



Benchmark®

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Committed to the sustainable  
development of the global  
salmon industry

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**Genetics and Health Atlantic Salmon Portfolio**



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# Driving sustainability in aquaculture

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# The One Benchmark approach to support the salmon industry



**I have been working in the aquaculture industry for more than 30 years and have seen first-hand the challenges that salmon producers face affecting yield, fish health and fish welfare, constraining growth. This is why it is so meaningful that we in Benchmark are driven by a desire to make a difference by helping aquaculture producers achieve sustainable production and growth.**

Our science based specialist products and solutions in Genetics, Advanced Nutrition and Health are designed to improve farming efficiency, animal health and welfare across the production cycle. This multidisciplinary approach makes Benchmark unique.

#### **Benchmark's Atlantic salmon offering**

Benchmark is a leader in salmon genetics and sea lice treatments, two mission critical areas in salmon production. We invest in technology, state of the art infrastructure and a talented team to deliver reliable, biosecure products and solutions that improve resource efficiency, disease resistance and survivability.

Our dedicated and experienced Atlantic salmon team work closely with you to understand your needs and challenges, delivering the best tailored solutions from our portfolio. Through a single point of contact, technical know-how and focus on customer service, we partner with you from the very beginning of the production cycle. We are passionate about your success. This is our 'One Benchmark' approach.

I see a lot of opportunities going forward for the aquaculture industry to play a crucial role in sustainable food supply. Our aim and focus is to work with you to extract that potential and to create sustainable and profitable growth for the industry.

**Trond Williksen, CEO**





## Atlantic salmon

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The Atlantic salmon is considered the pinnacle of technical, operational, and financial advancement in aquaculture, and we are proud to be at the forefront of its development

Our mission is to drive sustainability in aquaculture by delivering products and solutions that improve farming efficiency and animal health and welfare for aquaculture producers.

Our products are based on long-standing, advanced selective breeding programs and innovative health solutions, designed to address your unique challenges and opportunities.



## From ova to harvest

Innovative products and services to assist salmon producers in enhancing farming efficiency, as well as improving animal health and welfare



**As the Head of Benchmark Salmon, I take great pride in leading a global provider of aquaculture genetics and health solutions. At Benchmark Salmon, our primary focus is providing genetics and health solutions that support our customer's efforts to improve the sustainability of their operations.**

Our portfolio of products includes mission-critical, biosecure and high-performing salmon genetics tailored for sustainable farming practices. Through our pioneering efforts in land-based broodstock production, supported by state-of-the-art facilities in Iceland, Norway, and Chile, we produce and ship salmon eggs to the industry every week, where and when our customers need the eggs.

One of the most pressing challenges facing the global salmon industry is the presence of sea lice. These persistent parasites have a profound impact on fish health, welfare, wild salmon populations, and even the economic stability of the industry. Our innovative solutions Ectosan® Vet and CleanTreat®, and existing medicinal treatment Salmosan® Vet all have an important role in effective integrated pest management. These cutting-edge solutions work to combat sea lice, and improve fish health and welfare, whilst protecting the environment.

Our unwavering commitment to excellence extends beyond our own organisation. Through close collaboration with industry partners and recognised research institutions, we foster a culture of continuous improvement. By actively engaging in these collaborative efforts, we drive innovation and refinement in our products and processes, ensuring that we remain at the forefront of the aquaculture industry.

**Geir Olav Melingen**  
**Head of Salmon,**  
**Genetics and Health**



# Benchmark salmon timeline

## 2000

- Founded

## 2009

- Salmosan® launch

## 2014

- Acquisition of SalmoBreed and StofnFiskur
- Benchmark® Animal Health is founded

## 2015

- Salmosan® launched in Europe

## 2016

- Benchmark® Genetics Iceland (former StofnFiskur) granted WOHA disease-free compartment status by MAST

## 2018

- Launch of Purisan® in Chile
- Launch of Benchmark® Genetics in Chile

## 2019

- Official opening of Benchmark® Genetics Salten (previous SalmoBreed Salten) – a state-of-the-art land-based facility
- CleanTreat® wins the NorFishing Innovation Award

## 2020

- Benchmark® Animal Health established in Norway and Chile

## 2021

- Ectosan® Vet receives Marketing Authorisation in Norway
- Launch of two CleanTreat® systems
- CleanTreat® receives ASC sustainability recognition

## 2022

- Benchmark® Animal Health was nominated in the Welfare Category of the Aquaculture Awards
- Benchmark received Marketing Authorisation for Ectosan® Vet in the Faroe Islands
- New incubation centre in Iceland opened
- Benchmark granted the import tolerance for Ectosan® Vet's active ingredient in the United States
- Benchmark joins Euronext Growth market of Oslo Stock Exchange

## 2023

- Benchmark signed an agreement with MMC First Process AS and Salt Ship Design AS to integrate CleanTreat® systems onboard wellboats
- Benchmark Genetics Chile granted WOAH Disease-free compartment status by Sernapesca

## 2024

- Launch of new optimised Salmon Ova Product Portfolio
- Launch of CleanTreat® Integrated



