AQUA ÍNSUA
Aquicultura

Aquaínsua

Aquaculture

3 COMPANIES UNITED WITH ONE GOAL:

to produce the best fish in the world

AQUA ÍNSUA Aquicultura

1

The Juveniles

AVOS Added Value Offshore Systems

2

The handling and planning

coralis BY MARICULTURE SYSTEMS PORTUGAL

3

The growout

We believe that Nature is perfect.

We try to get close to that perfect stage, following Nature cycles.

3 COMPANIES UNITED

to produce the best fish in the world

The 3 companies:

- AQUAÍNSUA – Aquacultura, Lda
- AVOS – Added Value Offshore Systems, Lda
- Mariculture Systems Portugal, Lda

3 COMPANIES UNITED

to produce the best fish in the world

WHO ARE WE?

AQUAÍNSUA – Aquacultura, Lda

www.aquainsua.pt

Aquaínsua is a company that owns a fishfarm of 85.000m2 (8,5 ha) in an estuary area in Figueira da Foz – Portugal, developping specialized nursery techniques for sea-bream and sea bass in lined earthen ponds for offshore farming.

3 COMPANIES UNITED

to produce the best fish in the world

WHO ARE WE?

AVOS – Added Value Offshore Systems, Lda

www.avos.pt

Consultant company specialized in offshore farming procedures and farming management plans with expertise in seabream, seabass, seriola and tuna.

3 COMPANIES UNITED

to produce the best fish in the world

WHO ARE WE?

Mariculture Systems Portugal, Lda

www.mariculture-systems.com

Engineering and aquaculture company specialized in offshore farming with an innovative new semi-submersible platform named **CORALIS** that can submerge its cages and will produce 7.000 tons of Fish per cycle.

New developments are now undergoing to adapt this seabream/seabass/seriola cage to large size red tuna growing.

3 COMPANIES UNITED

to produce the best fish in the world

AQUA ÍNSUA Aquicultura

AVOS Added Value Offshore Systems

coralis BY MARICULTURE SYSTEMS PORTUGAL

1 First producing the juveniles in calm and clean estuary waters, the best for juveniles, in Figueira da Foz – center of Portugal

3 COMPANIES UNITED

to produce the best fish in the world

2 Then we transfer them from the estuary in Figueira da Foz to the Sea, as Nature would, in a large wellboat made on purpose for these transports. The destination is a quiet sea with transparent waters in the south of Portugal: Vila Real de Santo António.

3 COMPANIES UNITED

to produce the best fish in the world

3 Than we grow the juveniles in giant cages like the Ocean.

3 COMPANIES UNITED

to produce the best fish in the world

AQUA ÍNSUA Aquicultura

AVOS Added Value Offshore Systems

coralis BY MARICULTURE SYSTEMS PORTUGAL

We do things like Nature, respecting the balances.

And allways learning from each new step.

3 COMPANIES UNITED

to produce the best fish in the world

NURSERY PERIOD IN LAND:

3-4 MONTHS

GROW-OUT PERIOD IN CAGES :

10-12 MONTHS

1. Fingerlings are received with 2-3g from an hatchery and kept in lined earthen ponds until they are 30 grams;

2. The 30g juveniles are then transfered from the Nursery ponds in AQUAÍNSUA / Figueira da Foz by a wellboat to the cages in CORALIS platform in the south;

3. From the wellboat, the juveniles are transfered by vacuum pump to the Nursery cages in the CORALIS platform in Vila Real de Sto. António in the Algarve;

4. In the platform we have 8 Nursery cages where the fish (sea-bream and sea-bass) will grow, from the 30g in weight to about 100g of individual weight;

3 COMPANIES UNITED

to produce the best fish in the world

NURSERY PERIOD IN LAND:
3-4 MONTHS

GROW-OUT PERIOD IN CAGES :
10-12 MONTHS

5. FromtheNursery cages the fish will be moved also through vacuum pumps to the Grow-out cages to grow from 100g until 500g of individual weight;

