## THE VERY BEST TECHNICAL DESIGN & SUPPORT SERVICES FOR YOUR MARINE **ENERGY TECHNOLOGY AND PROJECT**

The IT Power and Fraunhofer IWES partnership offers you the very best engineering support and technical expertise for your entire marine energy project.

Building on collaboration between the two organisations over more than 15 years and a dozen major research projects, we are able to offer extensive expertise throughout the entire cycle of both technology and project development, from device concept formation and assessment through to project commissioning and O&M planning

Our specialist knowledge provides you with the skills you need to successfully combat the toughest technical and environmental problems facing the marine energy industry. We can provide all your technical support, project design, and also offer a suite of services for companies and governments looking to fulfil their own marine energy potential.

For a greater understanding of what we offer your organisation, look inside...

## ENGINEERING EXPERTS FOR YOUR MARINE TECHNOLOGY SUCCESS

Getting the right support can make a world of difference when developing a successful marine energy technology or project. With our combined approach of joining our practical consulting experience and cutting edge research and development capabilities, ITP and IWES are able to provide you with the highest level of technical and commercial assurance to solidify your place as a marine energy front-runner.

### WHO WE ARE

IT Power has provided independent consulting and engineering support to the marine energy sector since 1992.

The Fraunhofer Institute for Wind Energy and Energy System Technology IWES is a world-renowned research and technology development facility.

Together, we can provide you with the technical support you need, and the design resources to deliver success for your technology and projects.

We have already helped several companies develop full scale demonstration prototypes. Contact us to find out how we can assist with your project.









## **CONTACT US**

To find out how we can provide technical support for your marine energy organisation, get in touch.



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www.itpower.co.uk/marine



IT Power is an independent, international renewable energy consultancy with a specialist team dedicated to marine energy design and support services.

We started our marine energy work in 1991, developing the world's first commercial scale tidal energy device, Seaflow for Marine Current Turbines. Since then, we've provided engineering design and modelling services on over 50 projects and have developed several large designs. In addition to large projects, we advise governments, companies and developers on their marine energy strategy and design.



For Fraunhofer IWES: Jochen Bard Head of Department, **Energy Converters and** Storage Systems

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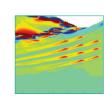
## FRAUNHOFER IWES PROFILE

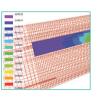
The research activities of the Fraunhofer Institute for Wind Energy and Energy System Technology cover wind energy and the integration of renewable energy into supply structures.

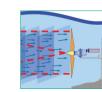
Fraunhofer IWES was established in 2009 as a merger of the former Fraunhofer Centre for Wind Energy and Maritime Engineering CWMT in Bremerhaven and the Institute for Solar Energy Technology ISET in Kassel established in 1988. Today IWES employs around 500 scientists, engineers, nontechnical staff, and students with an annual budget of approximately 30 million euros per year.

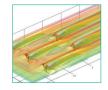
- **OUR DEDICATED TEAM OF EXPERTS INCLUDE:** • Mechanical and electrical engineers • Naval architects • Hydrodynamists • Oceanographers
- Environmental scientists Numerical modellers

We work with a multidisciplinary, multinational in-house team and a network of specialist associates and partner organisations. Our experience and capabilities, alongside the research and development facilities and staff of the Fraunhofer IWES, make us your ideal marine energy service provider.









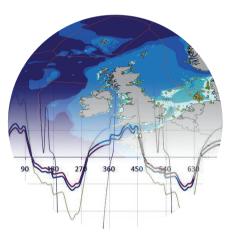
# **Your Marine Energy Design and Industry Experts**







**Project Design & Support Services** 



Fraunhofer

**Strategy Advisory** Services

COMPLETE TECHNICAL SUPPORT FROM **CONCEPT DESIGN TO PROJECT DELIVERY** 

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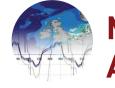
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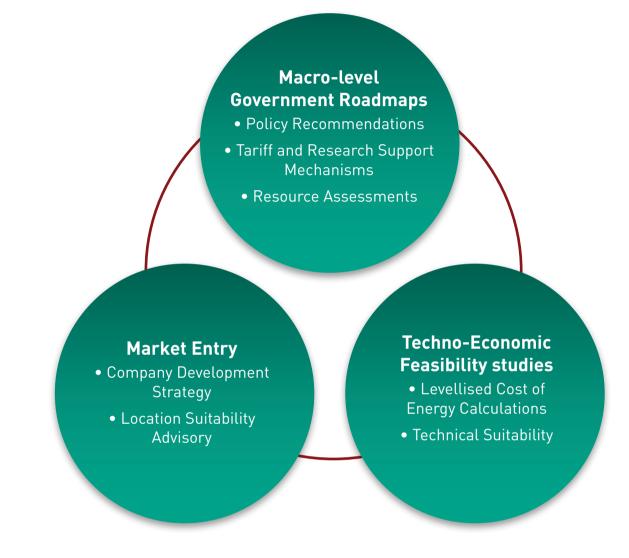
# Marine Energy Technical **Design Services**



# **Marine Energy Project Design & Support Services**

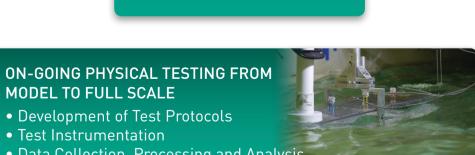


# **Marine Energy Strategy Advisory Services**



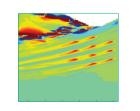
## a. Detailed Device Modelling for Loads, Motions and Performance

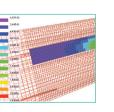
- b. Control System and Algorithm Design
- c. Computer Models: i. Potential Flow,
- ii. Computational Fluid Dynamics, CFD
- iii. Dynamic System Models
- iv. Finite Element and Structural Analysis
- d. Small-scale Testing in Wave/Current Tanks Flumes
- a. Compliance to International Standards
- b. Manufacturing Drawings
- . Manufacturing Specifications
- d. Permitting Advice
- e. Assembly Testing f. Project Management

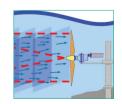


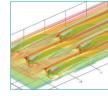
Feasibility Assessment 1 Concept Review Due Diligence Modelling and Tank Testing . Design: i. Power Take-off 3 Part-scale test ii. Foundations / Moorings iii. Structures iv. Hydro-dynamics b. Physical Testing 4 Full-scale test 5 Arrays

**EIA & Consents** Management Environmental Modelling Resource **Grid Connection Assessment** & Electrical • Resource Modelling Infrastructure Design Surveys **PROJECT Construction &** Moorings & **Operating Support Foundation Design** • Health & Safety Guidance Array Positioning & Access, Construction & Maintenance **Layout Optimisation** Planning









## MARINE ENERGY PLATFORM DEVELOPMENT

Our cross industry experience in the wind, marine and solar sectors has enabled ITP and IWES to be involved in the early stage development of several hybrid electricity generation platforms. Converting multiple resources, such as wind and wave energy, into electricity generation offers new opportunities to the marine energy sector.

Our technical experts are already advising on these pioneering projects. Speak to us about how we can assist with your concept.

**MODEL TO FULL SCALE** • Development of Test Protocols

- Test Instrumentation
- Data Collection, Processing and Analysis

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Technology • Projects • Strategy

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