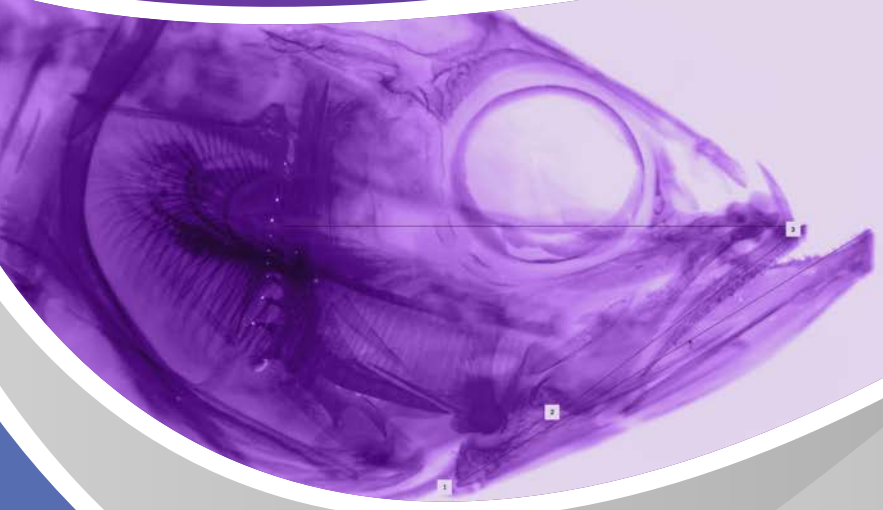
Jan 2018
vs. 2.0

AquaBioTech Group

ABT Innovia

Capability Statement



Excellence through Innovation and Quality

AQUABIOTECH GROUP

ABT Innovia

Capability Statement

Created by AquaBioTech Group

15 Jan 2018

vs. 2.0

The **AquaBioTech Group** is an international aquaculture, fisheries and marine consultancy and engineering company. Its headquarters are strategically located in the centre of the Mediterranean, on the island of Malta, and operates globally with clients in over fifty-five countries.

The **AquaBioTech Group** undertakes a variety of aquaculture, fisheries and aquatic environmental projects through its regional offices and selected partners throughout the world. The vast majority of the company's work is related to the marine or aquatic environment, encompassing aquaculture developments, market research/intelligence, through project feasibility assessments, finance acquisition, project management, technology sourcing and technical support and training. Within the **AquaBioTech Group** there are various divisions that focus on different business areas:

ABT Aquaculture is the consulting division of the company for all aquaculture related projects. We have become well established as a provider of due-diligence assessments and risk assessments for all forms of aquaculture operations, as well as consulting on operational issues and improvements in hatcheries, fish farms and processing facilities. These can be applied to hatcheries, broodstock, aquatic research and on-growing operations.

Offshore Aquaculture:

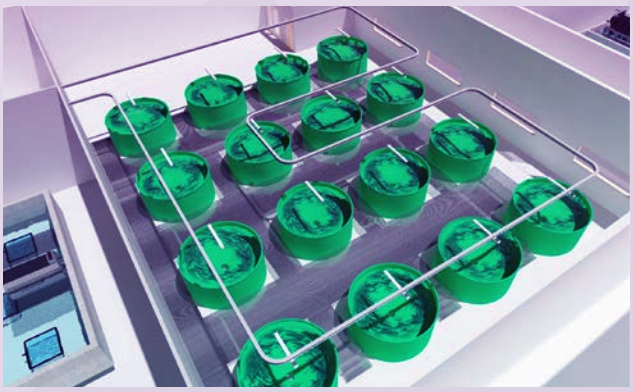
We are able to provide a complete service from project design all the way through to installation and commissioning. Projects of all sizes are undertaken, including assistance in procurement of equipment, technologies and staff for new projects. Experienced in designing offshore aquaculture projects for some of the most exposed sites, our engineers work with cage manufacturers and mooring experts to safely move fish farms further offshore.

Land Based Aquaculture:

With extensive global experience in the design and construction of recirculation aquaculture systems (RAS) for new projects and retro-fits, we offer a wealth of knowledge, assisting in management and monitoring of land-based production facilities. From flow-through systems to super intensive RAS, our company undertakes a variety of projects. These include anything from full project engineering, through to specific biological aspects of production systems for mainstream and emerging species. All projects include an online monitoring system that allows for our staff to continuously monitor the system's performance from our head office.

AquaCirc™ has developed a number of highly efficient and cost effective Recirculating Aquaculture Systems (RAS). The system developed by the **AquaBioTech Group** is a unique recirculation system which combines numerous state of the art recirculation apparatus, such as:

- Specifically designed tanks
- GRP fiberglass products
- Specialist products
- Saturation cones



ABT Aquatics is an independent aquatic consulting division that forms part the **AquaBioTech Group**. It has wide ranging experienced consultants specializing in all engineering, husbandry and technical aspects. We are aware of the importance of the dialogue between client and provider and are consequently dedicated to providing excellent consultation. It focuses on aquariums and the ornamental industry with the main areas of work including:

- Architectural, engineering and structural design
- Outline planning with concept development
- Management support and turnkey operations
- Life Support System (LSS) development
- Filtration systems development
- Initial feasibility studies
- Livestock supply

ABT Marine provides a range of services including marine surveying, construction support and mapping / GIS. The techniques we employ include bathymetric and side scan sonar surveys, bottom type assessments, ROV surveys, hydrodynamic measurments data confirmation and site inspections using both remote sensing and underwater video techniques.

ABT Innovia offers research services to support the development of vaccines, functional feeds, alternative protein sources, culture technologies and production techniques with a wide range of commercially important species under any combination of culture conditions in our fully licensed and bio-secure R&D facilities.

AquaBioTech Group

AquaBioTech Group

Central Complex
Naggar Street
Targa Gap, Mosta
MST 1761
MALTA G.C.

www.abtinnovia.com

www.aquabt.com

www.abtmarine.com

www.abtaquatics.com

www.aquacirc.com

The **AquaBioTech Group** has been continually upgrading and expanding its research and development facilities, which currently includes a total of seventeen (17) trial rooms - "Bays" with over twenty-eight (28) individual trial systems, all utilising the **AquaBioTech Group**'s highly efficient and stable RAS technology.

This first expansion and upgrading phase is now complete and the new Bays are ready from a general infrastructure basis, all with their own dedicated drain lines, more energy efficient pumps and the very latest heat-exchange units with increased efficiencies. All systems are lit using digital LED lighting and each bay has its own specific ventilation unit and computerised water quality monitoring and equipment control system.

The overall design and finishing enhances sanitation; with epoxy resin floors and walls for ease of cleaning. Most of the new Bays have already been fitted out with tanks and RAS units to client's specifications. Other Bays have not been completed with tanks and filtration at this time so as to enable future clients to have systems configured to their specific requirements.

