REMORA Technical

Non invasive, long term method to track migratory marine species.

Pennington, NJ, USA
bflammang.wixsite.com/fluidlocolab/underwateradhesion

Problem

Reliable data collection is difficult in a turbulent underwater environment, especially when it relies on device adhesion to marine animals. Suction cup tags fall off in a few hours. Puncture tags can cause infection and tissue damage.

Business Model

Target Customers
Research scientist and federal conservation managers are the primary users. Both NOAA and ONR have interest.

Channels
We have active collaborations with NOAA and ONR as potential users.

Potential Revenue Streams
We are seeking additional federal funding for production. Sales/marketing will be through an industry partner.

Ocean Impact

Our solution's impact is on conserving vital sea animal populations for maintaining ecosystems and preventing extinction.

It is a tool for collecting data in a novel way that will be more reliable than current methods, and is therefore applicable to all undersea issues that rely on collecting animal data longitudinally.

In solving issues for device attachment, data can be collected for longer and sensing apparatuses can be deployed, collected, and reused more effectively.

Key Metrics

The passive design prototype has been flow-tested to have over 30% better security than the actual remoras.

The key metrics to be achieved are pressure modulation to maintain adhesion to 1800 m, and while traveling at speeds up to 30 km/h.

Solution

An improved tracking method that is both more permanent than suction cups and causes no harm to the animals. Our bioinspired adhesive base uses the same fundamental physics to attach as remora fishes, without damaging soft tissues.

Solution Roadmap

TRL Level - 4

Immediate Next Steps in Development

Our Immediate next step is to produce a demonstrator to attract an industry partner. This focuses on the pressure modulation sensor and pump to be included.

Three Greatest Needs in Next 12 Months

1. sensor electronics
2. sealing lip addition
3. pressure modulation

Industry Information

There are 2 major organizations involved in marine mammal tagging presently.

- HDR, an environmental monitoring company, holds the contract with NOAA to deploy their suction cup tags.
- CATS (Customized Animal Tracking Solutions) is an Australia based company that is the primary source of academic research tags.

Both use suction cup tags that fail within 24 hours of attachment.

Technology & IP

This is novel technology designed by Dr. Brooke Flammang, who has been working on the fundamentals of the remora adhesive mechanism for the last 10 years.

Unique Value Proposition

There are currently no non-invasive, long term methods to track migratory marine species. This is of particular concern in regards to critically endangered populations including the North Atlantic Right Whale, with less than 350 individuals alive.

This is the only available solution that will allow us to significant reduce whale mortality through better knowledge of their habits to draft protections.

Kind Designs

Living seawall panels from non-toxic concrete as an artificial reef and net carbon sequestor.

Miami, FL, USA
kinddesigns.com
linkedin.com/company/kind-designs-official

Problem

The principal issue we are addressing is adaptation to rising sea-levels.

Secondly, we are addressing failing conventional seawall, which are expensive, slow to produce and destroy marine habitats.

Business Model

Target Customers
Seawall construction companies in coastal communities, starting with Florida.

Channels
There are 596 seawall construction companies in FL. We have that database and reach out to the owner directly.

Potential Revenue Streams

1. Selling Seawall Panels: 30% margin current (50% in 6 mo.)
2. Selling Data
3. Carbon and Biodiversity Credit

Ocean Impact

Ocean Impact is the essence of Kind Designs, which was founded to save Miami from rising sea-levels while nourishing its underwater ecosystem.

By utilizing biomimicry and non-toxic materials, Kind's Living Seawalls function like artificial reefs, promoting the attachment and growth of marine life and improving the quality of water in all coastal communities.

Key Metrics

1. Replace 50,000 miles of toxic seawalls with reefs by 2050. This is equivalent of driving across the US 17 times!
2. Save 507 cities from risks related to rising sea-levels by 2040. By democratizing seawalls and empowering local contractors with our tech, we can save those communities.

Solution

Living Seawalls offer a sustainable and cost-effective alternative to traditional seawalls, addressing environmental and economic challenges.

They function like reefs, sequester carbon and collect essential water quality data.

Solution Roadmap

TRL Level - 8

Immediate Next Steps in Development

- August: Miami Warehouse fully operational
- September: Close Seed Round, first installation (300 ft seawall) begins
- October: Begin executing $4.5M in LOIs.

Three Greatest Needs in Next 12 Months

1. Scale Production
2. Establishing local batching facility for mix
3. Grow local team

Industry Information

In Florida, coastal contractors currently spend $500M / yr building their own seawall panels. They can now outsource the panels to Kind.