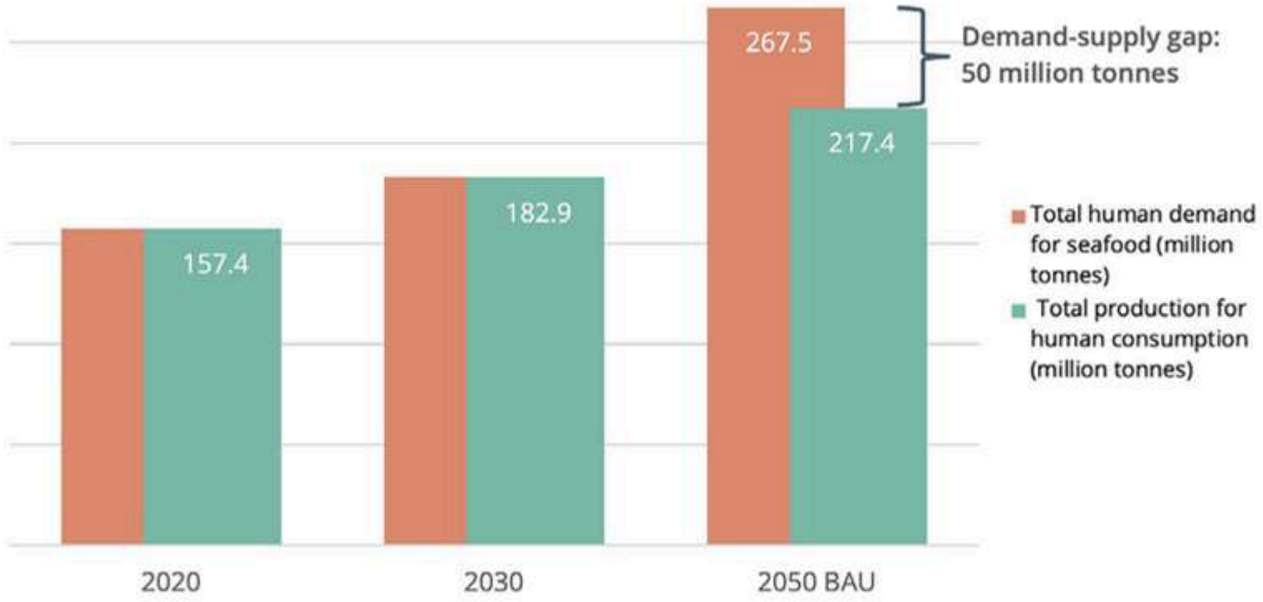
6. Each grow-out cage will need about 1,4 million juveniles a month and will produce around 600tons/cycle;

7. The CORALIS platform will produce about **7.000 tons of Fish per year.**

AFTER A NURSERY PERIOD IN LAND,
FISH GROW-OUT WILL BE DONE IN CAGES OFFSHORE ON A CORALIS PLATFORM.

Closing the 50mt-gap between demand 267mt and supply 217mt, creating food security, reducing import dependency and preserving the ocean.

- **Accelerating production capacity** with up to 10,000 tons per year installations
- Building partnerships up- and downstream to create a scalable model for growth to an **80,000-100,000 tons per year** industry in Portugal
- Future growth through national SPC-partnerships and international EPC delivery of facilities to global farming companies
- High-tech, high-capacity, AI-driven **'Precision Farming'** with patented technology
- Producing certified, sustainably, responsibly, no-antibiotics, **animal welfare focused** finfishing the **natural environment**



** FAO/DNV forecasted shortfall 50Mt per yearby 2050, in marine aquaculture, of which 25% is finfish*

ANY SOLUTION IS NEEDED FOR ACCELERATING GROWTH

however, **conventional aquaculture is challenged by limitations**

Shoreline (Bays, protected waters etc.)

- In enclosed areas, the water is usually relatively stagnant, impacting the environment from high fish-density
- The cages cannot be placed in open sea because they cannot withstand stormy conditions

ANY SOLUTION IS NEEDED FOR ACCELERATING GROWTH

however, **conventional aquaculture is challenged by limitations**

Inland fishponds in estuaries

- Usage of valuable resources - Land, energy, fresh water, oxygen
- Water needs continuous treatment, at cost of energy and additional oxygen
- In high-density operation usual use of antibiotics and vaccination.

ANY SOLUTION IS NEEDED FOR ACCELERATING GROWTH

however, **conventional aquaculture is challenged by limitations**

Inland RAS

- Usage of valuable resources - Land, power,fresh water, oxygen
- High CAPEX and OPEX

CHINESE DEVELOPMENTS ARE FULL FORCE AHEAD, **ALSO** WITH CLOSED RAS SYSTEMS INSIDE VESSELS

- RAS technology either on-land or in vessels requires energy for artificial currents and water treatment.

