



EnFAIT



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ENFAIT ENABLING FUTURE ARRAYS IN TIDAL

Conference Presentations & Technical Papers : Summary Report



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I The Project

1.1 Introduction

A Funding Grant was awarded from the European Union’s Horizon 2020 research and innovation programme in January 2017 to demonstrate a grid-connected tidal energy array at a real-world tidal energy site, propelling tidal energy towards competing on a commercial basis with alternative renewable sources of energy generation – Enabling Future Arrays in Tidal (EnFAIT). This was in response to the call *LCE-15-2016: Scaling up in the ocean energy sector to arrays* to generate significant learning through demonstration of cost-effective tidal arrays.

This document is produced as a summary report on the presentations and technical papers arising to date from the EnFAIT project. It is to be submitted to satisfy deliverable D2.5 of the EnFAIT project and to be also made available for public dissemination.

1.2 Communications planning

The internal EnFAIT Communications and Training Plan presents the proposed events and conferences to be targeted in year 1 of the project and the associated target audiences and messaging. For conferences and events, the top two target groups are clients and investors and supply chain and utilities. The primary objectives of the messaging to these two groups are to:

- Showcase project benefits and raise confidence on tidal array technology
- Increase the supplier pool; accelerate the technology development process; improve cost and performance; identify complementary activities; new products and potential barriers.

The core conference events planned to showcase EnFAIT through project partners’ presentations were:

Conference	Date
Scottish Renewables Marine Conference	Sep 17
Ocean Energy Europe	Oct 17
National Oceanography Centre Marine Autonomy & Technology Showcase	Nov 17
Marine Renewables Canada Annual Conference	Nov 17
11th Annual International Tidal Energy Summit	Nov 17
Subsea Expo	Feb 18
Oceanology International	Mar 18
All Energy	May 18
Institute of Mechanical Engineers Hydropower Event	Jun 18

The EnFAIT Plan for Exploitation and Dissemination includes the objectives to:

- Widely disseminate the results of EnFAIT to the marine energy industry and research sector;
- Target key European conferences to ensure technical organisations are informed of project developments during and after the project is complete; and
- Ensure EnFAIT findings, results and actions of project reach the broadest possible audience.

Additionally, links to other Horizon 2020 projects will be made informally at conferences and events.

2 Conference Presentations

2.1 Conferences attended

Table 1 presents the conferences where papers were accepted and presented by project partners in year 1 of the EnFAIT project. In the following sections, a summary of the presentations' content is provided together with cross-references to conference materials.

No	Date	Conference	Presenter	Presentation Title	No of Attendees
1	12-13/9/17	Scottish Renewables Marine Conference, Inverness, UK	Vicky Coy (OREC)	Innovating for Marine Energy Technologies	110+
2	25/10/17	Ocean Energy Europe, Nantes, France	Simon Forrest (Nova)	Scaling up a new industry	400+
3	26/10/17	Ocean Energy Europe, Nantes, France	Olivier Bontems (ELSA)	Technology reliability and survivability: Strategies for cost reduction	400+
4	8/11/17	Marine Renewables Canada 2017 Annual Conference, Ottawa, Canada	Simon Forrest (Nova)	A growing market for small-scale solutions	100+
5	14/11/17	11 th International Tidal Energy Summit, London, UK	Alasdair Macleod (OREC)	Technology reliability and survivability: Strategies for cost reduction	100+
6	15/11/17	11 th International Tidal Energy Summit, London, UK	Gavin McPherson (Nova)	Nova Innovation Tidal Solutions Company and EnFAIT	100+
7	28/2/18	RenewableUK Wave and Tidal, Glasgow, UK	Gavin McPherson (Nova)	The EnFAIT project: driving down the cost of tidal power	100+
8	3/5/18	All Energy, Glasgow, UK	Alasdair Macleod (OREC)	EnFAIT – Scaling Up Arrays	500+
9	6/6/18	EU Sustainable Energy Week, Brussels, Belgium	Gavin McPherson (Nova)	EnFAIT, from Collaboration to Commercialisation	100+
10	12/6/18	International Conference on Ocean Energy, Cherbourg, France	Gavin McPherson (Nova)	Small is beautiful: lessons from onshore wind for ocean energy	300+
11	13/6/18	International Conference on Ocean Energy, Cherbourg, France	Encarni Medina-Lopez (UoE)	Application of DTOcean tools to the EnFAIT project	300+
12	14/6/18	Institute of Mechanical Engineers Hydropower event	Lorna Bennet (OREC)	A growing market for small-scale solutions	50

Table 1 Summary of conference presentations made in year 1 of the project

2.2 Scottish Renewables Marine Conference 2017

Vicky Coy, ORE Catapult, presented on the key EnFAIT project information relating to the project partners, programme, aims and more details on the growth of the Shetland Array from three turbines to six turbines. The key message was the project's aim to prove that the reliability and availability of tidal energy arrays can be increased significantly and that the cost of tidal energy can be reduced by at least 40%.

Speaker presentations are available at:

http://www.scottishrenewables.com/media/filer_public/a1/c3/a1c34733-d8a4-4f41-a690-dd82e6ec4cd4/master_presentation_upload.pdf

2.3 Ocean Energy Europe 2017

Simon Forrest participated in the session titled, "Beyond Pilot Farms: Scaling up a new industry". The purpose of the session was to answer the questions: Is ocean energy now moving from project development to industry deployment? Once financed, how will key industry players build machines and supply their projects in the long-term? What is the immediate and near-future impact on local infrastructures and jobs?