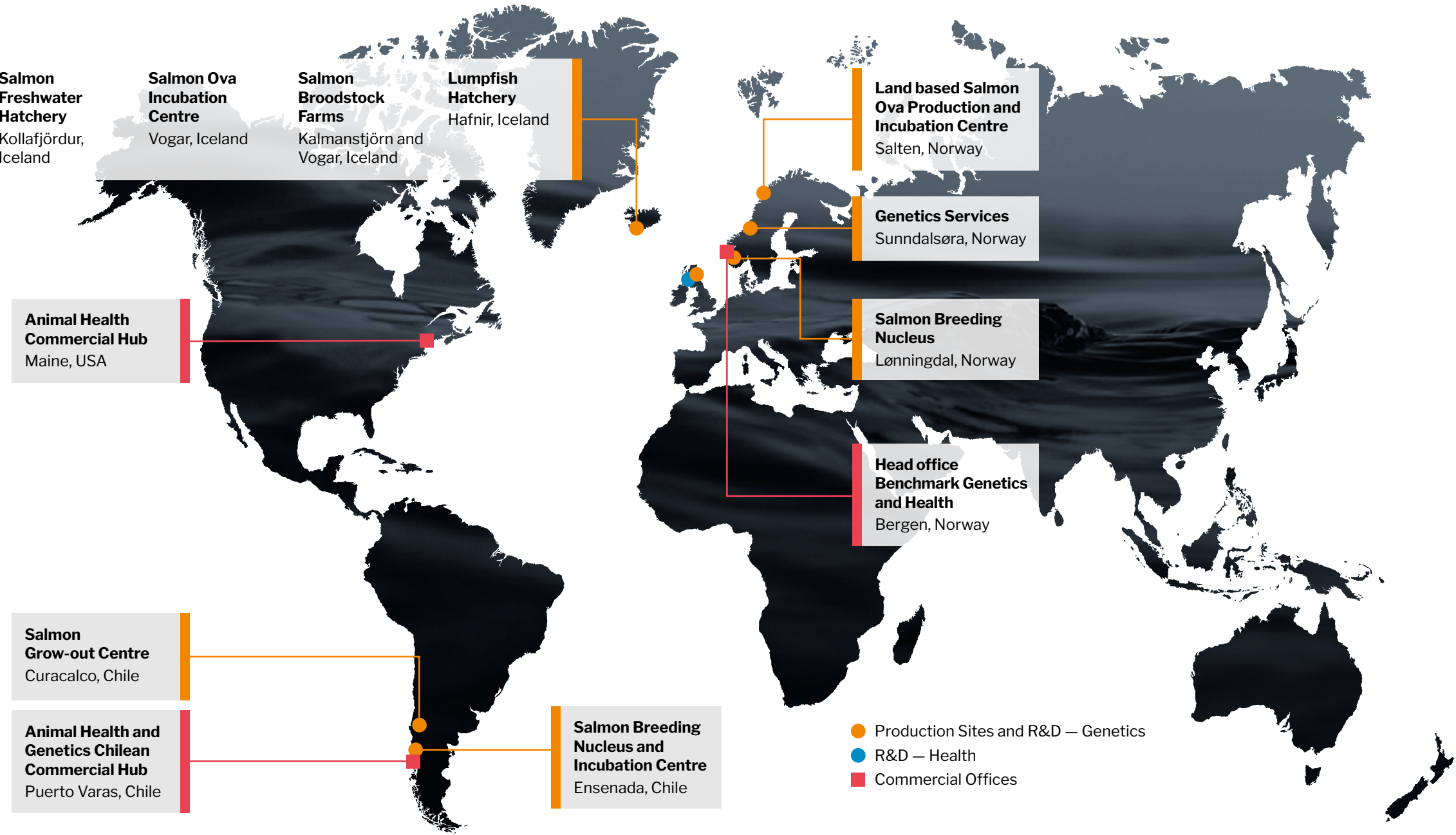
# Solving salmon challenges on a global scale through genetics and health solutions

High biosecurity salmon egg facilities



Global technical support teams are here for you to support your production

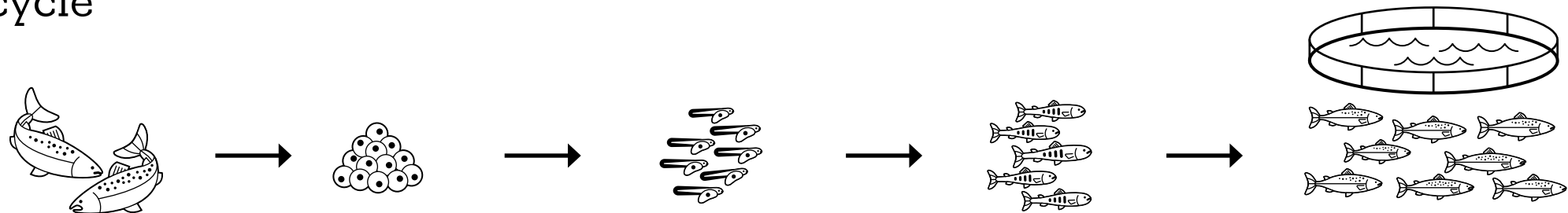

















Product portfolio

Supporting you throughout the production cycle



BUSINESS AREA	BROODSTOCK	HATCHERY	NURSERY	GROW-OUT	PRODUCTS
<div><p><b>GENETICS</b></p><p>Improved genetics provide a crucial starting point for production efficiencies and health resilience</p></div>	<div>Eggs, breeding (parent stock) animals for salmon</div> <div>Genetic improvement services for external programmes</div>	<div>Hatchery stage fish</div>			<div>    </div>
<div><p><b>ANIMAL HEALTH</b></p><p>Solutions for some of the most persistent disease and fish welfare challenges</p></div>				<div>Sea lice medicines</div> <div>Purification system</div>	<div>   </div>



# Genetics



## We strive to be the foundation of our customer's success

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### 6 steps for delivering top-quality products and services to our customers

1

**Strict bio-security protocols** are one of our most significant advantages. We understand the importance of healthy broodstock and maintaining a clean production environment to provide biosecure, robust, year-round supply of eggs.

