



CENER

NATIONAL RENEWABLE
ENERGY CENTRE

ADltech

Workhorses for the World

Japan and Spain Collaboration: Opportunities in
Offshore Wind Energy
Madrid, Thursday 15th of December 2016



MINISTERIO
DE INDUSTRIA, ENERGÍA
Y TURISMO

MINISTERIO
DE ECONOMÍA
Y COMPETITIVIDAD

Ciemat



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Who We Are



CENER is an internationally leading applied research & technology center focused on enabling more *efficient and effective* harvesting of renewable energies.

It has decisively contributed with its test services to establish a knowledge hub that has developed the most competitive of wind turbines in the world.

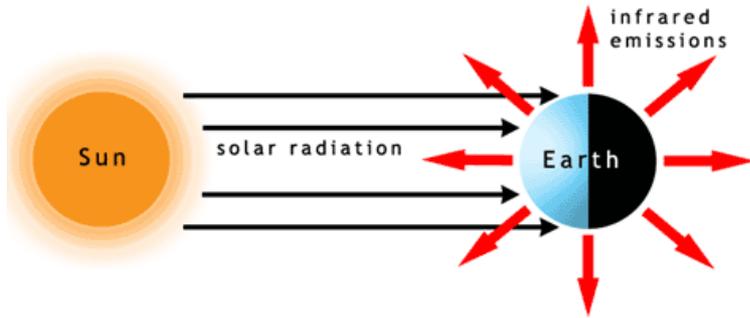
Leading experts in wind resource assessment and forecasting have implemented advanced nested methodologies that using supercomputer power obtain unparalleled accuracies essential for the competitive

Hybridizing of renewable technologies and smart management of storage systems offer technology opportunities that we are validating in our MW size test facilities.

electricity market and global tender processes.

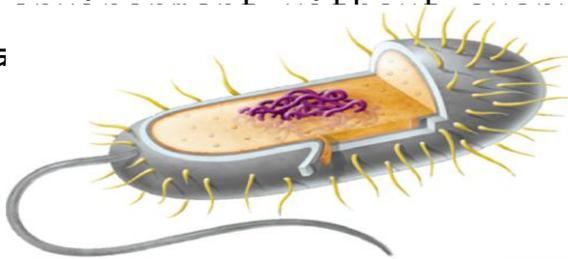
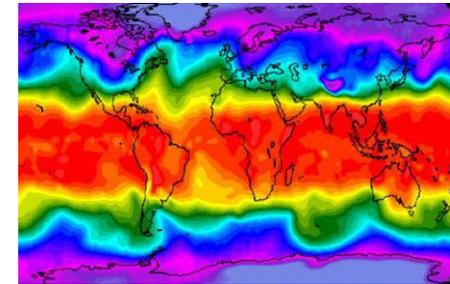
Our contribution to offshore wind is focused on delivering innovations that bridge various sector technologies, particularly wind, naval & construction.

Renewable Energies



They are our

In spite of their challenging spacial and temporal dispersion, they represent the key to *optimise* the valuable endowment of fossil and nuclear fuels through *cleverly* balanced energy scenarios that may guarantee sustainable human activity within a benign environment without overwhelming nature with waste a



THIS IS IN FACT A VERY OLD IDEA !

Sun radiation is *GLOBAL* and its natural gradients generate the natural indefinite cycles in water and air that act as a balancing redistribution system in our planet.