Kind prints and delivers the panels to construction site, offering all the environmental benefits of the panels for no added cost.

The United States will spend $400B on seawalls by 2040. Globally, there are 507 cities at risk from risings sea-levels. We can now offer them a product that's not only affordable but also has fantastic benefits for their community.

Technology & IP

Utility Patents: We have a US and International utility patent pending that encompasses the innovative application of 3D printing technology to manufacture Living Seawalls.

Design Patents: We are in the process of filing design patent applications for various customized designs of our Living Seawalls.

Trade Secret: Kind Design's proprietary concrete mix formula, developed in partnership with BASF.

Trademark: "Living Seawalls"

Unique Value Proposition

Kind's value proposition is providing sustainable, cost-effective, and rapidly deployable seawalls that not only safeguard coastal communities from rising sea levels but also foster marine life and enhance water quality.

The Living Seawalls are exponentially faster to produce than conventional seawalls and there is no green premium for all the additional environmental benefits. It saves contractors time, allowing them to execute more projects.

Kee Farms

Sustainably cultivated seaweeds with local social impact.

Kingston, Jamaica
keefarms.com
linkedin.com/company/keefarms

Problem

Current fishing practices in Jamaica are exerting more pressure on an already overfished stock and degrading reefs and habitats in the process. This degradation is amplified by increasing carbon emissions and coastal pollution

Business Model

Target Customers
Customers include the fisherfolk, buyers of raw seaweed and by-products such as agar, biochar and fertilizer.

Channels
Kee Farms operates B2B selling cultivated seaweed to buyers of unprocessed seaweed and seaweed byproducts.

Potential Revenue Streams
Possible Revenue streams include: Sale of raw/dried seaweed to processors, sale of seaweed byproducts

Ocean Impact

Kee Farms will encourage the cultivation of seaweeds which absorbs excess carbon and nutrients from human activity during their growth.

This biomass will be processed into food, pharmaceuticals and incorporated into other products. In the process, by engaging fisherfolk, destructive fishing practices, and overfishing can be reduced while developing the community and providing alternative livelihood.

Key Metrics

The metrics that we would focus on are the number of fisherfolk that we train and help set up an interdependent farm, the size of our overall farm operations (in hectares), and our yield of biomass and byproducts. This would allow us to determine the amount of biodiversity added to the areas, the amount of carbon we capture, and the rate at which we aid in the reduction of ocean acidification.

Solution

Through teaching existing fisherfolk to transition to sustainable seaweed farming, connecting them to markets, and our own cultivation, Fishing pressure and destructive practices will be reduced and ocean health will improve.

Solution Roadmap

TRL Level - 7

Immediate Next Steps in Development

- Establishment of independent farms, and
- Further establishing a network with existing fishing communities.

Three Greatest Needs in Next 12 Months

1. Funding to set up infrastructure at the site for processing the biomass
2. Processing capacity to produce value-added seaweed byproducts.
3. Completing the Intellectual Property processing for our activated carbon byproduct

Industry Information

Aquaculture output as a whole is increasing, including seaweeds. However in spite of its advantageous location, little to no commercial seaweed aquaculture is taking place in the Caribbean region.

Despite the region using these resources and being familiar with the consumption of seaweeds, all are wild-harvested.

Kee Farms represents a first mover in the regional space with vast potential for growth.

Technology & IP

The company has pending IP for the creation of activated carbon from seaweed as a byproduct and our overall cultivation/harvesting processes.

Technology will also be employed where possible for data collection, harvesting, seeding, and processing.

Unique Value Proposition

- Our process being focused on fisherfolk communities to grow a network to scale;
- Our geographical location being the Caribbean where you will find the highest concentration of extracts from our seaweed species;
- Our byproduct - activated carbon (patent pending) which is used for air and water filtration in the sewage, oil/gas, car, and water filtration industries.

MycoBuoys

Mycelium based natural alternative to styrofoam buoys.

Pembroke, ME, USA
mycobuoys.com
linkedin.com/company/mycobuoys

Problem

The future of aerobic life on the planet is threatened by an increasing mass of plastics degrading in the ocean into microscopic particles, including carcinogenic expanded polystyrene, soon to outweigh the biomass of fish.

Business Model

Target Customers

MycoBuoys targets diverse aqua-farmers scaling their operations to meet the needs of their coastal communities.

Channels

Individual sales at marine industry standard of 11% profit margin.
Wholesale to marine supply distributors

Potential Revenue Streams

Sales for various shellfish, fish and seaweed operations, mooring buoys, dock billets, & wetland restoration.

