ENERGY

POWER & WATER

RENEWABLES

THERMAL GENERATION

T&D

OFFSHORE & MARINE

WATER

PHOTOVOLTAIC	SCPP	SUBSTATIONS	OFFSHORE WIND FARMS	DESALINATION
THERMOSOLAR	CCPP	TRANSMISSION	WAVE ENERGY	WASTEWATER PLANTS
WIND	CHP	DISTRIBUTION	POWERSHIP-SHIP	
HYDROPOWER	CFPP	STORAGES	FLOATING SOLAR PV	
BIOMASS	RECIPROCATING ENGINE	MICROGRIDS		
WtE	HYDROGEN			

INTEGRATED SOLUTIONS

R&D

IDOM

Industry Recognition

Engineering News Record (ENR) annually ranks engineering, architectural and contracting firms based upon sales in various sectors.

In 2018, **IDOM** is proud to have obtained the following positions based on 2017 IDOM's revenue.

	2018	2017
TOP INTERNATIONAL DESIGN FIRMS	Ranking	Ranking
Power	**30**	**34**
Fossil-fuel	**11**	**10**

Top International Design Firms

POWER

RANK	FIRM	REVENUE ($ MIL.*)
1	POWER CONSTRUCTION CORP. OF CHINA	940.7
2	CHINA ENERGY CORP. LTD.	890.3
3	SNC-LAVALIN	634.0
4	TRACTEBEL ENGINEERING SA	342.6
5	FUGRO NV	222.0
6	WORLEYPARSONS LTD.	216.8
7	POYRY	200.0
8	STANTEC INC.	194.6
9	WSP	180.8
10	CHINA CHENGDA ENGINEERING CO. LTD.	180.8
11	BLACK & VEATCH	178.0
12	SENER INGENIERIA Y SISTEMAS SA	170.5
13	TETRA TECH INC.	164.0
14	MOTT MACDONALD	151.3
15	KEPCO ENGINEERING & CONSTRUCTION CO. INC.	148.8
16	CB&I	140.8
17	FICHTNER GROUP	137.7
18	INTERTEK-PSI	127.1
19	AF GROUP	123.0
20	AECOM	122.9
21	TECNICAS REUNIDAS	118.5
22	HYUNDAI ENGINEERING CO. LTD.	115.3
23	ASSYSTEM	105.0
24	JACOBS	103.2
25	CHINA NATIONAL MACHINERY INDUSTRY CORP.	94.9
26	SWECO	91.0
27	DOHWA ENGINEERING CO. LTD.	85.1
28	ARCADIS NV	84.0
29	SURBANA JURONG PRIVATE LTD.	77.0
30	IDOM	76.2
31	RAMBOLL GROUP A/S	72.8

OFFSHORE AND MARINE

Wind On-shore and electrical substations

Wind Power Sector
Fundamental traits

IDOM

20 years

Background in wind energy

450

Wind farms engineered

>80

Professionals with experience

>40

Customer around the world

WIND FARMS

A good example of our services in Wind Farms is feasibility study to reduce diesel consumption at the US Navy Base at San Clemente with a hybrid photovoltaic-wind-battery system. IDOM is designing wind farms in many countries: Mexico, Chile, Brazil, Jamaica, Poland, Serbia, Kazakhstan, etc

SEVERAL WIND PROJECTS
DIFFERENT SCOPES

ENHOL (CHILE & MEXICO)

WIND FARMS FEASIBILITY STUDY
AT SHELEK CORRIDOR
SAMRUK ENERGY
(KAZAKHSTAN)

230 MW DETAILED
ENGINEERING

ELECNOR (JORDAN)

9 WIND FARMS IN MORRO DO
CHAPEAU AND BAHIA
BASIC ENGINEERING + DETAILED
ENEL GREEN POWER BRAZIL

WIND FARMS IN SOMOVA AND
FECATEI
JORGE GROUP (ROMANIA)

SEVERAL WIND FARMS IN
POLAND
EDP RENEWABLES POLSKA

Several wind farms 564 MW in
Spain
VESTAS EÓLICA

WIGTON III WIND FARM
TECHNICAL SUPPORT
CJR WIND (JAMAICA)


IDOM
POWER TRANSMISSION & DISTRIBUTION
Energy
>40 years
Background in T&D Infrastructures
>300 Substations &
1.500 km OHL &
Cables
Designed
>40.000 hours
T&D Team capacity per year

TRANSMISSION & DISTRIBUTION

Our high qualified electrical engineers supports our clients needs with focus to guarantee a reliable and safe operation of the electrical power installation. In the renewable market IDOM is providing solutions in many fields: audits, network assessments, vulnerability assessments, off-grid systems, DC/AC connections and conversions, harmonic studies, steady and dynamic studies, short circuit analysis, safety, remote control, etc

Basic and Detailed engineering for power supply to industrial facilities
SEVERAL INDUSTRIAL CLIENTS

Detailed engineering of more than 80 Substations (from 15 kV to 380 kV)
IBERDROLA

Basic and Detail engineering of high-voltage power lines
RED ELECTRICA DE ESPAÑA

Detailed engineering of several Substations for Endesa: extensions, new transformers, new swichyards
ENDESA

Basic and detailed engineering of evacuation electrical lines from power plants to the grid
SEVERAL CLIENTS (POWER PLANTS)

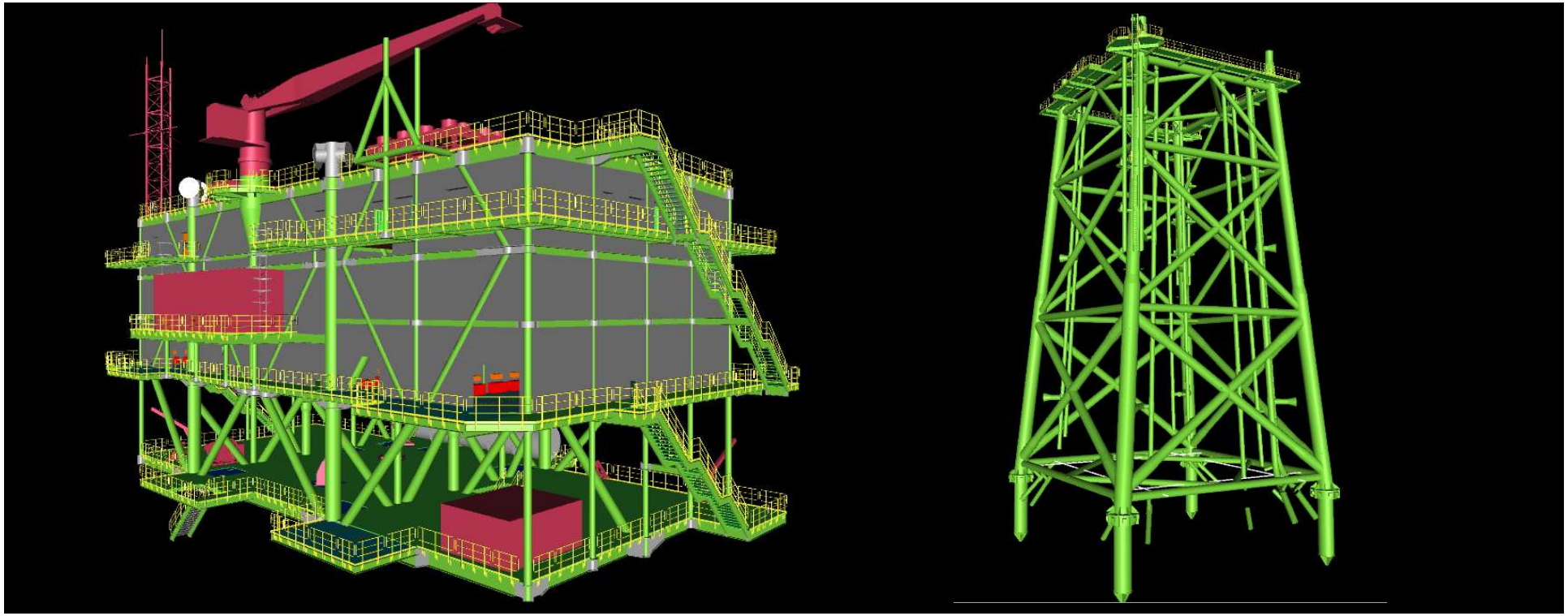
Basic and Detail engineering of electrical substations (up to 400 kV)
RED ELECTRICA DE ESPAÑA

