



2nd December 2021

French-Norwegian Chamber of Commerce

Technip Energies Digital Value Proposition for Offshore Wind

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Technip Energies at a glance

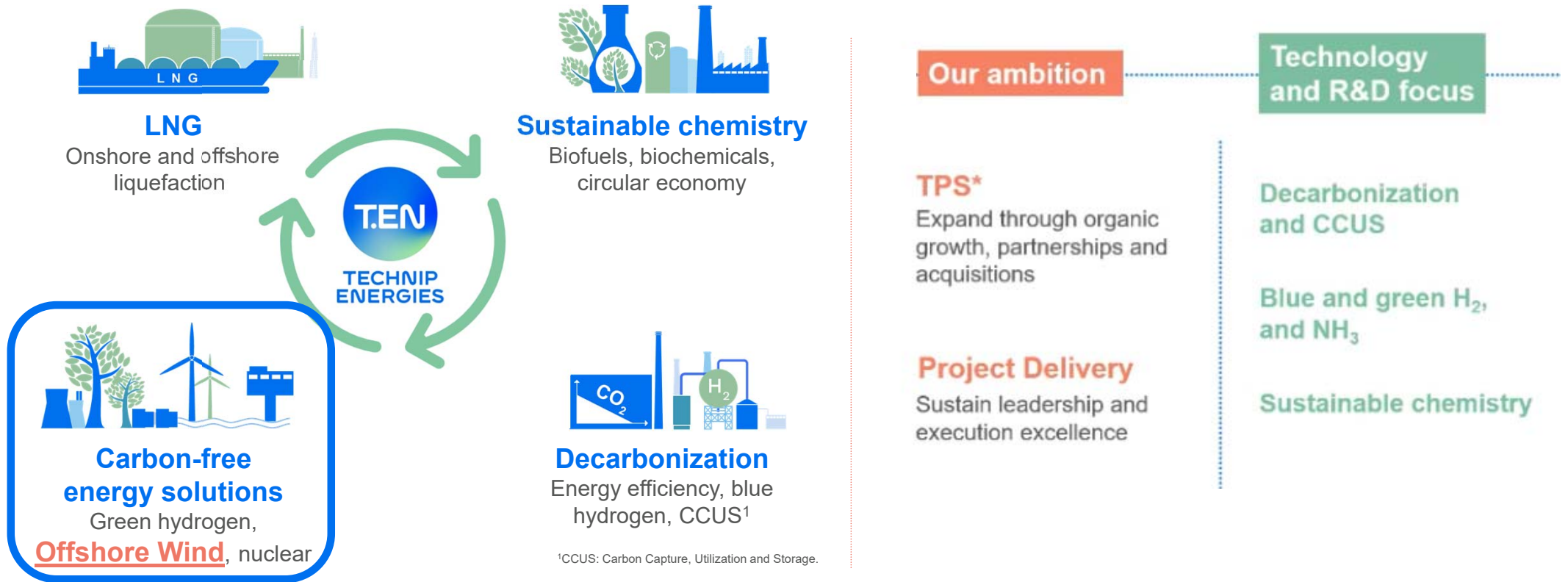
TE Euronext Paris listing ticker ADRs for US investors	Headquarters in Paris Registered in The Netherlands	60+ Years of operations
€6B¹ Revenue	A leading Project delivery, Engineering & Technology company for the Energy Transition	€17.5B¹ Backlog
~15,000 Employees in 34 countries	25+ Leading proprietary technologies	450 projects under execution

¹Company revenue for 2020 (adjusted IFRS) and backlog position as of June 30, 2021