Ocean Impact

Plants and fungi sequester and store carbon respectively while living and retain that carbon in buoy form.

When composted, the carbon dioxide from buoys is slowly released compared to fossil fuel derived EPS that emits 6.9 kg CO2 for every 1 kg EPS manufactured.

Upon loss, impact or degradation, MycoBuoys decompose within 3-5 months returning nutrients to the sea or land without bioaccumulation through the marine food web to our dinner plate.

Key Metrics

MycoBuoys™ will greatly reduce the environmental health costs ($33K-$330K per metric ton annually) of plastic pollution on all organisms and ecological services of the marine ecosystem by replacing plastic buoys.

They will replace EPS buoys that emit 6.9 kg CO2 for every 1 kg EPS manufactured, by acting instead as a carbon sink for -39.5 kg CO2 per cubic meter of biocomposite buoy material.

Solution

MycoBuoys™ made from mycelium and hemp are an all natural versatile solution for biocompatible marine buoys that are compostable at the end of useful life. They can be grown to serve the needs of aquaculture and fisheries.

Solution Roadmap

TRL Level - 5

Immediate Next Steps in Development

- Acquisition of key equipment for cold storage,
- processing of inputs, and drying outputs.
- Building the team to include COO, CFO and production staff.

Three Greatest Needs in Next 12 Months

1. Pilot facility development
2. Partnering with supplier and manufacturer
3. Scaling product for proof of concept

Industry Information

Policy changes in the EU (required EPR by 2025) and South Korea (Styrofoam buoy ban by 2025) are driving R&D for alternative solutions to plastic fishing gear. With the rapid global increase in aquaculture to meet the nutritional needs of an expanding population, the demand for buoys made from all natural materials is surging.

The global buoy market size reached $0.73 billion (USD) in 2020 and is predicted to reach $1.09 billion (USD) by 2028 at a CAGR of 5.5% between 2021 and 2028.

Technology & IP

MycoBuoys uses technology and licensed IP for composite Mushroom Materials® from Ecovative Design, LLC where the CEO conducted R&D as the founding mycologist between 2007 and 2016.

Design patents will be filed once a minimum viable product is ready to scale.

Unique Value Proposition

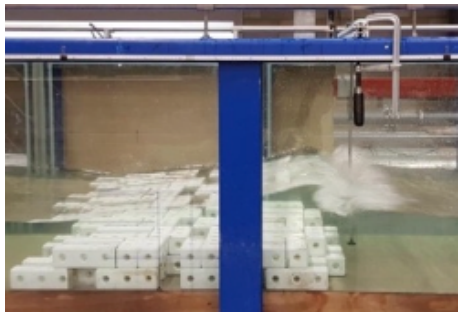
If we purposefully design products to fit within earth's ecological cycles, we would grow, not extract natural resources, we'd borrow them for the useful life of the product and insure those resources were returned to the soil to be recycled, not ever wasted.

MycoBuoys™ are leaders in a circular blue economy. Biofouling of the immersed surface of buoys adds market and nutrient value when buoys are composted or resold as natural fertilizer.

Reefy

Nature inclusive, reef-friendly, heavily engineered solution for breakwaters.

Delft, Netherlands
reefy.nl
linkedin.com/company/reefyinnovation



Problem

Erosion is increasing worldwide and natural barriers are dissipearing.

Breakwaters have a negative effect on marine life whilst artificial reefs structures lack the solid engineering principles to protect coastlines.

Business Model

Target Customers

- Governments in charge of coastal protection and environmental policies
- Beach resorts and developers

Channels

- Coastal engineering firms
- Marine contractors
- Distributors
- Knowledge institutes (e.g. Universities)

Potential Revenue Streams

- Eco-engineering support to design firm
- Supply of units or key components

Ocean Impact

Reefy aims to rewild the ocean through marine infrastructure.

Replacing miles of traditional grey coastal infrastructure with nature enhancing designs all around the world would make an unprecedented positive impact on marine biodiversity and ecosystem services.

By working together with nature we can not only create habitat and improve ecological water quality, but also develop climate resilient shorelines for generations to come.

Key Metrics

- Biodiversity
- Stability
- Wave dissipation

Solution

The first stable artificial reef that can both protect shorelines and boost marine biodiversity.

The system consists of gigantic lego-like reefblocks that can dissipate wave energy and provide crucial habitat for marine life

Solution Roadmap

TRL Level - 6

Immediate Next Steps in Development

- Pilot projects in operational environments to prove stability and ecology in tropical storms.