Energy Regional Plan 2005-2012
ARAGON GOVERNMENT

Quality Assessment of the Power Supply for Madrid Region.
CONSEJERIA INDUSTRIA MADRID

IDOM

Wind Offshore



PLANNING APPLICATION FOR OFF-SHORE WIND FARM AREAS

Description

Estrella Varada" Marine Wind Farm (Cádiz) of 200 MW, promoted by MONTEALTO. The park consists of 40 wind turbines with a unit capacity of 5 MW (200 MW in total), and is located on the coast of Cadiz between the towns of Chipiona and Rota. It also includes a 200 MW, 30/220KV Offshore substation, the interconnection conduits between wind turbines (30KV wiring), a submarine line with 220 KV wiring and a land evacuation line, which has been planned aerially from the Rota Substation to the Puerto de Santa María Substation

Scope of work

IDOM has provided necessary technical documentation for the processing of the reservation request for the zone of installation of electricity generation in the territorial sea.

Client: MONTEALTO (2009-2010)

Idom has performed a feasibility study of offshore wind areas for one of the leading European electricity utilities.

General Project Data

- Client: Enel – Unión Fenosa (2007-2008)

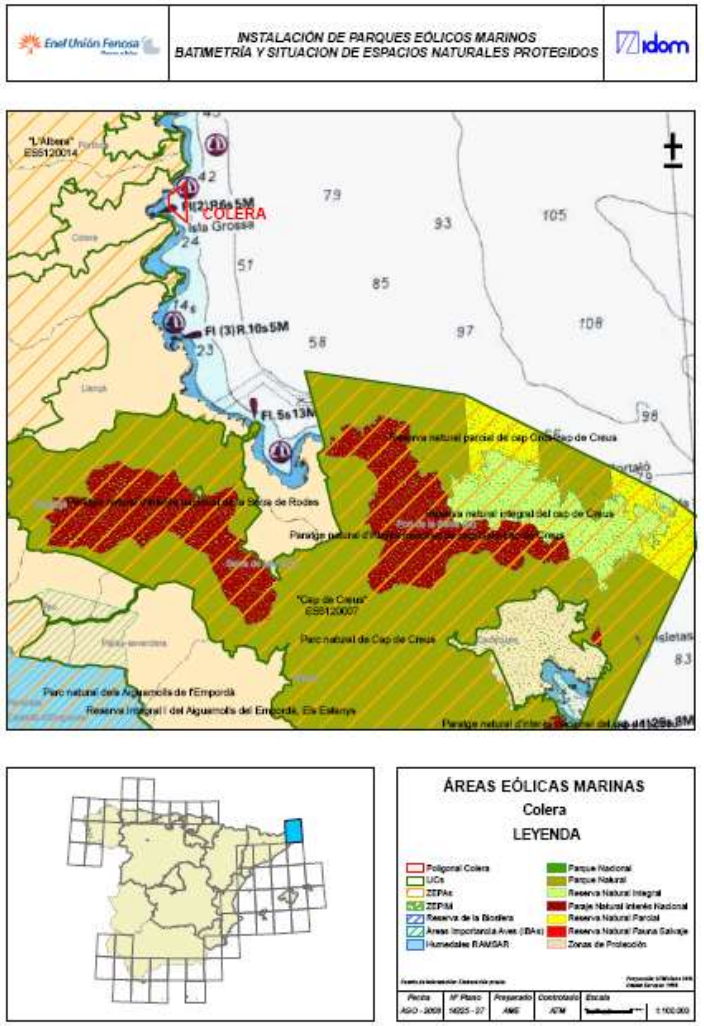
Activities developed

Idom gave technical assistance to Unión Fenosa to reserve offshore areas in Spain.

To realize the feasibility study, the project was divided into 4 stages:

- Monitoring of the preliminary project to be presented to the Reserve Administration of Offshore Wind Zones
- Feasibility study of 36 different locations for offshore wind farms in the Spanish coast
- Electric evacuation research in interesting projects
- Offshore wind farms feasibility research using as reference Spain's official exclusion map for this kind of installations

Including Arguineguin I/II y Fuerteventura in Canary Islands



PERSPECTIVES FOR OFF-SHORE WIND ENERGY DEVELOPMENT IN SPAIN

Studies

Services provided:

IDOM has provided Consultancy and Technical Assistance developing a comprehensive study for off-shore wind farms. Services included:

- Multidisciplinary assessment for off-shore wind farm development in Spain and Andalusia Region
  - Definition of key parameters for installation of wind farms in Andalusian coast
  - Definition of best practices in other Spanish and European Maritime Areas regarding wind farms installations
  - Environmental sensitive areas definition
  - Pre-study of land electrical evacuation possibilities
- Comprehensive study considering current regulation and politic, technical, economic and social conditions.
- Interviews and meetings with stakeholders (national and international, private and public).

Client: Andalusia Energy Public Agency (2008-2009)

OFF-SHORE WIND FARM. SITES RESERVATION

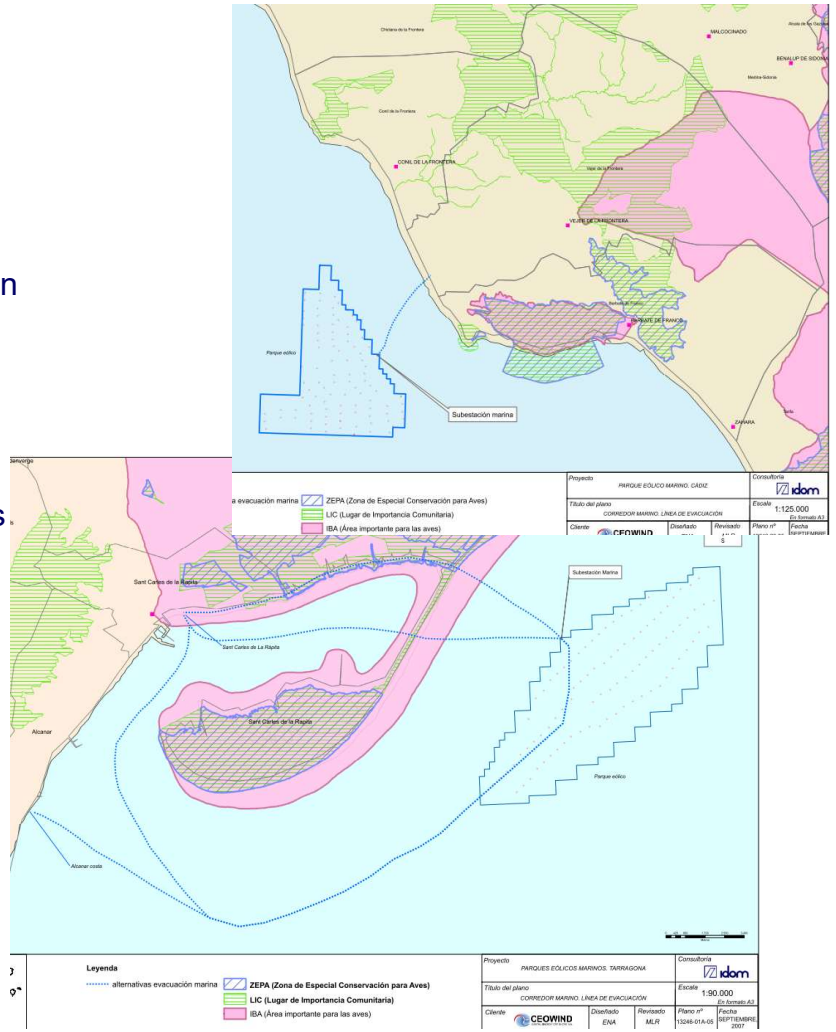
Permits

Project Description: 8 wind farms, located in the regions of Spain with the greatest potential for the development of off shore wind energy: Galicia, Catalonia and Andalusia.

