

ARRECIFE ENERGY SYSTEMS

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WE CAPTURE THE WAVES' POWER AND TRANSFORM IT INTO ELECTRICITY



WE ARE DIFFERENT



First operating system through turbines



Submersible when the sea is rough



Low O&M cost. Transportable system, fixable onshore



The system opposes the wave, absorbing more energy



Installed offshore, away from the coast and at great depths



Suitable for Oil&Gas plants and offshore wind turbines



Simple operation and proven technology



Cost-efficient. Commercial components



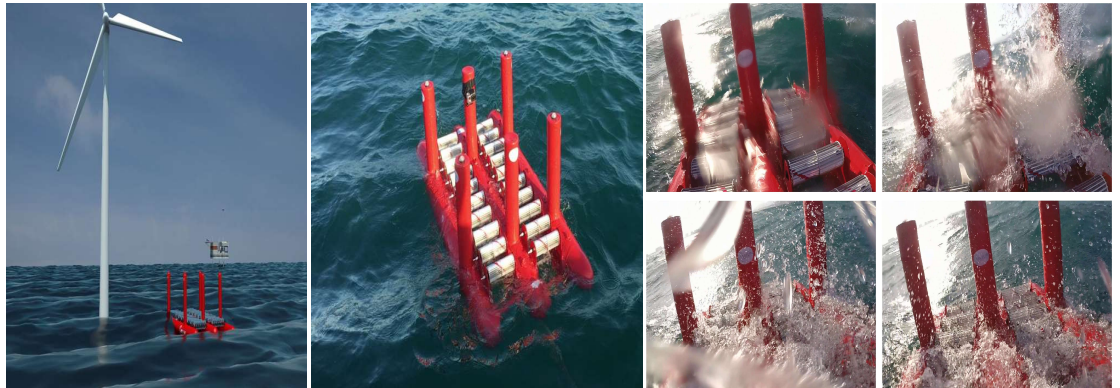
It obtains energy from waves, currents and tidal flows

BUSINESS DESCRIPTION

Arrecife has developed a wave energy device that generates electricity using both the ocean's waves and tidal currents. The device, which functions in low waves, operates at nearly 100% of the time. It is modular, scalable, easy to maintain and it will safely submerge during high waves

PRODUCT/MARKET FIT

Offshore wind farms suffer from variability on their production. The wind turbines do not produce electricity around 60% of the time. We can increase the electricity production (filling the power gap) and thus their income, expediting the payback of the high investment done on the grid infrastructure. It will also help their power generation to be more regular avoiding financial penalties



Why will Offshore Wind utilities be willing to pay for Arrecife?

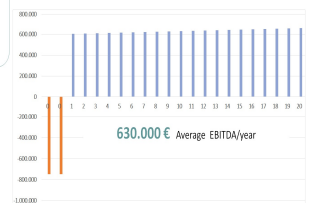
Needs / Problems	Market size: 50.000 M €
<ul style="list-style-type: none"> X Variability of the electricity production X Opportunity cost of 6M € per year-unit 	<ul style="list-style-type: none"> ✓ Europe +80 offshore wind farms + 3.600 offshore wind turbines ✓ USA 5 offshore wind turbines +320 planned for 2027
Benefits from Arrecife	
<ul style="list-style-type: none"> ✓ Increased of electricity production ✓ Constant electricity ✓ Increased predictability ✓ Leverage of infrastructure investment 	

Maximizing the return on capital

The business case:

- 440 kW system
- Production/year* 1.786.479 kWh
- Device cost 725.000 €
- Capital cost** 1.498.000 €
- Maintenance cost/year 22.500 €
- Energy price 0,35€/ kWh
- WACC 15%

The results:



TEAM & PARTNERS

Iñigo Doria CEO	Oscar Villanueva COO	José Javier Doria CFO
Economist MSc in Financial Advising +5yr sales experience in Atradius Group Credit Insurance	MBA. Electrical Engineer +12 yr experience working in Repsol Oil & Gas company	PHD. Professor Mechanical Engineer +25 yr designing turbines 36 patents 400 engineering projects

