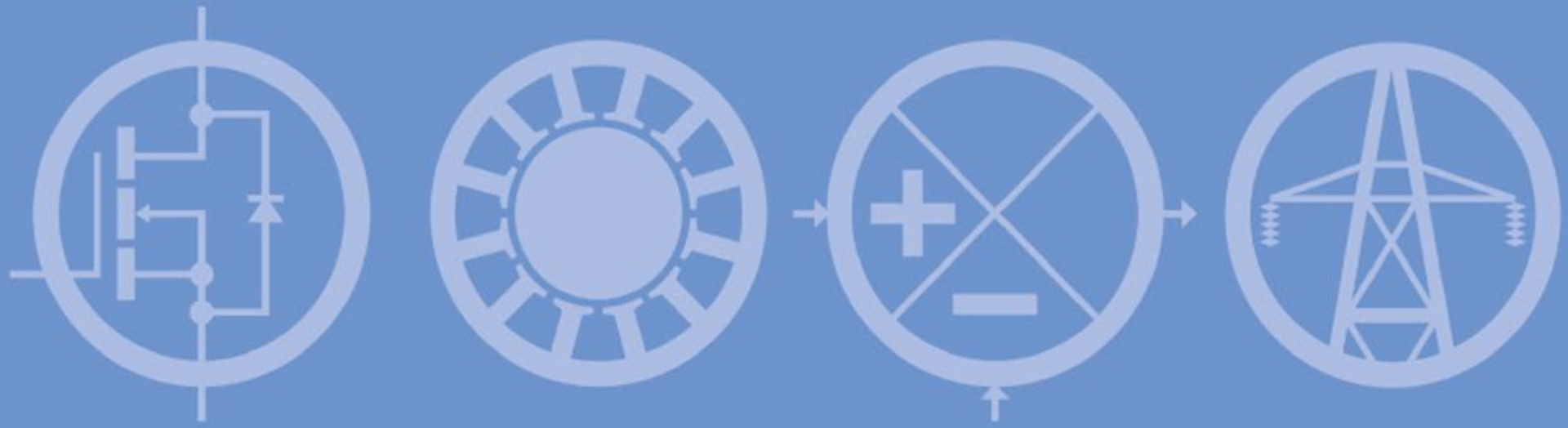
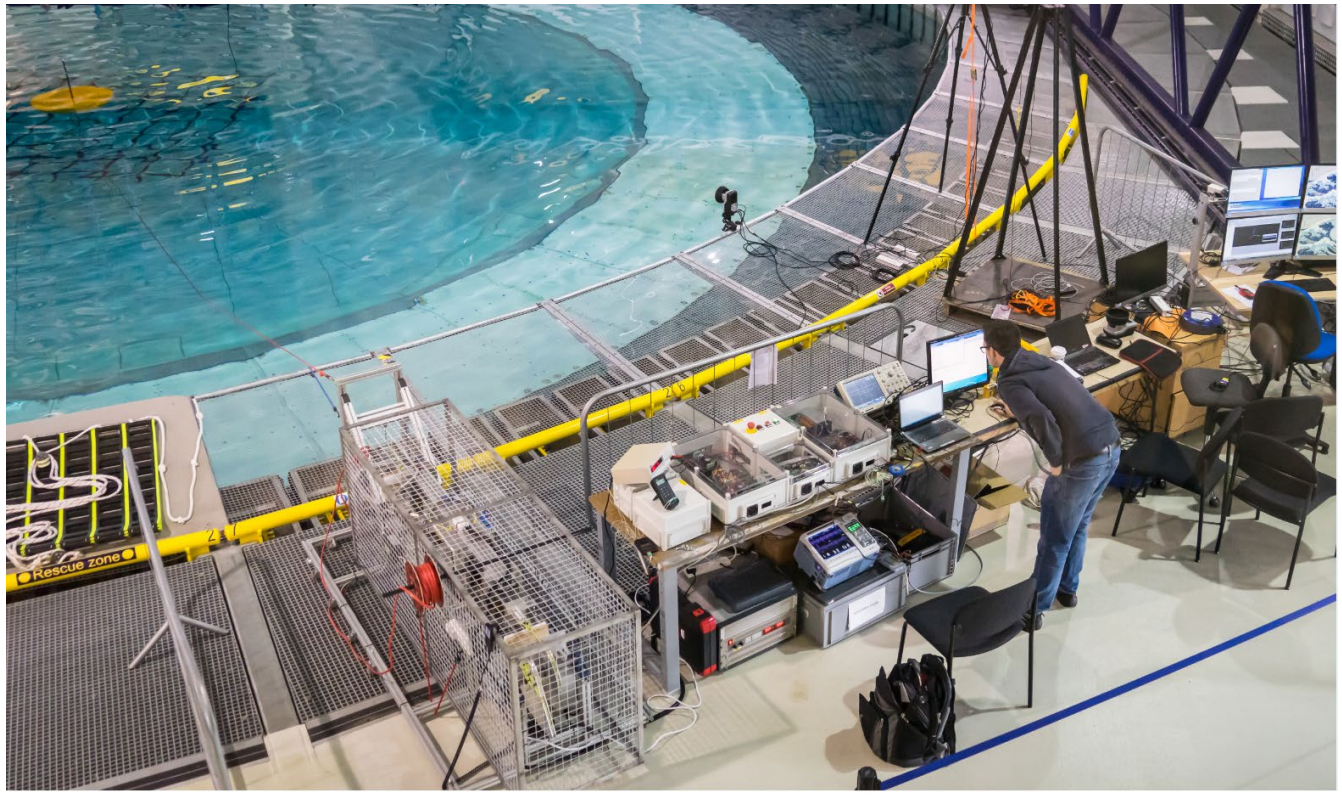
Markus Mueller, (University of Edinburgh)



