

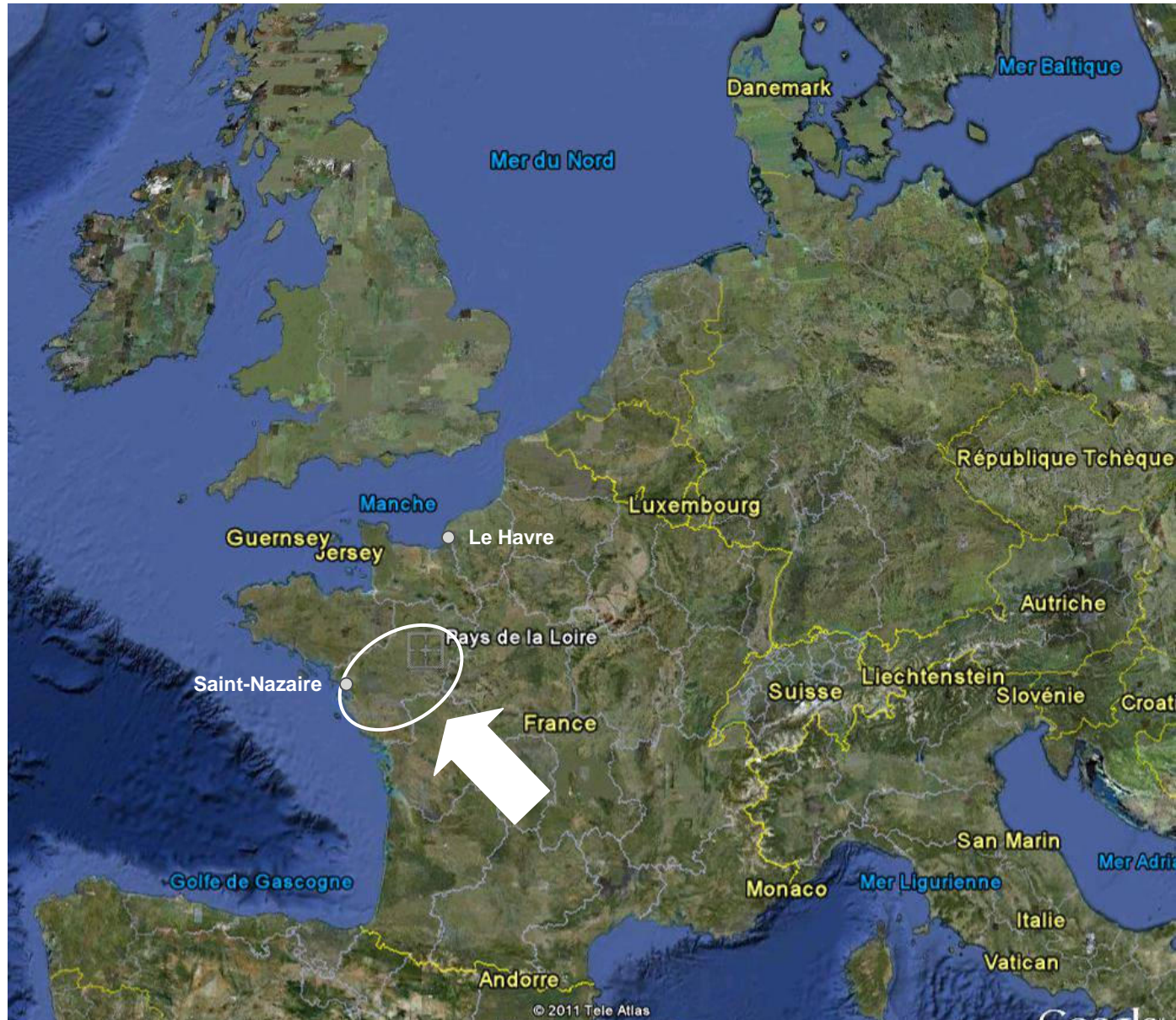
Offshore Wind Energy

Expertise and Initiatives in the Pays de la Loire



Engineering, research and training
Manufacturing sub-assemblies
Logistics and installation
Maintenance

Region Pays de la Loire is located on the French Atlantic Coast



Saint-Nazaire Harbour is already involved in wind elements handling



For heavy components, several shipment options are possible with majors operators as Altead, Daher, IDEA logistique, Sogebas, ...