Japan & ~~Spain~~

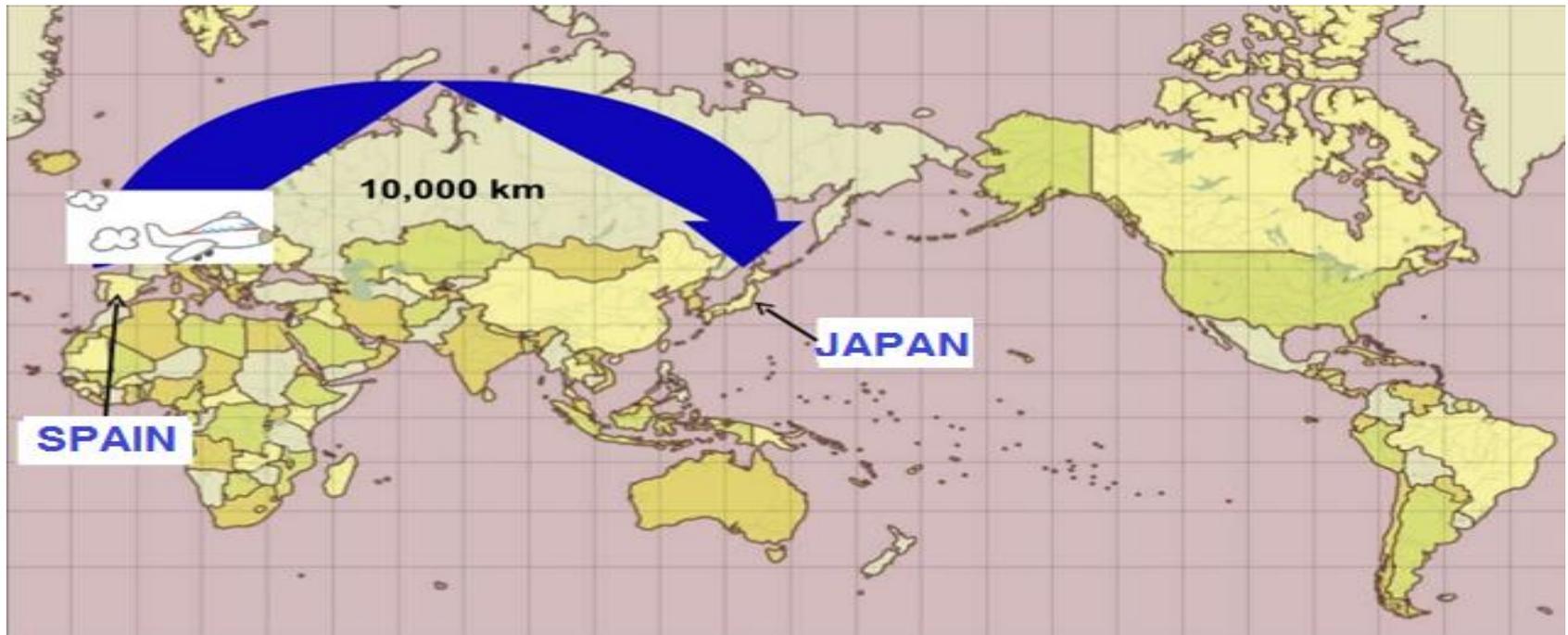


The land of the raising sun and that of the
Sunset.

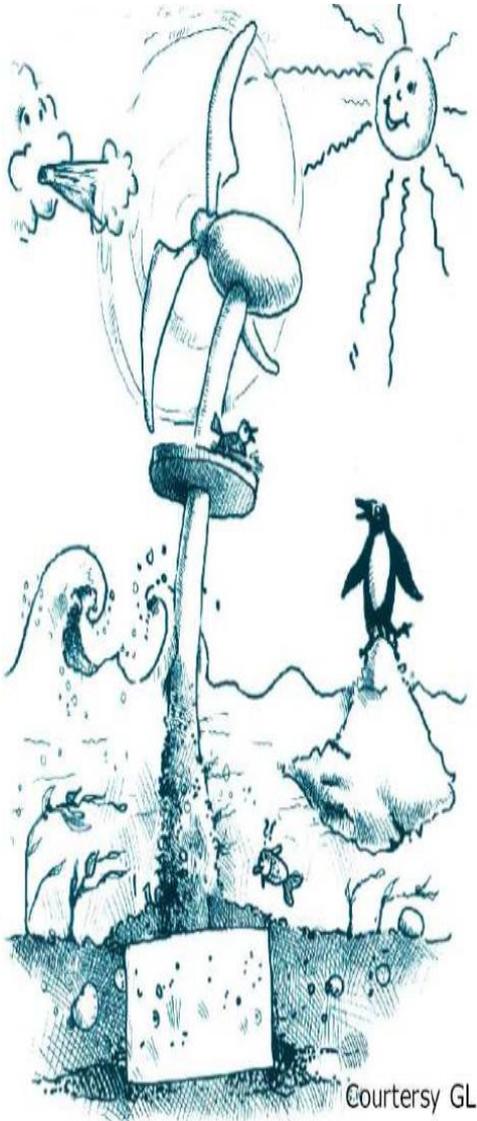
Half a world apart!

gradients !

But lets make the most of our



Offshore Wind



Characterised for its complex architecture, needs to be adapted for varied market and environmental constraints.

300 – 30 - 3

In a **BILATERAL JSIP** project CENER could contribute with:

- High added value testing of Nacelle system and related subsystems - Including simulations and smartdata analysis for maintenance optimisation and life extension.
- Concept selection and validation
- Fit for purpose substructure designs
- Mooring lines dynamic optimisation
- Advanced aerodynamic rotor design
- Competitive Supply chain matchmaking

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Thanks for your
attention

You are always welcome!



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