INF⁴INiTY

The concept

The INF⁴INiTY (INtegrated designs for Future Floating oFFshore wINd farm TechnologY) project will develop critical technologies for the offshore wind farm of the future, providing solutions for the current techno-socio-enviro-economic challenges of the industry, balancing the provision of clean energy with decreased negative environmental and social impacts. In a joint effort of industry and academia, the project aims to provide nature inclusive design innovations for sub-sea components of floating offshore wind installations.


Photo credit: TU Braunschweig/GICON

Mission and ambition

The INF⁴INiTY project aims to provide Nature Inclusive Design (NID) innovations for sub-sea components of Floating Offshore Wind (FOW) installations in a joint effort of industry and academia, thereby strengthening the European global leadership in the FOW industry.

The INF⁴INiTY project will develop critical technologies for the offshore wind farm of the future which enable balancing human needs (clean energy) with nature's and society's demands (decreased negative environmental and social impact).

Project's main objective

The overarching goal of INF⁴INiTY is to deliver major NID innovations for the FOW farms of the future. Specifically, NID innovations of sub-sea components of FOW systems are provided to:

- Develop an innovative NID for gravity anchors and their associated scour projection system
- Develop an innovative artificial reef structure combined the floating structure of the FOW turbine
- Reduce the LCOE of FOW while decreasing the environmental impact of installations
- Provide pathways to commercialisation for NID in floating offshore wind

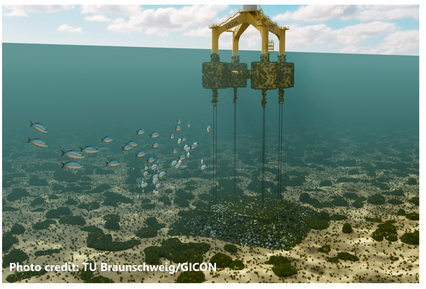
Photo credit: TU Braunschweig/GICON

WP1	**FEED for nature inclusive gravity anchors and their associated scour protection (GASP) system**
WP1 will provide a general design including "site-specific" designs of the GASP for the three case study sites of INF⁴INiTY, each of which with its specific design challenges.	
WP2	**FEED for artificial reef structure (ARS) integrated in the floating structure**
WP2 delivers a general design for the ARS to be incorporated into the floating structure as well as "site-specific" designs for the three case study sites.	
WP3	**Geotechnical and morphodynamic analysis**
WP3 will provide the geotechnical and morphodynamic design parameters and performance metrics for the design of the INF⁴INiTY innovations.	
WP4	**Hydrodynamic analysis**
WP4 will perform a cascade, interlinked and hybrid modelling campaign, using both numerical and experimental modelling tools.	
WP5	**Performance and loads analysis at farm scale**
WP5 aims to further investigate the innovations of the project at wind farm scale.	
WP6	**Technology validation and standardisation**
WP6 will perform the technology validation of the INF⁴INiTY innovations in a relevant environment by performing large scale model tests of the combined innovations.	
WP7	**Techno-environomics and impact analysis**
WP7 focus on the design and development of the INF⁴INiTY optimisation framework that considers all the most relevant technical, economic and socio-environmental aspects, enabling a holistic design.	
WP8	**Communication, dissemination and exploitation**
WP8 will maximise the visibility and societal uptake of the INF⁴INiTY project.	
WP9	**Project management**
WP9 will support the coordination and organization of the INF⁴INiTY project	

Impact

INF⁴INiTY contributes at the "new frontier in offshore wind energy" considering the EU's desire for clean energy production and minimal environmental impact on species and habitats. The project will impact:

- The environmental impact procedures for FOW farms by providing new and compensating disrupted habitats.
- FOW technology innovations through a revolutionary TLP-type FOWT concept
- The cost-competitiveness by reducing LCOE through a multi-objective optimisation
- The market up-take by providing inclusive FOW concepts complying with future tender scores
- The EU marine spatial planning procedures for FOW
- The European offshore wind leadership by pairing inter-sectoral European partners

DTU · Leibniz Universität Hannover · NIRAS · Ghent University · WIKKI · Technische Universität Braunschweig · IBW PAN

GICON Großmann Ingenieur Consult GmbH · BM SUMER Consultancy & Research · aquatera Atlántico · SINTEF · Mondragon Unibertsitatea Goi Eskola Politeknikoa Faculty of Engineering · Politecnico di Torino

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