

nautilus

floating solutions



NAUTILUS Floating Solutions Company Presentation

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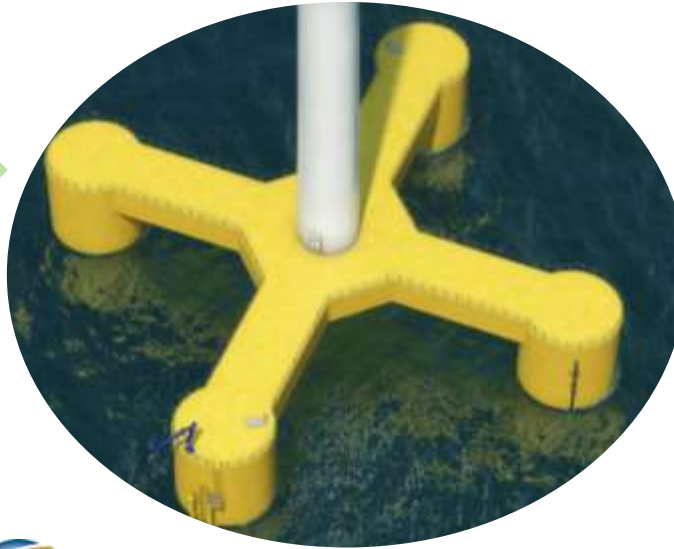
September 2020

NAUTILUS Floating Solutions, S.L.

Incorporated in Bilbao in 2013

Mission:

To Design & Manufacture floating foundations for Offshore Wind



Vision:

To be a global player in the Floating Offshore Wind market



GRUPO JIS
Jauregui Industrial Services



tecnalia Inspiring Business

velatia

VICINAYmarine
innovación

Strong R&D support from TECNALIA incorporating marine energy experiences and a Strategic Alliance with reference R&D Institutes

Collaboration with engineering companies and certification bodies

Industrial expertise coming from shareholders and other collaborating industries



opera



SENER

RAMBOLL

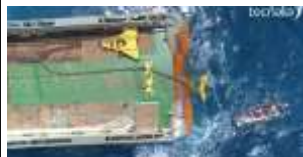


Cluster Energía
BASQUE ENERGY CLUSTER

NERVIÓN
INDUSTRIES



NAVACEL
Process Industries



ARSH LAB

CATAPULT
Offshore Renewable Energy

haizea
windgroup

NEM
solutions

Well positioned to serve North Atlantic markets...

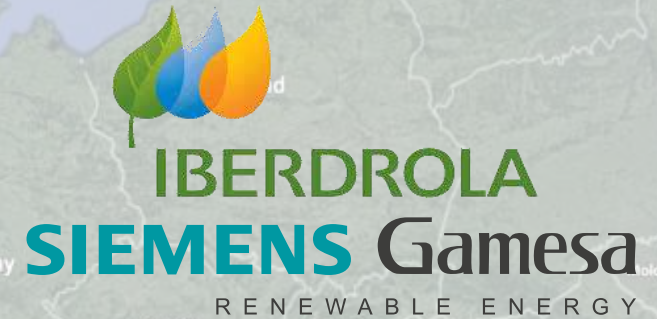
NAUTILUS is located in the Basque Country

