

NOVA [NEWS]

MONOGRAPH
PESCANOVA BIOMARINE CENTER

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AT THE FOREFRONT OF AQUACULTURE



GRUPO NUEVA
PESCANOVA

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EDITORIAL

The global demand for fish grows between 3% and 4% every year and if we only consumed wild products, this demand could not be assumed by seas and oceans. **Therefore, research in aquaculture is fundamental for guaranteeing the future supply of seafood** and, consequently, our future as a company.

We have a very clear example in the case of octopus, of which the consumption grows while making fishing grounds suffer. If we are capable of complementing what the sea gives us with responsible and sustainable farming, we will help preserve the species as well as enable future generations to enjoy it. Therefore, we must **support the balance between fishing and aquaculture activity** and, to make this possible, we need to boost research.

At the Nueva Pescanova Group we have made great progress in this regard: from the agreement with Microsoft to incorporate new technologies such as artificial intelligence and Big Data in our vannamei prawn farms in Latin America, to the recent opening of **our new aquaculture R&D+I centre: the Pescanova Biomarine Center**.

With great pride we can affirm that **we are the first company to have a private aquaculture centre in Spain**, in which we have invested €7.5 million with the aim of promoting research in this field. Here we are studying how to improve our farms in terms of efficiency, sustainability, nutrition and animal welfare, and we investigate how to breed new species that had never been produced by aquaculture until now.

The Pescanova Biomarine Center responds to three of our fundamental pillars: **innovation, sustainability and commitment to the environment**. As you know, innovation forms part of our DNA, but innovation does not only mean being at the forefront in our operations, we also oblige ourselves to ensure our advances are accompanied by a sustainable guarantee. Sustainability is not a strategy in the Nueva Pescanova Group, it is THE strategy. Furthermore, the launch of this R&D+I centre represents a new economic driving force for the area of O Grove (Pontevedra).

As part of this commitment to providing value within the community, we have created an **educational museum inside the Biomarine Center**. It is a wonderful tool for making known the benefits of aquaculture, give it the prestige it deserves, highlight the significance of research and sustainability and raise people's awareness of the importance of looking after marine ecosystems. If we bear in mind that over 250,000 wild

species are fished in the world and only 600 are farmed, it is clear that we have a lot of work ahead of us and I'm sure that the research we are carrying out here will mark the guidelines for aquaculture in the future.

Ignacio González
CEO - Nueva Pescanova Group



A LEADING RESEARCH CENTRE IN AQUACULTURE

Our aquaculture activity began in O Grove in the 1980s. It was the location of Insuiña that, for many years, was the only company in the world that farmed turbot. Our wish has been to take a step further by opening the Pescanova Biomarine Center in the same place where everything started.

It is a **private aquaculture research centre, equipped with cutting-edge technology and has become a referent in Europe.** In these state-of-the-art facilities, our researchers carry out investigation on sustainability and animal welfare.

Our team has become an international benchmark by completing the octopus life cycle in aquaculture for the first time in history, thus achieving that not only the animals born in our facilities have reached the adult stage, but they have also started reproducing in an environment outside their natural habitat. We are currently working with the **fifth generation** of this species and in 2022 we will become **the first company in the world to sell octopus produced in a fish farm.**

'We carry out aquaculture research focused on improving sustainability and animal welfare'

Besides the study of new species, in the aquaculture R&D+I centre we are working on **optimising our turbot and vannamei prawn farms.** In this regard, we have several collaboration projects underway with technology partners, universities and research centres to establish synergies that enable us to carry on improving in animal welfare and sustainability matters, such as the agreement with Microsoft.

'It is one of the most important aquaculture research centres in the world'

We have invested €7.5 million on our new centre: a facility of **4,000 m², with cutting-edge technology,** which also houses a **unique museum in Southern Europe,** created with the aim of making people aware of the importance of looking marine ecosystems for the future of the Planet. The museum runs through the history of aquaculture, its benefits, its future and new technologies for animal welfare. Furthermore, we show visitors what the Nueva Pescanova Group is and we explain our achievements in sustainability, as regards both fishing and aquaculture.



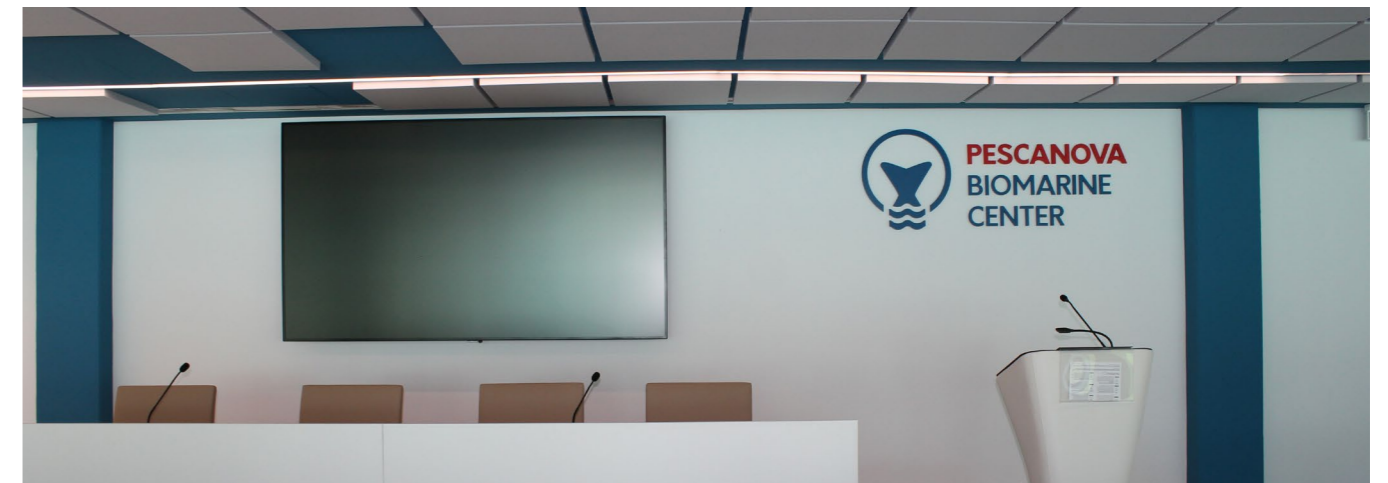
It is worth pointing out that the building of the Pescanova Biomarine Center **has been designed in line with efficiency and sustainability criteria.** Among other examples, it has a solar farm for self-consumption with 714 photovoltaic panels capable of producing nearly 300,000 kWh of energy per year, which will reduce CO₂ emissions by an amount equivalent to planting over 7,000 trees.