Energy transition is our business

Our 4 strategic pillars



➤ Applying our core capabilities to today and tomorrow's key energy challenges

A worldwide leader in floating facilities



› One of the most experienced contractor in floating facilities

Technip Energies offshore wind track record

Experience & knowledge from past projects

Pioneering Floating Offshore Wind

Hywind Demo (Norway)
2009
Equinor



Mistral (Vertiwind & Inflow)
2011-2016
Technip, EDF EN and Nénuphar



Hywind Scotland Pilot
Park 2017
Equinor



Hywind Tampen
2018
Equinor



> TODAY



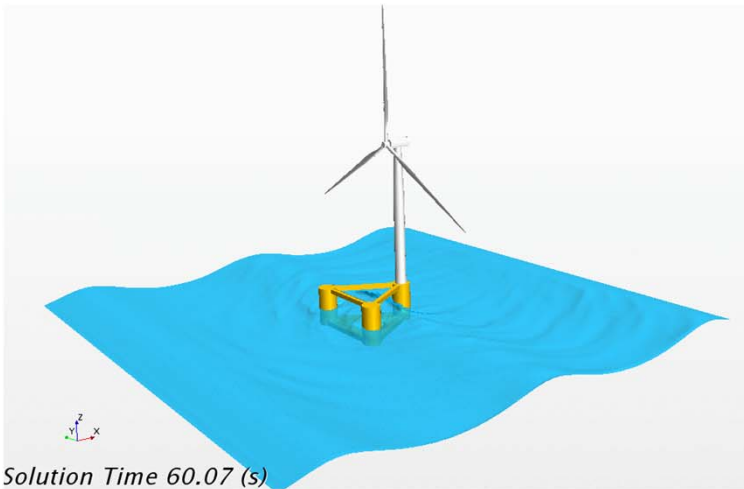
INO12™ **inocean**
A NAUTICAL MILE AHEAD
Inocean Norway; Subsidiary of Technip Energies

> **Strong knowledge of floating offshore wind**

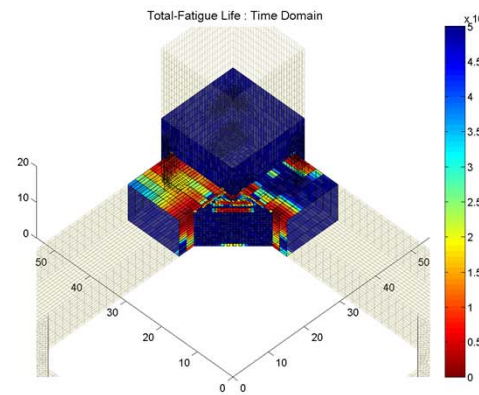


Leveraging T.EN expertise to build digital solutions

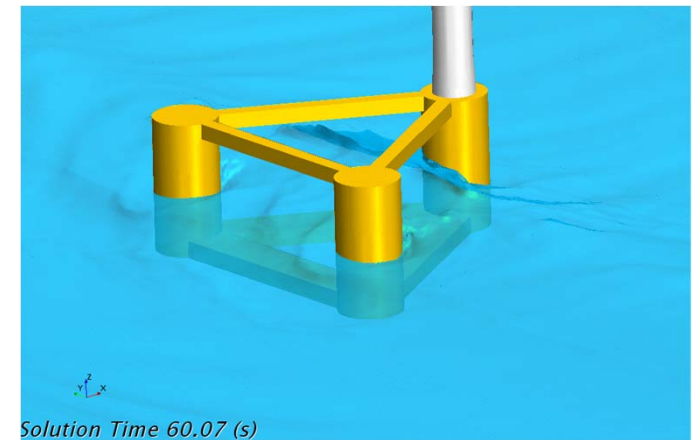
Engineering expertise for floating offshore wind



- **Applied CFD expertise**
- Hull Sizing & Scantling
- **Mooring System Design**



- *Interactive Simulation*
- **Aero-Hydro-Servo-Elastic Analysis**
- **Fatigue Analysis**