Major industrial players such as STX France, Airbus, DCNS, or Alstom are surrounded with a wide industrial network ...



**Industrial cluster of 130 companies
with 12 000 employees**

- ALLIO
- APAVE
- ASSYSTEM
- ARCELOR MITTAL
- ATELIERS MECHINAUD
- AUXITEC INGENIERIE
- CEGELEC
- CHASTAGNER
- DAHER INTERNATIONAL
- DEUTSCH Offshore
- DUQUEINE ATLANTIQUE
- ECA EN
- EIFFEL
- ELDRE SAS
- EUROPE TECHNOLOGIE
- FIXATOR
- GEMA
- GROLLEAU SAS
- HYDRATIGHT
- JALLAIS
- LEROUX ET LOTZ TECHNOLOGIES
- MESURE
- METEODYN



**Maintenance
Repairing
Production of Spare parts**

- MTTM - IDEA LOGISTIQUE
- OMEGA
- PRINCIPIA
- ROLLIX
- PULS ACTION
- SAH LEDUC
- SAITEC
- SAS 3MO PERFORMANCE
- SAS ROCHER
- SELHA
- SERMO ARRK TOOLING
France
- SITIA
- SLTS
- SORCOM
- SOGEBRAS
- STX EUROPE
- TISSOT
- TRONICO
- ...

... and gather various competencies

- Complex system engineering
 - Management and organisation of large projet
 - Constraints related to offshore environment
 - Civil engineering works onshore and offshore
 - Design and fabrication of composite components, electro-technical products, and large steel welded assemblies
- welding process and equipment
 - painting process and facilities
 - steel purchasing
 - quality system and procedures including welding quality control and geometrical control



Our ambition is to become a leading territory in the industrial and logistic chain of Marine Renewable Energy

Marine energies

Offshore wind energy

Expertise and initiatives in the Pays de la Loire

The Pays de la Loire, an ideal region for developing wind energy

- A region at the heart of a 1,100 MW offshore field
- A Europe-focused portside logistical offer
- Extensive industrial fabric allowing the development of offshore wind and marine energies
- Significant experience in terms of engineering and manufacturing large complex assemblies for the marine environment
- Considerable research means investing in these fields.

Businesses and economic development stakeholders in the Pays de la Loire are rallying round to provide services throughout the offshore wind and marine energies value chain.



STX France SA

MRE
Avenue Antoine Bourdelle • BP 90180
44613 Saint-Nazaire Cedex
Tél. +33 (0)2 51 10 97 31
marine.energy@stxeurope.com

STX France Solutions SAS

Engineering
Avenue Chatonay • BP 30156
44613 Saint-Nazaire Cedex
www.stxsolutions.com

