

# Wind Turbine Lifting Device



**ITI Energy is investing up to £2.3 million to develop a novel lifting device - Orangutan® - which will dramatically improve the efficiency of maintenance operations on wind turbines. The technology, initially developed for use onshore, has the potential to be used in the construction of turbines and for offshore applications.**



## Technology **Development**

Wind turbine operations and maintenance are a significant part of the overall 'cost of energy' and as such wind farm operators are looking for new ways of working to reduce costs. The majority of lifting in the wind industry is performed by large cranes designed to be used across a range of industries for construction and maintenance applications.

However, given that wind farms are often sited on remote hill top locations, they can be difficult to access whilst heavy cranes can also cause substantial damage to the ground and access roads. Large cranes are inherently costly, difficult to transport, deploy, operate and demobilise. In addition they can only be deployed in low level wind conditions. A lifting device, such as Orangutan®, has the potential to overcome many, if not all of these problems.

Orangutan® is made up of two friction clamps, connected by a hydraulic structure that allows caterpillar-like motion. It works by climbing the wind turbine tower, carrying whatever tooling package is required for the maintenance operation. The device can be used for a variety of lifting jobs and can be operated remotely.

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## Key Features & Benefits

- No modifications to existing towers required
- Faster mobilisation promoting reactive maintenance
- Size not dictated by tower height
- Tooling packages suitable for a wide variety of climatic conditions
- Tooling packages for a wide variety of tasks including inspection/Non Destructive Testing
- Dramatic change to the economics of post construction interventions

## Participation Opportunities

There is the potential for four to six companies to become involved in specific aspects of the research programme and subsequent commercialisation stages.

### Commercial R&D partners

- Friction Material Testing
- Structural Testing – clamping and loading of tubular structures
- Finite Element Analysis of imperfect thin walled structures

### Prototyping, Machine Builders and Supply Chain

- Machine Design and Build (SME/Niche especially)
- Electro-Hydraulic equipment, Servo hydraulics
- Control and Sequencing – Programmable Logic Controllers
- Industrial Sensors – displacement, pressure, strain
- Plant and Machinery – Tooling, Cranes, Access Platforms, Special Purpose Vehicles

### End Users and Supply Chain

- Wind Turbine Manufacturers
- Wind Farm Owners and Operators
- Onshore Construction Contractors
- Offshore Installation Contractors
- Wind Farm Maintenance Contractors
- Machine Builders and Supply Chain

## Collaboration

The design concept for the technology was developed by Aberdeen based Oreada Limited, a private company created by the founders of Atkins Boreas and James Ingram. Oreada will continue to work with ITI Energy on the project.

[www.boreasconsultants.com](http://www.boreasconsultants.com)

## Contact us

**To find out more about potential research and commercialisation opportunities related to this project, contact David Slee at [david.slee@itienergy.com](mailto:david.slee@itienergy.com). To find out about becoming a member of ITI Energy and the range of membership benefits please visit [www.itienergy.com/joinhere](http://www.itienergy.com/joinhere)**