Three Greatest Needs in Next 12 Months

1. Funding
2. Pilot projects in tropical environment
3. Network in Caribbean

Industry Information

Early adopters: Resorts (private beach owners)

The tourism industry is growing, and beach resorts are well funded as a result. The travel and tourism industry represent approximately 10% of the world's GDP. The beach hotels market is expected to reach a global value of $201 billion by 2023. Beach resort therefore typically have liquidity to invest in innovative solutions.

Technology & IP

The Reefy living breakwater solution has been granted the Dutch patent and is internationally pending in all geographic target areas.

Unique Value Proposition

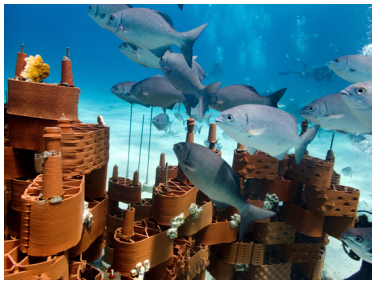
Reefy has developed the first modular artificial reef that is engineered to perform as a stable submerged (living) breakwater that can protect coastlines under hurricane conditions whilst boosting marine biodiversity and working together with nature to create a climate resilient shoreline.

The reefbuilding organisms that conquer the structure can grow with the sea level rise and self heal after storms.

rrreefs

Maintenance free, clay, modular reefs.

Zurich, Switzerland
rrreefs.com
linkedin.com/company/rrreefs



Problem

In 30 years, half of coral reefs vanished. By 2050, over 99% are expected to be in danger, risking extinction of 25% of marine species, leaving coastlines vulnerable, and destroying cultural heritage and livelihoods.

Business Model

Target Customers
2 customer segments today: Companies with a biodiversity footprint, and tourism companies.

Channels
B2B direct sales to management; hotel chains as multipliers; later biodiversity credits through platforms

Potential Revenue Streams
Reef sponsoring/Biodiversity credits, reef regeneration as a service (resorts), marketable data and visuals

Ocean Impact

Our approach positively impacts ocean health by creating socio-ecological resilience.

Our reef system fosters marine biodiversity and biomass by providing new habitat in places where coral reefs have been lost.

We scale implementation with people, integrating local labor and decisions, and generating local ownership, a prerequisite for long-term impact.

Our reef projects also provide a discussion starter to enlarge MPAs or create new ones.

Key Metrics

Expected customer-paid habitat regeneration in 2024 are 250 m2, with the set aim to regenerate reefs along 700 km of coastline until 2034 (7 million m2). This will provide new habitat for 840 million larger animals and 140 billion tiny animals, and protect 700 km coast and local communities from erosion and infrastructure damage. We expect to restore biodiversity to levels of healthy reefs today.

Solution

We rebuild coral reefs with a modular system 3D-printed from natural clay.

Our focus on multi-scale shape complexity ensures not only high biodiversity gains, but also allows for resource-efficient coastal protection.

Solution Roadmap

TRL Level - 7

Immediate Next Steps in Development

- MVP for our impact data platform
- establishing sensor suites at our reef sites
- cutting our production costs in half.

Three Greatest Needs in Next 12 Months

1. Partner for marine sensors
1. More customers to improve our offering iteratively
1. Top-level coastal engineer with material expertise

Industry Information

Nature-based solutions are trending, but associated markets are nascent, especially for the ocean.

Companies are focused on climate regulations and CO2-offsetting, while biodiversity regulations are underway, but not expected to result in mandatory rules for a few years. Companies engaging in biodiversity now are pioneers.

In the tourism sector, the need to regenerate marine life at resorts is rising, and the value proposition clear: guest engagement + binding, and sustainability requirements.

Technology & IP

Our core IP are our internationally protected trademark and governmental permits allowing us to operate in the Philippines, BVI, and Ecuador, with permits underway for Colombia, Mexico, and Belize.

The current manufacturing and implementation process is complex, but not patentable. We work with a secret material mixture and porosity, essential for our ecological achievements. We are starting on a proprietary smart reef shape algorithm this year.

Unique Value Proposition

We are the only reef solution proven to recruit genetically diverse coral larvae at high densities and regenerate fish diversity after only 3 months. Our scientifically designed surfaces interact with water flow to transport larvae to the surface and protect them.
The modularity of our system allows for versatile macro shapes, allowing for custom reefs, and beach protection by diverting eroding water flows with minimum weight at maximum stability.

Ocean Ecostructures

Digitally monitored biomimicry microreefs.
Designed to restore life on marine infrastrutures.