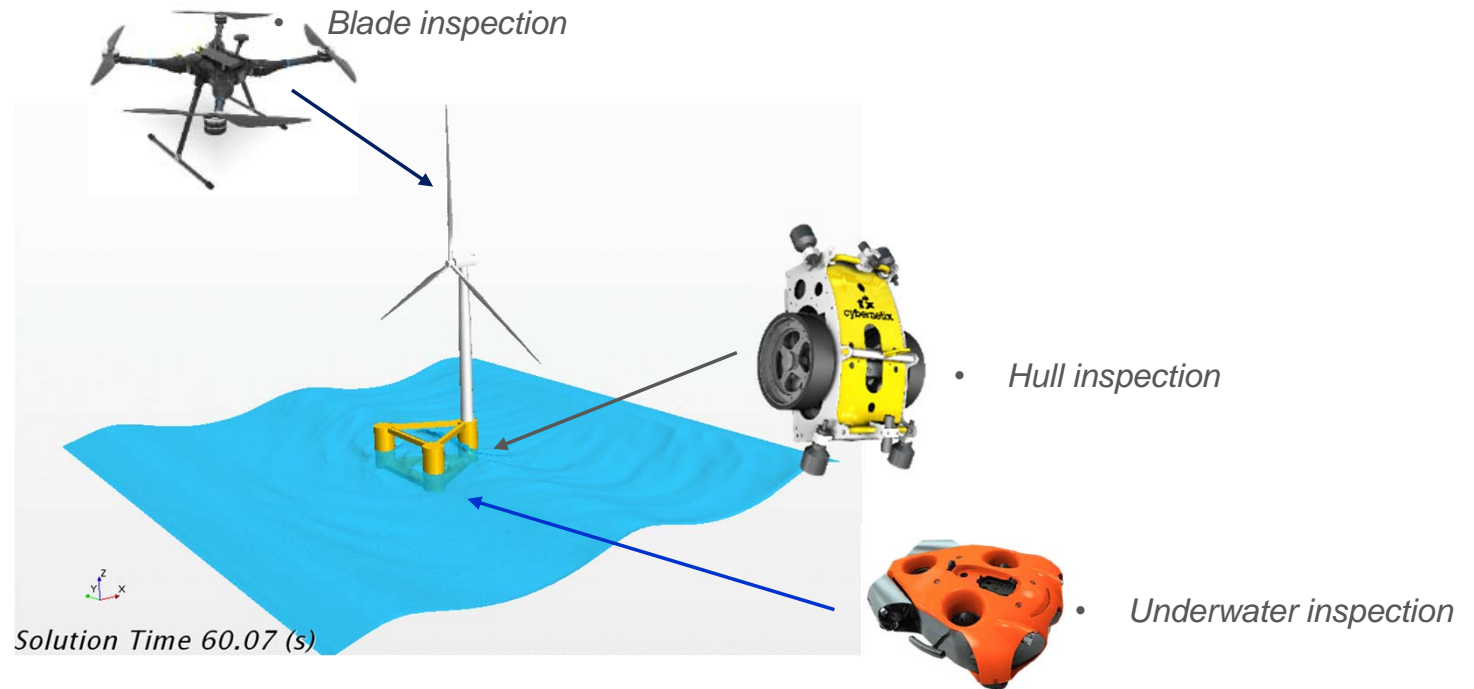
- *Time domain analysis*
- *Wake interaction between FOWTs*

> Experience in integrating complex systems

Leveraging T.EN expertise to build digital solutions

Offshore monitoring & inspection services

- Remote monitoring systems
- Smart solutions to **analyze data** from inspections & monitoring
- Knowledge of the physical asset itself & offshore as designer and integrator



> Cybernetix providing advanced surveillance & monitoring solutions

Leveraging T.EN expertise to build digital solutions

Track record of energy innovative data & AI solutions

Machine Learning for Operability

- *Intelligent Operability evaluation*
- **Applicable to FOW coupled analysis**



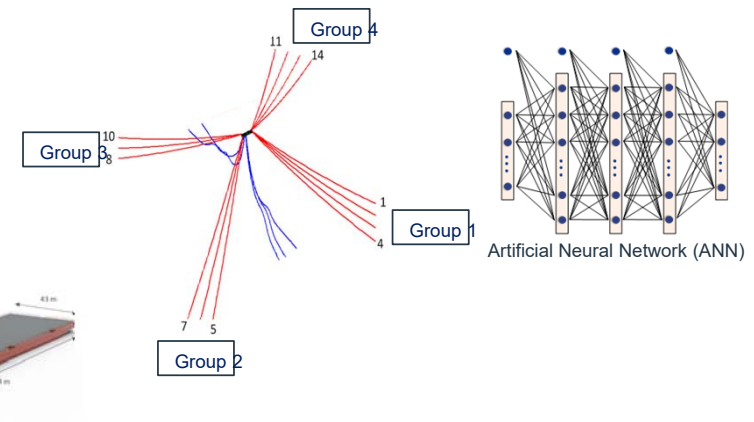
Analytics & Forecast for Smart Logistics

- *Data-Driven Fleet Management*
- *Intelligent Decision-making supports*
- **Applicable to wind farm O&M**



ANN for Prediction

- *Detection of mooring line failure using only DGPS*
- **Applicable to floating wind turbine mooring configurations**