Services provided:

Preliminary design documents for sites reservation and the reports necessary to initiate the environmental processing of applications.

Client: CEOWIND (2007)



OFF-SHORE WIND FARM. BASIC DESIGN FOUNDATIONS

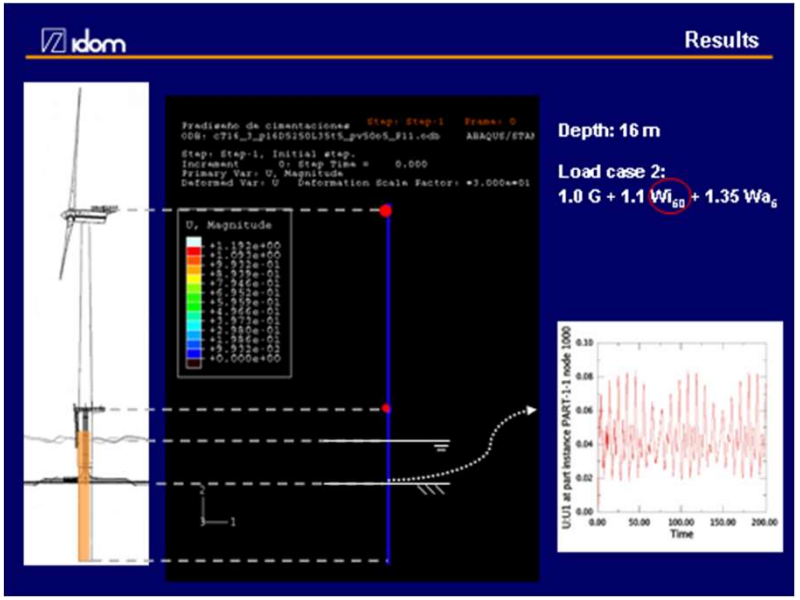
Permits and Foundation Basic Design

Project Description: 8 wind farms, located in the regions of Spain with the greatest potential for the development of off shore wind energy: Galicia, Catalonia and Andalusia.

Services provided:

Basic design were developed on the monopiles foundations of the 5 MW wind turbines (carrying out detail structural analysis of materials and type of foundations) and on the electrical connection to the on shore grid.

- Selection of 3 types of marine soil from a geotechnical point of view
- Calculation of the different forces due to the waves, tides, wind, etc.
- Modelization of the strengths supported by the mast of the aerogenerator
- Pre-design of the necessary basement in each case (type of soil)



Client: CEOWIND (2009)

French Industrial Plan. Port Site Logistic Analysis

Saint Nazaire & Cherbourg Ports

(2011-2012)

ALSTOM wind power, as a world leading company in wind energy, in 2011 was facing a challenge with the new trends in offshore wind power generation. The company have been developing cutting edge technologies in electric power generation with high efficiency and innovative generation systems.

Wind power was rising up towards large-scale scenarios in the North-European seas, ALSTOM was planning to tackle these opportunities with an ambitious industrial master plan to be implemented in French county.

Before long, the major tenders of offshore wind turbines were under planning, therefore large manufacturers might open out production facilities to fulfil this demand. The location of the manufacturing plants will be a strategic factor regarding offshore industry development and complementary activity sectors related.

The purpose of the IDOM work is to define the Industrial Plan to be implemented in the near future in order to satisfy French Tender delivery plan. It was focused on the France Eolic Plan that expected up growth of 6.000 MW from now to 2020 (corresponding to 20 million equivalent tons of fuel oil) to reach a global 23% of total power energy coming from renewables.

Industrial plan tackles the first stage of 3.000 MW. ALSTOM application was specially focused on supply wind turbine generators to install 2.250 MW corresponding to offshore lots:

Offshore Windfarm Lot	**MW**
Fécamp	500
Courselles-sur -mer	500
Saint-Brieuc	500
Saint-Nazaire	750

In order to fulfil the delivery programme from 2011 to 2020 the implementation of manufacturing plants was required to produce 100 wind turbine generations (WTG) per year. It concerned the downstream capacity required for each manufacturing plant, as well as delivery schedule to guarantee the installation on the accorded deadlines.

All facilities to be implemented were dimensioned and described, as well as the industrial configuration of the value chain. Industrial development concern manufacturing and assembly activities, logistic operations and some other processes included in the logistics supply chain.

ALSTOM wind power had no available manufacturing overcapacity in the current on-shore production plants. Therefore, it was planning to implement new manufacturing plants for the main components. Logistic operations performed on a chain downstream links might be concentrated in a port logistic site called Hub. All this sites and nodes of the industrial network group were defined in the present industrial plan.

General Project Data

SWAY AS a Norwegian renewable energy company, located in Bergen, aiming to change the offshore wind energy industry. This is based on two inventions and their synergies:

- A game-changing 10MW ultra light-weight gearless wind turbine.

- A down-wind floating tower for deep water deployment.

Client: SWAY (2010)

Scope of work

Technical assistance for marketing the SWAY's offshore wind power investment opportunity to potential investors in order to raise funds for developing SWAY's technology map for this kind of installations

AILES MARINES OFFSHORE WIND FARM 496 MW (FRANCE)

LV and Auxiliaries Systems owners engineering services

DESCRIPTION

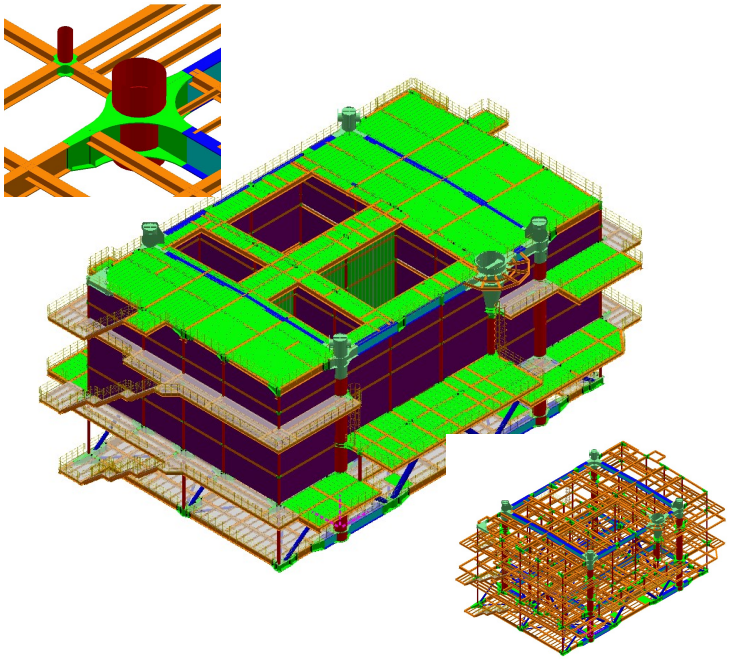
The Saint Brieuc Wind Farm is a 496 MW offshore wind farm located in the Bay of Saint Brieuc, in the region of Brittany in France, approximately 16km off the nearest coast. The water depth across the site ranges approximately from 29 to 42 m LAT. The wind farm will include 62 WTGs rated 8 MW each one, one substation and a metmast.