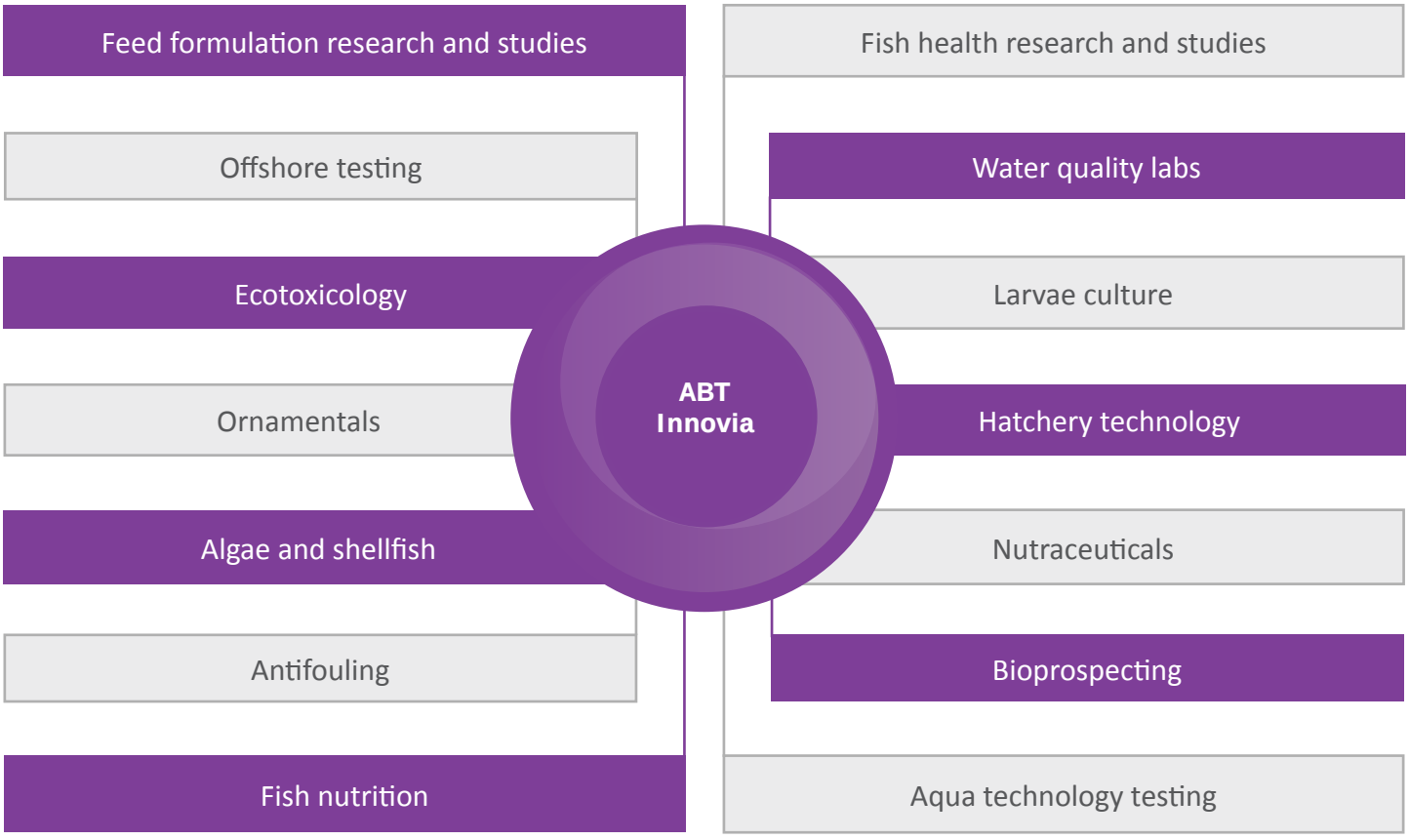
Having our own GRP fiberglass production facility means that we can make tanks of any shape and size and normally we can put an entire system together and have it operational in less than two weeks, if required.

As part of our second expansion and upgrading phase we have established a new, dedicated aquatic ecotoxicology laboratory and testing systems for fish and shellfish species.

The main areas of contractual industrial research undertaken for our clients and expertise areas of the company are described as:

VETERINARIAN RESEARCH

The veterinarian unit is geared towards undertaking various aspects of applied research into vaccine development, testing, efficacy and challenge trials as well as viral, bacterial and parasitic diseases in aquatic animals. Work also includes assessment of other medicinal items, functional feeds and antibiotics.



AQUATIC NUTRITION RESEARCH / STUDIES

The fish nutrition facility is available to international companies to benchmark commercially available products and carry out exploratory research on new products. Such as testing new formulations or specialised novel ingredients for providing new approaches to improving fish growth, reducing environmental impacts or improving fish health. In-depth detailed research, such as digestive physiology, metabolic biochemistry and quality issues can also be undertaken at the facility in a wide variety of species.

HATCHERY TECHNOLOGY AND PRODUCTION TECHNIQUES

The research facility hosts a fully operational hatchery using the very latest technology working towards developing new techniques for improving hatchery production/efficiency and knowledge of new species production in both commercial and ornamental aquaculture.

BIOMEDICAL / NUTRACEUTICAL RESEARCH - BIOPROSPECTING

Research into various applications of aquatic based products for use in nutrition as well as human and veterinarian medicines is also available as the resources of the sea continue to yield many new products.

TESTING FACILITIES AND CORE SERVICES

The wet-labs at the facilities are divided into separate areas so as to ensure maximum biosecurity and client confidentiality. Each of the wet rooms contains a set of holding tanks with self-contained recirculation systems providing high-level mechanical, chemical and biological filtration. All incoming water is stage filtered down to 1µm and the RAS units have the option of continuous UV, ozone or combined treatment. Systems operate with freshwater or seawater with operational temperatures ranging from 10°C to 32°C. Multiple RAS units can be operated within one Bay, isolating batches of tanks.

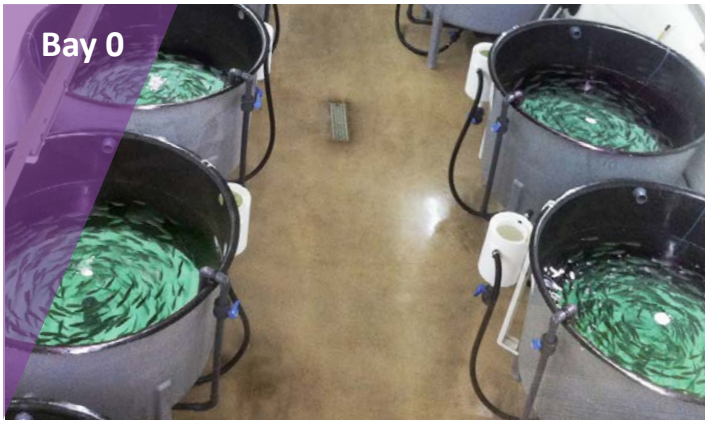
The fully operational research hatchery offers both research and training facilities with complete live feed production of rotifers, artemia and various algae species.

Each of the rooms can be used for a variety of research purposes including:

- Ornamental, novel and carrier species
- Veterinarian and pathology research
- Broodstock conditioning
- Aquatic toxicity trials
- Nutritional research
- Larviculture

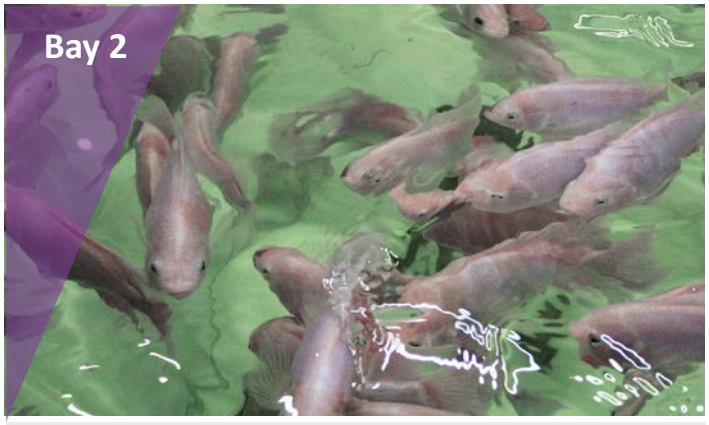
Main Research Areas

- **Nutrition / feeding trials - Commercial and ornamental aquaculture species**
- **Vaccine, efficacy and safety testing and challenge trials**
- **Technology testing, commercial development and technical direction**
- **Hatchery training facilities, including live feed and larvae culture**
- **Product research and reporting / benchmarking**
- **Technical support and testing for new products**
- **New / alternative species research**



Twelve (12) tanks in system (1,500 L each) with full RAS and feed / faeces collectors. Freshwater or marine species system.

Eighteen (18) tanks in system (500 L each) with full RAS. The Bay can be operated for both feed or challenge trials. Freshwater or marine species system.



S1: Six (6) tanks in system (300 L each) with full RAS. Freshwater or marine species system.S2: Nine (9) tanks in the system (300 L each) with full RAS. Freshwater or marine species system.

This bay has a dividing wall with two completely separate RAS units on each side. An interconnection is possible if required. The bay is currently used for quarantining and stock-holding of marine fish.

Bay 4 can be operated as one or two "state" systems – the room is divided by a wall with separate equipment on each side that can be interconnected if required.

S1: Nine (9) tanks in system (500 L each) with full RAS. Freshwater or marine species system.
State system can be operated at two (2) levels (350 L or 500 L)

Bay 6

Twelve (12) tanks in system (300 L each) with full RAS. Freshwater or marine species system.

