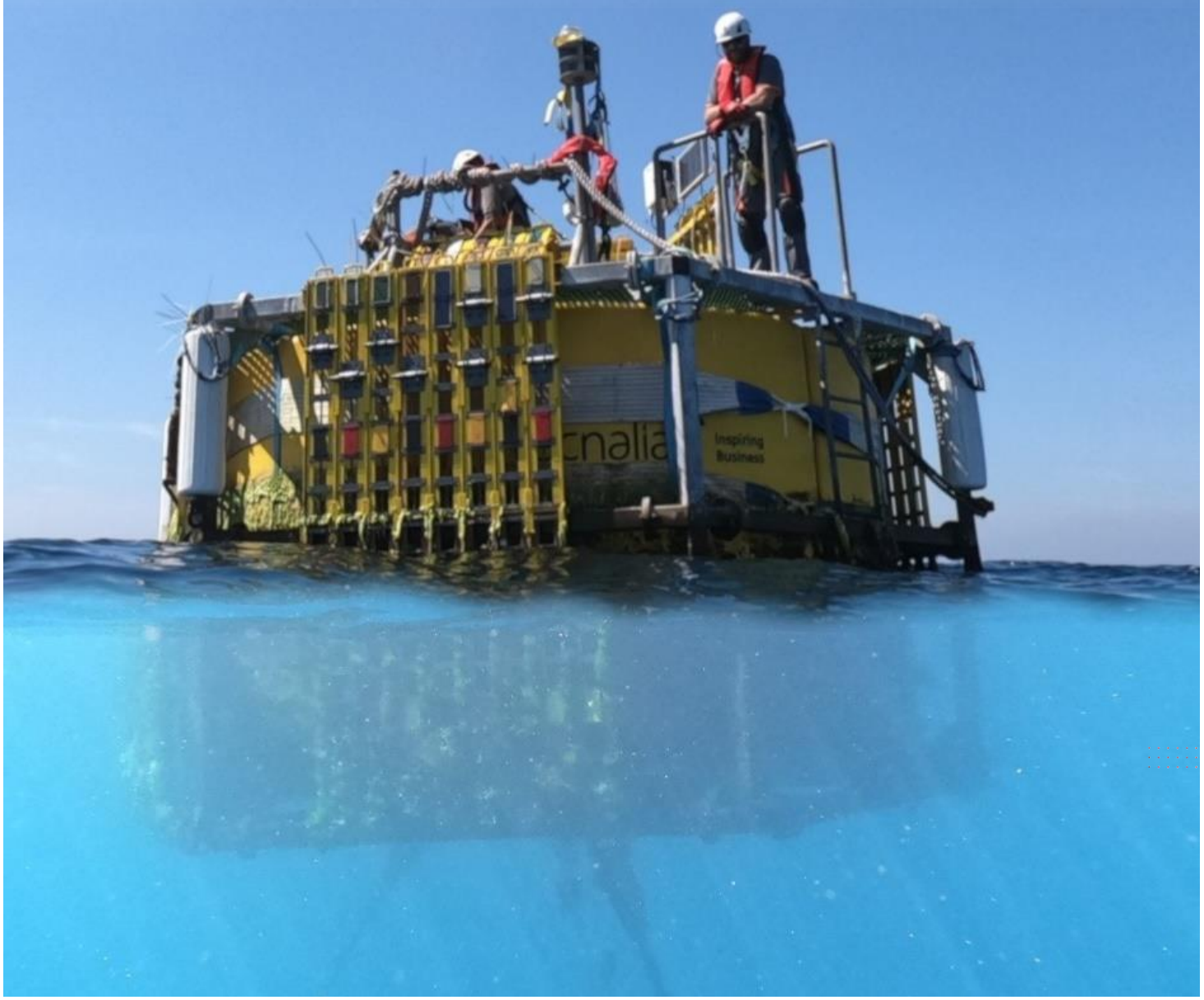
ENERGY AND ENVIRONMENT

HarshLab

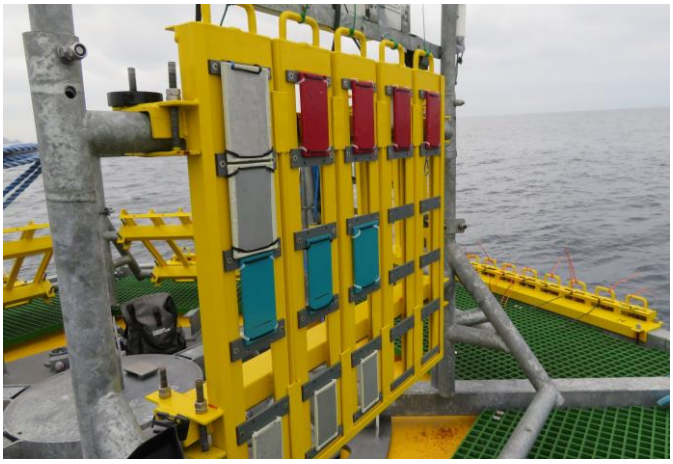
OFFSHORE MATERIALS & COMPONENTS LAB

ADVANCED FLOATING LABORATORY FOR THE VALIDATION AND EXPERIMENTATION OF COMPONENTS AND MATERIALS IN REAL OFFSHORE ENVIRONMENT