2

**Our Atlantic Salmon Ova Portfolio**, a meticulously curated selection of salmon ova engineered to deliver superior genetic performance and resilience. It is based on refined selection techniques aimed at maximising growth potential and robustness.

3

**Robust R&D capacities** allow us to innovate and improve our products continuously. With cryopreservation laboratories in-house connected with each of our egg production facilities, we have access to seamen of the best males from the breeding nucleus to match customer requirements.

4

**Outstanding customer service** is a key differentiating factor. We are committed to delivering excellent service, and our team is always available and knowledgeable to address our customers' concerns or questions.

5

**Worldwide delivery** is a vital part of a growing global industry. Our ability to send ova worldwide from our facilities in Iceland and Chile allows us to meet customer needs in a global market.

6

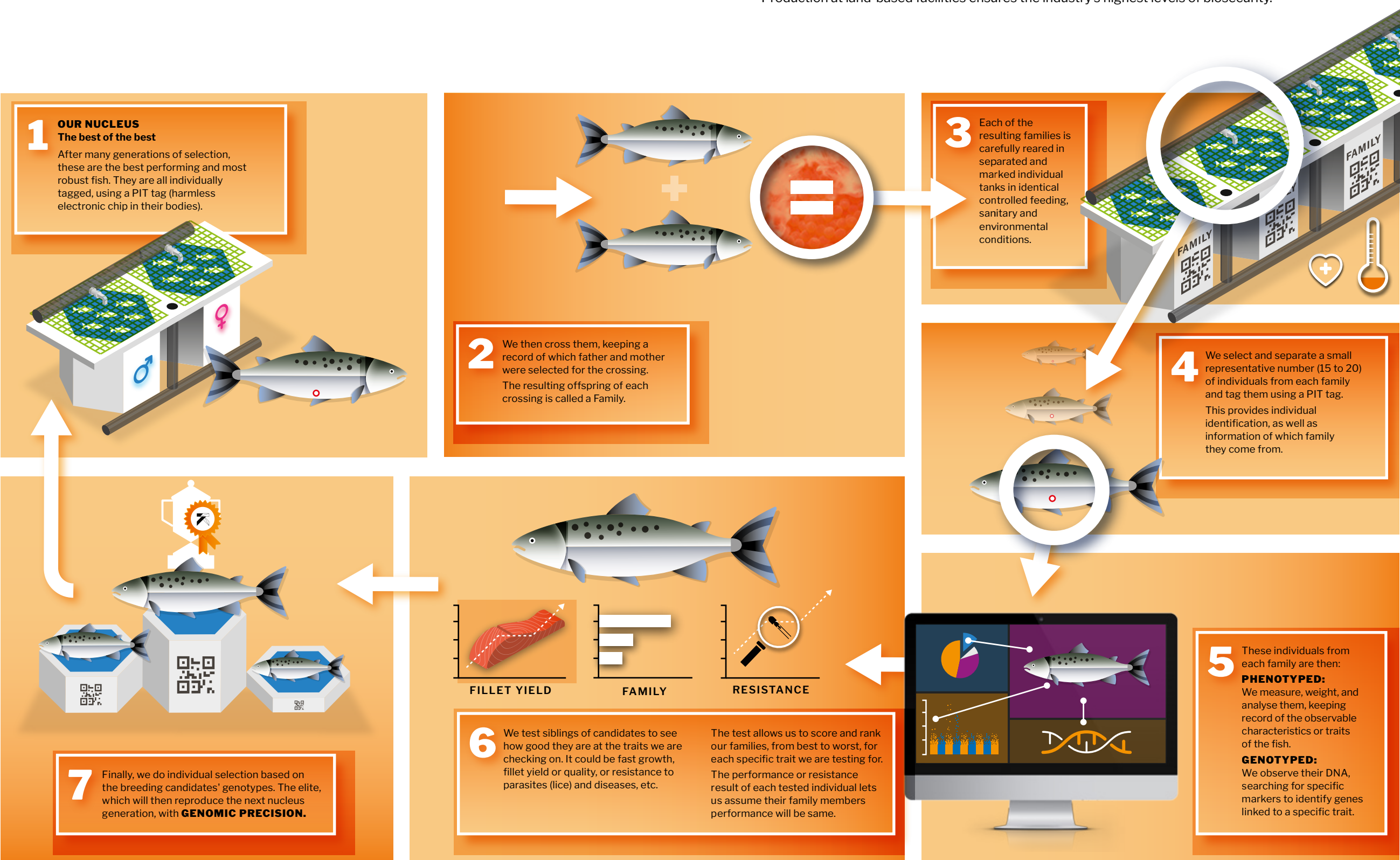
**Strong focus on environmental sustainability**, with nearly 100% of our power consumption in Norway and Iceland based on renewable energy sources.



# Land-based broodstock farming

We operate in-house breeding programs for three strains in Norway, Iceland, and Chile, managed by a highly skilled team of geneticists.

Production at land-based facilities ensures the industry's highest levels of biosecurity.



## Benchmark's Atlantic Salmon Portfolio

# Product line with enhanced genetic improvements

An optimised Salmon Ova Product Portfolio with refined selection methods designed to elevate genetic performance with enhanced traits for growth and robustness.



