Case Study

Fred Gibbs

EPSRC & NERC InDustrial CDT for Offshore Renewable Energy

www.idcore.ac.uk

QEDNAVAL

TOCARDO

Being part of IDCORE has been almost too good to be true. The first year of the programme was one of the best years of my life, and now, working for QED Naval, I am in a place I want to be, doing what I want to do. The work is challenging but the project is really well defined and I know that the outcome will make a difference to the company and potentially the tidal sector.

QED is a fascinating company, they are applying a unique approach to the tidal turbine sector and they are achieving results – it is very rewarding to be able to make an active contribution to their success.

Fred Gibbs

Sponsor

Set up as a naval architecture consultancy, early in its life QED Naval took the decision to focus on the marine renewables sector working with Scottish Enterprise before concentrating on tidal turbines which led to the investment in their JV partnership company Tocardo with HydroWing. They are bringing key, operationally focussed design skills into the sector, supporting the development of turbine technologies that will operate at much lower cost by minimising marine operations.

The partnership has made very effective use of the potential offered by engaging with IDCORE. There are now two IDCORE researchers working at QED in addition to the two that had already been taken on by HydroWing.

I have worked with Andrew Aveyard in the IDCORE team for many years. I have been really impressed by the impact that their researchers have been making in the team at HydroWing, so when we started looking for someone to support the development of our utility-scale turbine, IDCORE was a natural choice.

We are very fortunate to have access to this resource with our HQ based in Edinburgh. We have had other engagements with academic research and none come close for comparison with the quality and value of the IDCORE programme.

I always look for passion in the people in my team and Fred has that in spades – he is making a real difference to our work.

Jeremy Smith,
Founder and Managing Director, QED Naval

Project

Fred's project is working on the electrical generation aspects of a utility-scale turbine, where the key challenge is matching the turbine design to the available tidal energy resources. He is exploring the thermal signature of the generator within well-characterised but highly variable flow regimes. Ultimately, they are looking to optimise the turbine performance and efficiency by better understanding for how long it can be 'overdriven' and what the implications of this are for the overall design process.

Fred came to IDCORE from a five-year integrated Masters course in Physics at the University of St Andrews. As part of this course he had undertaken two internships with a large defence company, specialising in radar. This taught him a lot about systems engineering and also commercial skills that are proving very useful now that he is with QED, where he is finding it an interesting contrast to be working within a much smaller organisation.

IDCORE

The one thing Fred knew when he finished his first degree was that he didn't want to stay in the defence industry. This is something he shares with QED's founder, but it took Jeremy over a decade to get to this point. To be respected as an engineer/physicist your work needs to touch society, and Fred had always seen renewable energy as a way to do this. Hence, it was an area that matched his ambitions and skill set, and would allow him to do something meaningful, but also a sector that had quite significant barriers to entry for a physicist.

He came across the idea of an engineering doctorate, and IDCORE in particular, when looking for internships. As well as providing an entry point to the offshore renewables sector, Fred liked the combination of the taught year, learning to apply relevant skills without commercial pressures, followed by a research project based in industry.

From Fred's perspective, the other great thing about QED is that they are based in Edinburgh. It means that he has been able to carry on living in a location where he has developed some strong friendships, not least with the other members of his IDCORE cohort, and yet he can go into the office every day. This has allowed him to become very well integrated into the company, taking full advantage of the opportunity provided by being an EngD researcher.

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