LABORATORY FOR THE **VALIDATION AND EXPERIMENTATION OF COMPONENTS AND MATERIALS IN REAL OFFSHORE ENVIRONMENT**

ADVANCED FLOATING LABORATORY FOR THE EVALUATION OF STANDARDIZED PROBES AND COMPONENTS IN REAL OFFSHORE ENVIRONMENT



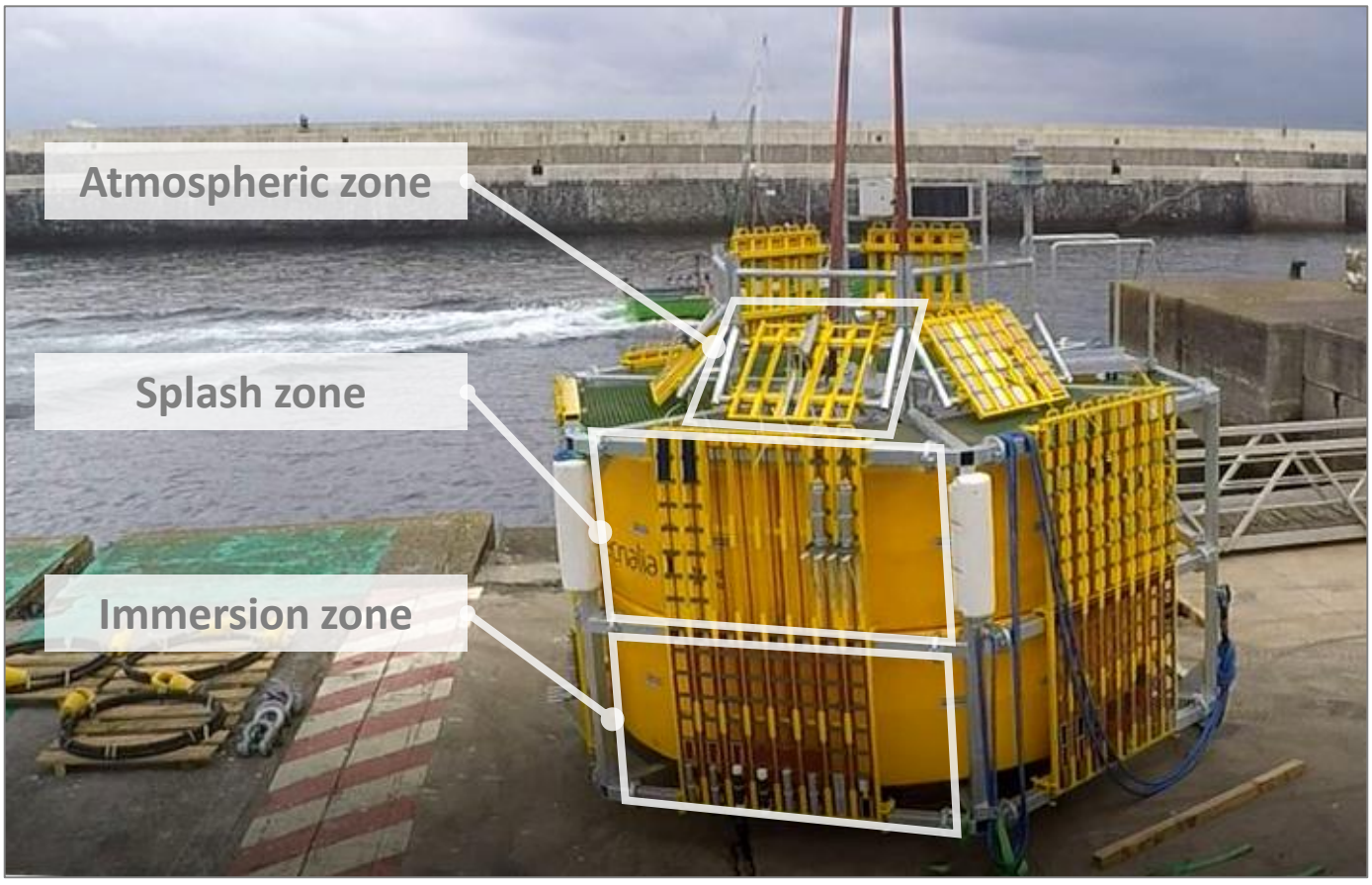
HarshLab1.0 is a first prototype of a bigger and more complex offshore laboratory.