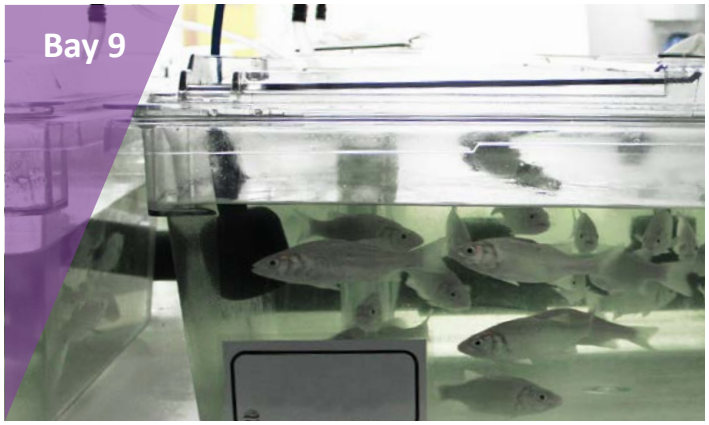
Bay 7

Eighteen (18) tanks (1,000 L each) for on growing and immunisation. Freshwater- assigned to Tilapia, Pangasius or other similar species with an additional eight (8) tanks for fry on growing and immunisation.

Bay 8

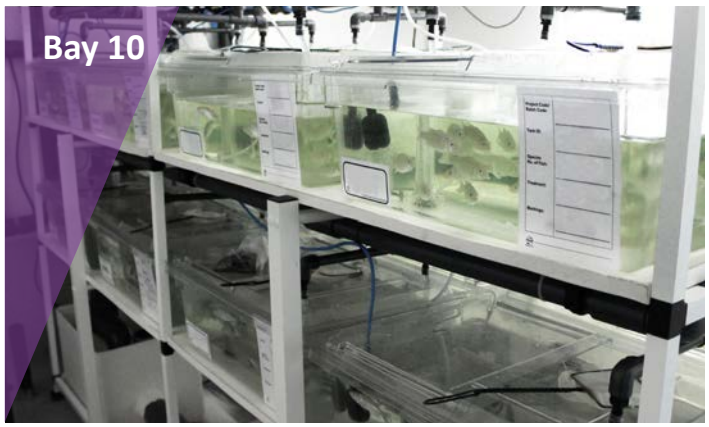
S1: Twelve (12) tanks in system (500 L each) with full RAS. Freshwater or marine species system.

Bay 9



S1, S2: Eight (8) tanks in system (100 L each) with full RAS. Freshwater or marine species system.All tanks have acrylic viewing windows for greater ease of fish behaviour observation.

Bay 10



Sixteen (16) tanks in system (40 L each) with full RAS. Polycarbonate tanks with sliding lids. Freshwater or marine species system.

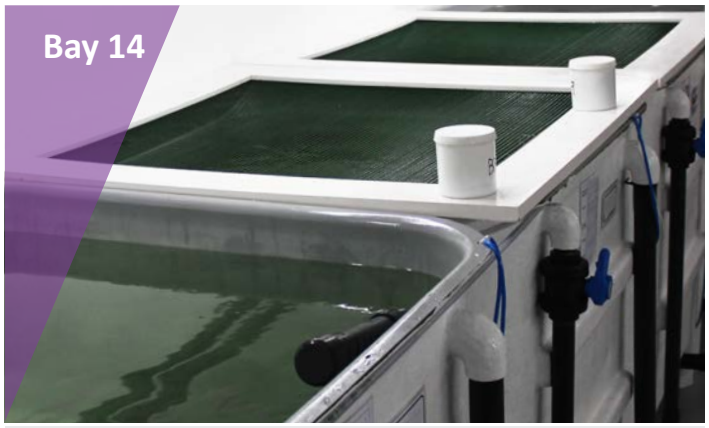
Bay 11

S1:Ten (10) tanks in system (6*10 L, 2*20 L, 2*40 L) with full RAS. Freshwater or marine species system.S2:Twelve (12) tanks in the system (40 L each) wifull RAS. Freshwater or marine species system.

Bay 12

A fully equipped laboratory with microscope, steromicroscope, analytical balances, incubators, and other equipment to support the experimental trials development in our facility.

Bay 14



S1:Four (4) tanks in systems (400 L each) with full RAS. Freshwater or marine species system. S2: Four (4) tanks in the systems (400 L each) with full RAS.

Bay 15

Fifteen (15) tanks in system (1,000 L each) with full RAS. Large surface areas for adult sized fish. Cold water or warm water. Freshwater or marine species system.

Bay 16

Twelve (12) tanks in system (400 L each) with full RAS. Freshwater or marine species system.

Bay 17

Four (4) tanks in system (400 L each) with full RAS. Freshwater or marine species system.

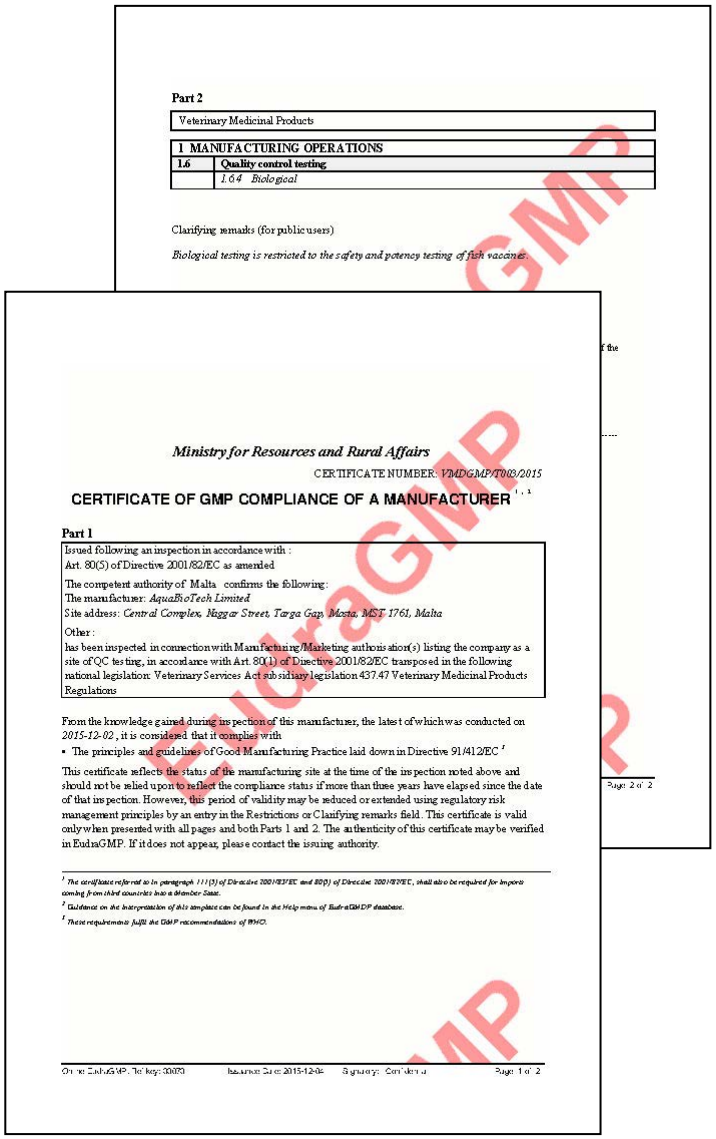
Other Bays

From Bay 18 to Bay 27

Open configuration – available to be customised to the exact requirements of clients.

The **ABT Innovia** is a GMP (Good Manufacturing Practice) certified facility by UK VMD-DEFRA and Maltese VRD authorities for the "safety and potency testing of aquatic vaccines for batch release".

The experimental challenge trials are performed according to GCP (Good Clinical Practice) under the principles of the International Cooperation on Harmonization of Technical Requirements for Registration of Veterinary Medicinal Products (VICH).



Part 2

Veterinary Medicinal Products

1 MANUFACTURING OPERATIONS	
1.6	Quality control testing
	1.6.4 Biological

Clarifying remarks (for public users)

Biological testing is restricted to the safety and potency testing of fish vaccines.