### Solid growth and resistance

Ova selected for **strong growth and extra strong resistance to IPN**.

Additionally, it offers a balanced selection for resistance to CMS, PD, Lice and ISA, and a lower risk of early maturation.

#### Key Properties:

- High growth performance
- Extra strong protection against Infectious Pancreatic Necrosis (IPN)
- Balanced protection against Cardiomyopathy Syndrome (CMS), Pancreas Disease (PD), Lice and Infectious Salmon Anemia (ISA)
- Lower risk of early maturation



### Superior growth

Ova selected for the **highest growth potential, extra strong resistance to IPN and strong resistance to CMS**.

Additionally, it offers a balanced selection for resistance to PD, Lice and ISA, and a lower risk of early maturation.

#### Key Properties:

- Our highest selection for growth performance
- Extra strong protection against Infectious Pancreatic Necrosis (IPN)
- Strong protection against Cardiomyopathy Syndrome (CMS)
- Balanced protection against Pancreas Disease (PD), Lice and Infectious Salmon Anemia (ISA)
- Lower risk of early maturation



### Superior resistance

Ova selected for **extra strong growth, and extra strong resistance to CMS and IPN**.

Additionally, it offers a balanced selection for resistance to PD, Lice and ISA, and a lower risk of early maturation.

#### Key Properties:

- Extra high growth performance
- Extra strong protection against Cardiomyopathy Syndrome (CMS) and Infectious Pancreatic Necrosis (IPN)
- Balanced protection against Pancreas Disease (PD), Lice and Infectious Salmon Anemia (ISA)
- Lower risk of early maturation



### Optimal RAS

Premium selection of salmon ova for the specific requirements of the land-based production environment.

This product is selected for high growth and a reduced early maturation (All-Female), or even elimination of early maturation (All-Female/Triploid).

#### Key Properties:

- High growth performance
- All-Female and/or Triploid



### Custom-built for specific needs

Upon request, we can deliver customized salmon ova with a selection of traits tailored to your unique requirements. In close dialogue with our specialist teams, we can meet your specific needs of regional and potential production challenges with SalmoTailored®.

#### Optional key properties:

Selection with tailored levels of strength in the following traits:

- Growth performance, Cardiomyopathy Syndrome (CMS), Infectious Pancreatic Necrosis (IPN), Pancreas Disease (PD), Lice, Infectious Salmon Anemia (ISA), Late Maturation, Pigment, Gill health (AGD)
- All-Female and/or Triploid

### Organic ova

Organic ova according to DEBIO/TÚN/CU certification.

Available upon request and must be ordered well in advance (12 months before delivery).

### All-Female and triploid

This optional feature combines All-Female production with triploid technology, leading to the elimination of early maturation.

For further information about our products visit [bmkgenetics.com/new-product-line](https://bmkgenetics.com/new-product-line)





Benchmark Genetic Services

Benchmark provide genetics support services to the global aquaculture industry, from small companies to some of the world's largest producers



Support to your breeding and genetic management programs

- Optimal design for new programs
- Maintaining the genetic integrity of your broodstock
- Design of cost-effective breeding nucleus and dissemination programs
- Tailored programs to meet your priorities and resources
- Technical support
- Data management and hosting

You can choose genomic tools and services

- Cost-effective genotyping services
- Off-the-shelf SNP array platforms for family assignment, diversity, and genomic selection for several species
- Design of bespoke tools tailored to new species or specific breeding populations
- Technical support with implementation to maximise benefits to breeding programs
- **High density Atlantic Salmon, Rainbow Trout, Tilapia, and Whiteleg Shrimp genotyping priced at 14.5 Euro per sample**