HarshLab1.0 was moored in Summer 2018, while v2.0 is expected to be installed in summer 2021.

HARSHLAB1.0 IS SUITABLE TO **TEST NEW MATERIALS AND SOLUTIONS** AGAINST CORROSION, AGEING AND FOULING IN REAL AND MONITORED OFFSHORE CONDITIONS

HarshLab1.0 allows the evaluation of standardized probes and other components in real offshore environment, in immersion, splash and atmospheric zones.

This offshore laboratory can handle up to 125 samples in atmospheric zone, and 600 in splash/immersion (765 probes in total).



Learn more about HarshLab:

https://harshlab.eu/

TESTING IN HARSHLAB

CORROSION TESTS

Atmospheric and splash zones have a corrosivity classification of **CX**. Immersion zone is classified as **Im2.**

Being situated immediately beneath the surface this zone receives abundant solar radiation being prone to the formation of biofouling. It's a good opportunity to study the influence of biofouling in initial stages of corrosion in materials and how the presence of barnacles and other biofouling species affects the corrosion rate on different materials.

ANTIFOULING SOLUTIONS

BiMEP is an open sea area especially prone to biofouling growth, so test immersion and splash zones of HarshLab are particularly suitable for testing experimental antifouling solutions under real offshore conditions.

AGEING ASSAYS

Not only nude and coated metallic surfaces can be tested in our platform, but also other non-metallic materials that need to withstand harsh marine conditions while maintaining their properties (flexibility, aesthetic, etc).

METEOCEANIC CONDITIONS

METEOROLOGICAL DATA

https://tinyurl.com/w54enqm

- Annual precipitation: 1500 mm/year.
- Mean interannual temperature: 13ºC.
- Average interannual max temperature: 16ºC.
- Average interannual min temperature: 10ºC.
- Average insolation: 1825 hours/year.
- Average annual wetting time (Hr>80%, T^a>0º): 5690 hours.