Barcelona, Spain
oceanecostructures.com
linkedin.com/company/ocean-ecostructures

Problem

The ocean is losing biodiversity at a high speed, as human pressure grows, and it will only get worse.We need real solutions to restore marine life, offset our impact and make human activities ocean friendly.

Solution

We provide solutions to offset environmental impact,restoring marine life in damaged areas with the latest regenerative technology,combined with AI monitoring and digitalised reporting to provide evidence of positive impact.

Business Model

Target Customers

- Core: marine infrastructures (offshore wind and oil, ports)
- Secondary: all marine businesses needing to offset

Channels

- Core: B2B, targeting ocean infrastructures operators and related businessess
- Next: B2B2C through NFT trading

Potential Revenue Streams

- IaaS (monthly fee per unit, based on services received)
- Full sale + monitoring fee

Ocean Impact

- Restoring Biodiversity - up to +300% increase in number of species per installation
- Increase ocean's CO2 removal capacity
- Generate oxygen
- Increase biomass

Key Metrics

- Environmental impact data: biodiversity increase (number of species), biomass generated, CO2 removed, and oxygen generated
- Environment health: acidity, chlorophyll, temperature, water transparency
- Number of infrastructures regenerated and turned into Hope Spots

Solution Roadmap

TRL Level - 9

Immediate Next Steps in Development

- Product optimization (efficiency and robustness-bullet proof) to maximize results
- Consolidate pilots in all core channels
- Visibility
- Start operating in the US

Three Greatest Needs in Next 12 Months

1. Find financed pilots in US market
2. Hire Talent to boost growth
3. Fine tune digital reporting and AI monitoring systems to increase efficiency and robustness

Industry Information

It's a €3Bn market opportunity, considering infrastructures only. Offshore wind (€1,8 Bn) will be a key market as it is expected to grow significantly from 2027 on.

Oil rigs will also be a key segment in the mid term (12.000 to be dismantled, with amazing negative impact- we can avoid that).

Commercial ports are also important, particularly because our technology can provide offsetting solution to the port community (shipping, cruising). Marinas are a big segment, but too fragmented.

Technology & IP

- 2 IP in process
- 2 Industrial designs confirmed
- Several brands registered to provide consistency to our marketing efforts

Unique Value Proposition

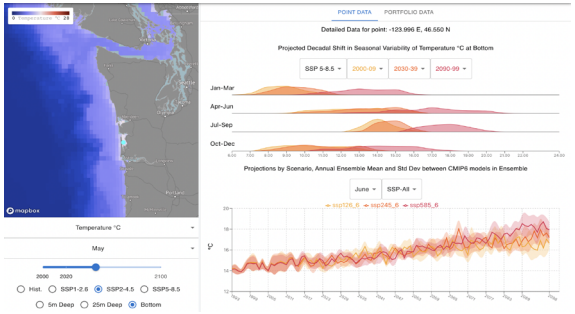
High speed and efficient marine restoration technology, specifically designed for marine structures, becoming an impact Offsetting solution.

Complemented with our digital monitoring and reporting services, we provide evidence of the positive impact, thus generating tangible socio-economic benefits to our customers (offsetting, cost saving, esg/compliance, social engagement).

Actea

Machine learning based climate modeling, for financial accessibility to stakeholders.

San Francisco, CA, USA
actea.earth
linkedin.com/company/actea-inc



Problem

The prohibitive cost of conventional climate modeling, and biases and low resolution of open data, prevents governments and businesses from having the required insights to mitigate and adapt to ocean climate change.

Business Model

Target Customers
Actea sells climate data to regulators and climate insights to the aquaculture and mCDR industries.

Channels
Raw climate projection data is licensed to regulators and academics. SaaS delivers insights to industry.

Potential Revenue Streams
Raw climate licenses cost $10s k - $100s k, mCDR MRV is a per Carbon Credit license, SaaS pricing is bespoke.

Ocean Impact

An understanding of the changes in the ocean helps both business and the environment:

- climate-data driven fishery regulation produces better outcomes;
- commercial fishing avoids financial loss through targeting robust species;
- aquaculture companies can improve fish health and return on capital through better site location;
- and mCDR companies can site facilities for greater sequestration and environmental co-benefits.

Key Metrics

The seafood market is $500 billion and growing. Marine Carbon Dioxide Removal (mCDR) has the potential to be a $100 billion market this decade. Coastal real estate and tourism round out over $1.5 trillion in ocean-linked commerce.

All of this value is under risk due to climate change.

Solution

Actea can produce local climate data at <1/50th the cost of the best alternatives.