Ministry for Resources and Rural Affairs

CERTIFICATE NUMBER: *VMDGMP/T003/2015*

CERTIFICATE OF GMP COMPLIANCE OF A MANUFACTURER [1, 2]

Part 1

Issued following an inspection in accordance with :
Art. 80(5) of Directive 2001/82/EC as amended

The competent authority of Malta confirms the following:
The manufacturer: *AquaBioTech Limited*
Site address: *Central Complex, Naggar Street, Targa Gap, Mosta, MST 1761, Malta*

Other :
has been inspected in connection with Manufacturing/Marketing authorisation(s) listing the company as a site of QC testing, in accordance with Art. 80(1) of Directive 2001/82/EC transposed in the following national legislation: Veterinary Services Act subsidiary legislation 437.47 Veterinary Medicinal Products Regulations

From the knowledge gained during inspection of this manufacturer, the latest of which was conducted on *2015-12-02*, it is considered that it complies with

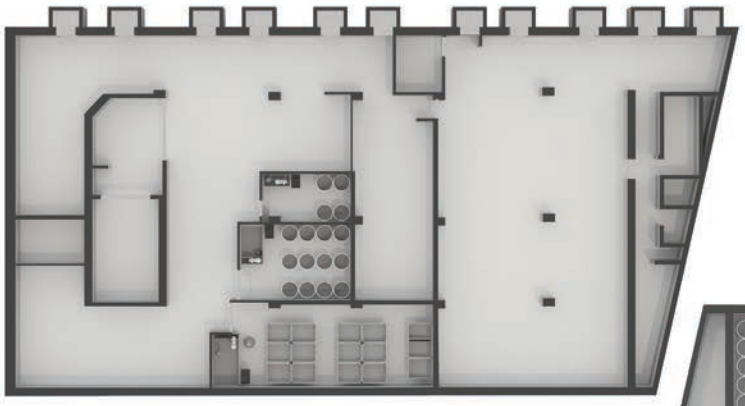
- The principles and guidelines of Good Manufacturing Practice laid down in Directive 91/412/EC [3]

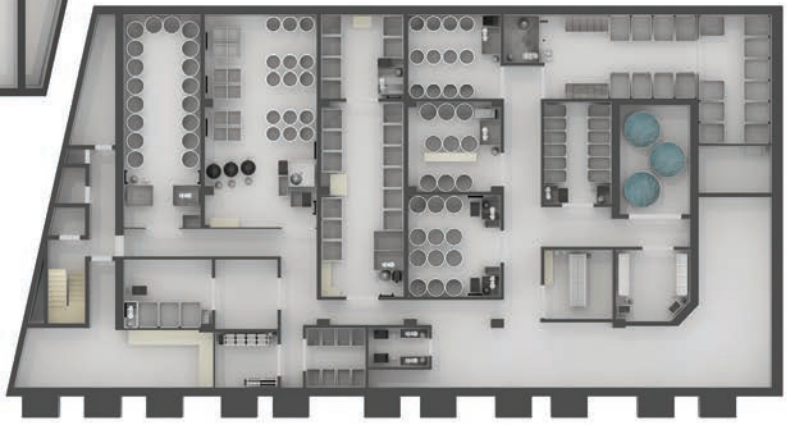
This certificate reflects the status of the manufacturing site at the time of the inspection noted above and should not be relied upon to reflect the compliance status if more than three years have elapsed since the date of that inspection. However, this period of validity may be reduced or extended using regulatory risk management principles by an entry in the Restrictions or Clarifying remarks field. This certificate is valid only when presented with all pages and both Parts 1 and 2. The authenticity of this certificate may be verified in EudraGMP. If it does not appear, please contact the issuing authority.

[1] *The certificate referred to in paragraph 1(1)(i) of Directive 2001/83/EC and 90(i) of Directive 2001/82/EC, shall also be required for imports coming from third countries into a Member State.*
[2] *Guidance on the interpretation of this template can be found in the Help menu of EudraGMDP database.*
[3] *These requirements fulfil the GMP recommendations of WHO.*

Online EudraGMP Telkey: 20020 Issuance Date: 2015-12-04 Signatory: Competent Page: 1 of 2

Bays and Facilities

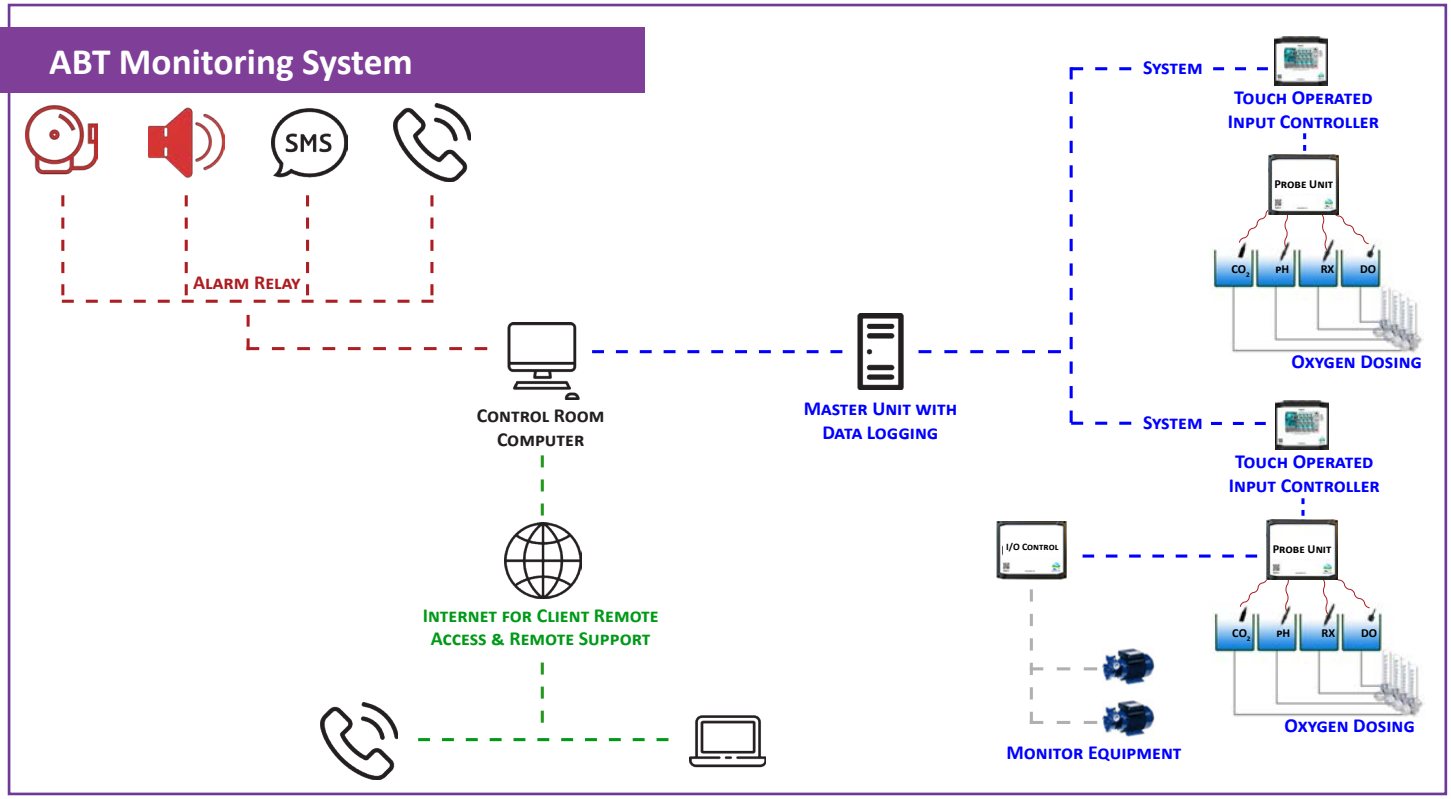




The **AquaBioTech Group** operates an advanced system for continuous measurment, monitoring and control of all water parameters, as well as key operational technology, just as it does in any of its commercial hatcheries or fish farms. The onsite facility utilises its liquid oxygen supply in a highly efficient system, which also comprises of several back up safety redundancies including emergency power supply.

