PYCHARGE EUROMARITIME

PYTHEAS TECHNOLOGY

OUR COMPANY

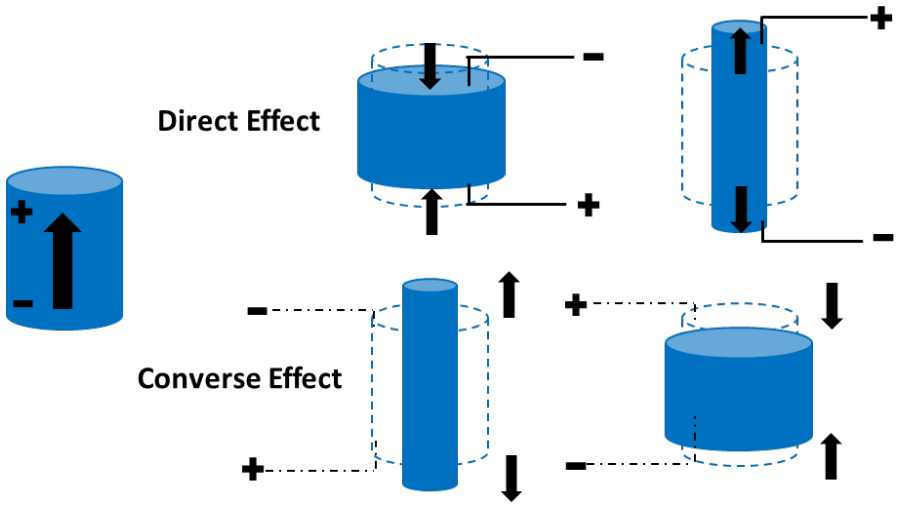
Founded in 2015
21 People

Design and manufacturing of piezoelectric devices, especially generators for renewable energies

Offices in Provence (France) and New York City

PYTHEAS TECHNOLOGY

PIEZOELECTRIC MATERIALS

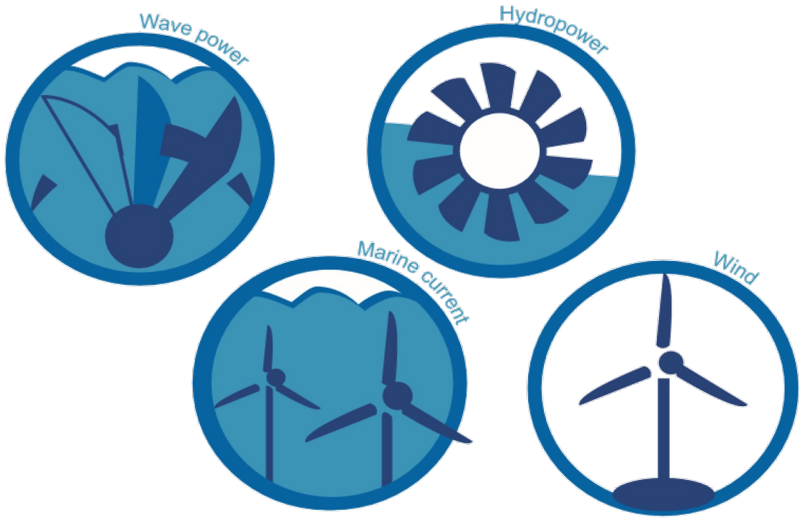


Transforms mechanical energy into electricity → Sensors and generators

Transforms electricity into mechanical deformation → Actuators

PYTHEAS TECHNOLOGY

GENERATORS FOR RENEWABLE ENERGIES



RPM = Rotation Per Minute

30 RPM — 1000 RPM

Renewable Energies

- Low speed (<30 RPM)
- Variable speed

Conventional Energies

- High speed (>1000 RPM)
- Constant speed

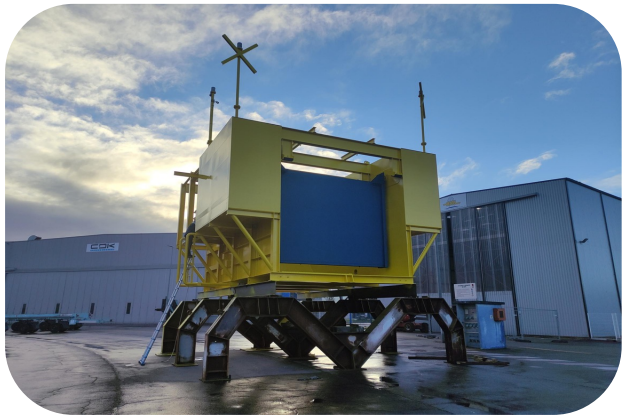
➡ **Technological need for variable and low speed motion conversion**

A START WITH WAVE ENERGY

3kW system installed at sea
First wave energy converter in France

Saint-Nazaire, France, 2020

7kW system installed at sea
First dike generating electricity
(1/4 scale prototype)