Good current suppliers for offshore



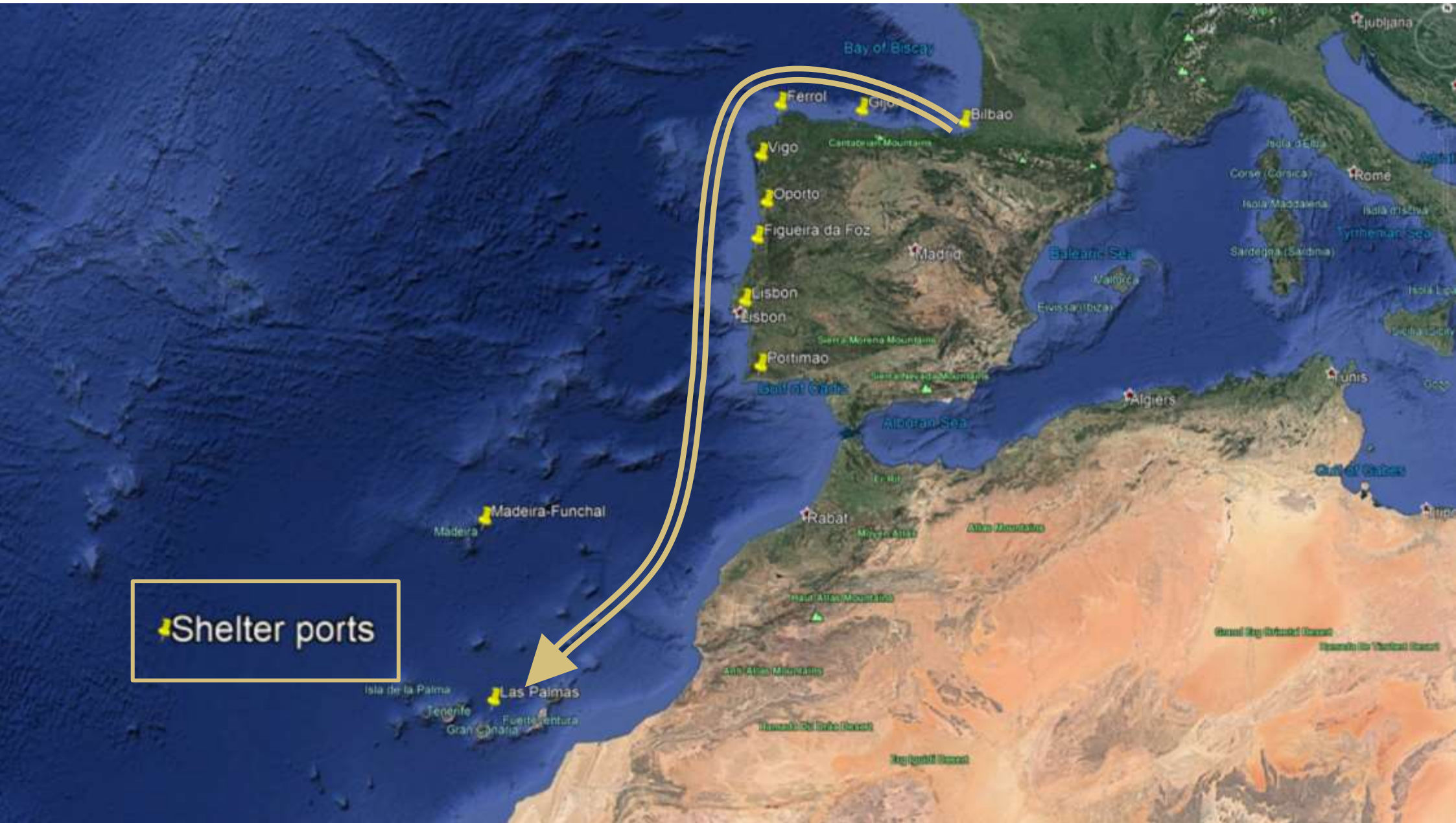
Well positioned to serve North Atlantic markets

Home of offshore wind world leaders



Companies in the North of Spain are participating in the offshore wind value chain, being cost conscious to support the necessary reduction in LCoE