Partner

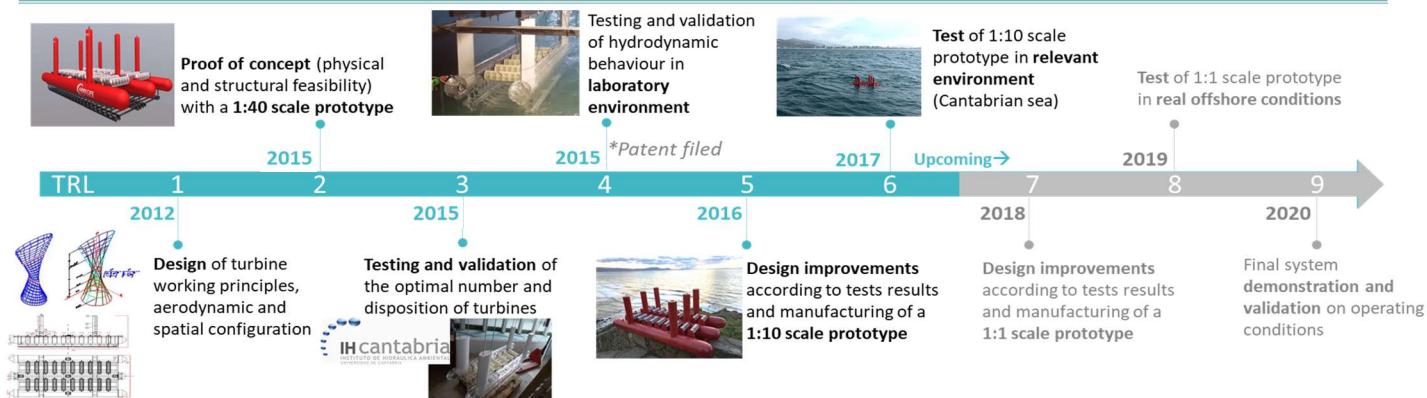


GRUPO JIS

Jauregui Industrial Services

Engineering group specialized in the study, development, and execution of technical solutions for facilities' and processes' improvement, as well as in the design of new production lines.

ROADMAP



COMPETITION

To date, although there are several companies developing WEC systems, there is no WEC technology commercially available. Currently, the most relevant technology under development is buoy technologies. Buoys are not submersible, consequently, they have to be design to resist the biggest waves of the sea, making it inefficient to work with the most common waves because of their size and weight. Here is a comparative table of technologies under development

Competitor	WEC system	Nominal power (kW)	Optimal wave height	CAPEX	Possible Locations	Survivability system	Adaptable to OWT	Wave Energy capture
		240	6-8 (15%)	High	25-50 m depth	No	No	Potential
		160	6-8 (15%)	High	50-70 m depth	No	No	Potential
		250	6-8 (15%)	High	50-100 m depth	No	No	Potential
		7,5	2-6 (50%)	Medium	Offshore	No	No	Potential
		15	0-5 (85%)	Medium	20-1000 m depth	No	Yes	Potential
		440	0-5 (85%)	Low	No depth limitations	Yes	Yes	Potential + Kinetic

OTHER POTENTIAL USERS OF ARRECIFE

We have identified other potential users of Arrecife and their needs, as well as the benefits brought by our system

Users	Needs and interest in Arrecife
* 	Offshore oil & gas platforms rely on diesel generators that require periodic fuel procurement at fluctuating prices and entail carbon emissions. Through combined multi-use platforms, Arrecife offers a continuous onsite, low-cost, carbon-free energy source to safeguard cost structure stability and thus the business profitability. There are over 1,500 oil and gas rigs.
* 	Energy utilities need to increase their share of carbon-free renewable energy in order to 1) meet the increasing demand by the European regulations and the society for renewable energy, diversify their energy portfolio and reduce their carbon footprint. More than 250 energy utilities worldwide will be able to benefit from integrating Arrecife in their production mix.
*	Island and remote communities are consumers of energy that is not often affordable, reliable or accessible to them, greatly impacting their sustainability.

*We have already received expressions of interest from the company

EXPECTED GROWTH POTENTIAL

YEAR	2018	2019	2020	2021	2022	2023	TOTAL
Investment (M€)	0.5	1	1.5				
Sales (Units of Arrecife)	0	0	2	7	19	49	77
Turnover (M€)	0	0	0.89	4.14	12.42	33.33	50.78
Production cost	0	0	0.41	2.28	6.89	18.55	28.13
Profit (M€)	-0.016	-0.25	-0.37	1.36	3.59	10.57	14.2
Cash flow (M€)	+0.26	+0.15	-0.34	1.19	3.11	9.32	11.91
Job creation (p.a.)	2	1	2	2	2	3	12

Assumptions

- Selling price = 725k€/unit
 - Cost = 500k€/unit
 - 2-fold increase of sales/year
- ### Financial forecast
- Total profit = 14.2 M€
 - ROI = 5.5
 - Breakeven = 3 years