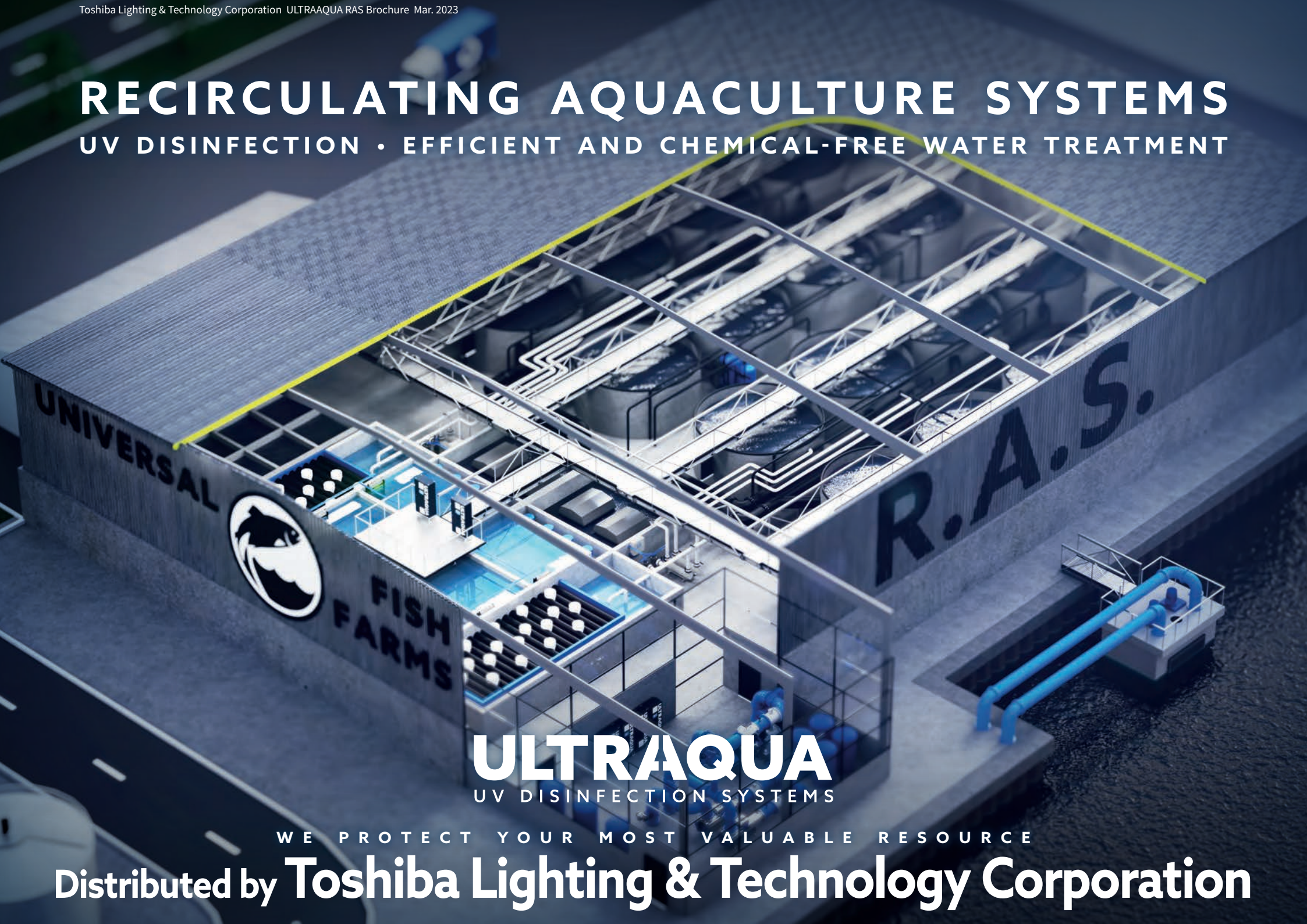


RECIRCULATING AQUACULTURE SYSTEMS

UV DISINFECTION • EFFICIENT AND CHEMICAL-FREE WATER TREATMENT



ULTRAAQUA
UV DISINFECTION SYSTEMS

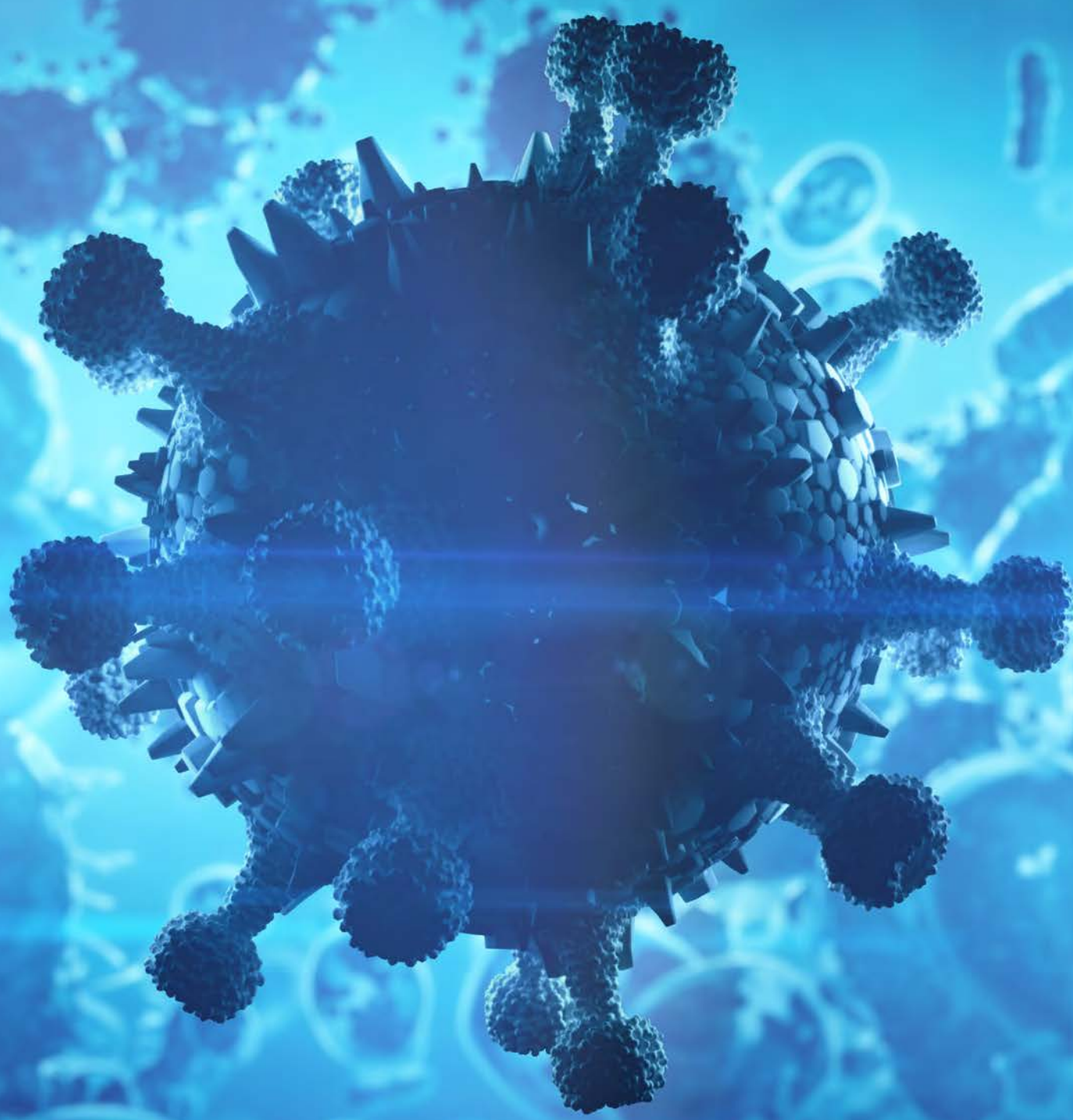
WE PROTECT YOUR MOST VALUABLE RESOURCE

Distributed by **Toshiba Lighting & Technology Corporation**

A microscopic view of various bacteria and viruses, rendered in shades of blue and white. The background is a dense field of these microorganisms, including spherical viruses with spikes, rod-shaped bacteria, and larger, more complex structures. The overall tone is a deep, cool blue.

KEEP YOUR WATER SAFE

ULTRAAQUA
UV DISINFECTION SYSTEMS



CORE BENEFITS OF UV

UV TECHNOLOGY IS A GLOBALLY ACCEPTED SOLUTION FOR WATER DISINFECTION, EFFECTIVELY INACTIVATING BACTERIA, VIRUSES, AND PROTOZOA.

The demand for cost-efficient solutions to provide clean water are at an all-time high and will only increase in the future. UV disinfection solves this complex challenge, being able to meet the strictest requirements regarding bacteria and virus protection.

Due to recent developments, UV disinfection is now an effective alternative in a wide range of water qualities and applications. Improved technological and design configurations have made UV a viable OPEX and CAPEX solution for disinfection processes as well as in more advanced applications such as Advanced Oxidation Processes (AOP).

Choosing UV as the disinfection method ensures optimal CAPEX and OPEX conditions compared to its alternatives, making UV the best solution for a wide range of installations.

ULTRAAQUA UV disinfection systems are easy to install, maintain, and thoroughly cost-optimized. The third-party approvals for performance and quality ensure complete peace of mind, employing the best available solution for complete biosecurity.

ULTRAAQUA
UV DISINFECTION SYSTEMS

UV DISINFECTION IN RAS

WITH WATER RESOURCES BECOMING INCREASINGLY POLLUTED AND SCARCE, DELIVERING LARGE QUANTITIES OF HIGH-QUALITY SEAFOOD PRESENTS A MAJOR GLOBAL CHALLENGE.

There are a lot of factors to address in order to achieve success in complex RAS environments.

Making reared species thrive requires advanced disease control due to continuous water re-use concerning accumulation of species droppings as well as the nutrients used in its feed. If not properly handled, RAS can be an ideal breeding ground for various bacteria and viruses, potentially contaminating the entire production resulting in huge financial losses.