In fact, the centre has already received the BREEAM (*Building Research Establishment Environmental Assessment*

Methodology), international certification, which certifies the sustainability of the building and facilities.

In addition, the Pescanova Biomarine Center has a fully equipped conference hall, where all kinds of events can be held, a large meeting room and a cooking show facility with everything necessary to organise gastronomic activities or cooking demonstrations, among events. In conclusion, a multi-purpose area that represents our principles of innovation and sustainability.

'The Pescanova Biomarine Center, which has been designed in line with efficiency and sustainability criteria, houses the only private aquaculture museum in Southern Europe'



Interview with David Chavarrías,
Chief Officer of Pescanova Biomarine Center

‘ANIMAL WELFARE IS ONE OF OUR PRIORITY LINES OF RESEARCH’

What is the main differentiating factor of the Pescanova Biomarine Center?

I would say its versatility, since it's half-way between a standard R&D centre and a production centre. Our main idea is to direct all our efforts towards lines of applied research, which will mean that everything tested here can be transferred and set directly into operation in the production centres.

In which areas do you centre your research work on?

We are working to optimise our turbot and prawn farms, and incorporate new species such as octopus (*Octopus vulgaris*), for which we are working very hard. Actually, we are currently working with the fifth generation of this species in aquaculture.

You have become a benchmark by completing the octopus life cycle. What is the next step?

For all aquaculture species, experimentation can take decades until a first industrial production can be launched. We completed the octopus's life cycle in 2019 and, since then, we haven't stopped reaping successes, also managing to increase the number of breeders. This means that, thanks to all the know-how derived from our R&D, we will be able to set in motion the first industrial production in 2022, which will gradually increase from that date. This fifth generation is a very relevant fact and, once again, confirms that we have all the stages of the life cycle under control: namely,

reproduction, larval cultivation, pregrow-out phase and grow-out phase; thus enabling us to select the best individuals from each generation to subsequently reproduce them.

How are you preparing to take the jump from research to the industrial process?

The versatility of our facilities that I mentioned earlier is based on the need to optimise any kind of species and under different conditions. It enables us to cover a wide variety of production systems and breeding stages (from the larval stage to the pregrow-out and grow-out phases), environment (controlling all the parameters that affect farming) and species in four specialised fields (genetics, nutrition, animal health and welfare) with high sensory levels and a very strict control of all the areas. We cover all the possible stages and variables to directly leap into the production centres.

Once the farming process has been resolved and standardised, the next step for any aquaculture species is to develop genetic improvement programmes that help identify the best breeders, in order to transmit features of interest to the progeny, such as better growth and greater resistance to diseases.

What other advances in research matters have been achieved?

We have taken a step forwards in the genetic improvement plan for turbot. We are using new advances in the selection process that will enable us to identify feature of interest and assign the genetic index to each breeder, a project that we are carrying out in collaboration with the University of Santiago de Compostela.

‘We work so that everything we test in the Pescanova Biomarine Center can be transferred and set into operation in our production centres’

As regards nutrition, we work with companies that specialise in animal feed and other public research bodies, with the purpose of optimising the feed, making it more sustainable from an environmental perspective.

I would like to highlight that we have achieved important milestones with the optimisation of zootechny and nutrition, as well as animal welfare, at both the larval stage (the first 40 to 45 days of life) and the subsequent stages until the animals reach their trade size. Animal welfare is one of our priority lines of research. This is fundamental if we want to continue making progress in the other areas. In this field, we are working to find welfare biomarkers associated to the animals' health, which will enable us to select the best farming conditions for each species.

‘We have taken a step forwards in the genetic improvement plan for turbot’

Which collaboration projects have been set in motion with other entities?

We are focused on improving the welfare of the octopus, a project on which we are working with the Instituto

de Investigaciones Marinas - Consejo Superior de Investigaciones Científicas (Institute of Marine Research - Scientific Research Council IIM-CSIC), which provide us with support in a very specific part of the basic research on stress in animals, which requires very specific technology and expertise.

‘It is fundamental to feed off the knowledge of other entities to establish synergies and tackle areas that we need to promote or complement’

We are also collaborating with the Centro Interdisciplinar de Investigación Marina y Ambiental (Interdisciplinary Centre of Marine and Environmental Research -CIIMAR) on the design and future development of molecular tools to establish the bases of the first genetic selection programme for this species.

In my opinion, it is fundamental to feed off the knowledge of other entities to build synergies and tackle areas that we need to promote or complement.



**SPECIAL EDITION:
PESCANOVA
BIOMARINE CENTER**

IN DEPTH

WHAT DO WE INVESTIGATE IN THE PESCANOVA BIOMARINE CENTER?