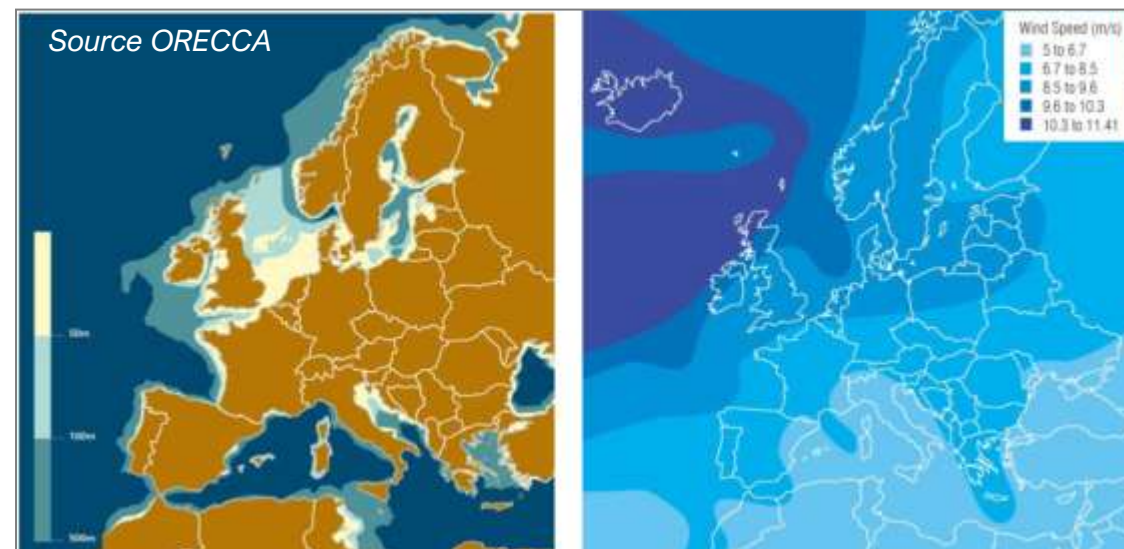
... and also to new coming Southern markets



The future is Floating Offshore Wind

Reasons to go deeper

- There are **limited shallow water locations with large wind resource**. In Europe, North Sea and Baltic Sea and some areas of the USA East Coast and China.
- Most of the wind resource lies in deep waters** with less turbulence.
- Access to markets without extended continental shelf: USA, Japan, South Korea, Taiwan and in Europe, Norway, France, Portugal, Scotland, Spain, Mediterranean countries, etc.
- Floating Wind **has lower environmental impact** than bottom fixed Wind because of the low aggressivity of the installation and easy retirement at the end of exploitation life.
- It can supply energy to coastal areas** with high electricity demand.
- At this moment, floating has a higher cost than bottom-fixed Wind and needs some **public support for its development** but trends show a learning curve to reach grid parity in the next decade.



The available continental shelf is very small

80% of the offshore wind resource in Europe is located in Deep Waters > than 60 m

