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Developing the Next Generation 12+ MW Offshore Wind Turbine for Clean and Competitive Electricity

Task 7.3 Probabilistic LCoE model

What is a probabilistic LCoE model?

A probabilistic LCoE model of offshore wind incorporates variability in key input parameters to estimate the levelized cost of electricity (LCoE). LCoE is a metric used to estimate the average cost of generating electricity over the lifetime of a wind farm or a different power plant. The outcome is a range of possible costs and their associated probabilities rather than a single-value estimate. The accuracy of the prediction is vital to evaluate the economic feasibility of the project and manage associated risks.

What are the components of the model?

The model incorporates parameters such as development costs, components and installation costs, operating and maintenance expenses, decommissioning costs, financial terms, and energy production variability. These parameters are subject to uncertainties, such as wind resource availability, accessibility of resources, turbine performance, and electricity production losses.

What are we doing in Task 7.3?

The innovations studied and developed in other work packages are brought together to compute the probabilistic LCoE of the offshore wind project. Considering +12MW wind turbines, two scenarios are analysed: a wind farm with fixed foundations located in the North Sea and a wind farm with floating foundations located off the coast of France.

Development of the model

Probability distributions are assigned to the input parameters developed throughout the project. We employ Monte Carlo simulations to estimate the potential outcomes for the full lifecycle cost and performance assessment of two wind farms with +12MW wind turbines with fixed foundations and with floating foundations.

ReaLCoE´s Vision

ReaLCoE´s vision is to unleash the full potential of offshore wind energy to be in direct competition with conventional energy sources in electricity markets worldwide by optimising and innovating in every link of the offshore wind value chain: from initial turbine design to equipment handling in the port, from testing to financing installation and providing electricity to final customers.

ReaLCoE Project

€35/MWh
LCoE Goal

+12MW
WEC Capacity

€32.320.049,49€
Total Budget

42 months
Project Duration

Consortium

GE · Principle Power · DNV·GL · DTU Technical University of Denmark · 8.2 The Experts in Renewable Energy · EnBW · Jan De Nul Group · Fraunhofer IWES · BIBA · TNO innovation for life · Ingeteam

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Further information about the ReaLCoE Project can be found on our website: www.realcoe.eu.

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