The Pescanova Biomarine Center is the Group's bastion of R&D+I and, as such, these facilities see **the emergence of the most strategic lines of research**. From here, the bases of future aquaculture will be established, thanks to two key factors: the most avant-garde means and a team of talented professionals.

Despite the fact that the people have been farming aquatic species for several thousand years, we have ambitious challenges ahead of us that imply a great deal of research such as we are promoting from our new centre. Here, besides investigating **improved genetics and animal welfare**, we are working on adding **new species** to aquaculture.

PIONEERS IN OCTOPUS FARMING

Octopus farming is the materialisation of a benchmark that has been attempted by many, yet we are the only people to have achieved it: the completion of the octopus' life cycle in aquaculture. And we are continuing to add unprecedented achievements, as we are currently working with the fifth generation of this species.

However, the research has only just begun, according to **Ricardo Tur, Technical Director of the Pescanova Biomarine Center**: 'We are currently developing the Cecaelia Project, which seeks to optimise octopus farming based on four fundamental areas: zootechny, nutrition, genetics and animal welfare.'

Thanks to this initiative, the Biomarine staff are analysing all the octopus' vital phases, adapting the different parameters according to needs of each one, to thus be able to improve their breeding with the focus mainly on animal health. In this way,



the different characteristics of the environment are studied and adapted, such as the light, type of water or its composition, with the purpose of trying to **recreate some conditions that are as similar as possible to those the animals would find in the marine environment**.

A detailed study of the species is also underway. The study is centred on genetics, detecting which genes are being expressed at all times and analysing what the different transformations that take place respond to. This makes it possible to detect whether the animals have a biological or welfare deficiency and offer alternatives to resolve the problem. Furthermore, as regards nutrition-related matters, 'We are carrying out different tests to know which nutrients the animals require at each stage, to be able to provide them with what they need and adapt their food throughout their whole life', explains **Pablo García, a researcher at Pescanova Biomarine Center**.

In turn, another **researcher at the centre, Pablo Touriñán**, adds, 'So they can grow well the quality of the food they eat is as important as the way it's absorbed. For this reason, we thoroughly analyse this process so the octopus can grow in the best way possible.'

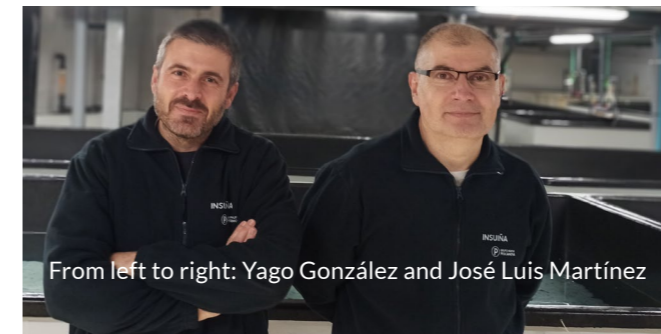
The challenge of the research is to scale the advances achieved in the Pescanova Biomarine Center up to industrial level, simplifying the process **without ignoring all the parameters that guarantee the octopuses' welfare**.



WE HAVE OPTIMISED OUR TURBOT PRODUCTION

Despite our extensive experience in **turbot farming**, we have set in motion a line of research through which the Pescanova Biomarine Center, in collaboration with Insuiña, has managed to **improve the level of welfare of these animals** therefore optimising their production. How? With a new protocol called the EcoBiological Production System (EBPS) with which, like in the case of octopus, we reproduce in aquaculture the same conditions each species would find in the marine environment.

'We've changed the way we work and now we place great importance on the observation of the larvae and ponds, which enables us to adapt the protocol to each group of turbot in particular', explains **José Luis Martínez, Larvae Manager in Insuiña**. To achieve it, says **Yago González, Fry Manager**, 'We've identified and boosted the workers' strengths to carry out this transformation, involving the teams in the project for change and interiorising a new methodology, which has made us understand the reasons for things and meet the established deadlines'.

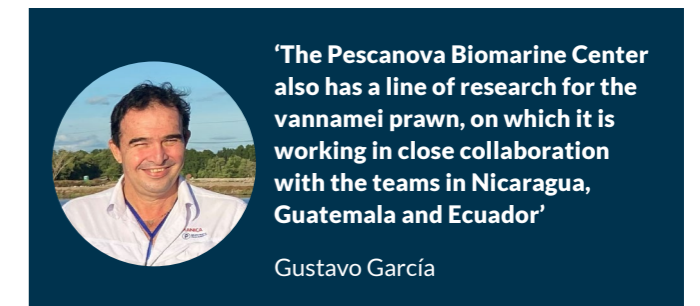


This concept of **sustainable farming as regards both the environment and animal welfare** already producing results: fish with greater resistance to diseases and improved growth rates. Soon it will be possible to transfer these ground-breaking advances to an industrial scale.

RESEARCH TO IMPROVE VANNAMEI OPERATIONS

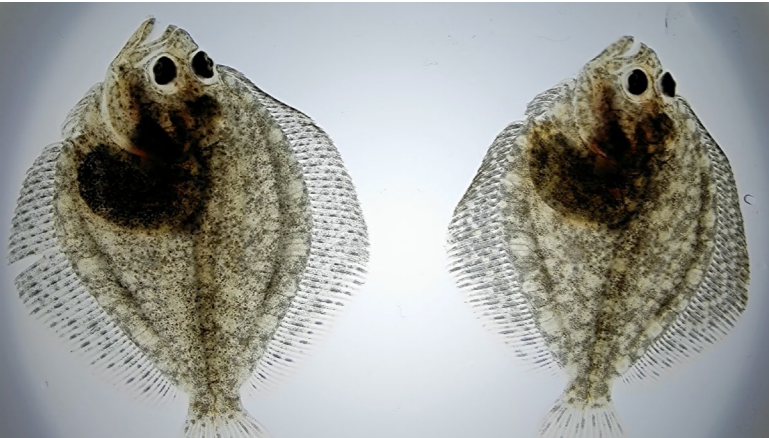
The Pescanova Biomarine Center also has a **line of research for the vannamei prawn, on which it is working in close collaboration with the teams in Nicaragua, Guatemala and Ecuador**. The aim is to create synergy to combine what the people who work on the farms know about the animal with the experience of the Biomarine researchers to define experimental lines, analyse results and transfer knowledge. Thanks to this, we are identifying aspects to improve and **designing tests and trials** to find solutions that contribute towards optimising the operation.