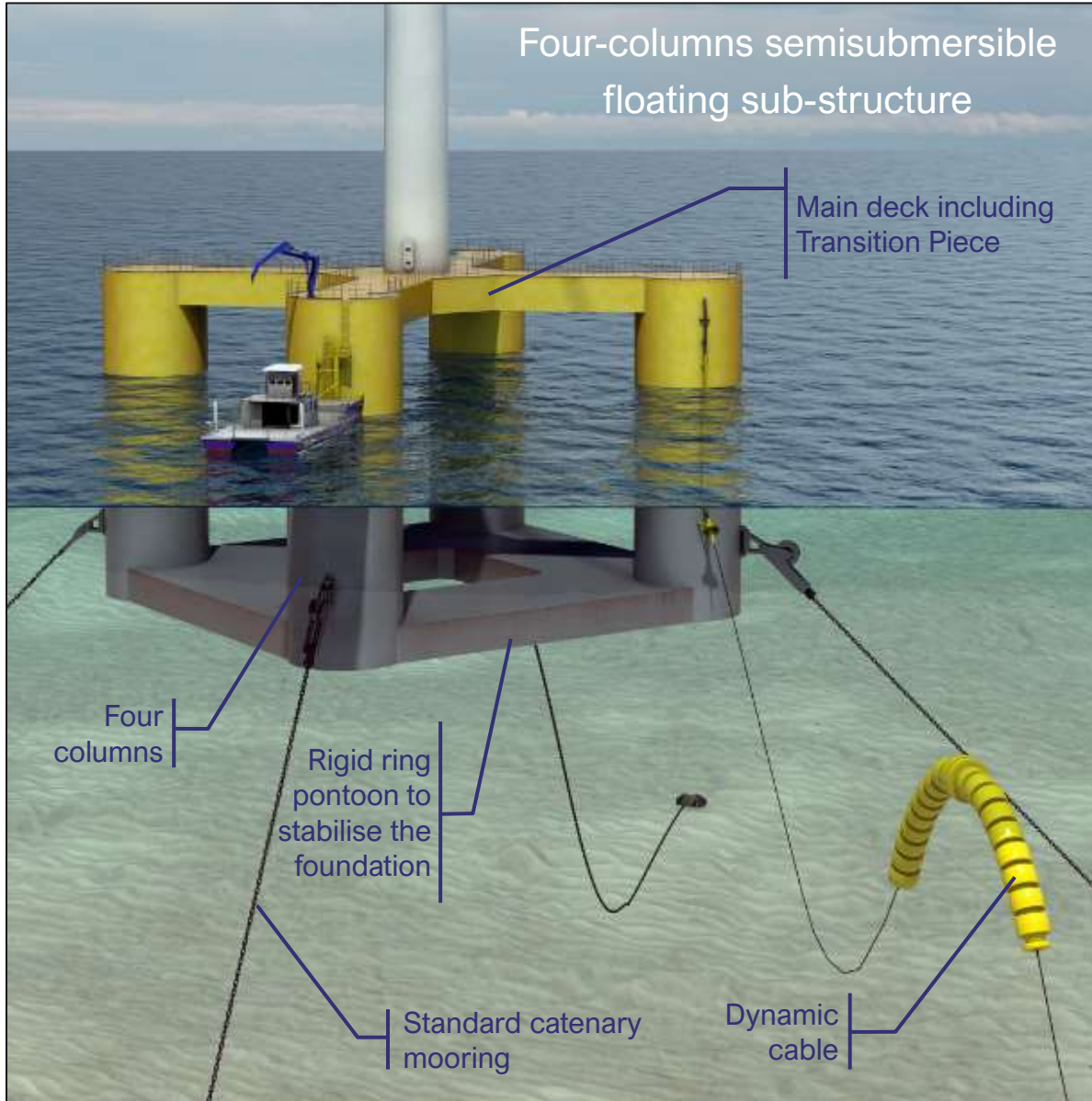
A reminder of the potential

Country/Region	Share of offshore wind resource in +60m depth	Potential for floating wind capacity
Europe	80%	4,000 GW
USA	60%	2,450 GW
Japan	80%	500 GW
Taiwan	-	90 GW

Giles Dickson, CEO WindEurope, FOWT 2017, Marseille

Unique Selling Point and competitive advantages

LCoE reduction with a minimum technological risk



Low-cost & minimum risk

- ★ Compact dimensions
- ★ Use of existing manufacturing capacities
 - ★ Monopile-like columns
 - ★ Common vessel structures for pontoon & deck
- ★ Flat bottom
- ★ No tubular joints
- ★ Steel construction
- ★ Very simple installation procedure
- ★ Adjustable draft for different conditions
 - ★ Very low draft in harbour
 - ★ On-site de-ballasting to improve inspectability
- ★ Main Deck ample space for additional equipment
- ★ Optional Platform Trim System



Company Roadmap

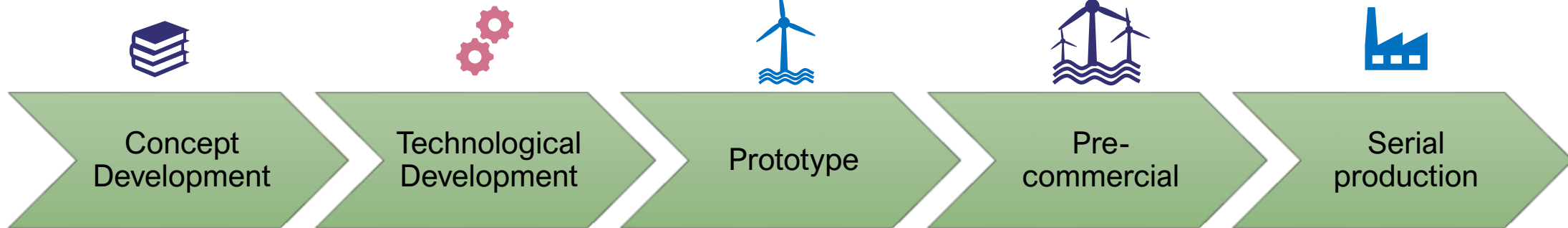
The development of the NAUTILUS Concept was made in TECNALIA using its capacities and experience in Marine Energies.