Lorient, France, 2021

WAVE ENERGY'S TRAJECTORY

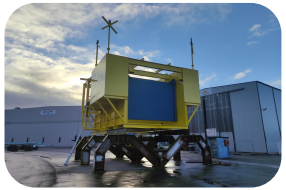
Today
kW-range for autonomy at sea

WAVEGEM

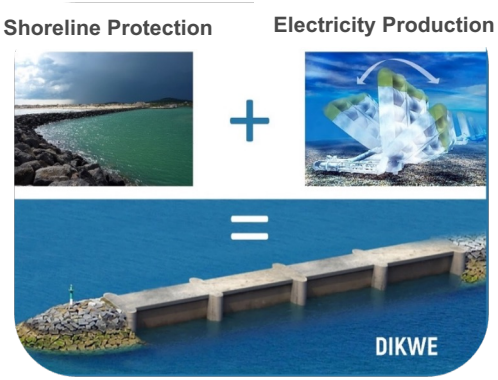
2019

2020

DIKWE

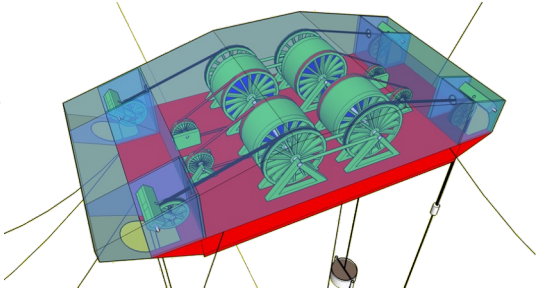


Tomorrow
MW-range production for the grid



MARINE ENERGY CORPORATION
ALTERNATIVE OCEAN ENERGY

20MW Super Watt Wave Catcher Barge (SWWCB)



RESOLUTE MARINE ENERGY

U.S. DEPARTMENT OF ENERGY

PYTHEAS TECHNOLOGY

PYCHARGE NON-ROTATIVE HYDROKINETIC TURBINE FOR MARINE CURRENTS

Neptune
Blue Growth Accelerator

GÉNÉRATION DEEP TECH

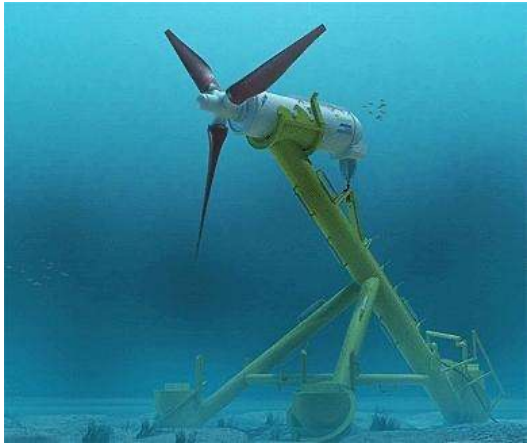
GALATEA
BLUE GROWTH ACCELERATOR

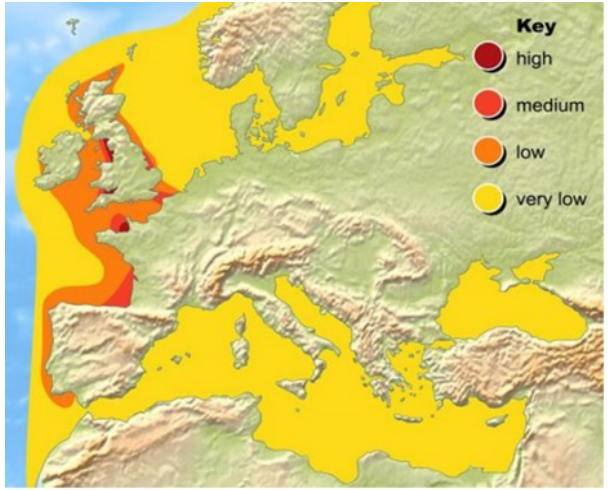
PYTHEAS TECHNOLOGY

THE PROBLEM WE ARE ADDRESSING

Current hydrokinetic turbines (tidal, marine currents) are adapted to high currents, high power

→ Very limited areas above 4 m/s in the world
→ Difficulty to have rotating parts, with dynamic seals, in these areas
→ Challenge to sustain mechanical loads (rocks, boulders)