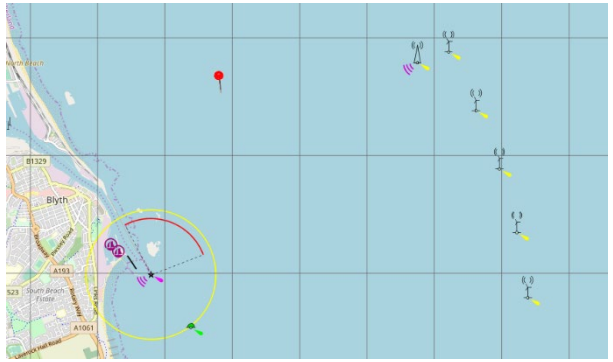
Direct Drive, the story so far

- Slow speed electrical machines suitable for WECs exist
- Reliable power electronics
- WEC can be controlled via the power take off



Aims of ‘Marinisation and Upscaling’

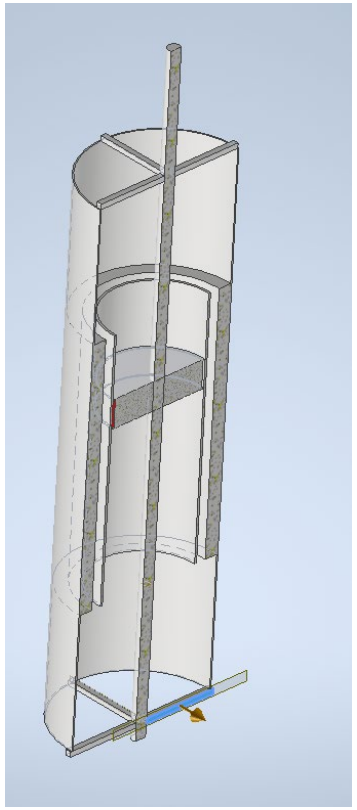
- Operation in the marine environment
- Reliability

