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Saitec Offshore Technologies

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www.saitec-offshore.com

SAITEC

Company Overview

Saitec Group

Saitec Engineering

Founded in 1988, is one of the most prestigious engineering firms in Spain. The company provides a wide-range of engineering and project management services to both public and private clients on the following areas:

- Roads
- Railways
- Water
- Environment
- Industry and energy
- Architecture
- Consultancy

www.saitec.es

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Saitec Engineering at a glance:

Bilbao
Headquarters

350+
Employees

35+
Years of experience

International
Offices

- Spain
- Sweden
- Colombia
- Panama
- Australia

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SATH

Technology

SATH technology

A flexible, low-carbon, low-cost offshore wind floater that promotes local content

Easy assembling and installation process

Assembling of structure is done onshore. Afterwards the platform can be easily installed or disconnected and taken ashore for major part repairs.

Single point mooring

Oil & Gas proven technology allows the platform to rotate facing the wind and reduces stresses on the mooring lines.

CO2

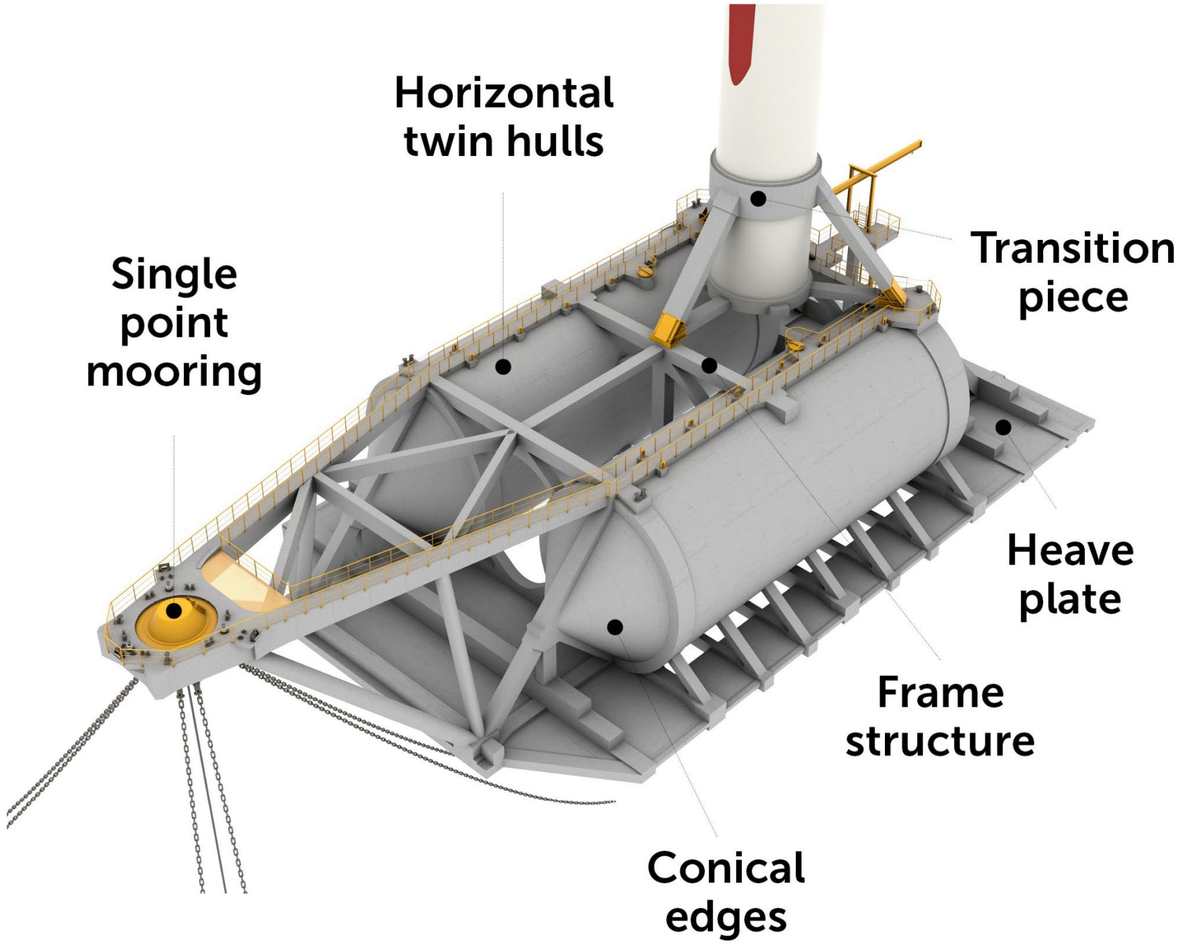
Concrete carbon footprint is significantly lower than the equivalent in steel.