The concept was handed-over to NFS to continue with the Technological Development and to carry out the Design Engineering of the foundation.

To validate the technology a prototype is needed. This stage will cover the construction, installation and validation phase.

Two or three prototypes of current turbine size will be deployed to validate the concept from a production and commercial side.

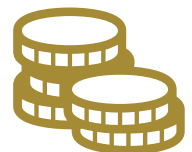
In this stage, the serial production of foundations will take place to provide units for 500+ MW wind farms.



Fund rising



Fund raised to create NAUTILUS Floating Solutions S.L. in 2013



Fund rising to build the prototype



Increase company dimensions to cope with the new needs



Development of the serial production capacities (make or buy)



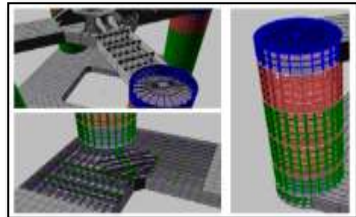
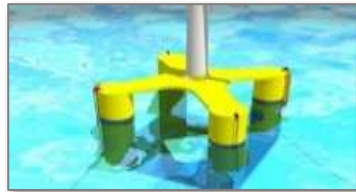
Concept & Technological Development



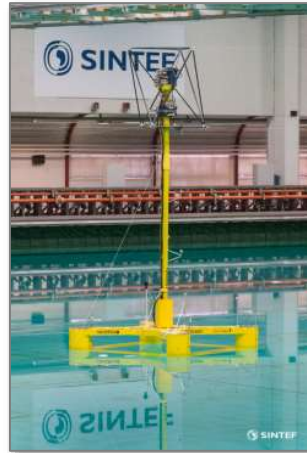
First concepts and alternative evaluations



Design and analysis of the selected concept



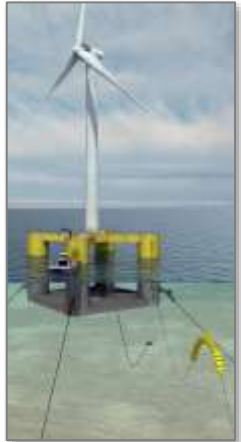
Wave Basin Tests



Concept certification



Design Engineering



2009 - 2014

2015 - 2016

2017-2018

2018 - 2020



NAUTILUS Creation.
Shareholders investment of more than € 2.5 million.

Participation in various R&D Projects, regionals, nationals and European

Active presence in International Conferences and Exhibitions

Strategic relationship with Engineering companies and international certification bodies