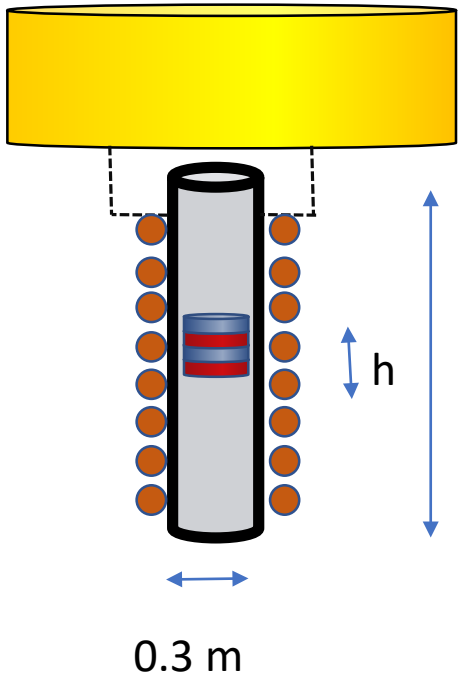


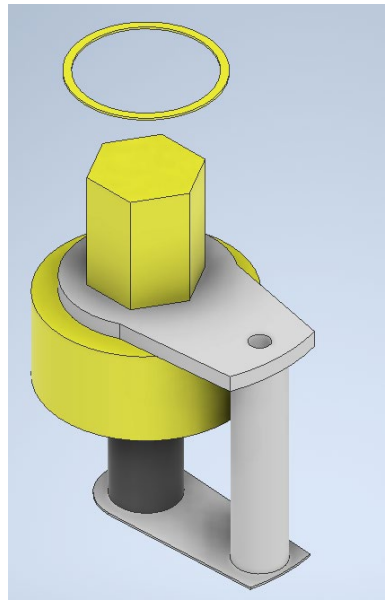
- Integration in a real WEC
- Upscaling

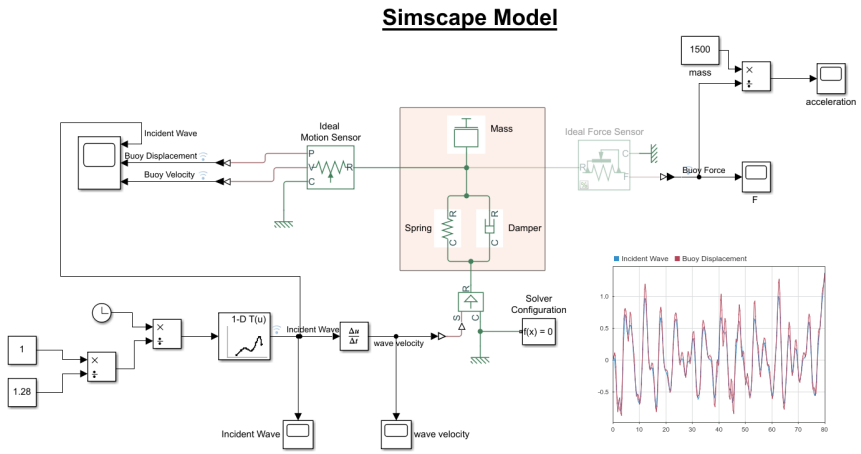
Progress - on the screen

- Find a representative wave energy converter to prove out our electrical machines
- Concept development
- Model
- Initial Design