Concrete

Use of concrete enables local content to manufacture the pre-cast elements in a industrialised way. Significant cost reduction in production and maintenance of parts.

The SATH floating platform is suitable solution for deep and shallow waters. The geometry of the floater provides a high level of stability, meets damaged stability criteria while a reduced concrete shell thickness can be used

Platform elements



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DemoSATH

Demonstration Project

Full scale prototype: DemoSATH

First offshore wind turbine connected to the grid in Spain

- Turbine: 2 MW wind turbine
- Base of the structure: 30 m. x 64 m.
- Installation: 2 miles off the coast in BIMEP
- Sea deep: 85 m.
- Mooring: Hybrid mooring lines (chains and fibre)
- Commissioned in September 2023
- It will collect data along 2 operational years for different purposes: technology development and other researches such as social, economical and environmental impacts.

Supply Chain< 25km | 75% of construction budget

BiMEP Biscay Marine Energy Platform · Bilbao Port · ferrovial construcción · VICINAY marine · GRI Renewable Industries · haizea wind · AUXEMA stemmann · prosertek · ORMAZABAL velatia · euskalforging · CMA COMECARAN S.A. · SOVERIN CONTROL · GABOTEK MONTAJES INDUSTRIALES · TAMOIN · SPARBER GROUP

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RWE · Kansai Electric Power — power with heart

Joining forces

RWE and The Kansai Electric Power Co. Inc . are our partners in this journey towards floating wind development

Green energy

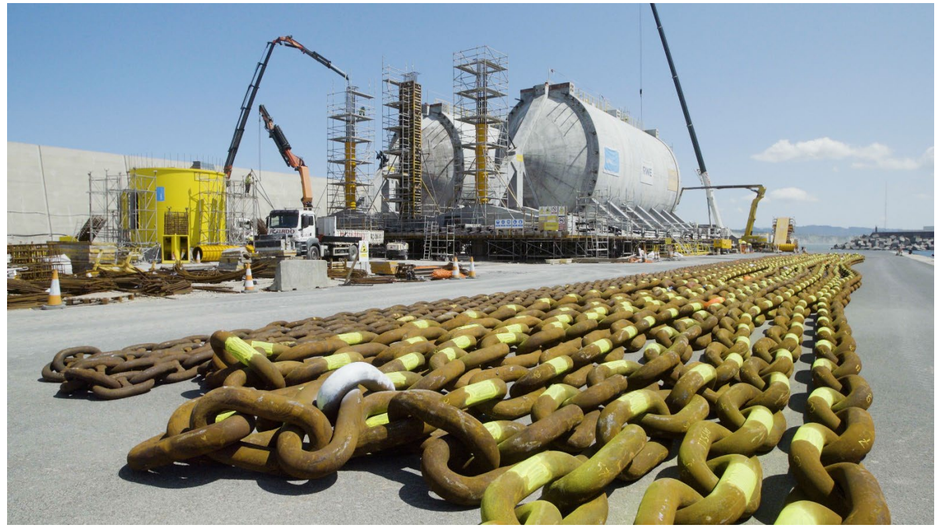
The electricity generated will be fed into the Spanish power grid with potential to supply energy to 2,500 homes.