Development of the NAUTILUS Strategic Plan

Search for industrial and financial investors

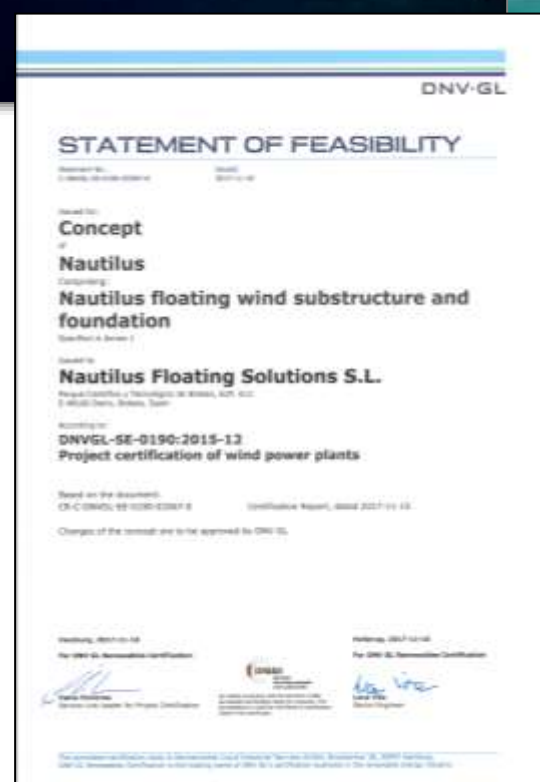
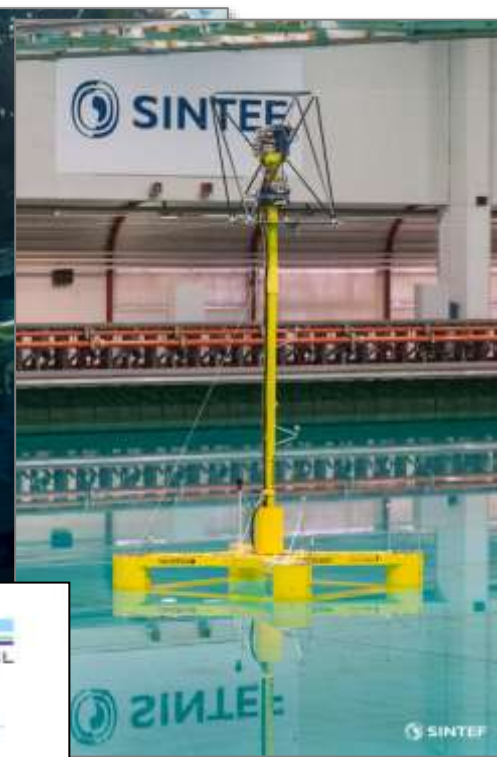
Stablishing relationships with developers and utilities:

- Technology presentations
- Technical Due diligences
- Agreements to collaborate in the development of Projects.

NAUTILUS current technology state

TRL5

Technology validated in relevant environment



Technology analyzed and reviewed by third parties. DNV-GL certificación.

R&D Activities



Participating in various Regional, National and European R&D Projects

CONCEPTS

NAUTILUS Semi-submersible Steel	Olav Olsen OO-STAR Semi-submersible Concrete	IDEOL Barge Concrete	IBERDROLA Tension Leg Platform Steel
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HAZITEK 2017
Proyectos de apoyo a la I+D empresarial

FLOW
Desarrollo de un aerogenerador flotante para su demostración a escala real en BIMEP

Proyectos de investigación industrial y de desarrollo experimental en sectores estratégicos

Líder del proyecto: NAUTILUS FLOATING SOLUTIONS S.L.
Participantes: Energía Renovables, Astilleros de Murseta, Nervión, Na Ingenieros Soluciones
Agentes de la RVCTI: TEC

ENERGY
COUPLED DYNAMIC ANALYSIS OF FLOATING WIND TURBINES
Joint industry project "floating wind turbines"

Sistema de Acceso a unidades Flotantes de Energías marinas (SAFE)

Nuevas Soluciones de Plataformas y Tecnologías Innovadoras Asociadas a la Evacuación e Integración en Red de Parques Eólicos Marinos Flotantes

Acronimo: FLOCAN 2 GRID

PROGRAMA ESTRATEGICO DE CONSORCIOS DE INVESTIGACION EMPRESARIAL NACIONAL: CIEN

Nº EMPRESA	NOMBRE EMPRESA	Logo
1 (Coordinador)	COBRA INSTALACIONES Y SERVICIOS S.A.	
2	ESTEYGO	
3	VICINAY SESTAO, S.L.	
4	NEM SOLUTIONS	
5	NAUTILUS FLOATING SOLUTIONS	
6	ORMAZABAL DISTRIBUCION PRIMARIA S.L.U.	
7	ORMAZABAL CONTRATOS TRANSFORMACIONES S.L.U.	