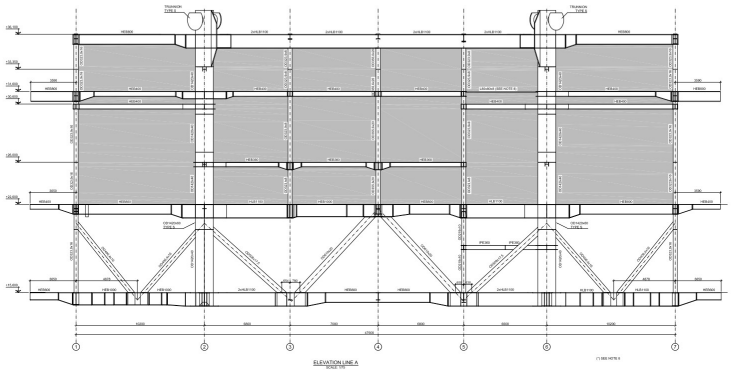
IDOM is currently performing the LV and Auxiliaries Systems owners engineering services for the offshore substation.

Client: IBERDROLA RENOVABLES FRANCE /AILES MARINES (2019-ongoing)

PERFORMED WORKS:

- Review and improvement of RFQ of substation
- Technical review and evaluation of proposals (LV distribution system, HVAC, Fire Fighting, Communications, ..)
- Coordination of the clarifications and review of the Division of Responsibilities with the TSO, owner of the export cables.





AILES MARINES OFFSHORE WIND FARM 496 MW (FRANCE)

Topside and Jacket 3D Modelling for Saint Brieuc Offshore Substation

DESCRIPTION

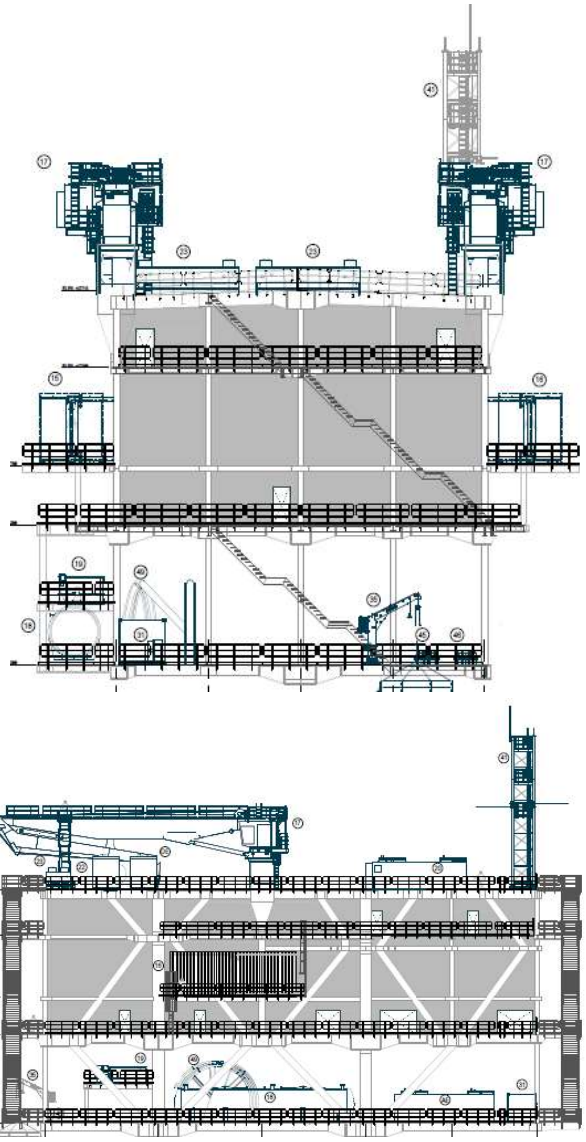
The Saint Brieuc Wind Farm is a 496 MW offshore wind farm located in the Bay of Saint Brieuc, in the region of Brittany in France, approximately 16km off the nearest coast. The water depth across the site ranges approximately from 29 to 42 m LAT. The wind farm will include 62 WTGs rated 8 MW each one, one substation and a metmast.

Idom is currently performing the electrical equipment distribution, the 3D model for the Topside and Jacket steel structures and the drafting of 2D drawings, based on the civil design inputs provided by Iberdrola Engineering & Construction. Idom is also involved on the generation of the key data to perform the Material Take Off and Weight Control.

Client: IBERDROLA (2017-2018)

PERFORMED WORKS:

- Electrical equipment layout in the Topside
- 3D Modelling & 2D drawing drafting
- MTO & Weight Control
- Generation of auxiliary systems basic drawings (single line diagram, HVAC flow diagram, etc).



EAST ANGLIA ONE OFFSHORE WIND FARM 714 MW (U.K.)

Topside 3D Modelling for East Anglia 1 Offshore Substation

DESCRIPTION

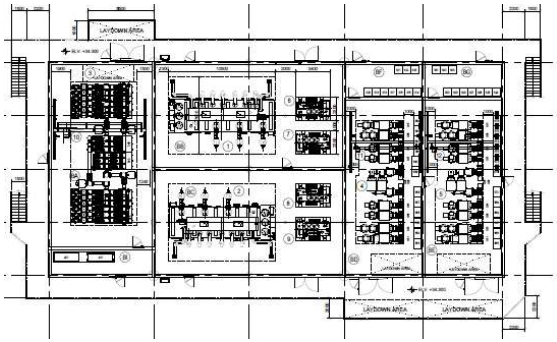
Iberdrola Engineering & Construction is carrying out the project of East Anglia 1 (EA1) Offshore Substation (OSS), situated in the southern North Sea off Norfolk and Suffolk coastlines. The EA1 substation is the first of six projects to develop with total target capacity of 7,200MW. The OSS requires a Topside that houses all the equipment needed for the correct operation of the substation, and it is positioned at the top of a jacket structure that seats on the seabed and it is fixed by means of driven piles.

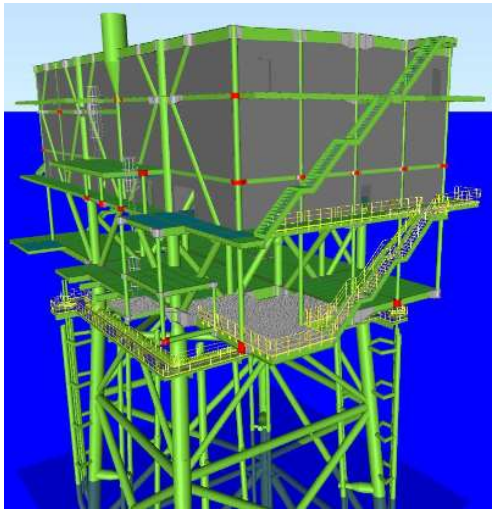
Idom performed the 3D modelling using SmartMarine 3D software for the Topside structure and the drafting of 2D drawings, based on the civil design inputs provided by Iberdrola Engineering & Construction. Idom was also involved on the generation of the key data to perform the Material Take Off and Weight Control.