Experience in

40

Breeding programs

20

Aquatic species



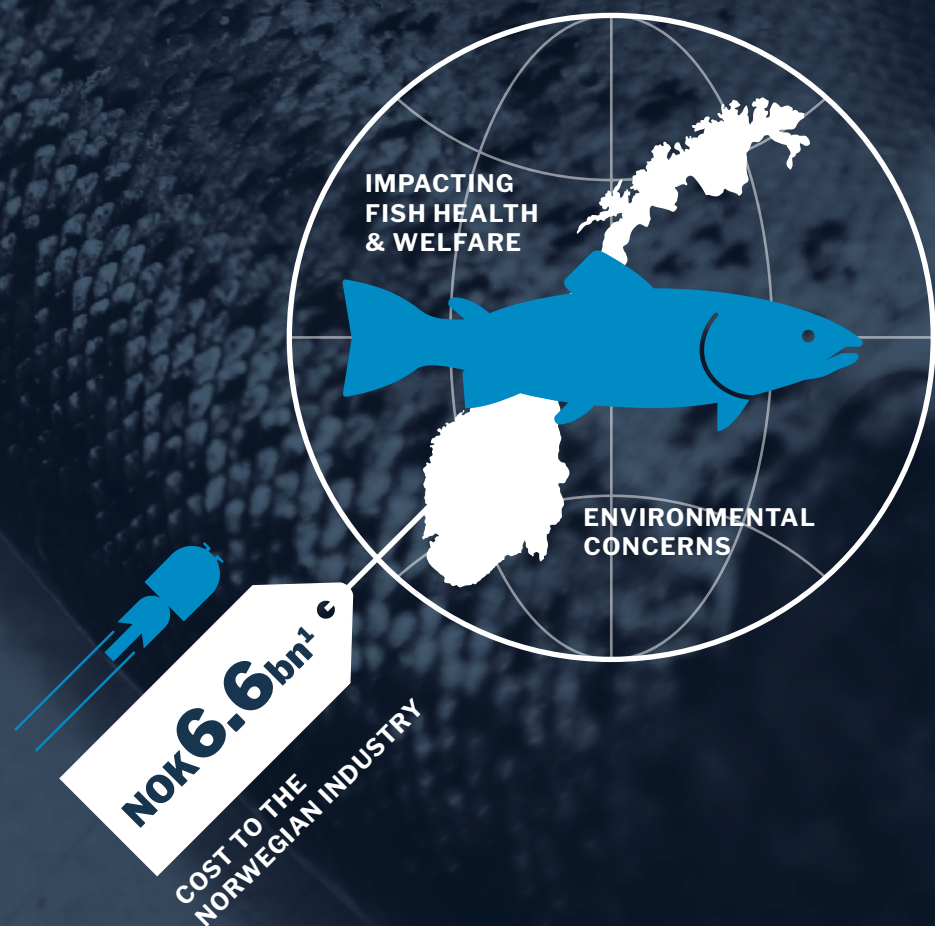
# Health



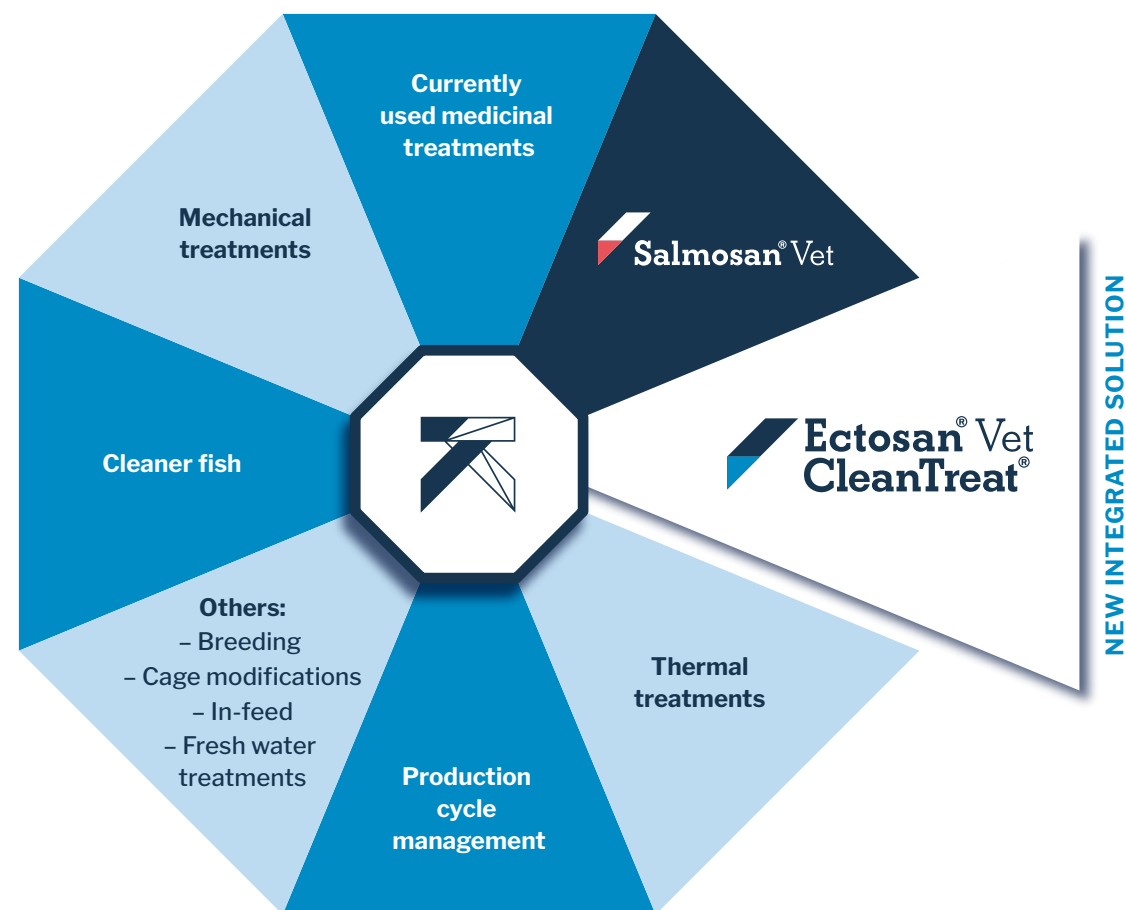
## Focus on sea lice

Sea lice are one of the greatest challenges the salmonid aquaculture industry faces.

With an annual cost of **NOK 6.6bn** for the Norwegian aquaculture industry, and a profound impact on fish welfare, sea lice are not a problem we can ignore.