'Ongoing research is fundamental, so it is very interesting to collaborate with the Biomarine, especially because we're biologists and we love aquaculture', affirms **Gustavo García, Chief Larviculture Officer Vannamei**. In turn, **Omar Portugal, Technical Manager at Marfrisco farm**, in Ecuador, describes this cooperation as 'an opportunity to formulate hypothesis aimed towards improving the production on farms, such as, for example, the development of fertilisation strategies focused on maximising the proliferation of microfauna at the pre-spawning phase or at the beginning of the culture of prawns'.



At present 'strategies and techniques are being developed to be able to promote "wild feeding" on the breeding line', says **Liseth Vega, Technical Assistant at Promarisco**. According to **Romina Acurio, at the research department in Ecuador**: this will represent a considerable improvement as, 'With wild feeding, production will be more efficient as we'll be able to transfer the postlarvae to the ponds after a shorter time and using fewer resources'. In conclusion, we still have a long way to go 'with many fronts with which to experiment: water and land analyses, symbiosis, animal health, etc.', points out **Gustavo García**.





THE FUTURE OF AQUACULTURE

Among the goals is the **development of new species**: fish, molluscs and crustaceans, as alternative cultures. If we achieve our goal, it would be strategic for the company, as it would be able to complement and even increase its current production lines; in this regard the Pescanova Biomarine Center plays a central role, given that it materialises the Group's commitment to research, innovation, sustainability and talent.

The Pescanova Biomarine Center works on different collaboration projects with technology partners, universities and research centres:



Universidade de Vigo



DID YOU KNOW THAT...

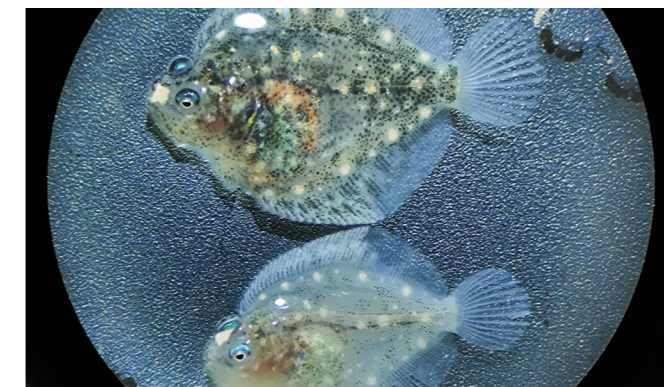
... according to the FAO, 50% of the seafood consumed in the world comes from aquaculture?

... prawns have a visual field of 360°?

... prawns' antennae are sensory organs that they use to move, balance and detect food, among many other functions?

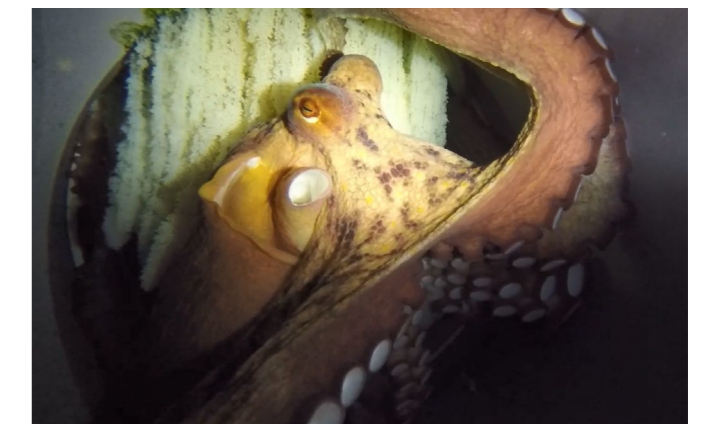


... male turbot are smaller than females?



... male turbot have a life span of 17 years, although females can live up to 27 years?

... octopuses have three hearts and their blood is blue?



... octopuses have over 200 suckers on each arm, which they use to taste and smell?

... in the research area of the Pescanova Biomarine Center we have one of the first turbot tanks that we used to use in the 1980s in the Insuiña centre, in O Grove?

Interview with Javier Aguilera, Global VP of Aquaculture of the Nueva Pescanova Group

‘WE ARE WORKING TO DEVELOP NEW FARMING SPECIES WITH A FOCUS ON SUSTAINABILITY’

What does the launch of the Pescanova Biomarine Center imply for the Group?

It is the largest private research centre in Europe and an international referent. Here we investigate and promote the development of aquaculture. There are thousands of species in the marine world, but only about 600 are farmed, which means we have a huge growth opportunity in this field.

‘We seek to supplement the demand for octopus with a product for which we control the entire chain’

With this scenario, we are working to develop new farming species with a focus on sustainability, a process that implies many years of work, as not all adapt to this medium. In our case, we achieved a milestone with the development of octopus in aquaculture, a line of research on which we had been working between eight and ten years. For example, in the case of turbot it took about 30 years, from the beginning of its study until it was eventually farmed. Making an animal adapt to the medium is a very complex process.

The centre has just been officially opened, but the research work has been underway for some time.