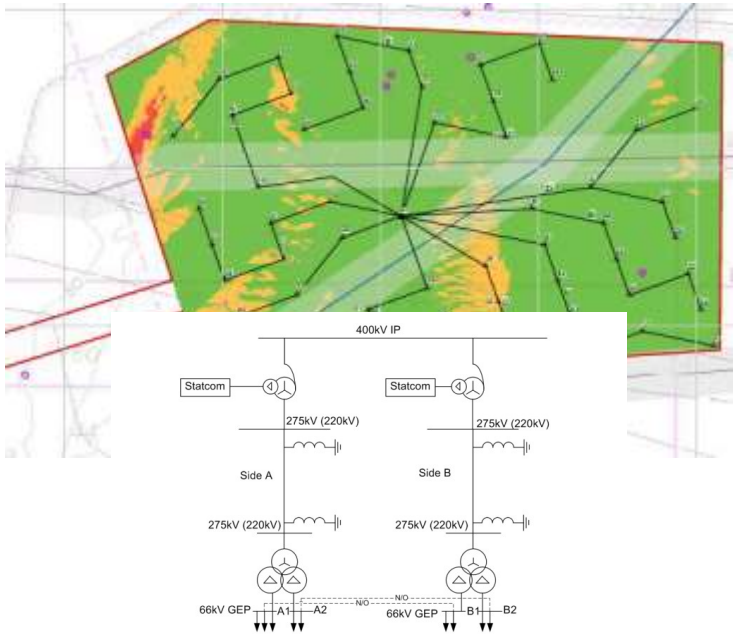
Client: IBERDROLA (2015-2018)

PERFORMED WORKS:

- 3D Modelling & 2D drawing drafting
- MTO & Weight Control







800 MW EAST ANGLIA ONE NORTH OFFSHORE WIND FARM (U.K.)

Pre-FEED electrical system Study

DESCRIPTION

800MW East Anglia ONE NORTH (EA1N) wind farm (locat 36 km from Lowestoft and 42 from Southwold) will generate at 66kV and will use HVAC technology with 2 circuits connecting at either 220 KV o 275kV. (Offshore cable corridor 60km and onshore 9km).

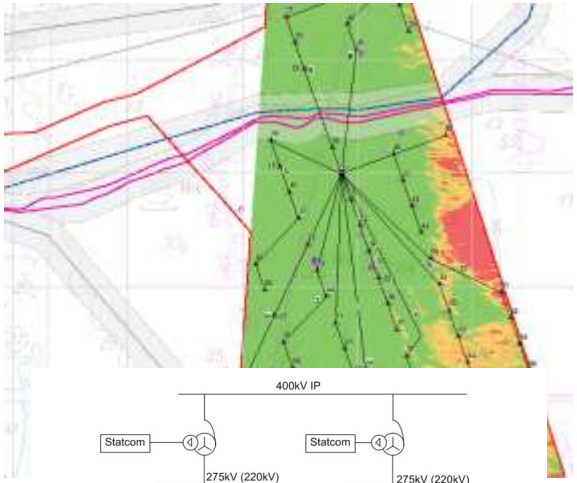
Client: SCOTTISH POWER RENOVABLES (2020-ongoing)

.

PERFORMED WORKS:

EA1N Pre-FEED electrical system Studies covering:

a) Load flow study between extents of operational range defined by UK Grid Code
b) Short circuit study (3 phase & 1 phase)
c) Reactive power compensation study at TIP and at OffGEP
d) Energy losses for overall project including WTG intrinsic and transformer losses.
e) Assessment of using 220 or 275kV export cables for exporting maximum generating capacity including impact on main plant equipment specification/costs



900 MW EAST ANGLIA TWO OFFSHORE WIND FARM (U.K.)

Pre-FEED electrical system Study

DESCRIPTION

900MW East Anglia TWO (EA2) wind farm (located 31 km from Lowestoft and 32 from Southwold) will generate at 66kV and will use HVAC technology with 2 circuits connecting at either 220 KV o 275kV. (Offshore cable corridor 50km and onshore 9km).

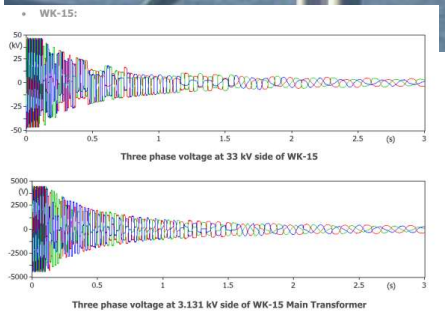
Client: SCOTTISH POWER RENOVABLES
(2020-ongoing)

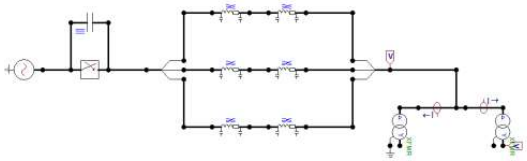
.

PERFORMED WORKS:

EA2 Pre-FEED electrical system Studies covering:

a) Load flow study between extents of operational range defined by UK Grid Code
b) Short circuit study (3 phase & 1 phase)
c) Reactive power compensation study at TIP and at OffGEP
d) Energy losses for overall project including WTG intrinsic and transformer losses.
e) Assessment of using 220 or 275kV export cables for exporting maximum generating capacity including impact on main plant equipment specification/costs





EMTP-ATP Model for ferroresonance simulations

WIKINGER OFFSHORE WIND FARM 350 MW (GERMANY)

Insulation coordination study for WTGs

DESCRIPTION

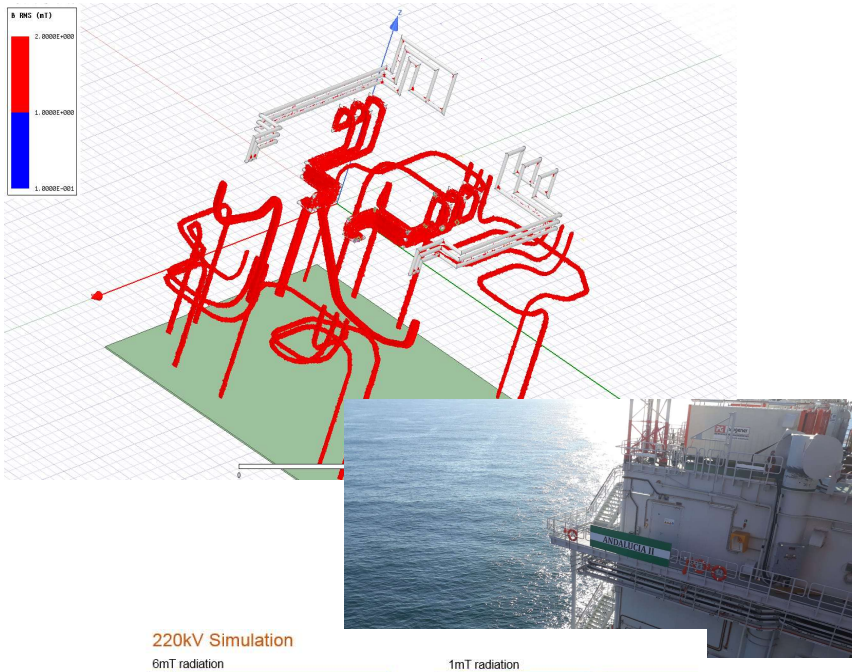
Wikinger Offshore Windfarm cover covers 34 km^2 and host 70 wind turbines, generating up to 350 megawatts. It is Located in the Baltic Sea, approximately 75 km from the mainland close to the Island of Rügen, Wikinger is in the northern part of an area known as Westlich Adlergrund.

MAIN FEATURES

Client:	**ADWEN (2017)**
Installed Power:	350 MW
Turbine Model:	AD 5-135
Number of turbines	70
Study Date:	2017

PERFORMED WORKS:

Insulation coordination study to define the rated withstand voltages of the electrical equipment and the characteristics of the surge arresters inside the wind turbine generators (WTGs). It includes ferroresonance analysis



EAST ANGLIA ONE OFFSHORE WIND FARM 714 MW (U.K.)

Offshore Substation Electromagnetic Field Study

DESCRIPTION

East Anglia ONE will have 102 turbines of 7 MW each one generating up to 714 megawatts. it is located at 85 km from the coast and occupies an area of 300 km^2 situated in the southern North Sea off Norfolk and Suffolk coastlines.

Andalusia II offshore substation will be the central nucleus of East Anglia ONE. Its function will be to collect the electricity produced by the wind turbines and transform it from 66 kV to 220 kV.