- Vessels need motorization to move away from harsh weather.

Fuxi-1 (China)

Guoxin-1 (China)

Wanqu Lingding-1 (China)

Zhanjiang Bay-1 (China)

AQUA ÍNSUA Aquicultura

AVOS Added Value Offshore Systems

coralis BY MARICULTURE SYSTEMS PORTUGAL

1. HIGH-TECH HIGH-CAPACITY FLOATING FACILITY, SELF-SUPPORTING WITH RENEWABLE ENERGIES AND AI, SCALABLE AT COMPETITIVE CAPEX

2. SUSTAINABLE AND RESPONSIBLE DEAP SEA PRECISION FARMING OF HIGH-QUALITY FINFISH WITH FOCUS ON ANIMAL WELFARE, THAT CONTRIBUTES TO ENVIRONMENT, SOCIETY AND GDP

1 HIGH-TECH, HIGH-CAPACITY FLOATING FACILITY

- **Low construction risk** – the innovation is in the joining together of existing, certified and tested offshore technologies in an unprecedented way, with technological suppliers from the oil and gas industry and marine technologies

- **Low regulatory risk** – project aligned with Portugal's National Ocean Strategy 2030 and Maritime Spatial Planning (PSOEM).

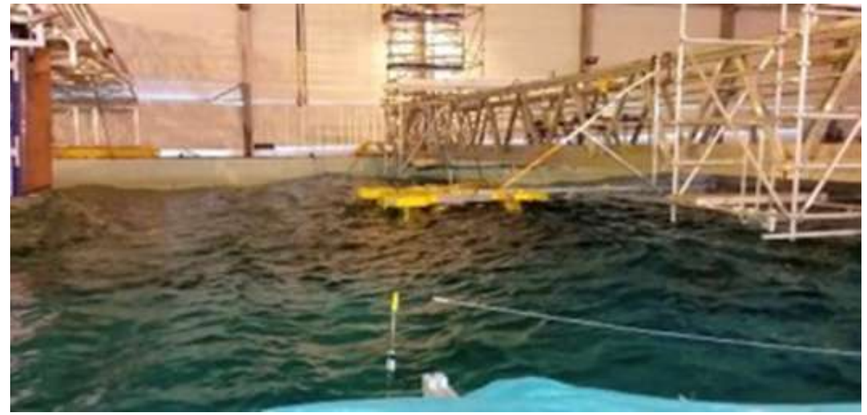
- MSP is finalizing aquaculture license application (TAA) with **full Environmental Impact Analysis**.

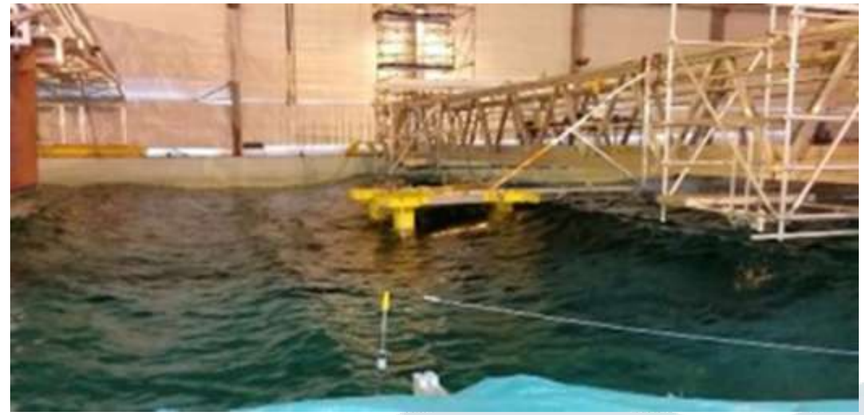
Key characteristics:

- Floating platform, permanently anchored
- Capacity 500,000 m3 in submersible cages
- 2,500 m2 deck
- 24/7-365 operational
- Serviced from fishing port of Vila Real de Santo António, supply vessel 1hr, where warehouse + office, ice factory

1 Engineering design and validation, DNV Approval In Principle

- Design by AS2CON Croatia – experienced, world recognized in maritime design.
- Technological knowledge and expertise from marine installations for oil and gas at sea
- Computerized simulation done at MARIN, The Netherlands – experts in maritime simulations
- 1:20 scale prototype tested at sea in Israel and tested in a pool simulating 17 meters high waves, currents and winds of 90 Km/h at Ecole Centrale de Nantes, France