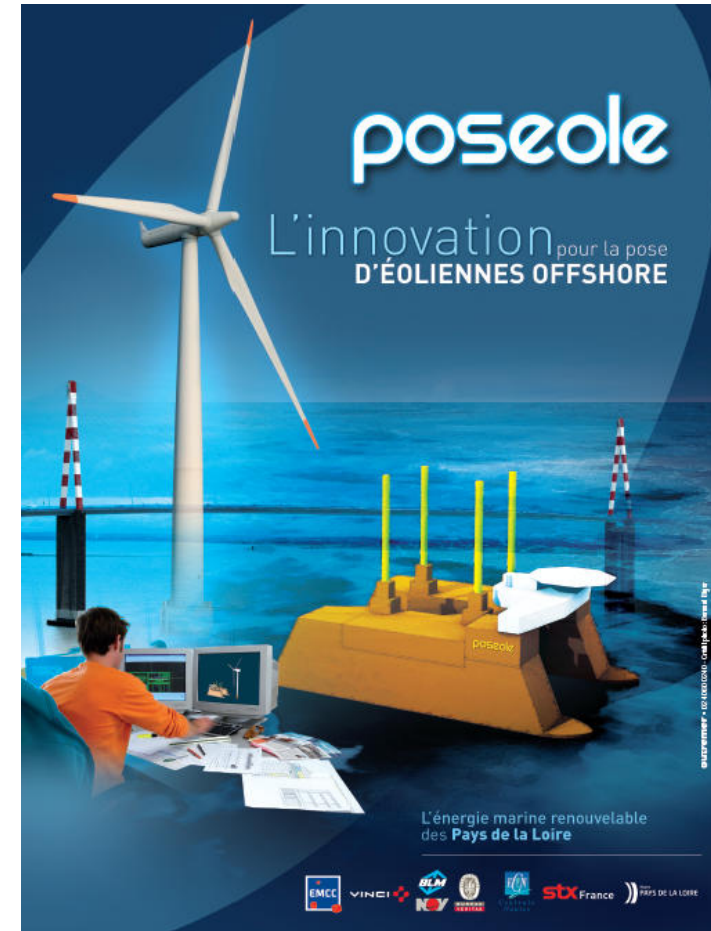


The design and fabrication of large and complex ship are in the core business of STX France

Cruise vessels



Wind Turbine Installation Vessels



Whereas Neopolia cluster leads a project of Service boats for offshore wind farm maintenance

•Partnership

- Shipyards
- Naval Architects
- Engineering companies in innovative propulsion and dynamic positioning system
- Specialists for electronics and controls
- Deck equipment manufacturers

•With the advices and technical information from manufacturing and operating companies



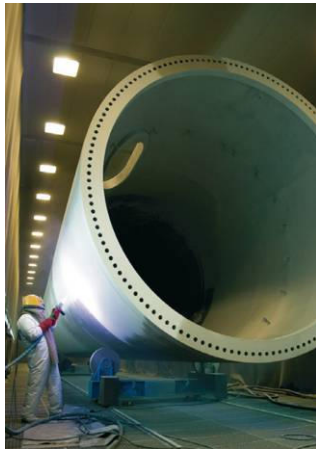
•Project key targets

- Face to rough sea conditions like North Atlantic and Bay of Biscay
- Adapt the design to the specificity of the turbines and of the maintenance program as stated by the manufacturer
- Cope with the repetition of the access on the masts

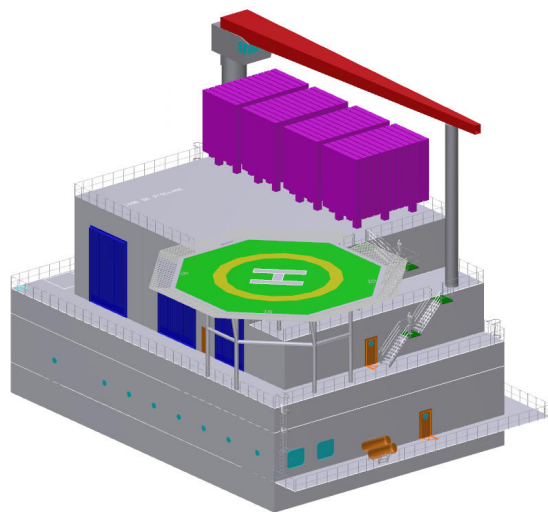
•Project Innovations :

- A safe access in all the sea conditions
- Efficiency, durability and low running cost

STX France has announced its ambition to design and manufacture some elements for Offshore Wind




Steel supporting structures



Electrical substation





Thank you for your attention.