MAIN FEATURES

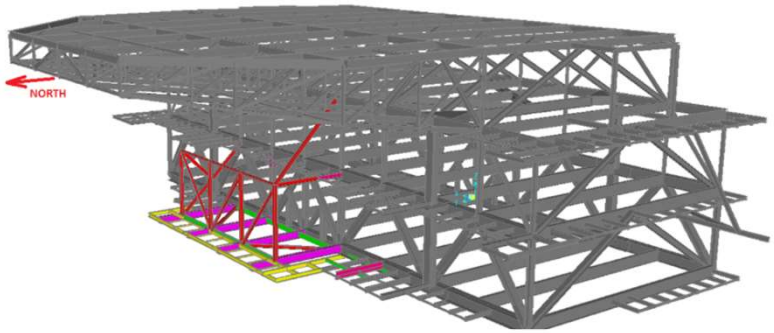
Client:	**PROELSUR/NAVANTIA (2018)**
Installed Power:	714 MW
Substation topsite weight	3,900 tonnes
Study Date:	2018

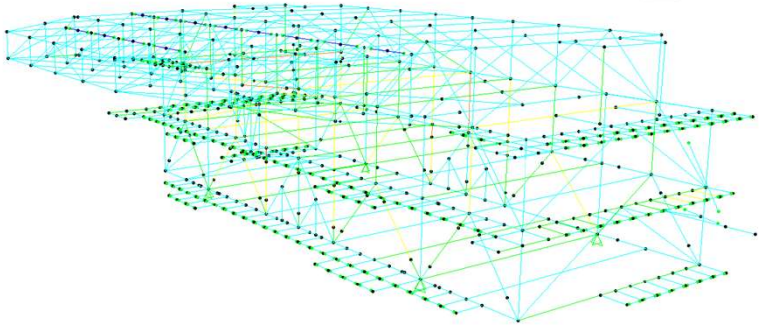
PERFORMED WORKS:

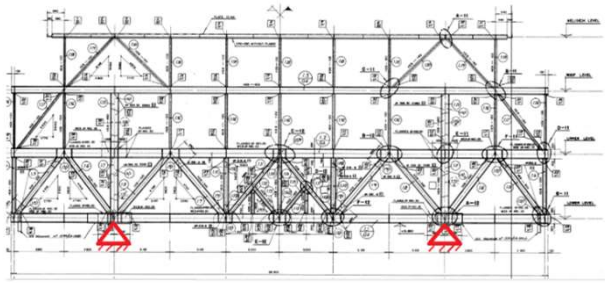
Electromagnetic Field Study based on Ansys Maxwell software in order to get radiation layout, establish action levels, compare radiation layout with cables location and establish hazardous zones and suitable work areas

Modification of Accommodation & Heliport Off-Shore Module

REPSOL INVESTIGACIONES PETROLÍFERAS S.A.







Services provided:

The Repsol's Division for Oil Research (RIPSA) intended to modify the accommodation and heliport module in order to locate new facilities for personnel inside the Casablanca off-shore platform located in Tarragona's seaside.

Idom performed the detail engineering for the structural reinforcement of the existing off-shore module, the general construction and related utilities, together with the resolution of the electrical feeding, interfaces resolution and other related items.

Performed Works (2013):

- Detail Engineering
- Purchase Specifications

CASABLANCA OFFSHORE OIL PLATFORM (2013-2015)

- Client: **Repsol Investigaciones Petroliferas S.A**
- Country: Spain

DESCRIPTION

- *Casablanca* Oil Platform is the only oil platform in the entire Spanish territory. Located 52 km off the coast of Tarragona, it rises as an imposing structure sited 75 m above sea level and serving to extract about 8.000 barrels per day by its almost 30 employees.

SEVERAL PERFORMED WORKS:

- Engineering services for the substitution of the platform diesel engine generator from 965 kW to 2.880 kW and related needed modifications
- Engineering services for the renovation of drain system of the offshore platform
- Basic and detail engineering for the offshore platform workover of the *Boquerón* Well.
- Basic and detail engineering for new crane installation, new NDB aerial installation & maintenance, crude-oil water chiller system conversion
- Renovation of the platform's wastewater treatment plant, developing the detail engineering of auxiliary structural elements and definition of the procedure of movement within the platform and supervision of the works

HA-LT 01 OIL OFFSHORE PLATFORM (2009)

- Client: **DRAGADOS OFFSHORE**
- Country: Mexico

DESCRIPTION

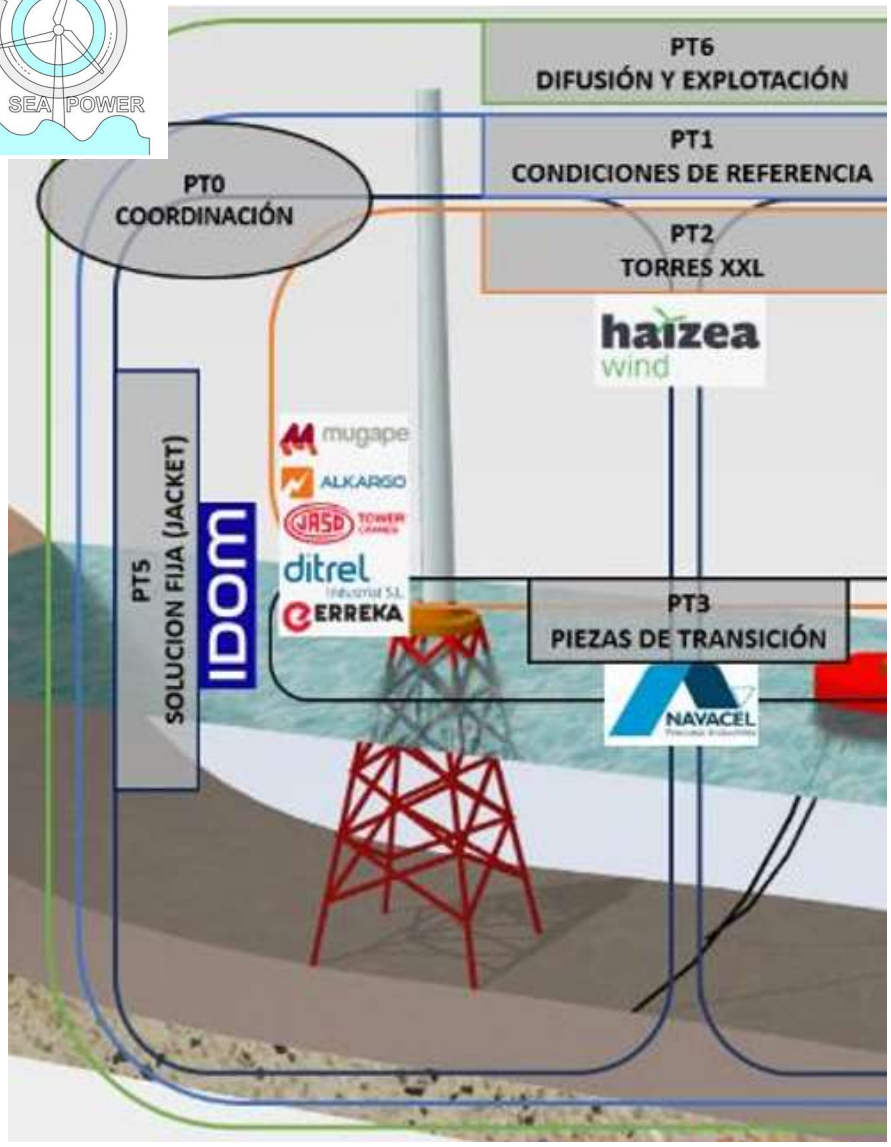
- HA-LT-01 is an accommodation and utilities platform with capacity for 220 beds, which stands on top of the main multi-purpose deck supported by a jacket.
- The platform is linked to the other existing platforms in the Litoral field via a bridge.