The research dedicated to aquaculture has been working at full steam for several months. The museum, auditorium and other rooms have just been opened, although the centre as a research space already has a great deal of work under its belt.

When will octopus produced by aquaculture be ready for marketing?

At scientific and research level, the milestone has been achieved. We have calculated that farmed octopus will leave the Pescanova Biomarine Center and enter the market in summer 2022 and we are looking for an alternative farming location in the Canary Islands. These will be the two production centres for our octopus.

What characteristics and flavour does farmed octopus have?

There is no difference, which fills us with confidence. In the end, the food we give our octopus is based on what they could find in the natural environment, we reproduce what happens in the wild in our aquaculture ponds as regards food, living conditions, temperature, etc., placing priority to the animal's welfare.

Will it be bigger than octopus that comes from the natural environment? Will it affect the product's market price?

It will depend on what consumers demand. We can let it develop until it reaches the required level of growth.

As regards the market, it will actually be a small niche. We are not going to distort it; our intention is to supplement the demand for octopus with a product for which we control the entire chain until the end: where the animal comes from, who their father and mother are, what they have eaten, etc. We are going to complement the product, not eliminate market shares.



Why choose O Grove? What does coming to this location mean for the Group?

Right from the start we wanted to do it in O Grove for our roots in Galicia, which is the Group's birthplace. Furthermore, these facilities were once a turbot production centre (Insuiña) and we wanted to go back to the place where the farming of this species began.

We hope that the launch of the Pescanova Biomarine Center will become a driving force for the area and we believe that it will, as it has already been visited by researchers from all over the world. It is producing excellent results and it is going to attract talent and visitors. There's no doubt that this is wonderful news for O Grove and the whole district.

‘We hope that the launch of the Pescanova Biomarine Center will become a driving force for O Grove and we believe that it will, as it has already been visited by researchers from all over the world’

The Pescanova Biomarine Center also houses a museum. Who can visit it?

In effect, it is open to the public and tickets can be booked on the Pescanova Biomarine Center website (www.pescanovabiomarine.com). It is also possible to arrange group visits, which are very interesting as they run through the history of Nueva Pescanova, marine ecosystems, their care and aquaculture, all with audio-visual and interactive material for visitors. I think it is very attractive for anyone who wishes to find out about a different world in which it is possible to enjoy all kinds of experiences.

TECHNOLOGY AT THE SERVICE OF INNOVATION, SUSTAINABILITY AND ANIMAL WELFARE

The Pescanova Biomarine Center has been conceived to be a centre of reference from where aquaculture of the future will emerge and, to achieve the goal, the facilities are equipped with the most advanced technology, so as to improve processes and especially benefit the animals' welfare.

In this regard, the biological area of the Pescanova Biomarine Center **as four Recirculating Aquaculture Systems (RAS)**, something unique and exclusive in respect to other centres

or companies of the sector, which enable us to manage and monitor the activity. This gives us great advantages as the researchers can remotely control and monitor the operations of the ponds that are home to the different species we farm in the centre.

'We have four Recirculating Aquaculture Systems, something unique and exclusive in respect to other centres or companies of the sector, which enable us to remotely manage and monitor the activity in real time'

Furthermore, thanks to the use of sensors, we can obtain accurate information that is indispensable for the animals' quality of life: type and intensity of the lighting, temperature, level of the water in the ponds or the concentration of oxygen and ozone. This technology represents a leap forward, since it **enables us to respond quickly in the event of any significant change, as well as anticipate possible setbacks and act in a preventive manner.** In fact, when any indicator is outside the established parameters, the system sends an alarm that directly reaches the mobile devices of our researchers and maintenance staff.

'The equipment in the Pescanova Biomarine Center also enables us to reuse up to 90% of the water in the ponds.' It reflects our commitment to sustainability, as not only does it drastically reduce water consumption, it also means that we save an important amount of energy and significantly reduce the effluents of the farms. Moreover, the systems are capable of reproducing the conditions that correspond to each one of the species during the different vital phases and provide **guaranteed quality and biosafety**, given that they control the different water parameters and have been designed so that it returns to the sea in better condition than when it was collected.

'The equipment enables us to reuse up to 90% of the water in the tanks'

These systems require constant maintenance, which is carried out by **David Gil and Sara Rey, who work in this department at the centre as Head of Maintenance and technician, respectively**, as well as other staff. 'Bearing in mind that we have to respond to the animals' different needs, we have implemented protocols associated to the routine and preventive maintenance of the facilities, thus avoiding undesired shutdowns of our systems', explains **David Gil**.

According to **Sara Rey**, handling these innovative systems 'is quite a challenge, since we have to be permanently alert to deal with any setbacks that could jeopardise the animals' welfare, as well as adapt equipment and means to the new projects that are set in motion.'

THE TECHNOLOGY THAT WILL COME AS A RESULT OF OUR ALLIANCE WITH MICROSOFT

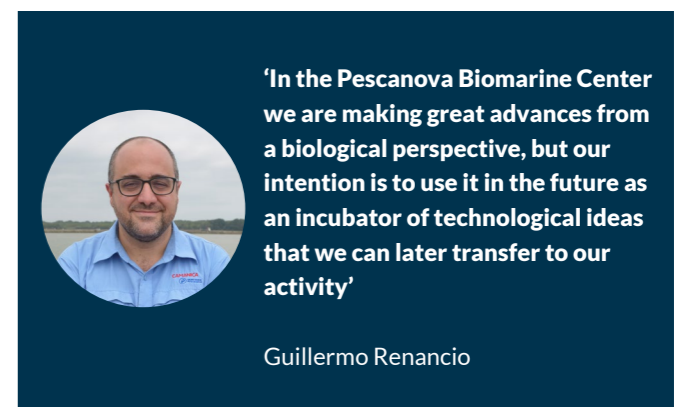
The vocation of the Pescanova Biomarine Center is to become a referent in aquaculture, at both a biological and technological level. 'In the Biomarine we are developing new species and making great advances from a biological perspective, but our intention is to use it in the future as an incubator of technological ideas that we can later transfer to our activity', explains **Guillermo Renancio, Chief Technology, Expansion and Partnerships Officer of the Nueva Pescanova Group**.

