

About Wavegen

We own and operate one of the most advanced marine renewable development test facilities available. Since 1990, continued operation has maintained Wavegen at the forefront of wave power commercialisation. With the aid of our state-of-the-art facilities Wavegen's experienced team of engineers and naval architects offers the following specialised services to the marine industry:

Services

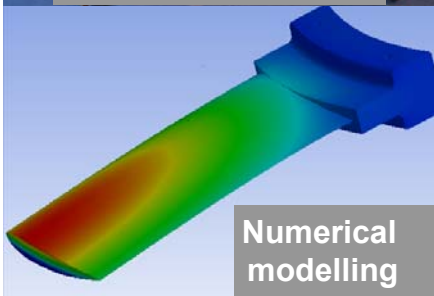
- **site** investigation, consenting & management
- measurement & simulation of **metocean** data
- basic wave **tank hire & data acquisition**
- model making, **instrumentation & calibration**
- marine renewable **concept development**
- marine structure simulation & assessment for coastal, **floating & fixed structures**
- **mooring**, wave **loading**, marine **operations** & motion response
- scour assessment & **coastal processes**
- analysis of tank generated data via **numerical models**
- **power take-off** development via test rigs (hydraulic & pneumatic)
- cross validation of physical with **numerical models & field trials**



Site investigation



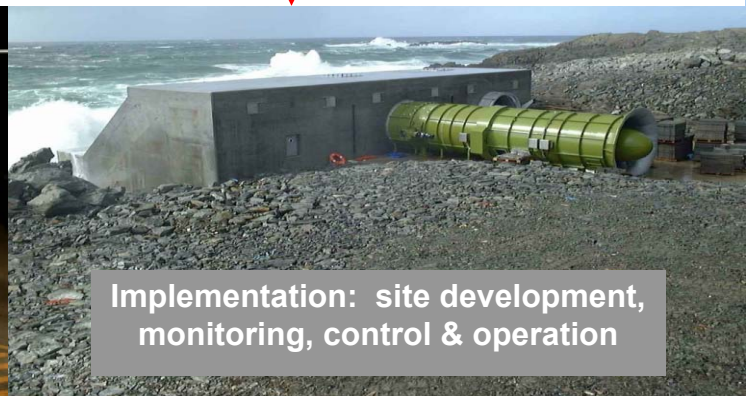
Physical modelling & analysis



Numerical modelling



Power take-off development & control



Implementation: site development, monitoring, control & operation

Marine Services



Test Tank

This enables us to simulate a wide range of wave conditions at model scale, including site specific conditions measured via our own waverider buoy. The paddles develop highly repeatable wave conditions under controlled experimental conditions, including regular, irregular and multi-directional waves for operating and survival environments.

Each paddle senses reflections from the beach and radiation from the model and adjusts via a force feed-back mechanism to maintain wave quality. The control system features digital control, continuous monitoring, extensive built-in diagnostics and ocean software that enables the host PC to run multi-spectral and multi-directional seas.



Wavegen waverider buoy

Tank Specification

- Size:** 20m long x 6m wide x 1.5m deep
- Tank Floor:** Adjustable tank floor
- Wavemakers:** 8 independent piston wavemakers
- Seas:** regular, irregular, multi-directional
- Spectra:** Pierson Moskovitch, ISSC, Bretschneider, Neumann, Gaussian, Mitsuyasu and Jonswap
- Waves:** Maximum height 0.5m (e.g. 30m at 60th scale)

Instrumentation

Our instrumentation suite includes:

- :: Industrial PC
- :: Strain gauge amplifier
- :: A-D boards (64 channels)
- :: Motion response sensors
- :: Load cells
- :: IP68 rate absolute pressure transducers
- :: Differential air pressure transducers
- :: Submersible bi-axial load table

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Supporting Software

- :: Labview, Labtech, InstruNet, MathCad (for data acquisition & analysis)
- :: Autodesk Inventor 8 (3D solid modelling)
- :: Ansys Professional & Design Space
- :: Orcaflex (mooring & riser design)
- :: Flowmaster (hydraulics)
- :: CFX 5.7 (computational fluid dynamics)

Facilities

- :: Model making workshop
- :: Vacuum former
- :: Video and stills photographic facilities
- :: Directional waverider buoy and software
- :: Turbine test rig & wind tunnel



Wavegen wave tank

“Wavegen’s core skills include the simulation, performance assessment and testing of marine structures designed to be installed & operated in the severest of marine environments”