OCEANOGRAPHIC DATA

http://dss.trlplus.com/

- Water temperature min/max: 11ºC (Jan) – 22ºC (Aug).
- Significant wave height min/med/max: 1,15m/1,67m/9,62m.
- Average salinity: 35 USP.
- Average dissolved O_2: 6 mL/l.
- Average transmittance: 88%

MAIN IDENTIFIED **BIOFOULING** SPECIES

- *Bryozoan*
- *Perforatus perforatus*
- *Anomia ephippium*
- *Hiatella arctica*
- *Mytilus galloprovincialis*

HARSHLAB FOR R&D

HarshLab gives the capability to support the results obtained at the laboratory with those observed in real offshore conditions

Marine renewables Infrastructure network for enhancing energy technologies (MaRINET 2) http://www.marinet2.eu/

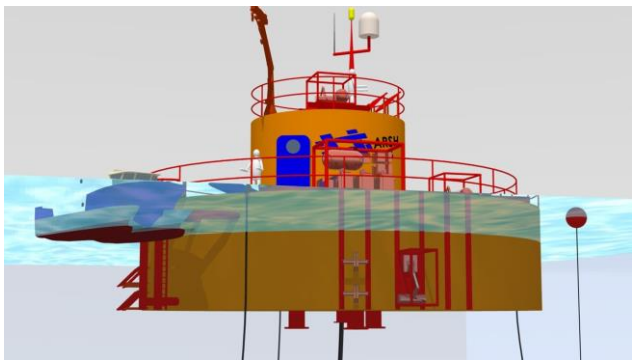
Next Evolution in Materials and Models for Ocean Energy (NEMMO). http://nemmo.eu/

Innovation ecosystem to accelerate the industrial uptake of advanced surface nano-technologies

HarshLab is open to private industrial user, to public funded research initiatives, or to other collaborative public-private partnership initiatives.

HarshLab infrastructure will enable to understand how offshore conditions may hinder lifetime expectancy of components designed to withstand harsh conditions in offshore industry.

Some of these conditions can be simulated in the laboratory with different climatic chambers and regular corrosion tests, but others, such initiation of corrosion phenomena in materials and coatings caused by fouling, cannot be easily replicated in the laboratory.



Technologies for the design, advance manufacturing and validation of components for energy facilities in offshore environments
http://www.clusterenergia.com/harsh-en

LOCATION

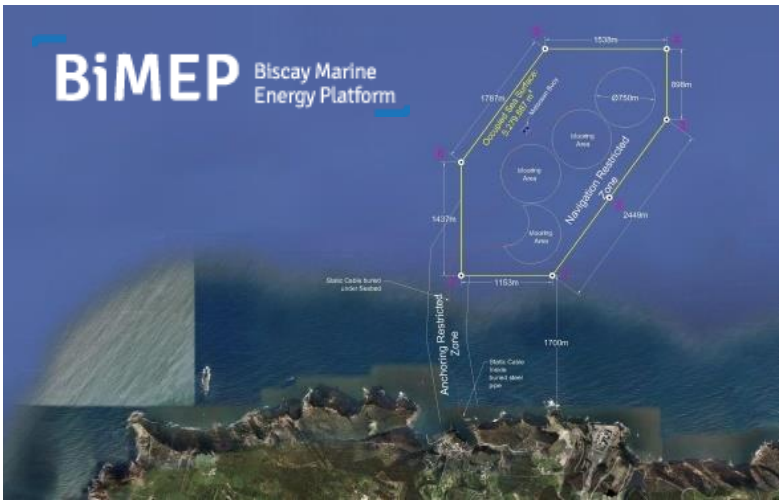
HarshLab1.0 was moored in the Biscay Marine Energy Platform – BiMEP (http://bimep.com/en/).

BiMEP is an experimental sea zone with a total surface area of 5.3 km^2 situated in the Biscay Gulf, 1,700 meters in front of the village of Armintza (Bizkaia, Spain).

BiMEP area is well communicated with Armintza's port and it is under 24 hour surveillance, which allows a quick access to samples under trial while ensuring 100% offshore conditions.