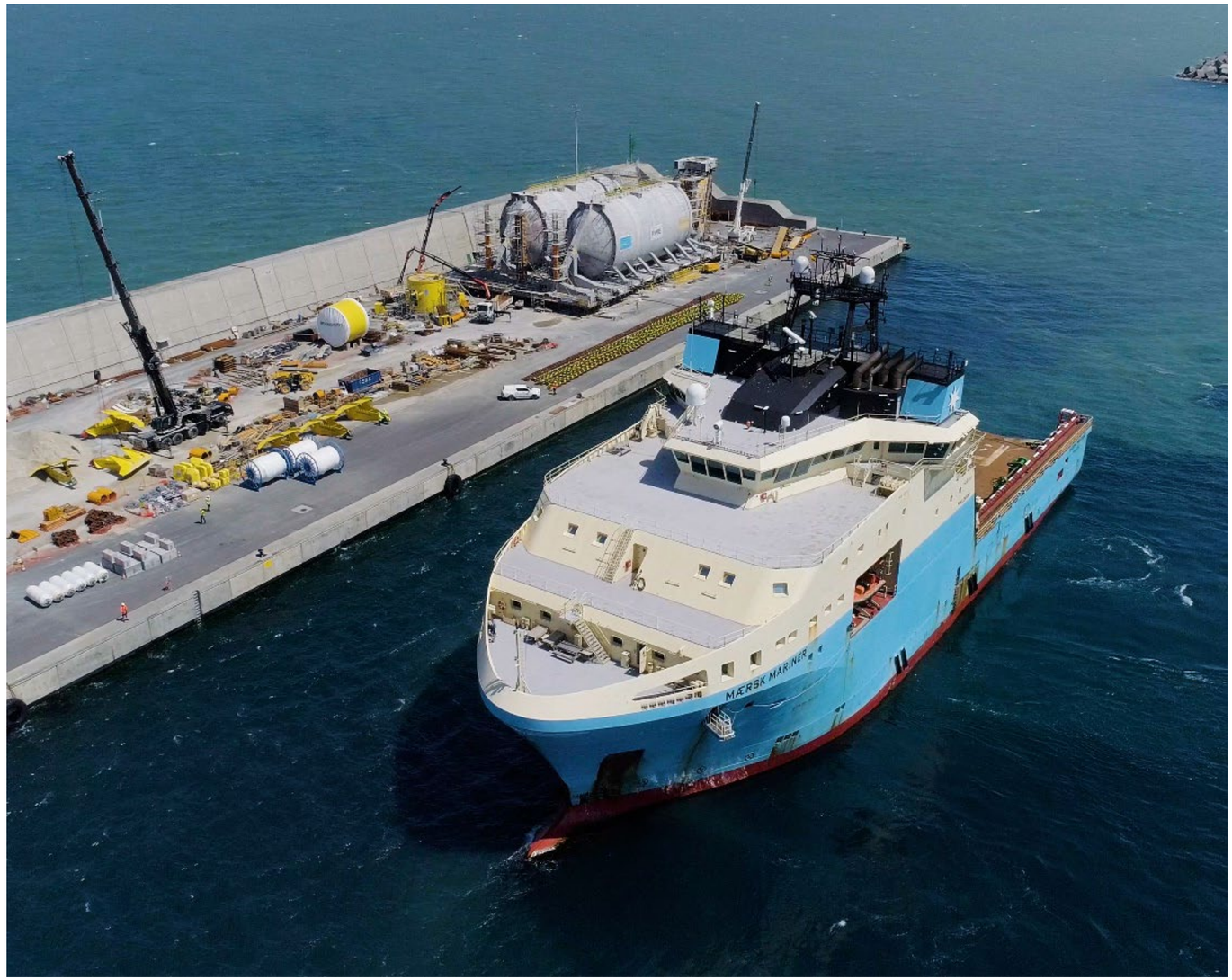
Floater Construction

- Combination of precast elements with in - situ elements. | Construction area divided between prefabrication zones and assembly zon e.
- Longitudinal and transversal post - tensioning of the structure once the assembly is executed.
- Assembly of the tower and the WTG onshore.