HAZITEK 2019
Proyectos de apoyo a la I+D empresarial

MEMORIA TÉCNICA DEL PROYECTO

SEAPOWER
Desarrollo de soluciones innovadoras e integrales para cimentaciones, torres y sistemas auxiliares de aerogeneradores offshore de gran potencia

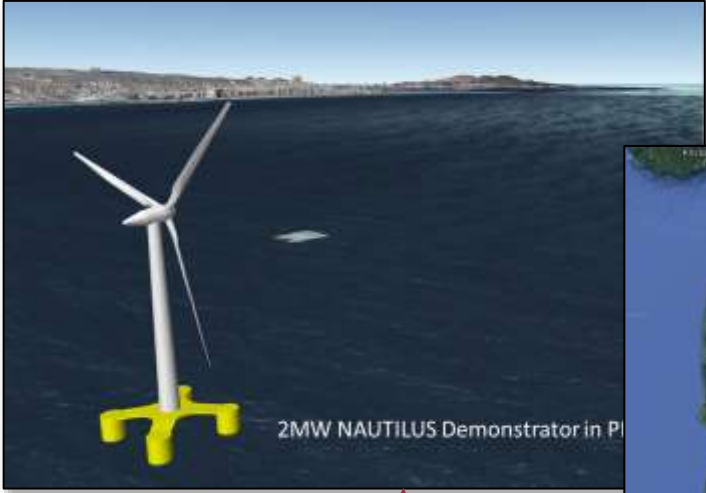
Proyectos de investigación industrial y de desarrollo experimental en sectores estratégicos

Líder del proyecto	SENER Ingeniería y Sistemas
Participantes	Idem, Navacal, HalbaWind, Mugape, Jaso Tower cranes, Ditel, Nautilus, Eneka, Alkargo,
Agentes de la RVCTI	Fundación Tecnalia Research & Innovation, IKA-TEKNIKER

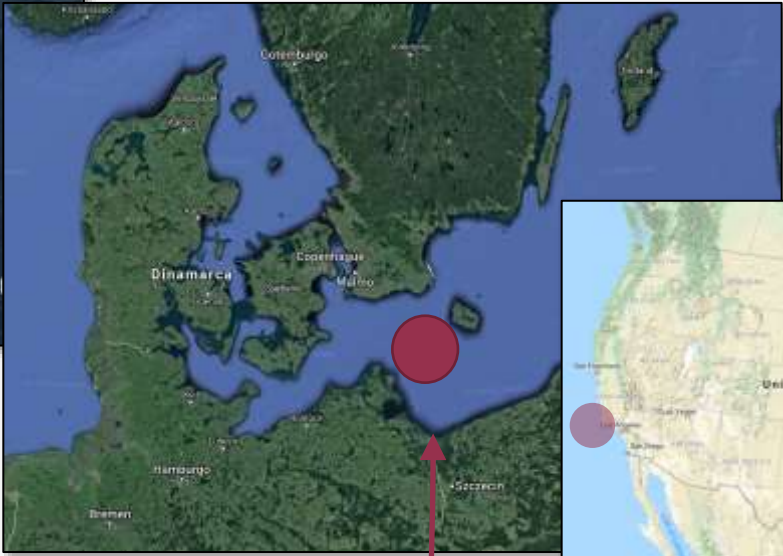
From prototype to serial production



PLOCAN



Demonstration Projects



Start exploitation activity thanks to previously achieved milestones

Various tenders



2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
		2MW prototype									
		Strategic partners incorporation									
			Demonstration Projects 10MW WTG size								
				First Commercial Floating Offshore Wind Farm							
								Growth and consolidation of the Floating Offshore Wind Market			

- **NAUTILUS** has developed a patent pending Floating Offshore Wind Foundation concept that has been recognized by various third parties:
 - Well-known Engineering Companies
 - Certification bodies
 - R&D institutions
- **NAUTILUS** is facing a detailed design process that will lead to the manufacturing and installation of a 1:1 scale prototype.
- **NAUTILUS** design and installation procedures are in line with industry requirements to provide a LCoE reduction from current developments.
- **NAUTILUS** is very well known in the industry
 - Participating in the largest R&D EU financed Project regarding FOWT (Lifes50+)
 - Attending Conferences, Exhibitions and Events all over Europe, USA and Japan
 - Establishing relationships with potential customers, suppliers and partners.
- **NAUTILUS** is in a fund raising process to secure enough financial resources to go ahead with its Strategic Plan

Thank you, for your attention

Nautilus Floating Solutions, S.L.