BiMEP is an open sea test site for Wave Energy Converters - WEC trials:

- 13,2 kV – 5 MW subsea export cables.
- 24/7 surveillance and monitoring.
- Research and data centre (monitoring and control system)



HARSLAB1.0
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COMPONENTS AND MATERIALS IN REAL OFFSHORE ENVIRONMENT

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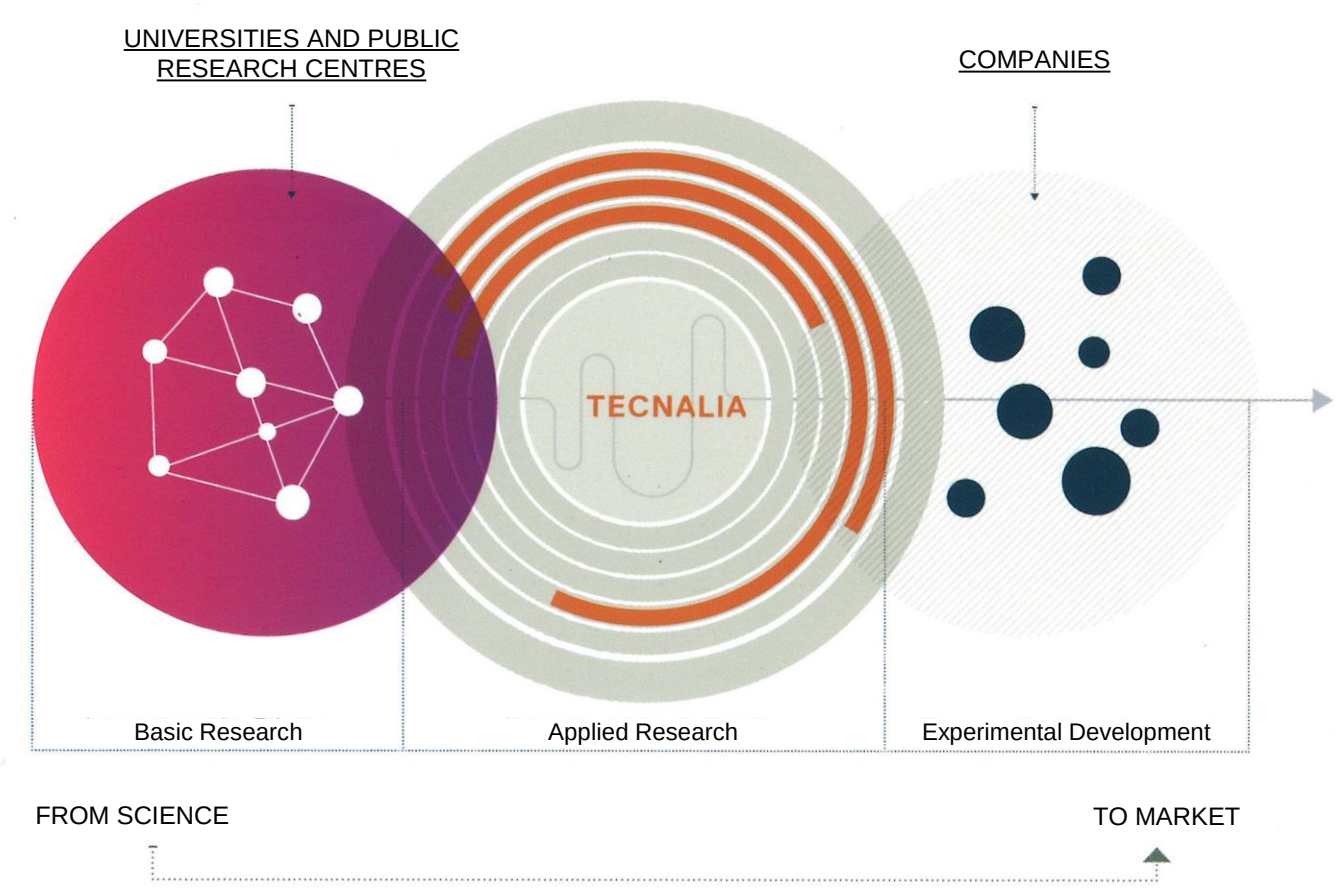

WE CAN DO SO MUCH TOGETHER

Our work is not understood without yours; we want to work together so your company can compete better. Because together, we can develop technologies that transform the present.

The future is technological, let's share it!

blogs.tecnalia.com

HarshLab1.0 – Advanced floating laboratory for the validation and experimentation of components and materials in real offshore environment

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