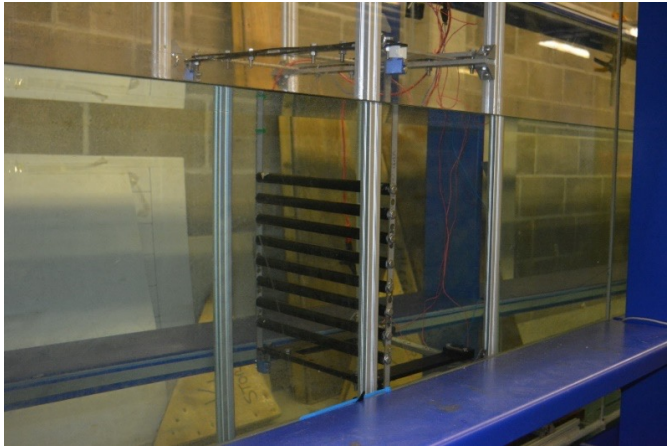




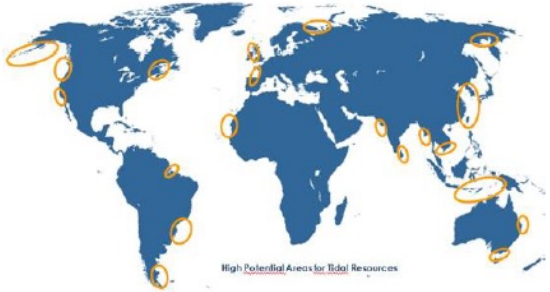
VALIDATED THROUGH IN-LAB TESTS

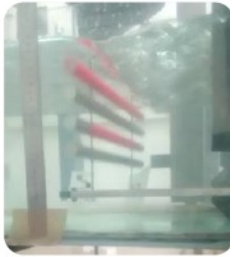
Where are we today ?

- **System validated experimentally in a water fume**
- **Mechanical/hydraulic behavior fully validated**
- **Models and simulations validated at small scale (≈ 1W) for power generation**



PyVIV To PYCHARGE:Problems autonomy at sea

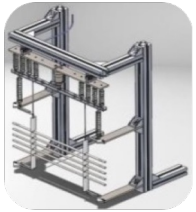




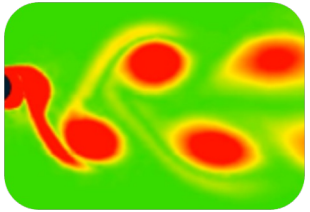
Enhance AUV's autonomy for maritime surveillance

PYCHARGE PROJECT PARTNERSHIP

PYTHEAS TECHNOLOGY



FEAC
ENGINEERING | REALISE YOUR DIGITAL TWIN



notilo plus

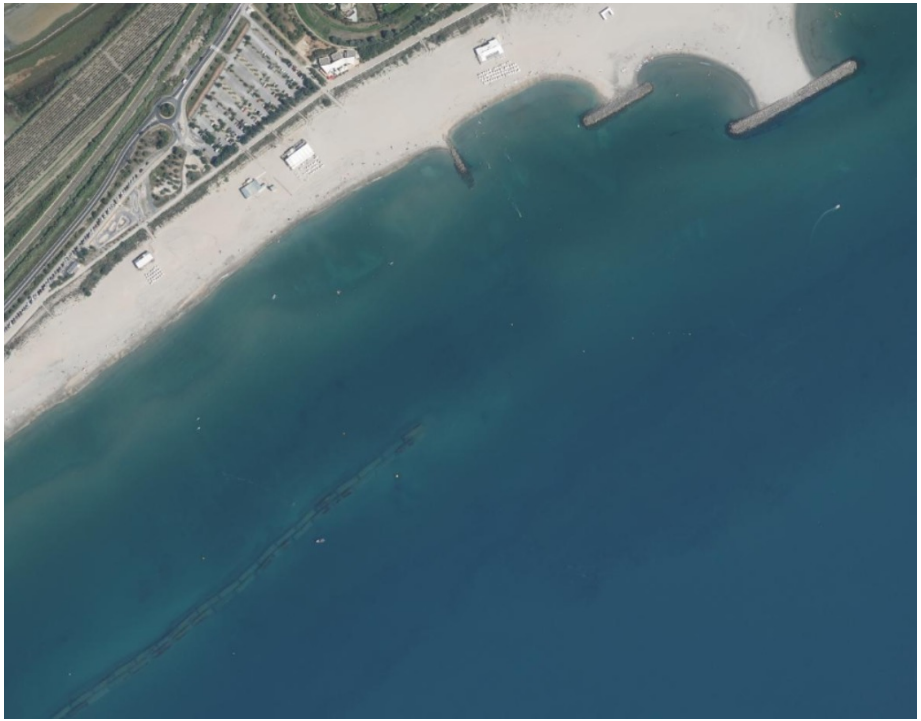
GALATEA
BLUE GROWTH ACCELERATOR

DESIGNED FOR AUTONOMY AT SEA

And tomorrow ?

- **Design underway for a 20W system for autonomous AUVs (at 0.8 m/s)**
- **Design underway for >1kW systems at higher currents**

Use case for high-power : autonomous electrolysis for artificial coral generation



Why apply to GALATEA ?

PÔLE MER MÉDITERRANÉE

GALATEA
BLUE GROWTH ACCELERATOR

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Renewable Energy Lawyer

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