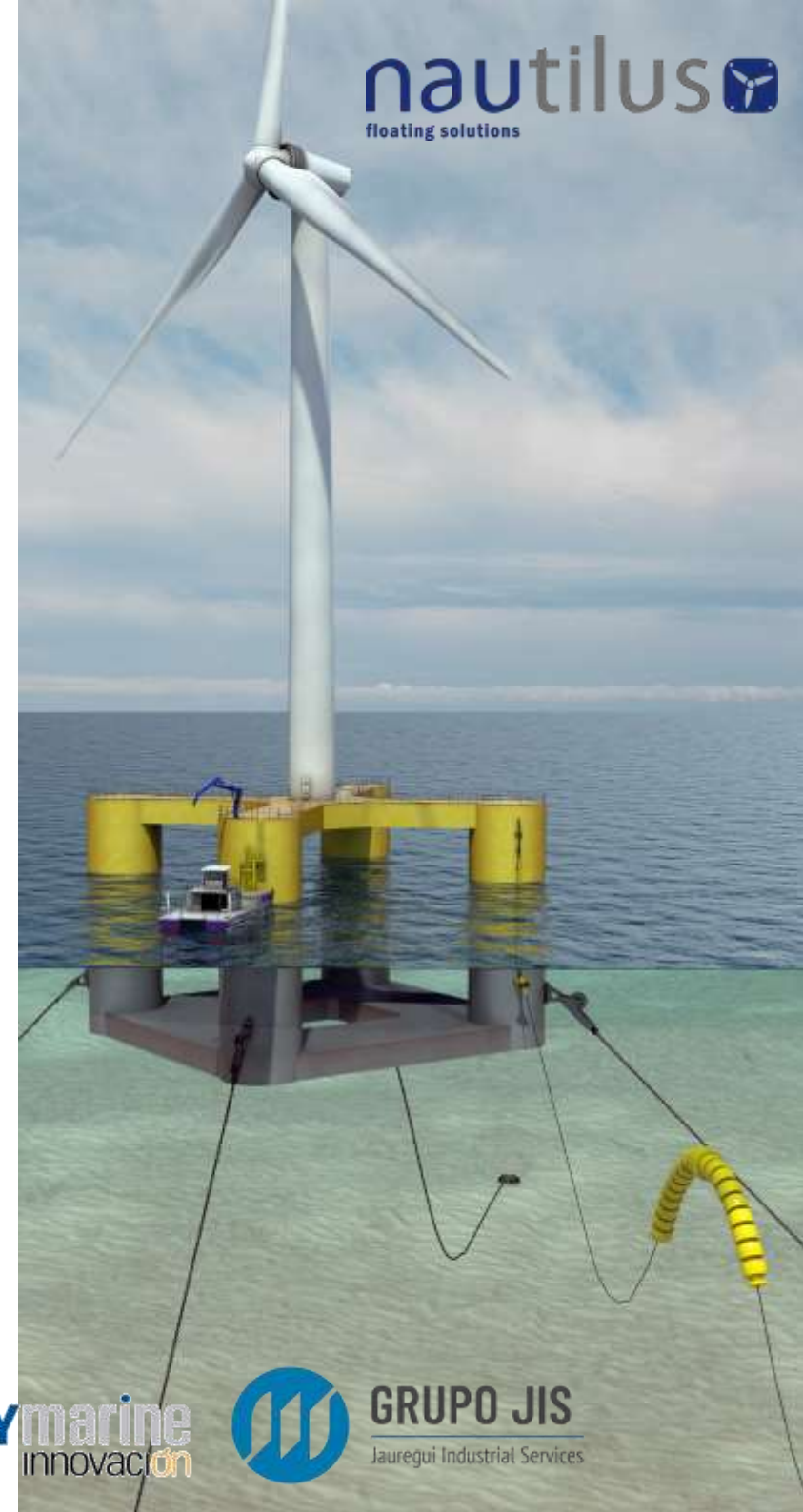
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Inspiring Business



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