



SuperGen UK Centre for Marine Energy Research Annual Assembly 2012

Optimisation of Large Scale Tidal Stream Energy Farms



Optimisation of Large Scale Tidal Stream Energy Farms

- Farms of up to hundreds of devices are to be multi-objective optimised for maximum power and minimum flood risk.
- Quantities optimised are: locations and load factors of the individual devices.
- The application context is medium flow shallow tidal estuaries.

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- The farm is to be modelled semi-analytically using 3D, CFD results from modest sized clusters to inform on the coupling and wake driven flow re-energization processes.
- The estuary is to be modelled using coarse scale CFD.
- Uniformly valid matched solutions are to be developed over the farm/estuary interface zone.
- Novel information theoretic optimisation tools will be employed to reduce the number of optimised parameters in order to make computational costs realistic.
- Array experiments in the new All Waters Tank will interact closely with the analytic and computational studies.