Engineering design and validation, DNV Approval In Principle

DNV

Mariculture Systems
4 Hagidonim
3094104 ZICHRON YAACOV
Israel

DNV AS Offshore Classification
Floating Offshore Structures
Veritasveien 1
1363 Høvik
Norway

Date:
2024-03-07

Our reference:
M-OA-FSYMENAL/
Offshore-AiP-J-118

Approval in Principle (AiP)

Owner: Mariculture Systems
Designer: SimFWD

On request by Mariculture Systems, DNV has carried out a review in accordance with the specified rules of the preliminary design documentation to assess the design principles of a floating fish farm installation, with the conditions and assumptions as given below. The intention of the Approval in Principle (AiP) is to assess the feasibility of the concept, based on a high-level approach, and to identify potential future challenges with the design and construction of the unit, within the disciplines covered by the AiP.

Basis of the review

The assessment has been carried out towards the class notation:

- Of Floating fish farming installation POSMOOR Column-stabilised

- It is understood that the design is at a conceptual level and the design of detailed arrangements are not completed.
- The Approval in Principle review has been based upon assessment of the overall feasibility of the preliminary design, thus DNV has not appraised detailed calculations and evaluations.
- Independent of the Approval in Principle carried out, a complete set of documentation is to be approved by the society according to normal classification procedures before construction of the unit is commenced.
- The scope of the review covers the following disciplines:
  - Wave load motions
  - Hull structure
  - Stability
  - Marine Safety and Systems
  - Mooring
- High-level review based on the submitted general arrangement drawings, motion and acceleration analysis and stability calculations towards DNV Rules for Offshore Units DNV-RU-OU-0503, "Floating fish farming units and installations", July 2022

DNV Headquarters, Veritasveien 1, P.O.Box 300, 1322 Høvik, Norway. Tel: +47 67 57 99 00. www.dnv.com

Offshore-AiP-J118.docx

In final phase for license for a pre-approved area

9 miles south of Vila Real de Santo António

- Excellent water quality and physicochemical aspects for farming of Seabass and Seabream
- Serviced from fishing port of Vila Real de Santo António, where warehouse + office, ice factory, nursery. Supply vessel 1 hour travel
- License for 25 year + 25 year option in final stage for aquaculture license of 6,700 tons per year.

2

SUSTAINABLE AND RESPONSIBLE DEEP SEA PRECISION FARMING OF HIGH-QUALITY FINFISH WITH FOCUS ON ANIMAL WELFARE

- High-capacity, high-quality **precision farming**, with a focus to **minimize stress**, minimizing disease and mortality, utilizing the benefits of the **natural habitat of ocean waters**, and **optimizing product quality.**

- Proof of concept for further roll out, to other locations and with other species, in Portuguese waters including the outermost regions and abroad.

- **Live lab** for collaborations with R&D entities, marine observation entities and universities, to continuously innovate, adapt and improve.

2

AQUA ÍNSUA Aquicultura

AVOS Added Value Offshore Systems

coralis BY MARICULTURE SYSTEMS PORTUGAL

Happy Fish coralis

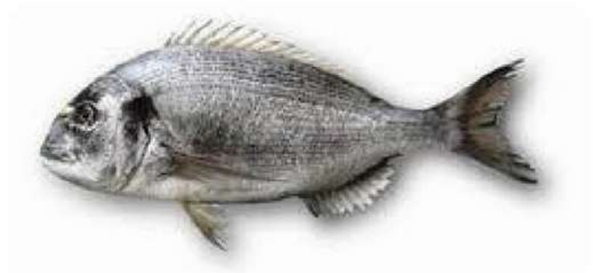
- High quality of life through feeding protocols based on anticipation of needs, active environmental enrichment and minimization of stress from husbandry activities;
- AI, camera- & sensor-supported resource management;
- Feed innovations for optimized absorption and FCR;
- Continuous data collecting and exchange;
- Cleaning robots that remove biofouling and reduce need for maintenance;
- Humane fish transportation and harvesting technology with electric stunning and fish pumps to minimize stress;

2

A claim for best quality in product freshness, texture and taste, synchronized with demand for healthy seafood of **certified and traceable origin**, with a **short time-to-market**

- It is the focus on ‘Animal Welfare’, **minimizing stress** and creating quality of life for the fish, that is the catalyst to best quality, super fresh, healthy and valuable product from the natural habitat, the ocean.