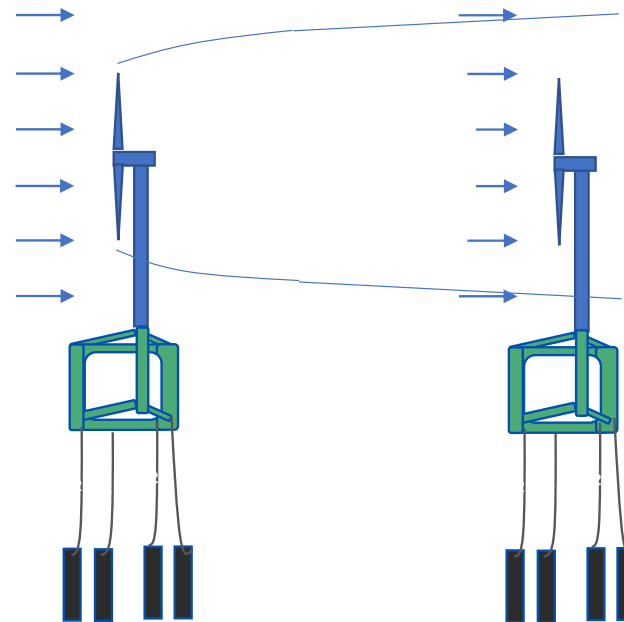


> Onboarded data & AI solutions on projects

Leveraging T.EN expertise to build digital solutions

Wind turbine control & O&M knowledge acquisition

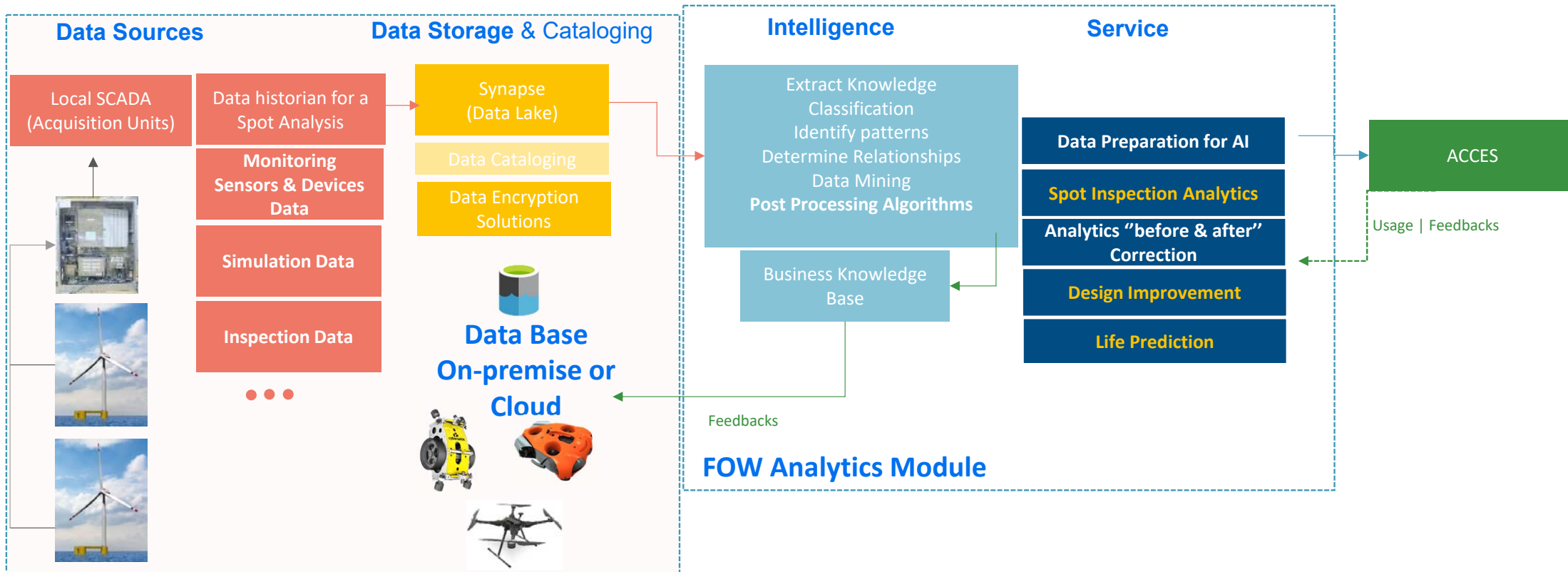
- Collaborating with turbine providers to have **common indicators for optimal control** of the asset
- Control algorithm design specific to **floating** offshore wind
- Controller **integrating turbine & floater** inputs to contribute to **production optimization**
 - *generator torque,*
 - *blade pitch angle,*
 - *yaw angle,*
 - *instability of floater pitch,*
 - *etc.*



> Partnership & co-development through digital ecosystem

Leveraging T.EN expertise to build digital solutions

Data management expertise & infrastructure



Deliver robust FOW digital-enabled solutions



- • **Digital by Design**
 - In-house cost competitive floater solution and scale-up solution
- • Data-centric project execution
 - Marine operations and logistics expertise
- • In-house **digital twin expertise applied to O&M**
 - Monitoring & inspection solutions
- • Experience in **integrating complex systems**
 - Knowledge of the physical asset as **designer and integrator**
- • In-house knowledge of digital solutions deployment such as **robotics, simulation, remote operations capabilities**
 - Helping clients through the **whole-life-cycle** of the projects to have **low carbon foot-print** (from "anodes usage minimization" to "blade recycling strategies")



Thank You

Where energies make tomorrow ●