Actea's proprietary Machine Learning (ML) based climate modeling makes asset-specific and near-shore climate modeling financially accessible to ocean stakeholders.

Solution Roadmap

TRL Level - 8

Immediate Next Steps in Development
Actea is currently implementing its proprietary mCDR Measurement, Reporting, and Validation (MRV) toolset on top of our already in-market ML model outputs.

Three Greatest Needs in Next 12 Months

- Ocean focused business development expertise.
- Aquaculture sales expertise.
- Runway to get mCDR MRV product to market.

Industry Information

Mariculture companies are spending $100s of millions to offshore pens or pull water from depth in order to avoid warming associated problems as the industry grows. Commercial fishing fleets are investing hundreds of millions in boats tailored to fisheries that are not yet climate adapted.

$10s millions are being spent on mCDR technology implementation without an MRV solution that will make resultant carbon credits salable. Climate risks can be measured and minimized for these activities.

Technology & IP

Actea's patent pending Machine Learning system uses publicly available global climate models in conjunction with local datasets to produce local climate projections.

Two key features of Actea's outputs are:

- they eliminate the systemic biases found in the global climate models while at the same time resolving near-shore waters with the most economic activity.
- Actea also has a patent pending mCDR MRV model which utilizes its ML system as input.

Unique Value Proposition

Actea was born of the need for climate modeling for fishery management. Actea's team's diverse background in financial modeling, machine learning, and ocean science makes it uniquely positioned to productize an academic project and extend that solution to new markets.

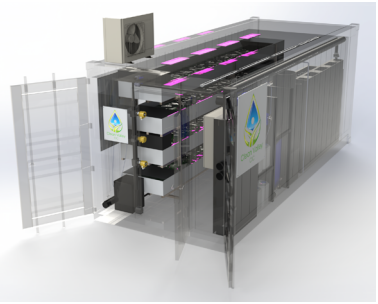
Actea was using its ML system as a climate data "Generative AI" before that term was popular, and Actea has cemented its time-to-market advantage with patent filings.

Clean Valley

Landbased aquaculture solution that mimics ocean water nutrients as a feed for shellfish.

Nova Scotia, Canada
cleanvalleycic.com

CLEAN VALLEY CIC



Problem

The landbased fish farming industry has slim margins despite being a sustainable industry. These slim margins are preventing them from closing the loop on their pollution and removing the last percentile of water pollution.

Business Model

Target Customers

- Recirculating aquaculture system farmers
- Flow through aquaculture farms
- Shellfish hatcheries

Channels

Direct sales, then referrals, and scaling with distribution through small/medium reputable equipment suppliers

Potential Revenue Streams

Razor and Razor Blade Model: Razer is a direct sale of our biofilter at 90k. Razor blades is a Maintenance agreement is 30k annually and a subscription agreement at 15k quarterly.

Ocean Impact

In the last decade our dependence on the ocean shifted from traditional capture fisheries to optimizing aquaculture. We have made advances for aquaculture to use less feed. Water solutions for aquaculture are yet to remove it's reliance on the Ocean.

Whether that is drawing high volumes of water or sending effluent back to the ocean the best aquaculture have not closed the loop but our solution can by utilizing the ocean's filter in a modular box.

Key Metrics

- The average green premium for Integrated Multi-Trophic Aquaculture is a 50% increase for an aquaculture facility with our solution.
- Oyster farmers can triple their oysters size
- We grow polyculture algae from landbased aquaculture's dissolved nitrogen, phosphate and CO2 emissions.

Solution

We solve this problem by empowering a green premium for using their wastewater to grow new co-products.

The green premium is a 50% end product increase and the algae feeds oyster increase their value by 30%.

Solution Roadmap

TRL Level - 8

Immediate Next Steps in Development

We have paid pilots with SEAentia, Oberland and leading a consortium of companies in developing AI to provide predictive analytics and optimization of oyster farming.

Three Greatest Needs in Next 12 Months

- Take technology through the TRL 9 and commercialize it
- Raise a 1.5 million pre-seed round
- Find partners for paid demos in the USA

Industry Information

Landbased aquaculture wastewater remediation is 12.2 billion industry and based on our LOIs we believe we can capture 12%. The industry has many small to medium size companies that rely aquaculture equipment suppliers. Meanwhile the larger outfits rely on large equipment suppliers.

We have been provided 3rd party validation of three small/medium suppliers who want to distribute our technology. Green premiums are market dependent based on consumer sensitivity to sustainability.

Technology & IP

We have a patent cooperation treaty application up for review in 11 jurisdictions around the globe including the USA, Canada, the EU, Africa, Chile, Mexico, Japan, South Korea, Australia and New Zealand.

