NOVA Project

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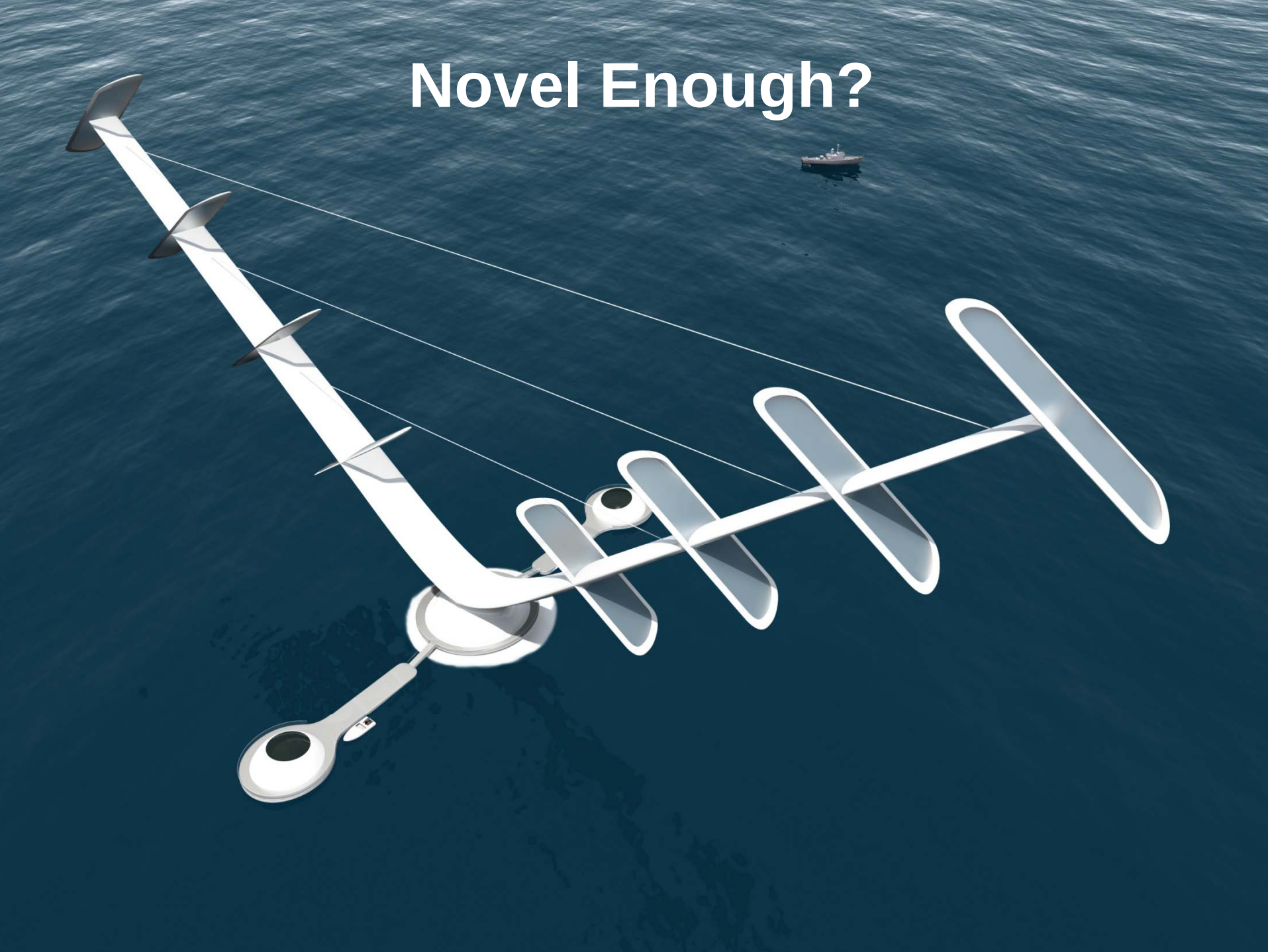
The University Of Sheffield.

energy technologies institute

What is the NOVA Project?

- Novel Offshore Vertical Axis wind turbine proof of concept study
- One of the first projects to be funded by the Energy Technology Institute
- Collaborative applied research
- Strong market focused design in a competitive funding environment (lead by ETI)

Novel Enough?