## Strategic mitigation of sea lice with reliable medicinal treatments



### 3 steps to improve sea lice management for your business and environment



**1.**

Increase the environmental profile of medicines by purifying treatment water before discharge



**2.**

Reduce the number of treatments and improve overall fish health and welfare by a strategic and coordinated sea lice management approach



**3.**

Improve the economics of sea lice management by adding value through the introduction of a safe & highly efficacious tool to an IPM Strategy





**At Benchmark, we understand that many factors need to be considered when selecting the right sea lice treatment plan.**

**There is a place in the future for all the tools we have today and more, to be used in a coordinated, strategic approach.**

**Sindre Rosenlund**  
Global Product Manager, Sea Lice Medicines  
Benchmark Animal Health

## Working in collaboration with our customer's Fish Health team

Benchmark offer market leading medicinal sea lice treatments developed to meet the highest standard of efficacy, animal welfare and sustainability



### Market-leading azamethiphos solution used globally

- Used for the control of pre-adult to adult stages of sea lice
- Recognised as accessible, gentle and effective treatment
- Launched in 2009 and continuously improved to meet evolving industry challenges
- Currently available in the UK, Norway, Faroe Islands, Canada, and Chile (under Purisan® trade name)



### First new sea lice veterinary medicinal treatment to be introduced to the Norwegian salmon market in over a decade

- Used for the control of pre-adult to adult stages of sea lice
- Highly reliable veterinary medicine
- Applied exclusively in wellboats, all treatment water is retained for purification
- Gentle, safe and effective treatment
- Treatment water may be used twice, reducing overall medicine usage



### Setting a new standard in environmental care for sea lice bath treatments

- Cutting-edge water purification system that removes medicines from treatment water before safely returning cleaned water to the sea
- First of its kind to be used in the aquaculture industry
- Winner of the 2019 Nor-Fishing Innovation Award and acknowledged by the ASC



### Revolutionizing aquaculture water purification

- MMC FIRST PROCESS and Benchmark have joined forces and designed the first treatment water purification system to be built onboard a wellboat, a future solution for the farming industry
- This new solution will increase the accessibility for the aquaculture industry, allowing them to use efficacious and high-welfare sea lice medicines more extensively in an environmentally responsible and cost-efficient way

\* Prescription only medicine



## What makes Benchmark's Animal Health products different?

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At Benchmark, we believe in **striking a balance** between the needs of our customers and the environment

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Our strong expertise in sea lice management, combined with our commitment to environmental sustainability, enables us to provide our customers with innovative and effective solutions that address their needs while minimising our environmental impact.

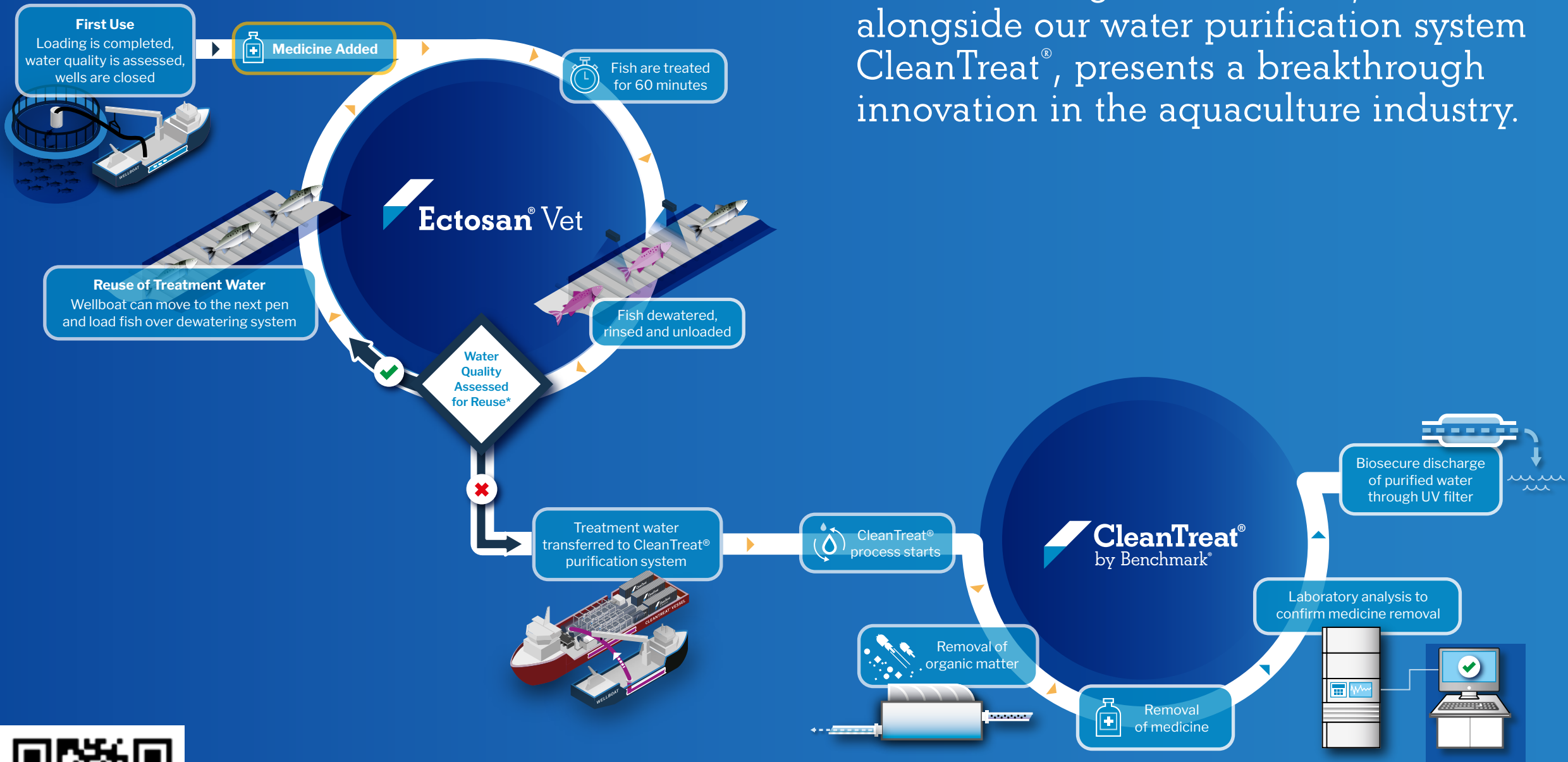
For over 15 years, we have been a leader in medicinal sea lice treatments. Initially through our bath treatment Salmosan Vet® we then supplemented our portfolio through the addition of Ectosan Vet®, the first sea lice veterinary medicinal treatment to be introduced to the Norwegian salmon market in over a decade.