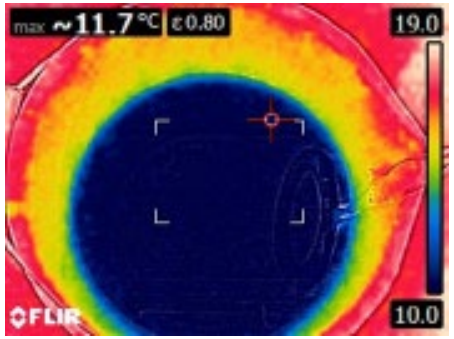


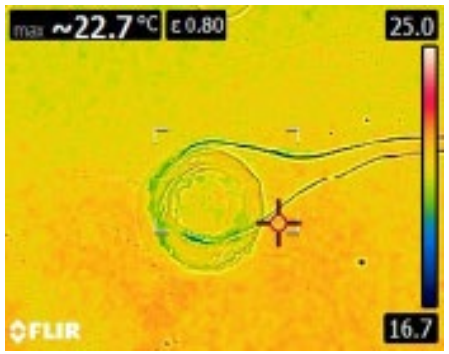


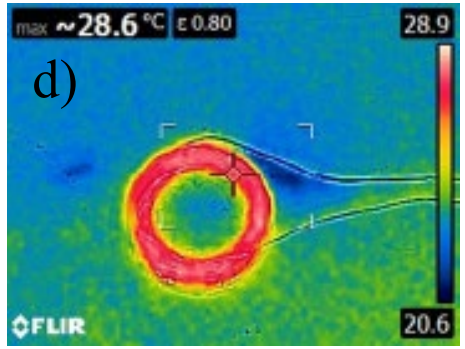


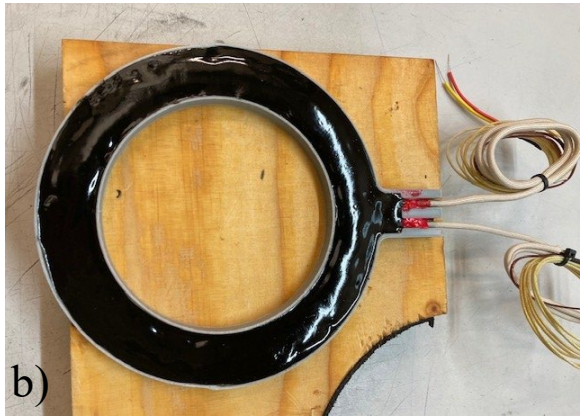
Progress – in the lab

Coil coatings, protection and thermal characteristics



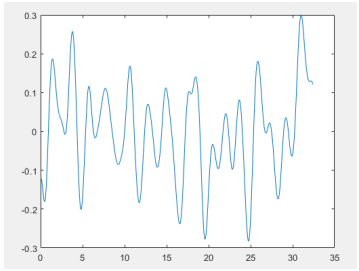


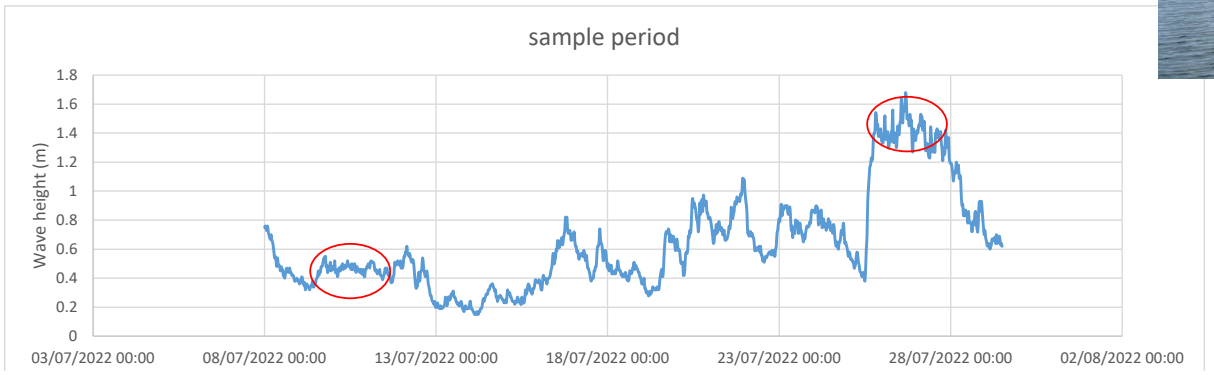




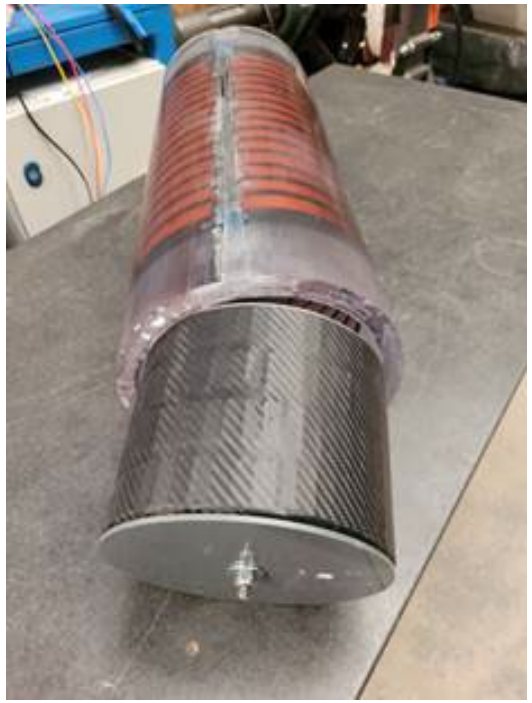
Progress – in the field

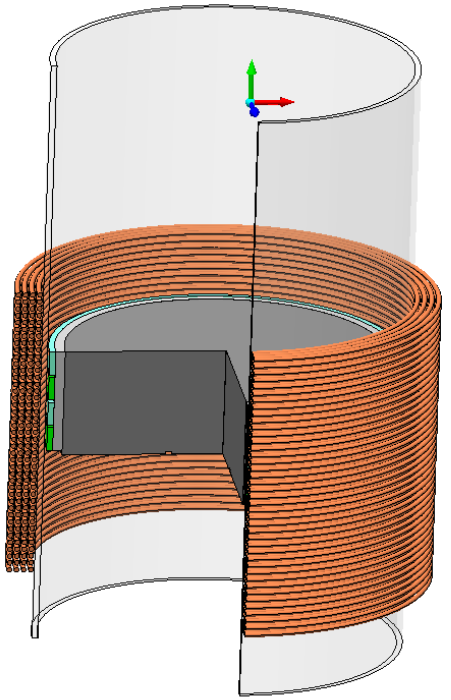
- Have 3 weeks of buoy and sea data
- Practicalities of in the sea
- Re-learn data management





Progress – In the workshop





Fountain Design Limited

Progress – In academia

Renewable Power Generation

RPG

2.a.2

Marinisation of direct drive generators for wave energy converters

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2.a.4

Developing a direct drive generator for a heaving IPS buoy

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