We will also support innovative projects that help us advance towards Aquaculture 4.0, such data collection and analysis, which we will use to improve our operations and we will support biological research. This is the idea pursued by the



From left to right: Sara Rey and David Gil

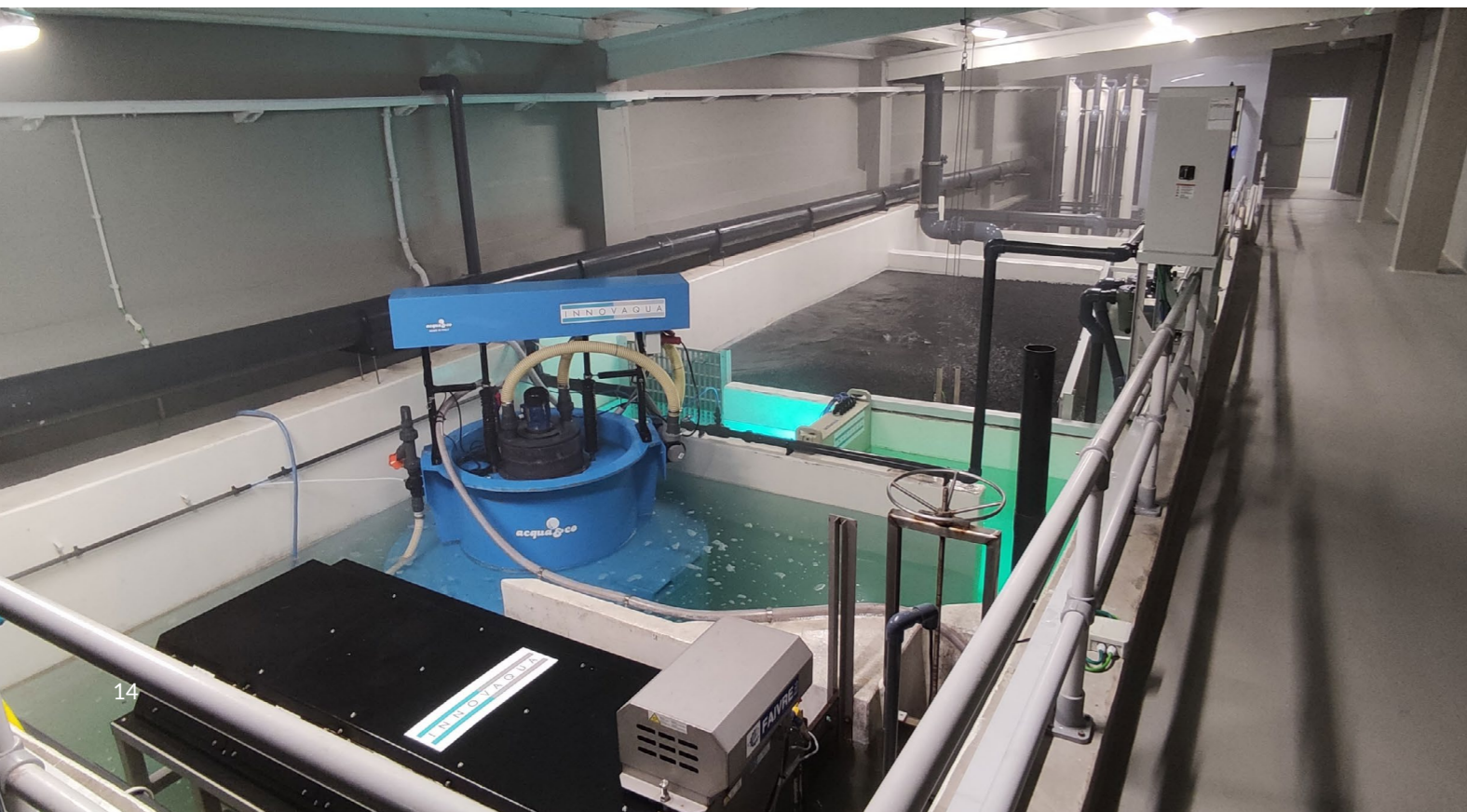
winning proposal of the **"Nueva Pescanova Open Innovation"**, the first open innovation competition that we organised with Microsoft. The winning project of this first edition is from Nokia Bell Labs and it seeks to **roll out private 5G networks powered by solar panels in remote environments**. Thanks to this, Renancio says that, 'We'll be able to have computational calculation systems in places where, up until now, it was not feasible as not even electricity reaches them, let alone telecommunications. In other words, we'll be able to provide locations with ultra-fast broadband networks where there is currently nothing'.