As a key component of the upgrade, the new monitoring and control system provides a highly improved level of monitoring, control, electronic reporting and trial security with flexible monitoring configurations available for each and every system, as per client's requirements.

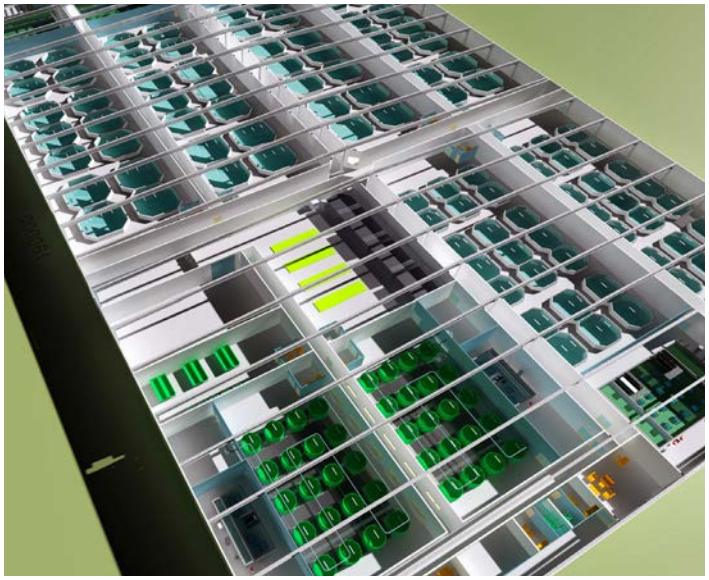
ABT Monitoring System



DESIGN AND ENGINEERING

In addition, **ABT Innovia** and the **AquaBioTech Group** are proud to offer design and engineering services for recirculating aquaculture facilities for both research and commercial use.

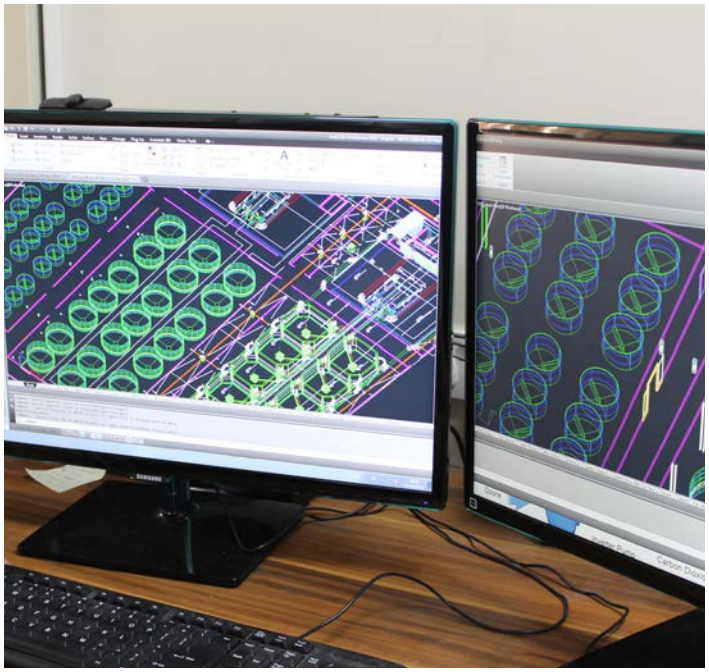
Based on our expertise, we can design facilities that can run a wide range of daily water exchange rates – from flow-through to zero exchange. We can also offer independent filtration solutions for solids removal, biofiltration, gas exchange, water polishing and disinfection.



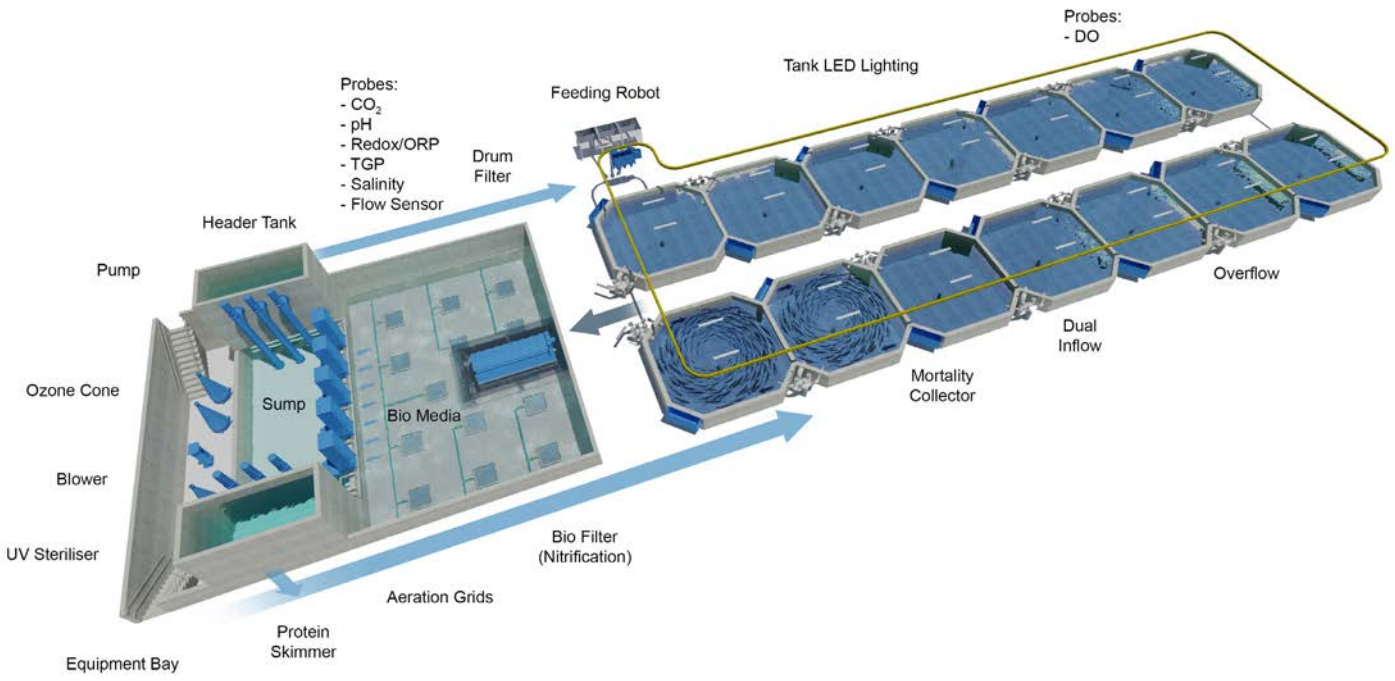
INTERNAL DESIGN AND MANUFACTURING

ABT Innovia and the **AquaBioTech Group**, also apply their expertise to the design and manufacturing of Glass Reinforced Plastic equipment for aquaculture facilities, offering:

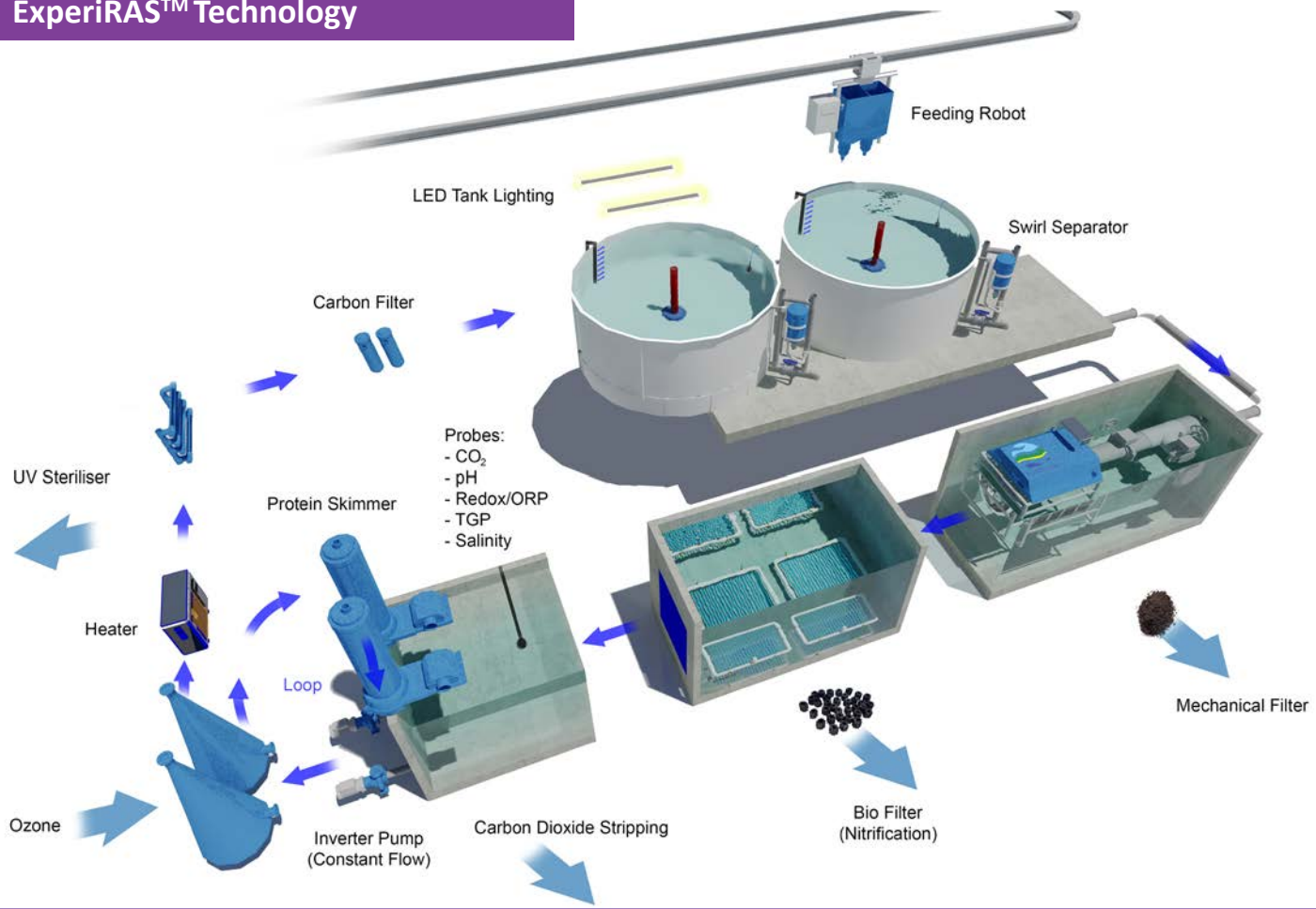
- Solids separation devices: hydro cyclones and radial flow separators
- Tanks for every application: fish tanks, biofilter tanks, sumps.. etc.
- Down flow bubble contactors: oxygen and ozone cones
- Packed columns: oxygenation and degassing
- Protein skimmers



Commercial RAS Technology



ExperiRAS™ Technology



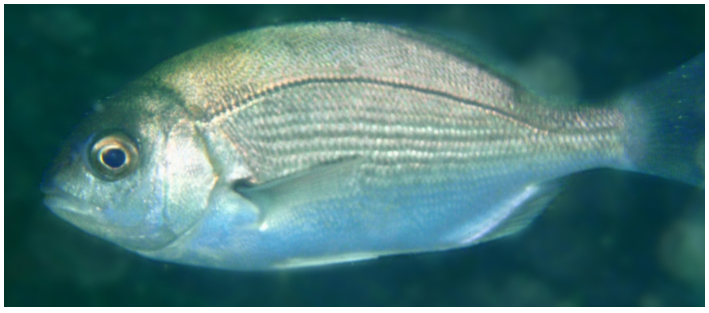
The ABT Innovia research facility runs cost effective trials on cold water species like Atlantic Salmon, Brown Trout, Carp, Coho and tropical species like Pangasius, Asian Seabass and Shrimp (L. vannamei). Furthermore, with existing partnerships with hatcheries worldwide we develop secure reliable supplies of a number of additional species.

The following list represents species we are able to secure from known sources, but we are also open to requests from clients to work on other species if required.

FISH SPECIES

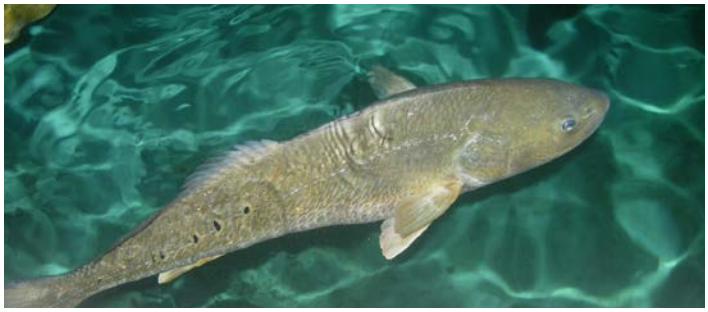
MARINE

- Yellowtail / *Seriola lalandi*
- Groupers / *Epinephelus sp.*
- Red snapper / *Lutjanus spp*
- Sea bream / *Saparus auratus*
- Atlantic Salmon / *Salmo salar*
- Meagre / *Argyrosomus regius*
- Cobia / *Rachycentron. canadum*
- Sole / Solea solea / *Senegalensis*
- Turbot / *Scophthalmus maximus*
- Coho salmon / *Oncorhynchus kisutch*
- Silver Pomfret / *Paralichthys olivaceus*
- European Sea bass / *Dicentrarchus labrax*
- Japanese flounder / *Paralichthys olivaceus*



WARM - FRESHWATER

- Clarias Catfish / *Clarias gariepinus*
- Pangasius / *Pangasius hypophthalmus*
- Tilapia / *Oreochromis niloticus* (and other species)
- Nile Perch / *Lates niloticus*
- Asian Seabass / *Lates calcarifer*
- Tambaqui / *Colossoma macropomum*
- Snakeheads / *Channa striata and C. micropeltes*



COLD - FRESHWATER

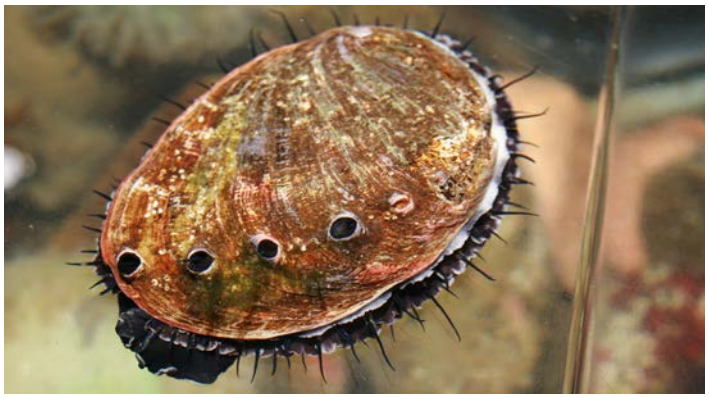
- Tench / *Tinca tinca*
- Perch / *Perca fluviatilis*
- Pike Perch / *Sander lucioperca*
- Brown / Sea trout / *Salmo trutta*
- European Catfish / *Silurus glanis*
- European eel / *Anguilla anguilla*
- Sturgeon / Sterlet / *Acipenser sp.*
- Rainbow Trout / *Oncorhynchus mykiss*
- Carp / Koi Carp / *Cyprinus carpio* (and other species)

ORNAMENTALS

- Clownfish
- Zebra Danio / *Danio rerio*
- Angelfish / *Pterophyllum scalare*

SHELLFISH

- Oysters
- Abalone
- Manila clams
- Limpets / *Patella sp.*
- Razor clams / *Ensis sp.*
- Sea urchins / *Paracentrotus lividus*
- Mussels / *M. edulis and galioprovincialis*