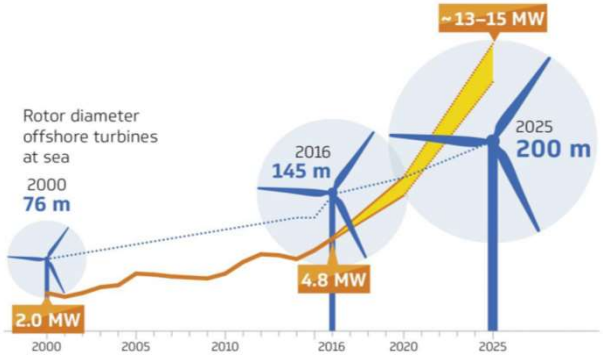
PERFORMED WORKS:

- Supervision and administration of the Bidimensional and Tridimensional Electrical Intelligent Models (METI/MEBIs) on the Dragados Offshore Fabrication Park

Offshore R&D

WTG>10MW





IDOM will lead the integration of a innovative R&D project in collaboration with several companies for fix solution for **WTG>10MW** and will develop:

- Numerical model for jacket structures
- Design of a innovative jacket structure for WTG>10MW and a prototype.
- Digital twin of the jacket structure
- Optimization tool for wind farms

Note: Starting June 2019-2021

IDOM

WIND2GRID

IDOM Líder del proyecto

Presented for approbal in March 2020

2020-2022

- INVESTIGACIÓN Y ANÁLISIS DE SOLUCIONES DE ESTRUCTURAS FOSS
- ESTUDIO DE NUEVOS MATERIALES Y SISTEMAS ANTIDEGRACIÓN
- FABRICACIÓN AVANZADA Y LOGÍSTICA INTEGRADA
- DIGITALIZACIÓN APLICADA A LA O&M DE FOSS

Investigación Aplicada a Subestaciones Eólicas Offshore Flotantes

IDOM

Waves Energy

THE COMMITMENT OF IDOM TO R&D IN RENEWABLE ENERGY

In September 2018, IDOM acquired the company Oceantec, thereby reinforcing its commitment to the development of R&D projects in the strategic sector of renewable energies.

The MARMOK-A-5 prototype

In 2016, Oceantec/IDOM manufactured the wave energy device, MARMOK-A-5, a real quasi-scale prototype, operating in real conditions and connected to the grid. This operation was made possible because of the Pre-Commercial Public Purchase by the Basque Energy Agency (EVE), which allowed Ocenatec to position itself as an advanced development group.

The prototype has successfully fulfilled its first life cycle in real conditions. In 2018 and 2019, as part of IDOM, a second launch was carried out. This has allowed the existing operating data to be extended, also under real sea conditions **surviving to 13m waves.**

All this work has being carried out within the framework of the European OPERA project (Open Sea Operating Experience to Reduce Wave Energy Cost).

WAVE ENERGY CONVERTER

Power Take Off

Langlee Wave Power is a Norwegian company developing innovative technology that harnesses the energy of the sea by means of a semi-submersible floating installation that converts wave motion into electrical energy. For this purpose, a 132kw prototype was being developed.

Services provided :
The work that Idom developed for this prototype included the design of the Power Take-Off (PTO), responsible for converting mechanical wave energy into useful electrical energy.
Both the mechanical components, the power train, as well as all the electrical and electronic components are housed in submerged containers that must be airtight. Idom faced significant technical challenges in the design of these containers and their connections to ensure a long useful life under the conditions of low maintenance requirements and exposure to high corrosion.

Client: LANGLEE WAVE POWER

WAVE POWER GENERATION SCALABLE PROTOTYPE

Development, manufacture and installation of a load simulator for a 1: 4 scalable prototype of a power generator from the waves energy

Services provided :

- Study of applicable technologies and selection.
- Analysis and sizing of the system.
- Selection of components and suppliers.
- Design
- Purchasing and manufacturing management.
- Programming.
- Factory test.
- Problem resolution: operation of hydraulic system elements, servo valve control.
- Field erection.
- Field tests.
- Documentation.
- Customer training.

Client: ABENCIS S.L

30 MW WAVE FARM BASED ON “ATTENUATOR” WAVE ENERGY

Planning application for Offshore wave farm

Project Description: 30 MW Wavefarm located in the Spanish north coast, based on “attenuator” wave energy converters technology

Services provided:
IDOM has provided Consultancy and Technical Assistance services for the planning permission application to develop a Wavefarm in the north of Spain. Services included:

- Location alternatives assessment
- Basic design for Planning application
- Environmental Impact Statement
- Cost and financial statement

Client: Terrapower Marine Ltd.

Ships & Floating power plants

SHIPS ENGINEERING CAPABILITIES

CAPABILITIES AND MAIN AREAS OF EXPERTISE

	DETAIL DESIGN
HULL STRUCTURE	x
PIPING	√
HVAC	√
STEEL OUT FITTING	√
ELECTRICITY	√
ELECTRONICS & INSTRUMENTATION	Partial

Advanced technical tools

INTERGRAPH SmartMarine 3D

(Optionally through IDOM partners)

FORAN

AVEVA MARINE

Other tools

- AUTOCAD
- SOLID WORKS
- ANSYS
- MICROSTATION
- STAAD/PRO
- CAESAR II
- ROHR2
- TEKLA
- EPLAN
- AFT ARROW
- AFT FHATOM
- ETC

SOME FLOATING POWER PLANTS. DESIGN

42 MW FLOATING POWER PLANT (2010-2011)

Project Description: BOAVISTA II. It a gas turbine GE 6B installed over a pontoon. The pontoon with double skin have two areas; one indoor for the fuel oil tanks and auxiliary equipment and in the boat deck the electrical substation, turbine and auxiliary skids.

The electrical connection to export power is done through insulated cable and the supply of process fluids and services fluids through flexible piping connections.

Main characteristics:
- length: 63 m
- width: 18 m
- depth: 4m
- Power: 42MW
- Outlet voltage: 66 kV

Services provided: EPCM
- Technical specifications for main equipment purchasing
- Piping design
- Electrical detail design
- C&I detail design
- General integration-project management

Client: UTE CUETO-SOLUCIONES

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SOME SHIP REFERENCES. DESIGN

Detail Design

SHIP

Project Description: Machinery modifications in the casing of the C34 and the L34 project

Services provided:
Implementation of integrations studies of networks and equipment in the technical area of the vessel C34 (Lots 666 and 676) and vessel L34 (Lots 605, 606, 615, 616 and 626). The studies are carried out in Smart Marine software creating 3 dimensional (3D) mockups of the equipment, platform and access and the routing of the piping and support, HVAC and electrical networks .

Client: CHANTIERS DE L'ATLANTIQUE
Date: 2019-Jan 2020.