'In the Pescanova Biomarine Center we are making great advances from a biological perspective, but our intention is to use it in the future as an incubator of technological ideas that we can later transfer to our activity'

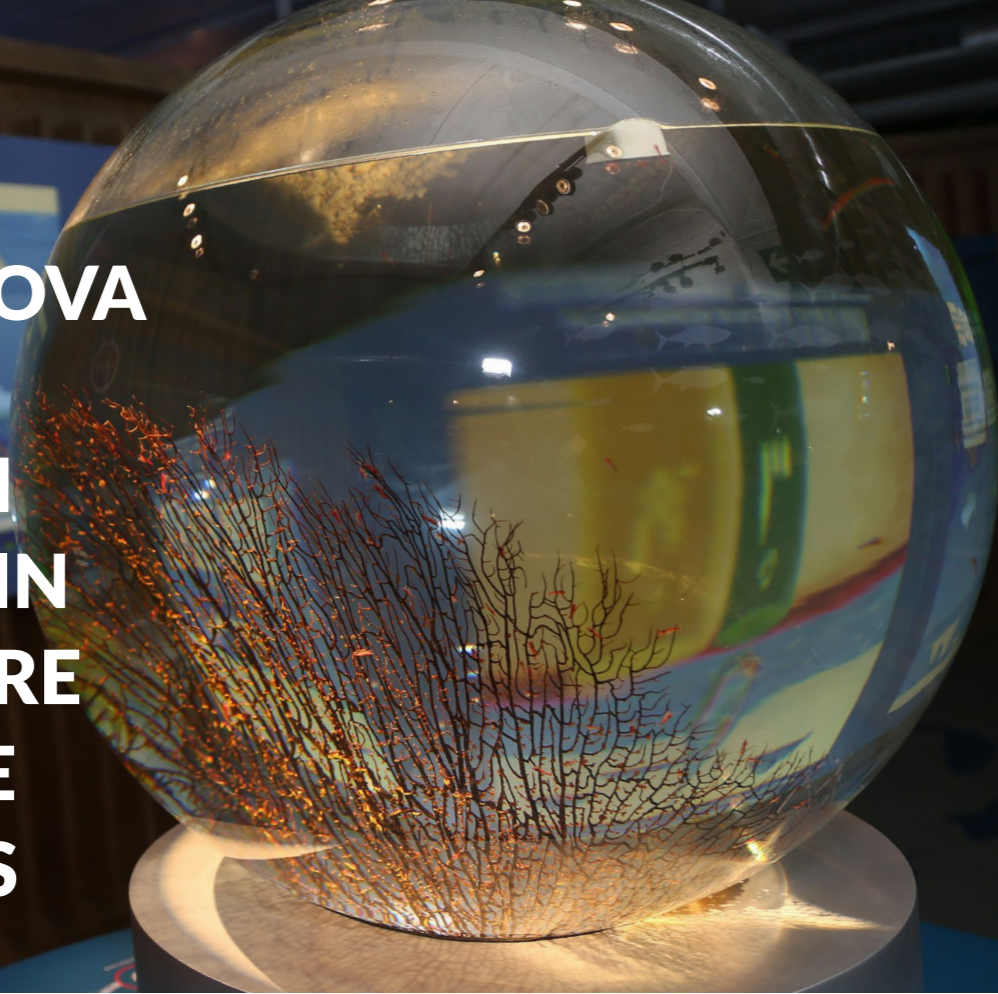
Guillermo Renancio

'The pilot of this ambitious project, which places priority on sustainability, will be initially implemented in the Pescanova Biomarine Center and, after testing the performance, we will transfer it to our aquaculture production centres all over the world. It is a simple, yet unique, action, since it will be a case of applying 5G to aquaculture for the first time', he concludes.



SPECIAL EDITION:
PESCANOVA
BIOMARINE CENTER

THE PESCANOVA BIOMARINE MUSEUM, AN IMMERSION IN AQUACULTURE AND MARINE ECOSYSTEMS



INNOVATION

The Pescanova Biomarine Museum is our educational centre in O Grove. It is open to the public and combines different sensory experiences and interaction elements, which we use with the intention of making people aware of the importance of looking after marine ecosystems for the future of the planet and to make known the benefits of aquaculture and its history.

‘Through our new museum, we want people to understand aquaculture, our values as a company and the importance of looking after marine ecosystems to guarantee the sustainability of the species’, affirms **Tesa Díaz-Faes, Chief Communication and IRR Officer of the Nueva Pescanova Group.**

Divided into six themed sectors, it has been designed so that each visitor may live different experiences that lead them to discover the secrets of the marine environment, learn fun facts and improve their knowledge of the research and innovation that we are developing. However, there is no doubt that we want each person to reflect upon the importance of the aquatic environment as a source of wealth and the decisive role that each one of us performs to preserve and perpetuate it.

To enter into our museum, it is necessary to go through a huge virtual wave. A welcoming that makes the immersion easier for us and which takes us to an area that goes over the **history of the Nueva Pescanova Group**, its origin, etc. And, to enable visitors to capture our DNA, we have a series of **interactive items to learn all about our vessels**, give a face and voice to our crews and discover what the work is like aboard a ship sailing through the finest fishing grounds in the Southern Hemisphere to bring us the best freshness from the sea. In this section, we also reveal our commitment to responsible fishing, animal welfare and our contribution to the United Nations’ Sustainable Development Goals. To achieve this, **we show some of our Corporate Social Responsibility projects** of which we are extremely proud, such as those reflected in our documentary ‘La Ciudad que Nació del Mar’ (The City Born from the Sea).

‘We want people to understand aquaculture, our values as a company and the importance of looking after marine ecosystems to guarantee the sustainability of the species’

‘One of the museum’s gems is an important ecosphere, a large glass ball that contains a self-sustainable ecosystem patented by the NASA’

MARINE ECOSYSTEMS

Following this introduction, we move on to one of our museum’s gems: an impressive ecosphere. The scientific project patented by the NASA: a hermetically closed and self-sustainable

ecosystem inside a huge glass ball. A scientifically perfect world! **Our ecosphere presides over a themed room on the future of the sea** and its current problems, such as marine debris, or the so-called ‘garbage patches’.

The next themed sector goes over the **history of aquaculture** from its beginning in China in 3500 B.C. to the present day. Here visitors have the chance to discover fun facts about the consumption of aquaculture products, know how the farming is carried out, the main species farmed in the world, their characteristics and stages of growth, etc.