- This focus synchronizes with the momentum for sustainable food production, for the protein-transition to seafood, for animal welfare and preservation of the biodiversity of the oceans. And with **growing consumers' demand for high quality, certified product of traceable origin, locally sourced with a time-to-market of just hours**.



Momentum in consumer preference to buy local, healthy, certified, sustainably, responsibly farmed fish with a very short time-to-market

- Research confirms a demand for product that **distinguishes on high value characteristics, no-antibiotics, organically farmed, with a texture and taste that resembles wild catch.**
- Research confirms **willingness to pay a premium of 30%-100%** for high quality, certified, local, natural product from the ocean with a short time-to-market.

2

Analysis of the European market indicate a potential of 10% market share of the total market for Seabass and Seabream (650,000 ton per year) with high quality product at price premiums relative to the East Mediterranean productions

Offtakers include leading (multinational) supermarkets and selected European distributors for other channels including gourmet retail, hotel, restaurant and catering, in key volume markets:

- Italy (105,000 T/Y),
- Spain (87,000 T/Y),
- France (30,000 T/Y),
- Portugal (25,000 T/Y) and
- North Europe (100,000 T/Y including re-export)

LOI's signed for 109% of the first year harvest volume

Target retail companies' calculated market potential for 'high-quality/premium/organic' ≈ 10% of total sales of SBSB in EU

Our target for 6,700 T/Y is ≈ 1%

MSP – PROJECT DEVELOPMENT TIMELINE

AQUA ÍNSUA Aquicultura

AVOS Added Value Offshore Systems

coralis BY MARICULTURE SYSTEMS PORTUGAL

WE ARE HERE

2025-2026 supplier selection & construction phase

2026-2028 14 months First Growth Cycle

First Harvest

21 Feb May 22 Jun Dec 23 Mar May Nov 24 Feb Nov 25 Jan Sep 26 27 28 Mar 29

First contact AICEP, DGRM, DGPM, Forum Oceano

PSOEM pre-approved areas for multi-use floating island and aquaculture

Jun-May location search, ports visits

UNOC22 Forum Oceano

VRSA Location approved for TAA Appl.

TAA process

TAA Application Submitted

Initial approval by DGRM & Public Consult.

Declaration DGRM

Event VRSA

TAA Roadmap & EIA requirement defined

EIA Scope Report subm.

Approved Maritime Signaling Project

EIA Execut Report subm.

Apr-Sep EIA review

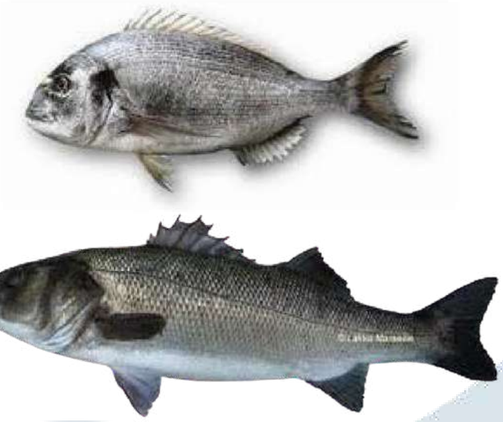
EIA Compliance

DIA exp

Target approval TAA License

Project Finance closing

Platform installed; Commence Fish Grow



Portugal recognizes Offshore Aquaculture as solution for food security and acceleration of needed growth of capacity

A aquacultura desempenha um papel cada vez mais importante na segurança alimentar

"Os consumidores devem ver na aquacultura a forma mais sustentável de produzir proteína animal"

DGRM - Direção-Geral de Recursos Naturais, Segurança e S...
5,386 followers
7h

Projeto inovador de aquicultura offshore em Portugal

Este desenvolvimento é um testemunho do compromisso de #Portugal em se tornar líder na #economiaazul, e a Mariculture Systems está na vanguarda desta iniciativa com o seu projeto de #aquicultura offshore. A empresa espera que este projeto pioneiro abra o caminho para futuros desenvolvimentos na indústria de #aquicultura em #Portugal. 🇵🇹

Thank You

AQUAÍNSUA – AQUICULTURA, LDA
Av. Pedro Álvares Cabral, 631 2750-184 Cascais

LUIS REALISTA / Adviser
luis.realista@gmail.com

PAULO SERRA LOPES / CEO
psl@aquainsua.pt