SOME SHIP REFERENCES. DESIGN

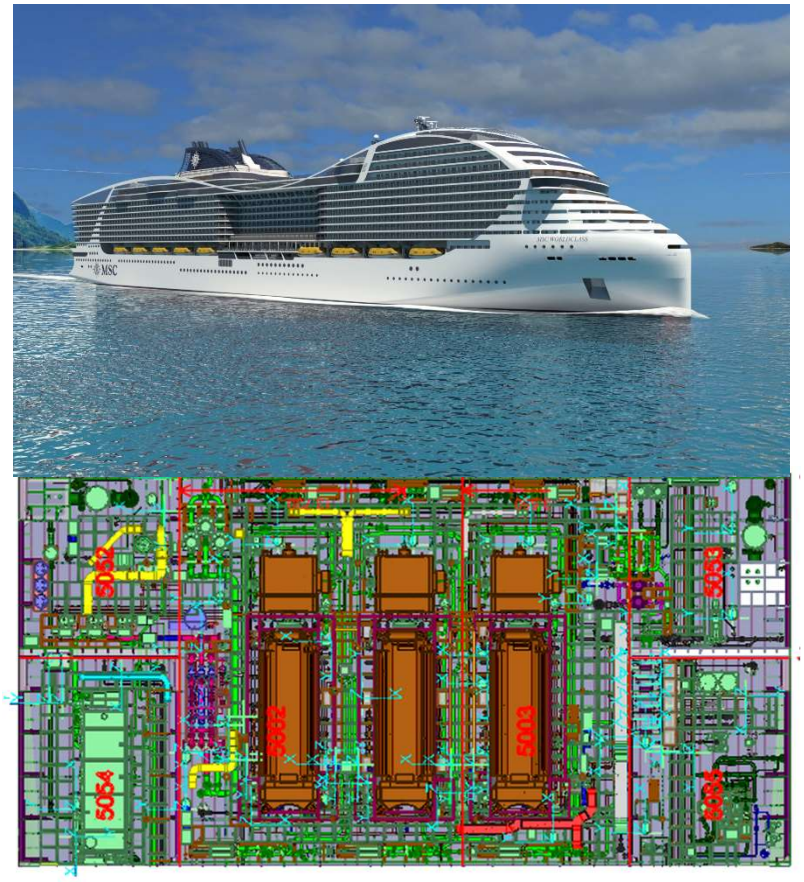
Detail Design

SHIP

Project Description: Implementation of integration studies of networks and equipment in the Diesel Engine Rooms of vessel W34

Services provided:
implementation of integrations studies of networks and equipment in the technical area of the vessel W34 within the limited area in the lots 135, 235, 325, 335 and 345. The studies are carried out in Smart Marine software creating 3 dimensional (3D) mockups of the equipment, platform and access and the routing of the piping and support, HVAC and electrical networks .

Client: CHANTIERS DE L'ATLANTIQUE
Date: 2019.



SOME SHIP REFERENCES. DESIGN

Detail Design

SHIP

Project Description: Mechanical installations for ship 306

Services provided:
IDOM carried out the detail design of piping (water, steam, oil, fuel, etc.), HVAC and some steel outfitting (non-structural tanks, foundations, floor plates, etc.) for ship 306

Client: ASTILLEROS ESPAÑOLES.

SOME TEST FACILITIES. STUDY & DESIGN

Study

WIND EFFECT ON A SHIP DOCKED (2010)

Project Description: System to simulate the effect of the wind on a ship docked in a scale model (laboratory).
Option considered:
- Linear or rotative direct actuator (pneumatic, servo electric, etc.)
- Propellers in the ship
- Wind generation system

Services provided:
Alternative study and detail project for a system to simulate the effect of the wind on a ship docked.

Client: CEDEX.

IDOM

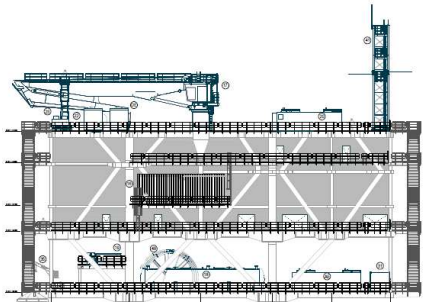
Thanks!

IDOM

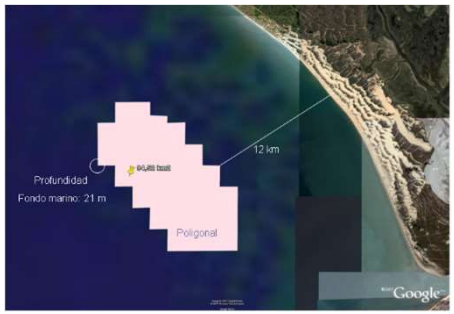
OFFSHORE-MARINE-WAVES

IDOM focus on state-of-art energy solutions screening the evolution, performance, reliability and cost of all the technologies.

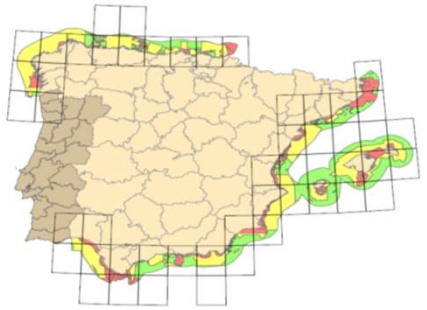
496 MW SAINT BRIEUC OWF
Offshore substation. Several works
IBERDROLA-AILES MARINES (FRANCE)



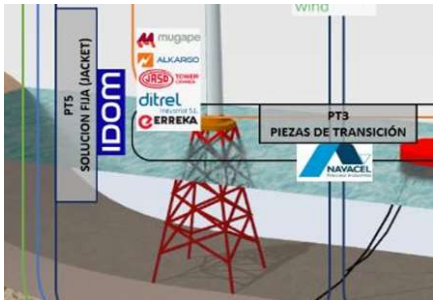
714 MW EAST ANGLIA I OWF
Offshore substation. Several works
IBERDROLA and NAVATIA (UK)



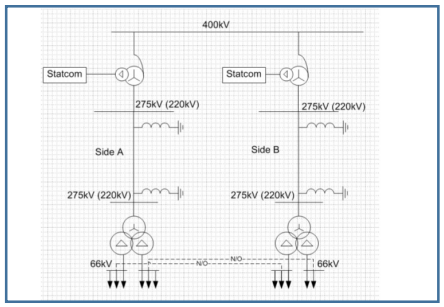
200MW ESTRELLA VARADA OWF
Planning application for permitting
MONTEALTO (SPAIN)



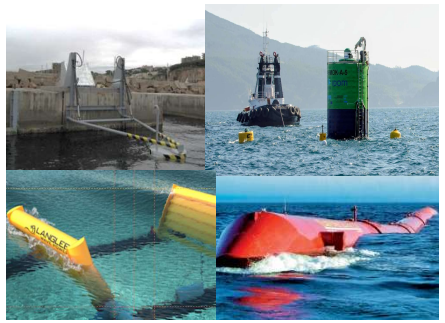
Reserve offshore areas in Spain. 36 locations for possible OWFs
Enel – Unión Fenosa (SPAIN)



SEAPOWER R&D PROJECT Design
A innovative jacket structure for WTG>10MW and his prototype with digital twin.
INTERNAL IDOM (BALTIC)



800MW EAST ANGLIA ONE NORTH (EA1N) & 900MW EAST ANGLIA TWO (EA2) OWF
Pre-FEED electrical system studies
SCOTISSHPOWER (UK)



PROTOTYPE OF POWER GENERATOR FROM THE WAVES
ABENCIS S.L (SPAIN)
OCEANTEC-IDOM (SPAIN)
LANGE WAVE ENERGY (NORWAY)
And planning permission application
Terrapower Marine Ltd

42 MW FLOATING POWER PLANT (ANGOLA)
Gas turbine GE 6B
UTE CUETO-SOLUCIONES

Photovoltaic Sector
Fundamental traits

IDOM

20 years

Background in PV plants

100

PV plants engineered

>20

Professionals with experience

IDOM

SOLAR PV

From single units to big scale plants, ground mounted or roof-top, IDOM has been involved in this technology since 2004 when we designed the pioneer singular module for Barcelona Forum. Today we´ve integrated batteries in our solutions. Banks like Morgan Stanley, Developers like Sunpower or private companies like Engie are our clients in this market.

40 MW PV IN INIPAMPA PERU
OWNER ENGINEER
ENGIE PERU

34 MW PV IN CALIFORNIA
BASIC DESIGN
GES USA

30 MW PV IN BADAJOZ
BASIC & DETAILED DESIGN
ECO-ENERGIAS DEL GUADIANA

34 MW PV IN SPAIN
DETAILED DESIGN
SUNPOWER

25 MW PV in SPAIN
FEASIBILITY STUDY
MORGAN STANLEY

34 MW IN NEVADA
BASIC DESIGN
GES USA

10 MW PV
BASIC ENGINEERING
M. OF ENERGY (LEBALON)

ROOF TOP PV
CONCEPT + BASIC
ARAMCO (SAUDI ARABIA)