Pre-lay mooring operation

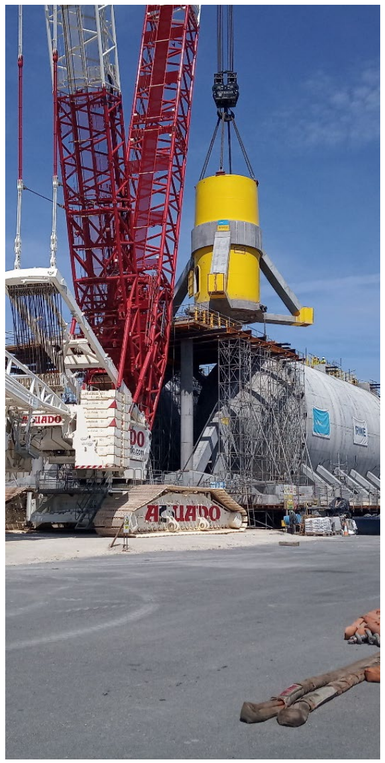
- Use of Maersk Mariner vessel.
- 3 hybrid double lines (6 in total).
- Lower chain + polyester rope + upper chain.
- 6 drag anchors.

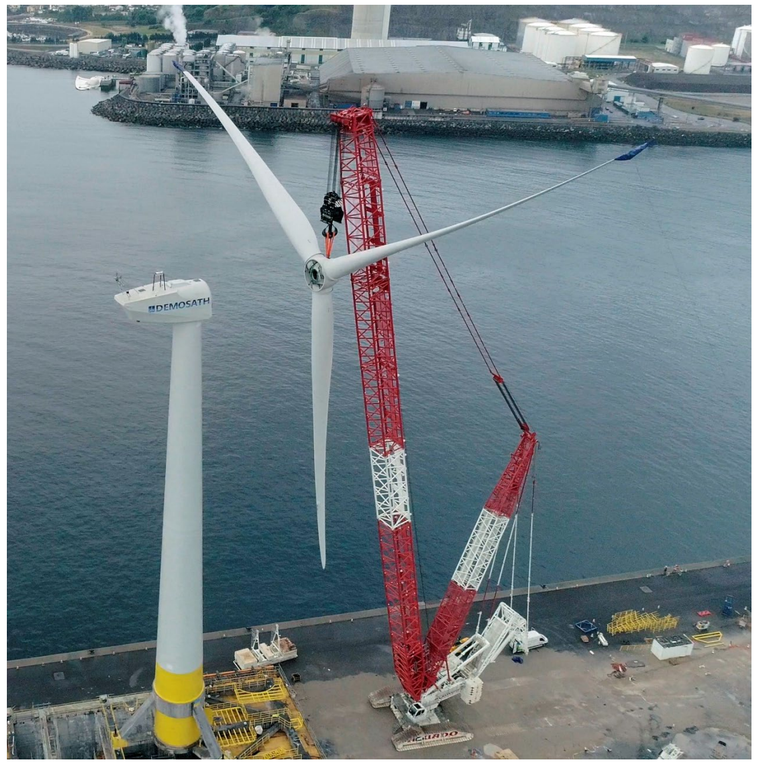




TP, Tower and WTG

- Main crane: Liebherr LR11000
- TP: transition piece and 1st part of the tower
- Tensioning of the transition piece
- Tower in 2 sections + Nacelle
- Blades lifting in star configuration