Olivier Bontems participated in the session titled, "Technology reliability and survivability: strategies for cost reduction". The session aimed to answer the following questions: How do we improve these two crucial factors in device conception? Do we plan for the 100 year-wave or use mitigation techniques? What of materials? Which crucial components require attention? And which solutions for all the above will reduce maintenance, increase yield, and ultimately reduce costs. As part of the presentation, he launched the EnFAIT project video.

Programme details for the conference are available at: <http://www.cvent.com/events/ocean-energy-europe-2017/agenda-f74a0ca7afb24250955263f531ab19a2.aspx>

2.4 Marine Renewables Canada Annual Conference 2017

Simon Forrest participated in the session titled: "A growing market for small-scale solutions". He presented the EnFAIT project aims, including showing the EnFAIT project video. The purpose of the presentation was to share information about the project's aims and its importance for the tidal sector.

The conference programme details are available at: <http://www.marinerenewables.ca/wp-content/uploads/2017/09/MRC-2017-Conference-Agenda-with-confirmed-Speakers-as-of-Nov-3.pdf>

2.5 11th International Tidal Energy Summit 2017

Alasdair Macleod presented on technology reliability and survivability: strategies for cost reduction. This presented the goal and objectives of the project and provided some detail on the resource measurement campaign and modelling that is planned over the course of the year. The ability to change the turbine array layouts over the life of the project was highlighted and the learning the project partners will be able to dissemination from the work was summarised.

Gavin McPherson presented Nova Innovation's development plan and the part that the EnFAIT project is playing in the building of the company and the European tidal industry.

The schedule for the conference is available here: <http://events.newenergyupdate.com/tidal-conference/conference-agenda.php>

2.6 RenewableUK Wave and Tidal 2018

Gavin McPherson presented on learnings around operation and maintenance (O&M) that are being fed into, and gained from, the EnFAIT project. He presented in a session titled, “Taking a Fresh Look at Known Challenges: Being Smarter About O&M” and participated in the following panel discussion.

The detailed programme is available at: <https://events.renewableuk.com/wt18-programme-3>

2.7 All Energy 2018

Alasdair Macleod presented in the wave and tidal pavilion on the scaling up of arrays in the EnFAIT project. For the first time he presented the results from the initial modelling and analysis using the data collected from the site under the EnFAIT scope. This included presenting the logic diagrams of how the Array Interaction Modelling (AIM) has been planned and the flow of data into the models and what the outputs are used for. The presentation included showing the planned turbine layouts for the array and the changes that will be made over the course of the latter three years of the project.

The conference presentations are available at: <https://www.all-energy.co.uk/Conference/Download-All-Energy-2018-Presentations/>

2.8 EU Sustainable Energy Week 2018

Gavin McPherson presented on the EnFAIT project and how the collaborative nature of the European project, generating common, fundamental learning for the wider ocean energy sector, is enabling tidal energy to move towards a commercial reality, competing with other energy sources.

Details for the conference session are available at: <https://eusew.eu/watts-water-advances-blue-energy>

2.9 International Conference on Ocean Energy 2018

Gavin McPherson presented on the pathway from small-scale development to large-scale deployment that Nova Innovation is following. His presentation included details on the EnFAIT project in first year and how the lessons learnt by the project team are bringing down the cost of tidal energy. He shared these lessons and outlined the plans for the next four years.

Encarni Medina-Lopez presented on the application of the European project DTOcean’s tools are being applied to the EnFAIT project. She detailed the tool inputs and the planned outputs in the session relating to, “Tools for the industry: gear them up”. This is part of the shared learning from other European projects that EnFAIT is building on and sharing the results of.

2.10 IMechE Hydropower event 2018

Lorna Bennet was invited to present on the EnFAIT project as a hydropower event at the Institute of Mechanical Engineers. This was an opportunity to outline the aims of the EnFAIT project and to share the purpose of the resource and hydrodynamic modelling and analysis of array effects. The instrumentation planning and data collection techniques and granularity were shared.

No public outputs from the event relating to the presentation are available.

3 Technical Papers

The key technical papers to be submitted to journals from the EnFAIT project relate the exploitation of the DTOcean tools by European marine energy industry developers. The journals being considered for submission are *Energies*, *Energy* and *Applied Energy*. *Energies* is targeted because it is open source and *Energy* and *Applied Energy* as they have higher impact factors.

The first submissions to journals are planned for year 2 of the project, after the first runs of the DTOcean model outputs have been made.

4 Additional Dissemination Events

In addition to the planned conference submissions and technical papers, Nova Innovation's team has undertaken significant supporting dissemination activities in Year 1 both in the UK and in Europe. Below is a summary of these activities that they have delivered:

- Presented the EnFAIT project to the Industrial Advisory Board of the Centre for Doctoral Training (CDT) on 6 December 2017.
- Attended the RenewableUK Marine Policy Forum on 27 February 2018, which was a separate event from the RenewableUK conference highlighted in Table 1.
- Attended the Ocean Energy Europe strategy day and board meeting 27-28 March 2018.
- Gave a seminar to the Centre for Doctoral Training (CDT) PhD students at Strathclyde University, Glasgow, on 17 May 2018. Approximately 20 PhD students and four research staff attended. The EnFAIT video was shown followed by a discussion on the EnFAIT project and the current critical areas of research for tidal energy.
- Participated in the inaugural UK Marine Energy Council meeting on 22 May 2018.
- Attending the Scottish Marine Energy Industry Working Group on 21 June 2018.

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