Among other features, there are giant models of an octopus, a turbot and a prawn, our main aquaculture species. There are also interactive elements to be able to learn about some interesting details about some of the species farmed today.

After entering inside a very special cave, we take a step into the future, where research and innovation play a fundamental role. And there's no better way to do it than visiting the **laboratories of the Pescanova Biomarine Center by way of a virtual reality headset** with which it is possible to visit the centre's research area. In this section of the museum, an aquatic drone is exhibited, like the ones we use in our farms. We also show the artificial intelligence and Big Data technologies that we have implemented in collaboration with

Microsoft, etc. In conclusion, we show some of the key features of **Aquaculture 4.0**.

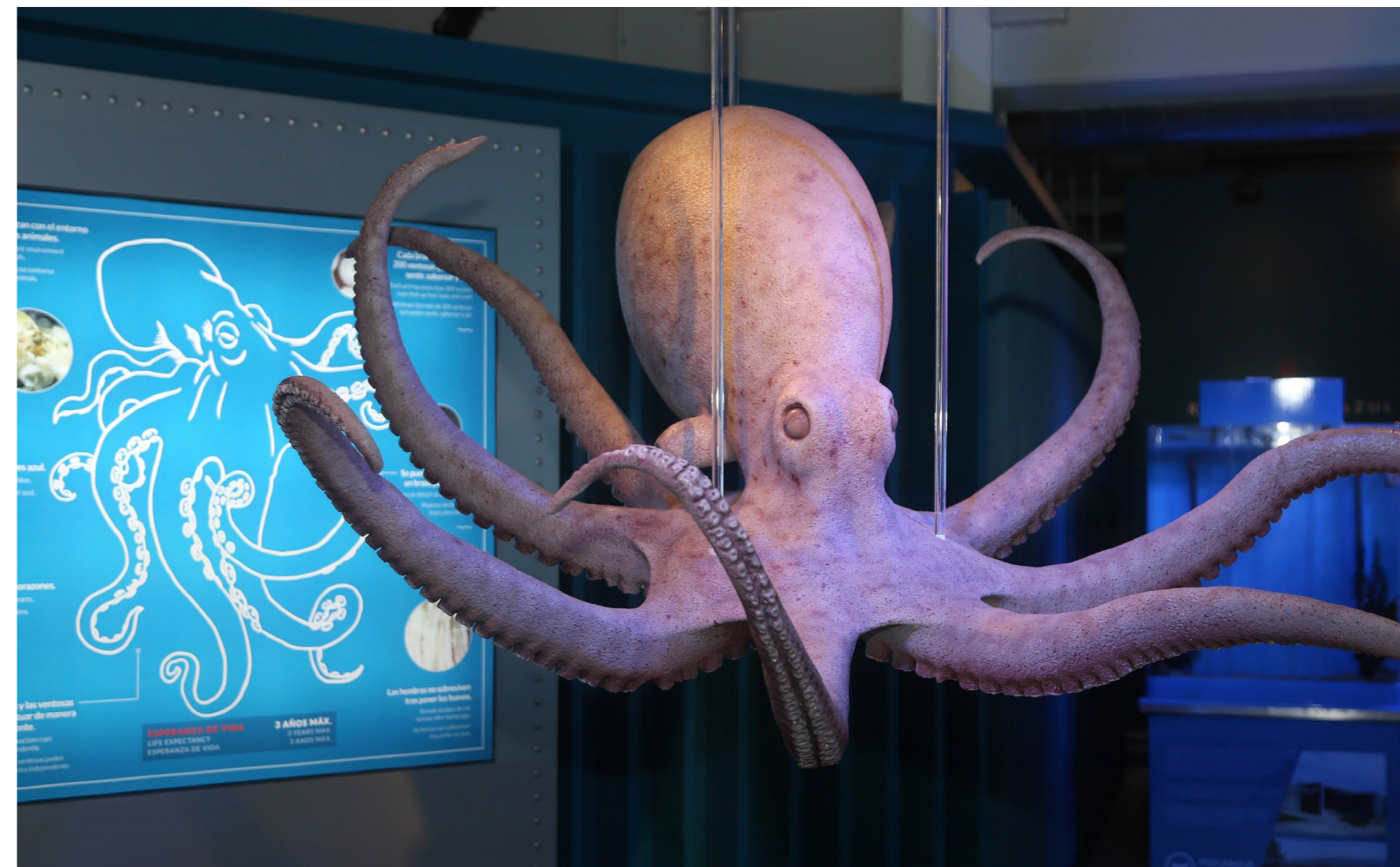
Lastly, the final touch to the visit to our museum is added by the people who make the Nueva Pescanova Group possible, a team of over 10,000 professionals. Colleagues from all over the world present our brand, giving us recognition in all the

'Divided into six themed sectors, each visitor reflects upon the importance of the aquatic environment as a guarantee of life for the whole planet'

markets, and they emphasise the importance of consuming marine protein for a healthy diet. By way of a virtual mural, visitors tour the countries where we are present to know the nutritional and health value of the products that bear the Pescanova seal. A sea of health!

In conclusion, our museum invites us to submerge ourselves in the depths of the sea to discover all its secrets, 'go aboard' a fishing vessel, learn about the peculiarities of marine life and come close to the work carried out by our researchers in favour of the sustainability of the species. In this way, the Pescanova Biomarine Museum is presented as a space created for people of all ages in which children, teenagers and adults can test their senses and enjoy all kinds of experiences in a space that helps us transfer our values, the benefits of aquaculture and the importance of looking after our seas and oceans.

www.pescanovabiomarine.com



SUSTAINABILITY

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