We developed the algae polyculture with the California Centre for Algae Biotech and Scripps Institute for Oceanography.

We utilize real time data to iterate on the algae polyculture and hold it as a trade secret for now.

Unique Value Proposition

Our competitors include companies such as Swedish Algae Factory and Bolder Industries. All of these companies utilize wastewater from aquaculture to grow algae for valorization.

The difference is that they grow monocultures and heavily treat the wastewater prior so the algae may be sold to the medical and similar industries.

Our solution is simple and elegant. We use the waste water to grow a community of algae that is feed to oysters.

OCEAN EXCHANGE

Ittinsect - Feed for the Ocean

Sustainable fishmeal replacement in aquaculture feeds.

Rome, Italy
ittinsect.com
linkedin.com/company/zero-ocean-impact-aquafeed/

Problem

A quarter of all marine-sourced fish is used as a feed ingredient, causing pressure on marine stocks. Fish feeds represent 50% of a fish farmer's costs. The lack fishmeal caused a four-fold price increase in the past 20 years.

Business Model

Target Customers
Medium and large fish farmers of trout, sturgeon, sea bream and sea bass, soon also salmon in Europe.

Channels
12-month buy-and-claim model, Multi-brand sales agents in specialised by fish species and geographical areas

Potential Revenue Streams
Direct sales of complete fish feed to fish farmers through 12-month subscription plans.

Ocean Impact

In the past year of development we have succeeded in removing fishmeal from fish feeds by using insects and agricultural by-products.

With the production of 3,500 tons of feed, our objective for 2024, we will avoid fishing 100 million sardines (or similar fish), while upcycling 3,500 tons of by-products.

Overall, growth performance of farmed fish will increase by up to 15%, thereby reducing droppings which could pollute the coastal environment.

Key Metrics

Every 10,000 tons of feed produced:

- Upcycle of 10,000 tons of agricultural by-products included in the feeds
- Reduction of emissions by 17,000 tons of CO2-Eq emissions in the feed production affecting whole aquaculture value chain;
- Removal of all marine-sourced ingredients from aquaculture feeds including 300 million sardines (or equivalent fish).

Solution

Replacing marine-sourced ingredients in fish feed. Ittinsect's biotech treatment on novel raw ingredients including insects, microalgae and agricultural by-products creates a fish feed according to circular economy principles.

Solution Roadmap

TRL Level - 7

Immediate Next Steps in Development

- Scaling up our internal ingredient production capacity (which at the moment is externalised to production partners) in a commercial pilot plant.

Three Greatest Needs in Next 12 Months

1. Quick production scale up, and
2. Internationalisation in the salmon industry.

Industry Information

- Global aquaculture, poultry, and swine feed market size: 500B€
- Global aquaculture feed market size: 60B€
- European aquaculture feed market size: 10B€
- CAGR: 6.5%

Technology & IP

- Patent pending on the process to obtain the highly efficient protein used in Ittinsect feeds
- European trademark on ittinsect brand
- Internally selected microorganism (1).
- Internally developed software for fish feed formulation

Unique Value Proposition

Economic: fish growing 15% faster using our products reduce the production cycle and all the variable costs associated to it, whilst maintaining the same unit price.

Healthy: Ittinsect-bred fish have 3% less fat than average, making them a healthier choice for the consumer.

Environmental: fish raised with Ittinsect has no direct impact on ocean fishing, promotes upcycling and reduces emission reduction of up to 20% compared to market standard.

Impact Food

Plant based seafood with the same taste, texture and nutritional value of animal fish.

San Francisco, CA, USA
eatimpactfood.com

Problem

90% of fish stocks are gone, and we're rapidly losing biodiversity and destroying marine ecosystems, in addition to supply chain instability and food insecurity. Existing seafood production methods and alternatives don't satisfy seafood demand.

Solution

Impact Food is a food technology platform that uses plants and biotechnology to create cutting-edge whole muscle seafood solutions that taste and perform just like conventional fish.

Business Model

Target Customers
Our target customers are foodservice operators (e.g. corporate dining, restaurants) and distributors.

Channels
Foodservice: Restaurants, Institutional Cafeterias, Airlines, Hospitality, Schools.

Potential Revenue Streams
B2B2C foodservice sales & distribution, licensing seafood structuring system in future.

Ocean Impact

Currently, our innovation reports a total of 0 bycatch as we do not exploit or endanger any sea animals when harvesting our ingredients.