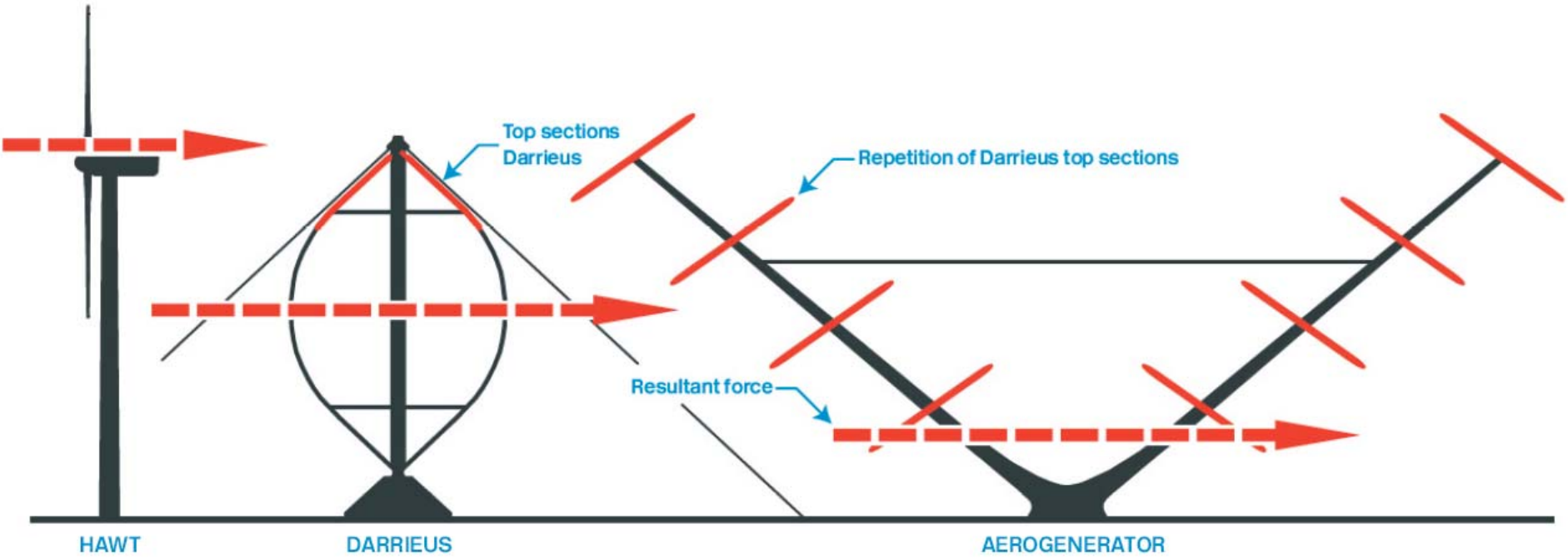
Unique Rotor

1. Sails generate independent horizontal and vertical forces
   - Horizontal forces produce drive and overturning moment
   - Vertical forces produce a restoring moment

2. Resultant horizontal force on rotor is very low altitude compared to other VAWT & HAWT technology – dramatically reducing foundation overturning moment.

(Invented by David Sharpe)

Rotor Concept



Unique Offshore Concept

The “engine room” is at platform deck level (just above the waves) – lower cost lifting

- Less weight constraint
- Significantly lower cost major intervention
- Less downtime potential
- Ultra high availability potential

Project structure

- Concept Integration & Economics

James Ingram & Associates (lead) & all partners
Functional specification, Cost modelling, Availability analysis

- Rotor (*Wind Power Ltd (lead), QinetiQ, Cranfield*)

Aerodynamic analysis, Structural design, Materials, Testing Aerodynamic analysis, Structural design, Materials, Testing

- Drive Train, Power Converter & Electrical System

Strathclyde University (lead), Sheffield University, Wind Power Ltd
System requirements, Concept design, Subsystem integration

- Support Structure (*Cranfield University (lead), James Ingram & Associates*)

Concept development, Hydrostatics, Hydrodynamics, Materials

- Installation & Maintenance (*James Ingram & Associates*)

Cost analysis, Minor & Major intervention strategy, Accessibility and maintainability analysis

- Commercialisation & Supply Chain (*OTM Consulting (lead), Wind Power Ltd*)

Manufacturing strategy, Supply chain gap analysis, Key supplier selection

- Project Management (*OTM Consulting*)

Summary

- Extremely novel concept
- Controlled innovation (only where necessary)
- Step change potential that may reduced the life cycle cost of energy
- A world class technical team
- Initially targeting UK Round 3

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