Ectosan® Vet was developed in tandem with CleanTreat® enabling the use of efficacious and high welfare medicines in an environmentally responsible manner. It is recognised by the Aquaculture Stewardship Council, included as a mitigation tool in their current 'Weighted Number of Medicinal Treatments' – resulting in all treatments receiving a score of zero.

Our solutions have been used by some of the largest salmon farmers in Norway and across the globe. Working with Benchmark means a commitment to developing innovative products and solutions for our customers, while championing the environment.



Ectosan® Vet and CleanTreat® process diagram



Ectosan® Vet was developed to become a core part of our customers integrated sea lice management toolbox, and used alongside our water purification system CleanTreat®, presents a breakthrough innovation in the aquaculture industry.



Watch here our team explain the treatment process

\* Disclaimer: Ectosan® Vet should be used in-line with the product SPC



A full-page background image showing a man in an orange jumpsuit and white hard hat working on a large industrial valve with a red handwheel. He is on the deck of a ship, with the ship's superstructure and other valves visible in the background. A red rectangular box is overlaid on the right side of the image, containing white text.

Market-leading  
innovation drives  
sustainable  
aquaculture

World-renowned research and development

Benchmark's innovation program, always one step ahead of the curve

The future of the industry and your business is front of mind when we are developing our products and solutions. Benchmark Innovation Board oversee R&D collaboration and governance across the Genetics, Health, and Advanced Nutrition Business Areas, and link strategic oversight of market developments and opportunities to R&D strategy.

Key Genetics R&D priorities include:

- Optimisation of genomic selection and trait recording to continuously improve health and performance of salmon and shrimp lines, and;
- New methods for mass production of sterile production animals, as well as gene editing for key target traits.

Benchmark Genetics have successfully developed salmon lines with enhanced growth and disease resistance by innovating in breeding program design, including application of the latest genomic tools.

Key Animal Health R&D priorities include:

Development of treatment and prevention solutions for sea lice, the salmon industry's most problematic disease.

Following more than 10 years of research, development and trials, Benchmark were proud to launch the first sea lice veterinary medicinal treatment, Ectosan® Vet in Norway for over a decade.

The NorFishing Innovation award has recognised innovative products and solutions and is well-known across the industry. We are honoured to have received the prestigious award in 2019 for our treatment water purification system CleanTreat®.

Benchmark have strategic collaborations with some of the world's top research institutions in these core areas, in addition to high-calibre internal science teams.



At Benchmark we are translating the latest scientific developments into commercial practice, enhancing the sustainability of the industry to the benefit of our clients.

Ross Houston  
Director of Genetics and Head of the Benchmark Innovation Board  
Benchmark Genetics

30

Number of scientists in Genetics and Health R&D

Benchmark's R&D focuses on harnessing the latest technologies in genetics and health, including a major sterility and gene editing program focused on generating future breakthrough products



# Benchmark salmon team is dedicated to your success



The One Benchmark approach for salmon is the union of Genetics and Animal Health to support you as our customers with strong tools for successful production. We are uniquely positioned to work with customers from the very beginning of production and then carry this relationship forward throughout the production cycle.

One main benefit for customers is that the same people are involved in all areas of decision-making, bringing their specialised skills to the table and taking the wider picture into account. This also brings benefits in terms of profitability and goes hand in hand with sustainability. By optimising production throughout the value chain, we create the best base to improve efficiencies and survivability.

**At Benchmark we have a mantra:  
Your success is our success!**

**Kate F. Stenerud,**  
Commercial Director, Salmon,  
Genetics and Health



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# Our people are the key to our success



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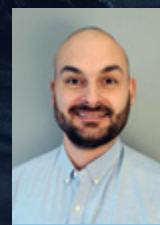
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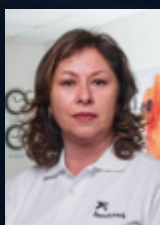
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ESG — sustainability

At Benchmark, we recognise that the future of aquaculture lies in sustainability



GENETICS

Crucial starting point for resource efficiency, disease incidence and survivability across the production cycle



HEALTH

Addressing sea lice, one of the biggest sustainability challenges in salmon production



ADVANCED NUTRITION

Early-stage nutrition is key to growth, health and survivability through all production stages

Environment

Overall commitment

As a responsible operator, Benchmark is committed to a programme of continuous improvement across all our operations to achieve our Net Zero Goals and reduce our overall environmental impact.

Focus areas

- Climate change
- Energy
- Water resources
- Waste
- Biodiversity

Goals

- Achieve Net Zero scope 1 and 2 by 2030 and scope 3 by 2050
- Operate using only energy from renewable sources by 2030
- Reduce energy intensity by 5% every year
- Zero waste to landfill by 2030

Relevant SDGs



Achievements

- ISO 14001 implementation for the breeding facilities in Norway and Iceland in 2023
- Carbon footprint of egg production was calculated first in Norway in 2020 and Iceland in 2023
- On track to reach Net Zero target
- Programme to reduce use of packaging / increase sustainable materials
- Certified feed ingredients – 100% certified soy

Animal Health and Welfare



Overall commitment

We are committed to protecting and promoting animal health and welfare both in our own operations and in the development of new products and solutions. We are guided by the Five Freedoms Principle (FAWC).