This is a huge feat in comparison to a study conducted by the Food and Agriculture Organization of the United Nation (FAO) that states a total of 28.7 million megatonne (mt) of bycatch and 27.0 million mt of discard is estimated by world marine fisheries.

Key Metrics

- Our seafood tech platform guarantees no accidental harm and 0 bycatch in comparison to the 38.5M sea creatures accidentally caught in fishing nets yearly.
- Total global tuna consumption is ~5.6m tons, which means displacing 10% of global wild tuna production with our first product alone avoids ~3.4 MtCO2e.

Solution Roadmap

TRL Level - 8

Immediate Next Steps in Development

- Generalize our whole muscle seafood structuring system through rapid iteration.
- Improve seafood system through user testing of flagship Impact Tuna.

Three Greatest Needs in Next 12 Months

1. R&D (talent & equipment)
2. Scale up pilot production to supply US and Japan market tests.
3. Market activation through strategic food service partnerships.

Industry Information

The US seafood market is worth $26B, and the global seafood market is $300B+.

Even if less than 1% of US consumers choose the plant-based option over seafood, we have a $164M+ opportunity in the US alone.

Our key competitive advantage is our proprietary R&D system that can go to market quicker than competitors due to our consumer-centric innovation approach and capital-efficient manufacturing process.

Technology & IP

We have developed a patent pending whole muscle seafood structuring system that allows us to optimize & transform plants into muscle fiber and design hyper-realistic (taste, texture, nutrition) fish-free seafood.

Unique Value Proposition

Deliver a craveable, true replacement for seafood with consistently exceptional quality and performance.

Reinvent the seafood experience while meeting consumer demands for tasty, healthy and environmentally friendly seafood options.

CLEAN OCEAN COATINGS

Clean Ocean Coatings

Biocide and solvent free hard smooth antifouling coating, without microplastics.

Hamburg, Germany
cleanoceancoatings.com
linkedin.com/company/cleanoceancoatings

Problem

Biofouling is the growth of algae and seashells on ships. This increases fuel consumption up to 40%.

More than 100,000t of toxic antifouling coatings are applied every year of which 50% end up in the ocean.

Business Model

Target Customers
Our target customers are ship owners operating in the commercial shipping industry from ferries to big cargo.

Channels
The industry still works via direct sales, strong trust based networks and specific trade fairs.

Potential Revenue Streams
We sell the coating at a competitive price as well as development services to customize the product. We collaborate with smart cleaning solutions on a commission basis.

Ocean Impact

- We save the ocean 1.250t of microplastic until 2030 alone.
- We stop the use of biocides.
- Our coating reduces microplastic and biocide contamination from antifouling coatings to zero.
- Since our hard coating is easy to clean, it is feasible to maintain a clean hull at all times and avoid the spread of invasive species protecting ecosystems around the globe.

Key Metrics

- Imagine 2030 when we will coat 250 vessels and generate 70€ million in revenue.
- On the way we will save 853,000t of CO2 equivalents, 1.250t of microplastic and 440t of solvent.

Solution

We develop a biocide and solvent free hard antifouling coating which does not wash of.

Our magic is a uniquely smooth surface which saves fuel, is easy to clean and more durable than conventional coatings.

Solution Roadmap

TRL Level - 7

Immediate Next Steps in Development

- We adjusted the formulation for the spray application process and produce material for the upscaling test.
- In October we will measure friction in the flow channel.

Three Greatest Needs in Next 12 Months

- Succesfull spray tests;
- Running pilots which generate data and marketing material; and
- Secure seed funding next spring, to go to market

Industry Information

- The global marine coating market is in the size of 11Bn US$. It is forecast to grow by 7 % CAGR to 15Bn US$ in 2024.
- 80 % of the market is owned by five global players (International, CMP, PPG Paints, Jotun, Hempel).
- 90% still use conventional so-called self-eroding coatings which contain biocides and wash off into the ocean. The others rather use no antifouling than any alternatives which lag behind in durability and practicability.

Technology & IP

Ecoating is a combination of a nano-structured patented particle and a polymer matrix, so called Polyramik.

Combining the advantages of ceramics and polymers, the coating is sturdy yet flexible.

Patricia Griem developed the coating at Phi-Stone during three research projects together with Christian Albrechts University Kiel. We have an exclusive agreement to use the particle.

Unique Value Proposition

Our magic is a uniquely smooth surface.

Due to the smooth surface we have less friction. First modelations indicate at least 6% fuel savings. No solvent – no micropores – no corroding surface for organsims.

Our coating does not only stand out in longevity and sustainabilty but also in ease of application. It is highly scalable and applicable with standard methods.