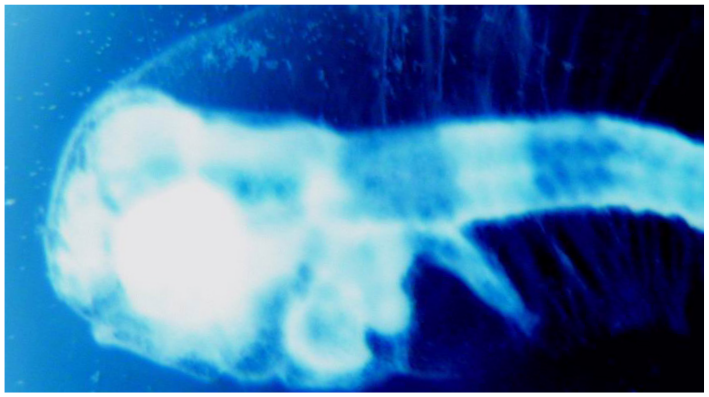


PHYTOPLANKTON

- *Pavlova*
- *Isochrysis*
- *Skelotonema*
- *Nanochloropsis*
- *Chlorella, Phormidium*
- *Chaetoceros, Tetraselmis*
- *Thalassiosira, Phaeodactylum*

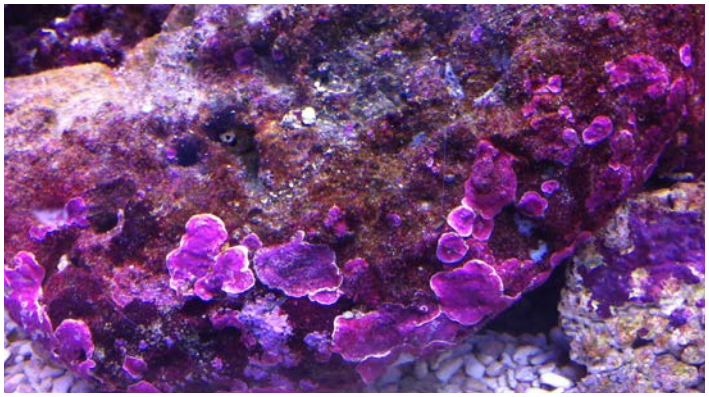
LIFE FEEDS

- Copepods
- Artemia / *Artemia sp.*
- Rotifers / *Brachionus sp.*



OTHER INTERVERTEBRATES

- Corals
- Sponges



AQUATIC ECOTOXICOLOGY

ACUTE AND CHRONIC TRIALS

- Daphnia, Mussels, Bugula, Barnacles,
- Artemia, Algaes, Sea urchins, Fish, Rotifers

BIOACCUMULATION TRIALS

- *Mytilus sp.*, Fish

...as well as other commercially important emerging species.

We have been working on expanding our list of challenge models. Work has been completed on our cohabitation challenge models for streptococcosis on Nile tilapia (*O. niloticus*) in challenges with orally infected fish. New microbiological technologies have been studied for its application in the production of highly concentrated pathogenic bacteria vials that are also available to our clients, ready to use in our own bacterial strains but also ready to apply to any other organism requested.

OUR CHALLENGE MODELS MAY INCLUDE

- Challenge by pathogen inoculation, through a bath or an oral/parenteral administration. Mortalities can be studied in the fish directly inoculated with the pathogen or in cohabitation groups according to the trial design
- Application of vaccine / therapeutic products by bath, oral or parenteral routes
- Application of environmental stressors when required by the experimental protocol

PARASITE CHALLENGE MODELS (UNDER DEVELOPMENT)

- Monogeneans (*Sparicotyle chrysophrii, Diplenactum aquaeans*)
- Myxosporeans (*Enteromyxum leei, Enteromyxum scophthalmi*)

ENVIRONMENTAL STRESSOR CHALLENGES

- Thermal stress: high and low temperatures, slowed and controlled rising / lowering levels
- pH stress: slow and rapid change
- Oxidative stress, low dissolved oxygen (DO): slow and controlled reduction of levels
- Carbon Dioxide (CO_2): static and controlled elevation of levels
- Stocking density and stress indicators: cortisol levels, heat shock proteins, etc.

Challenge Model List

- *Flavobacterium psychrophilum* – Trout; Bacterial Cold-Water Disease
- *Streptococcus agalactiae* – Tilapia; Streptococcosis
- *Streptococcus iniae* – Tilapia; Streptococcosis
- *Photobacterium damselae* subsp. *piscicida* - Sea bass; Pasteurellosis
- *Vibrio anguillarum* Serotype 01 - Sea bass; Vibriosis
- *Vibrio harveyi* - Sea bream; Vibriosis
- Cyprinid herpesvirus 3 – Common carp; Koi Herpesvirus Disease
- *Aeromonas hydrophila* - Tilapia and Pangasius; Motile Aeromonas Septicemia
- *Aeromonas salmonicida* subsp. *salmonicida* - Trout; Furunculosis
- *Edwardsiella ictaluri* - Catfish; Enteric Septicemia of Catfish
- *Edwardsiella tarda* – Channel fish, Flounder; Edwarsiellosis
- Betanodavirus (RG NNV: Red Grouper Nervous Necrosis Virus) - Sea bass; Viral Nervous Necrosis

Different types of nutrition trials can be performed in our facilities:

- Benchmarking performance trials using different commercially available feeds where fish are grown for a period of time, and biometric parameters are recorded

Feed formulation trials, where desired raw materials or additives are included at different inclusion levels in experimental diets. Feeds can be formulated by the client or with the help of **ABT Innovia**

- Functional feed trials: where feeds containing special ingredients are fed prior to a particular challenge such as thermal stress, low oxygen or an immunological challenge
- Digestibility trials

INTERNAL ANALYSIS AND PRACTICES

- Tagging
- Histology
- Microbiology
- Spielberg test
- Digital Imaging
- Vaccine residue
- General biometry
- Optical microscopy
- Elastomer and PITs
- Examination via gross necropsy
- Physiological / Biochemical parameters

WITH PARTNER LABORATORIES AND RESEARCH CENTRES

- ELISA
- HPLC
- RT PCR
- Respiratory burst
- Sediment analysis
- Heat Shock Proteins
- Off flavouring geosmin / MIB
- Viral isolation and cell culture
- Enzymatic activity at tissue level
- mRNA expression in specific tissue
- Protein expression in specific tissue
- Proximate composition of whole body or target organs

Marine fouling causes enormous problems in the maintenance of vessels, aquaculture cages, ropes and moorings as well as intake pipelines, Reverse Osmosis (RO) plants and other structures. Our licensed facilities provide laboratories, testing tanks and field studies to assess the antifouling activity of active substances and antifouling products. In field studies, we provide an in-depth assessment of the antifouling performance using image analysis and identification of the fouling community.

LABORATORY SCREENING TESTS

Single species bioassays provide a fast and reliable screening method to identify effective active substances and formulations. Micro and macro-fouling model species currently in-house:

- bacteria
- bryozoan, hydrozoan
- barnacles and mussels
- microalgae, macroalgae

FIELD TESTS – HARBOUR AND OFFSHORE

- Dynamic Testing
- Static field tests in harbour (Panels - ASTM D3623-78a, D6990-05)
- Offshore field tests (Nets / Metallic Demonstrators)

Many regulations require ecotoxicological studies in order to fulfil applications for registration (e.g. REACH, BPR and certification of bioplastics). The EcoTox laboratory carries out standardised and specialised toxicity tests. Our facility has a close collaboration with local and international laboratories that are able to conduct physical and chemical analyses. New techniques can and are being developed for existing and new applications.

AREAS OF APPLICATION

- Pharmaceuticals – Waste water
- Pesticides and Fertiliser Runoff
- Nanomaterials
- Microplastics
- Aquaculture

ECOTOXICITY TESTS (MARINE / FRESHWATER)

- Acute test with macroinvertebrates (*Daphnia, Artemia*, Rotifers)
- Embryo toxicity tests with sea urchin, fish (Zebrafish)
- Chronic test on fish – various species (OECD 215, 204)
- Algae growth inhibition (OECD 201)
- Plant growth tests (*Lemna* sp.)
- Rapid Toxkit microbiotests
- Coral larvae toxicity tests
- Sediment toxicity tests
- Pre-screening *Vibrio*

Biochemical Parameters

- Protein content
- Catalase activity
- Lipid peroxidation
- Acetylcholinesterase activity
- Lysosomal neutral red retention
- Gluthatione S-transferase activity

Biosecurity is one of the most important aspects in animal production since it prevents the introduction, spread and transmission of disease into, within and between animal production facilities. Although basic in principle, biosecurity is one of the most challenging aspects of food production, as it encompasses the design, implementation and monitoring of specific measures at a variety of stages when working with animals.