Focus areas

- Operate health plans that adhere to best standards
- Tailored training

- Build and operate facilities that promote animal welfare
- Incorporate animal health and welfare as critical parameter in product development

Goals

- 100% trained staff
- 100% compliance with healthplans; no incidents

Relevant SDGs



Achievements

- CleanTreat® is enabling greater use of efficacious and high welfare sea lice medicines in an environmentally responsible way
- Highest recognition for environmental protection and sustainability received by the Aquaculture Stewardship Council including CleanTreat® as a mitigation tool – resulting in all treatments receiving a score of zero

People and Communities



Overall commitment

We are committed to promoting the wellbeing of our people, the people in the communities where we operate and the people that work in our supply chain.

Focus areas

- Making Benchmark 'A Great Place to Work'
- Supplier policy
- 'Benchmark for Better' community programmes
- Health and safety

Goals

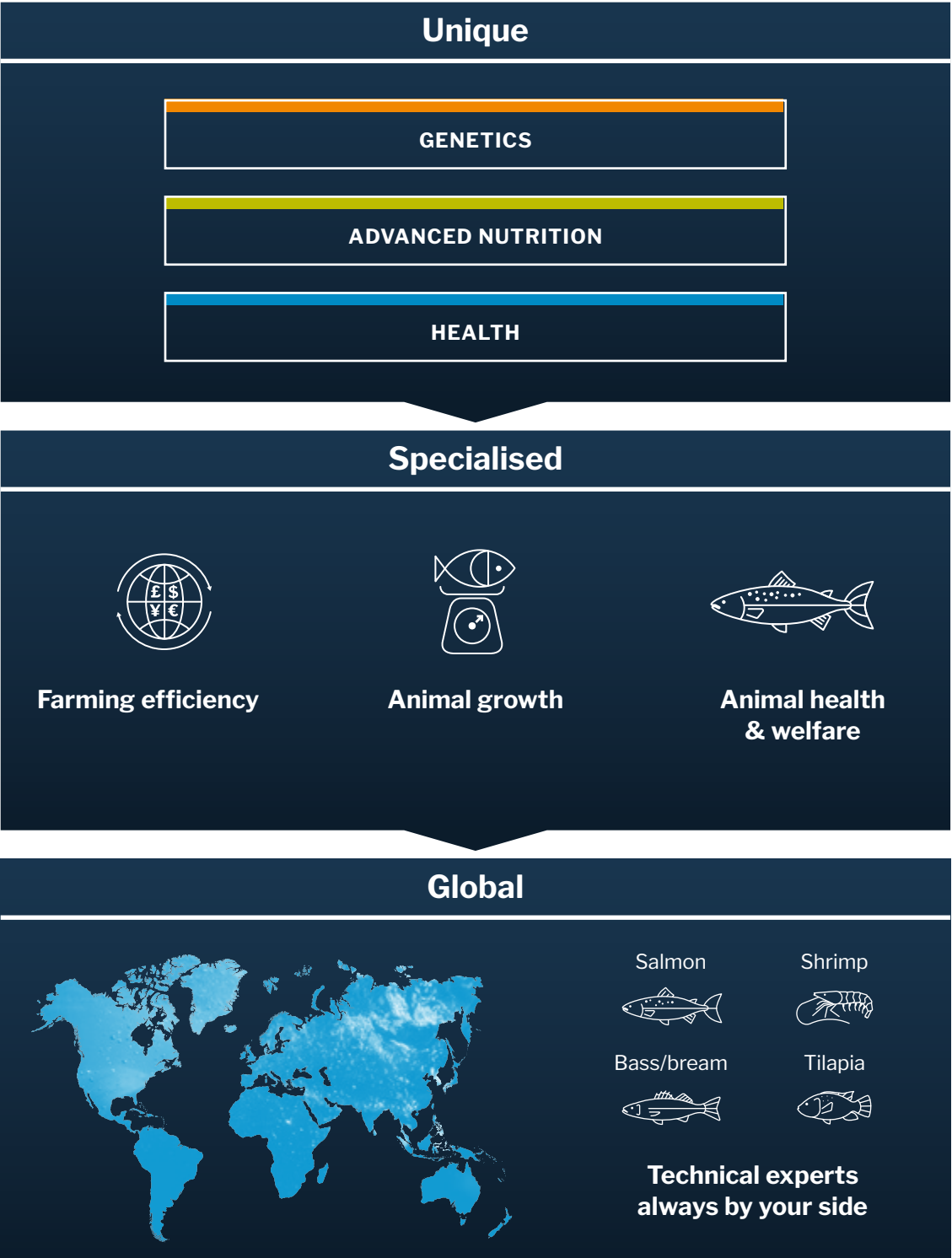
- Above industry engagement scores
- Training and development
- Diversity and inclusion
- Supplier engagement – 100% adherence to policy

Relevant SDGs





Benchmark at a glance

Technical experts  
always by your side

Mission critical products and solutions

Group Revenue (FY23)  
**£169.5m**

Employing more than  
**800**  
people worldwide

Commercial and R&D operations  
**26**  
countries

Customers in  
**70+**  
countries

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# Driving sustainability in aquaculture

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**in** Benchmark Holdings plc



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are subsidiaries of Benchmark Holdings plc.

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