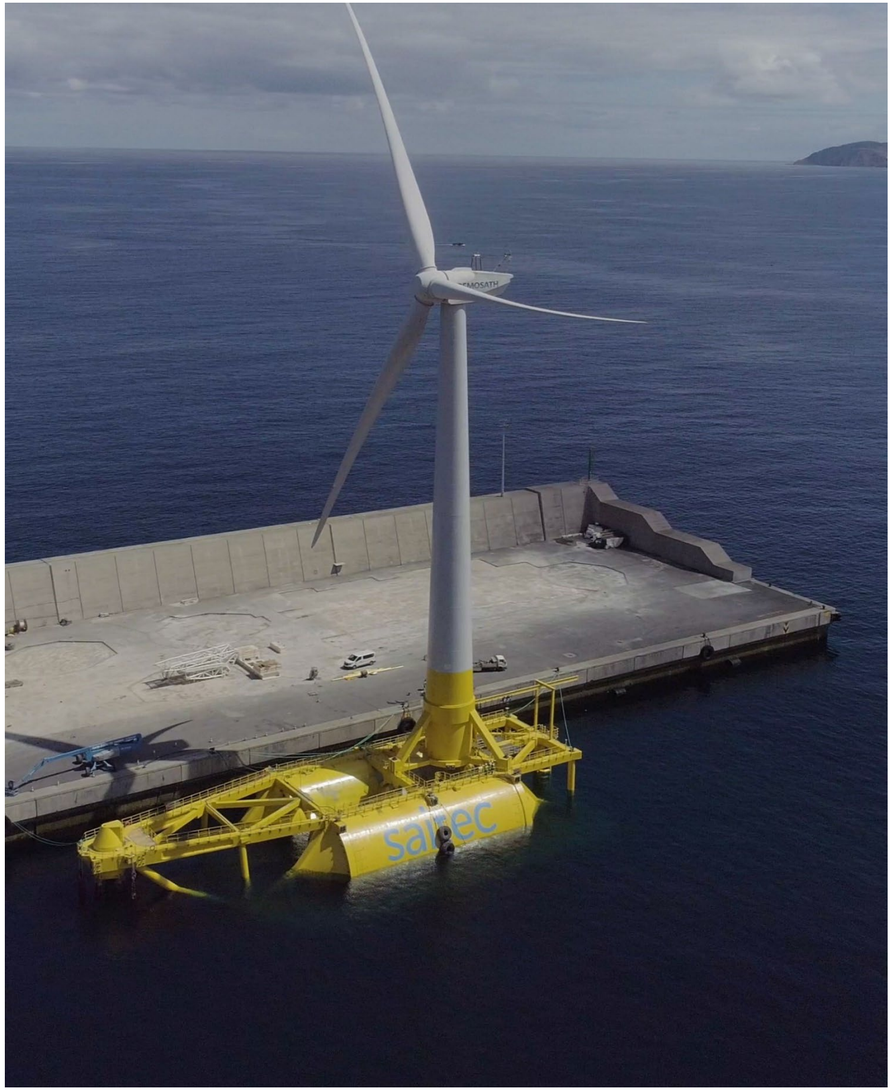




Loading and launching

Launching:

- Semi-submersible barge: BOA 33.



Towing and installation

Engineering | Procurement | Mooring connection | Cable laying & Hook-up

- Vessels and Equipment:
  - Main vessel: Norman Sapphire from Windstaller Alliance, moored at Port of Bilbao.
  - Crew Transfer Vessels (CTVs) for personnel movement.
  - Remotely Operated Vehicle (ROV) for underwater tasks.
- Towing: Conducted in August 2023, covering 11 nautical miles in 4 hours.
- Mooring Lines Connection: Six mooring lines were connected to the Single Point Mooring (SPM) of the platform. These lines were already pre-layed and left on the seabed.
- Cable Installation:
  - Repositioning and preparing the BiMEP seabed connection cable for linking with the dynamic cable.
  - Final installation of the cable to DemoSATH after connections were made.

DemoSATH certification

Prototype Certificate

Rev 00

SAITEC

DEMOSATH – PROTOTYPE

P19-47
September 24

PROTOTYPE CERTIFICATE

Issued to
SAITEC

Bureau Veritas Marine & Offshore attests that the Basic Design and Prototype Testing of

DemoSath – Prototype

has been assessed and fulfills the requirements of the following standard:

Bureau Veritas NI 572 - Classification and Certification of Floating Offshore Wind Turbines, R02, January 2019

This prototype certificate is based on the following Prototype Evaluation Report:

- Annex 1: Conditions of Approval.
- Annex 2: Interface with Basic Design Evaluation.
- Annex 3: Interface with Prototype Testing Evaluation.

The scope of the evaluation includes the offshore floating substructure and the mooring systems.

The validity of this statement may have to be reconsidered, in case of any major modification likely to invalidate the principles shown on the documents listed in Annex 2 and 3. This statement would become null and void should **BUREAU VERITAS MARINE & OFFSHORE** not be kept informed of such modifications.

Date of Issue : 25/09/24

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