Our facilities operate with a high degree of bio-security so as to reduce the risk of pathogen transmission. Our staff are trained in industry-leading biosecurity procedures and the work-flows around the facilities are designed to keep biosecurity risks to a minimum. Some of our biosecurity policy features include:

- Disinfection of footwear, gear and hands at the entrance of every lab
- Strict access control to experimental bays
- Individual sets of footwear, equipment and water quality sensors on each bay
- Work flow that forbids staff from re-entering the labs after pathogen work has been carried out
- Constant disease surveillance preformed on water and stock
- Quarantine procedures in place for each batch of incoming fish, even when sanitary certificates have been provided by the supplier

All the work undertaken by the **AquaBioTech Group** is based on the knowledge provided by the latest international publications and conferences, regional biosecurity status and global alerts regarding reported diseases across the different sectors of the aquaculture industry.

Aquatic organisms are faced with many threats to their health through natural exposure to stresses and challenges. At the **AquaBioTech Group** we are constantly striving to advance scientific understanding of how technology, nutrition and health management can help fish, shrimp and other aquatic species resist and recover from illness, stress and disease. Optimising the health status is essential for maintaining fish welfare and for achieving optimum growth of aquaculture species - research plays a key role in accomplishing these goals.

The ethical and humane treatment of all animals in our care is of the highest priority, therefore we implement the three "R's" principle where possible and when animal testing is required. The three "R's" are a widely accepted ethical framework for conducting scientific experiments using animals humanely, and they are:

REPLACEMENT

It refers to methods that avoid the use of animals, or at least replacing those animals that are used in research. When discussing research needs with clients, the **AquaBioTech Group** will encourage clients to identify alternatives to animal testing such as in vitro methodologies.

REDUCTION

It refers to methods which minimise animal use and enable researchers to obtain comparable levels of information from fewer animals or to obtain more information from the same number of animals.

When designing experiments, the **AquaBioTech Group** will attempt where possible to reduce the number of animals used. This can include:

- Reusing experimental animals when no increased risk of pain, suffering or lasting harm is foreseen
- Carrying out appropriate research (e.g. literature research) to avoid unnecessary testing
- Improving experimental design and statistical analysis

REFINEMENT

It refers to improvements in scientific procedures and husbandry practises which minimise actual or potential pain, suffering, distress or lasting harm and / or improve animal welfare in situations where the use of animals is unavoidable.

When conducting experiments, the **AquaBioTech Group** will provide the highest standards of care and husbandry to the experimental animals, including:

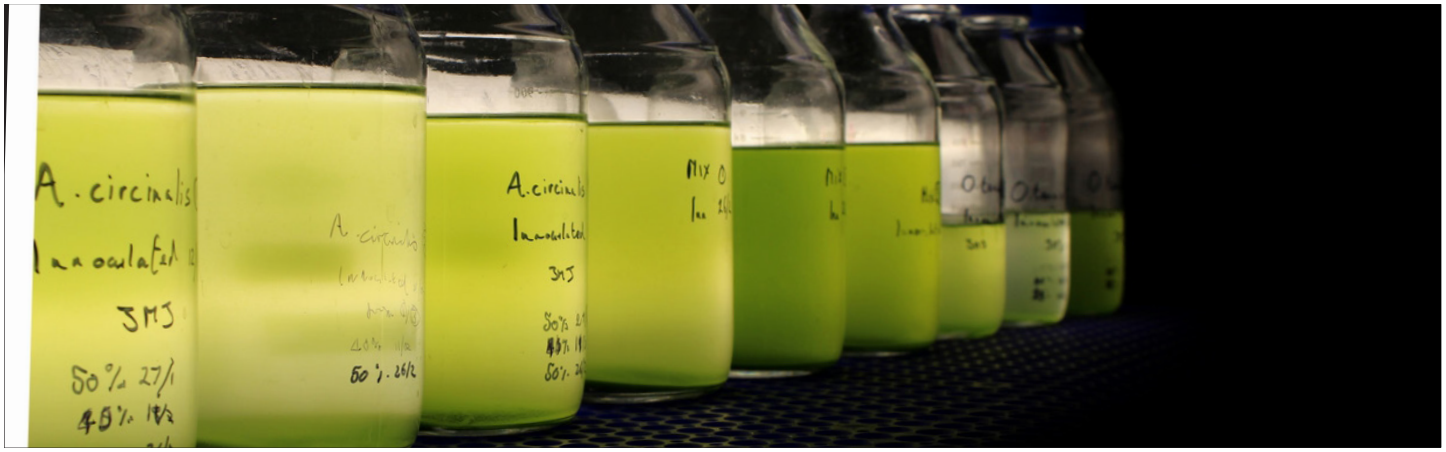
- Ensuring where possible that the use of non-invasive techniques are employed
- Maintaining appropriate and optimal husbandry conditions
- Ensuring that suitable humane endpoints are identified

The **AquaBioTech Group** is actively involved in research and academic activities at both National and European level, either in collaboration with local universities and public bodies or as part of larger consortia which takes part in Europe's main research schemes.

In Malta: Collaboration with the University of Malta performing oceanographic work such as ROV surveys, seabed mapping and sampling work.

EU: Active involvement in H2020 projects and other initiatives. Currently **AquaBioTech Group** is involved in 2 on-going FP7 and 3 Horizon 2020 projects whilst many more have been completed.

International: Furthermore we do participate in a number of international and bilateral cooperation schemes such as the ERANETs, Interreg, Eureka, PRIMA Initiative and others to establish a long-lasting business and research collaboration with counterparts from Africa, Middle East, Asia, Latin America, USA and Canada.



The **AquaBioTech Group** provides ample opportunity for students and trainees to develop skills and know-how in the various fields of activity in which it operates: fish rearing, aquaculture engineering, water chemistry, fish health and nutrition, toxicology, marketing, project management, business development etc.

We have been receiving an increasing number of trainees over the years, coming from all over the world and contributing to enrich our international dimension. We are familiar with the EU framework and the Erasmus+ program, and are ready to provide the necessary help regarding the administrative and scholarship requirements.

We look forward to welcoming all applicants that wish to enhance their CV with a new, significant and professional experience for a duration of between 3-12 months.

Camilla Due Gitz
Business Development Intern
Denmark

Noemi Cubo
Water Quality Intern
Spain

Sam Clough
Aquaculture Technican Intern
England

Monika Šatková
Aquaculture Technican Intern
Slovakia

Alejandra Gimeno
Aquaculture Technican Intern
Spain

Gourav Kumar Thazhathillath
Laboratory QA & QC Intern
India

Karl Peebo
Applied Chemistry & Biotechnology Intern
Estonia

Elena Zarnier
Fish Health & Microbiology Intern
Italy

Canada
USA
Mexico
Costa Rica
Columbia
Venezuela
Brazil
Portugal
Spain

Ireland
UK
France
The Netherlands
Italy
Germany
Norway
Poland
Hungary

Slovenia
Greece
Bulgaria
Moldova
Turkey
Rusia
Vietnam
Malta
Marocco

Lebanon
Egypt
Saudi Arabia
Nigeria
Ghana
Uganda
Zimbabwe
South Africa
Australia

We believe that our first responsibility is to our clients who utilise our products and unique professional services. Meeting their needs and demands is our primary goal, pushing us to strive and carry out every task at the highest standard.

We constantly strive to reduce our costs in order to maintain reasonable prices, as this will enable our clients to obtain the best value for their money using our services. Our customer`s demands and problems are of the highest importance to us and are serviced promptly and accurately.

Experimenting with new ideas, developments, concepts and research is an ongoing process at the **AquaBiotech Group**, and innovative programs are constantly developed developed to offer new services and technologies.

In accordance with our mission statement, we continue our expansion. It is expected that a number of new wet labs and facilities will be available in order to satisfy the growing sectoral demand. These facilities will include additional quarantine and stock fish rooms and RAS facilities for fish nutrition and challenge trials.

The company also offers a licensed offshore marine experimental site area which is used for applied research and testing for a wide range of activities including the anti-fouling materials tests, water quality monitoring equipment and other oceanographic instrumentation / research activities.

"Quality is the customer coming back – not just the service"

AquaBioTech Group

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