Implementing UV disinfection is a vital integration of a well-functioning and cost-efficient RAS. UV disinfection ensures comprehensive water biosecurity which reduces any virus or bacteria outbreak significantly. As no chemical by-products are added, the crucial water qualities such as pH and temperature remain unaltered, while causing massive improvements in the water turbidity.

ULTRAAQUA UV systems have been designed to meet disinfection requirements for even the most complex RAS facilities, disinfecting over 100.000 m³/h RAS water globally.

The great diversity in the product range makes ULTRAAQUA able to accommodate almost any RAS requirements for a high variety of climates and flows in both open channel and closed vessel systems, available in both stainless-steel and polypropylene materials. The best available solution is just a few steps away, whether it may be influent, effluent, or process water to be installed or retrofitted in a variety of RAS layouts.



CHINA, EEL FARM

THE WORLDS LARGEST EEL FARM, BASED IN CHINA.



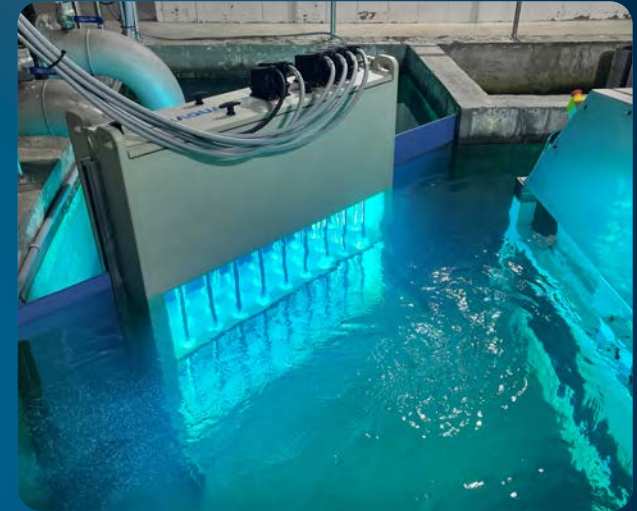
SCOTLAND, SALMON

24,000M² HATCHERY PRODUCING UP TO 12 MILLION SMOLTS ANNUALLY.



CANADA, TROUT FARM

LAND-BASED RAINBOW TROUT BREEDING AND PROCESSING SITE.



See more cases: www.ultraqua.com/cases

CUSTOMIZED SOLUTIONS

ULTRAAQUA EMPLOYS AN ENTIRE DEPARTMENT OF ENGINEERS WHO ARE SPECIALIZED IN THE DESIGN AND CONSTRUCTION OF UV SYSTEMS.

Multiple years of experience within relevant applications makes it possible to adjust any standard UV system to accommodate specific requirements.

The customization requirements can vary from adjustments such as reactor shape or flange size, to adding new advanced features. This makes the ULTRAAQUA design department function as a consulting agency, working towards an optimized customized solution. This means that we can ensure on site validation to various standards, fitting your exact requirements.

The following possibilities are available for all customized UV units:

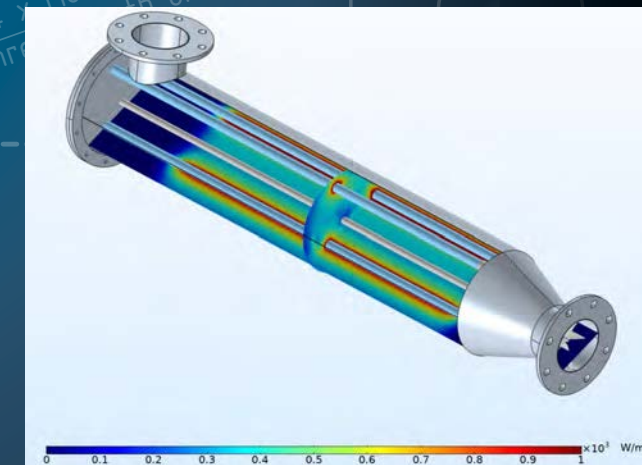
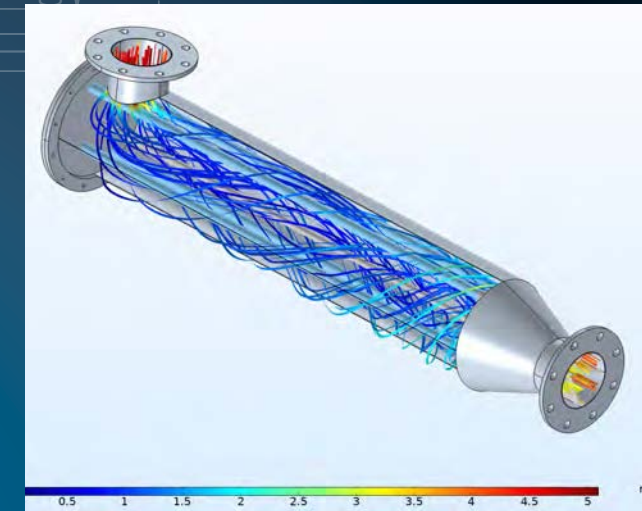
Customized services

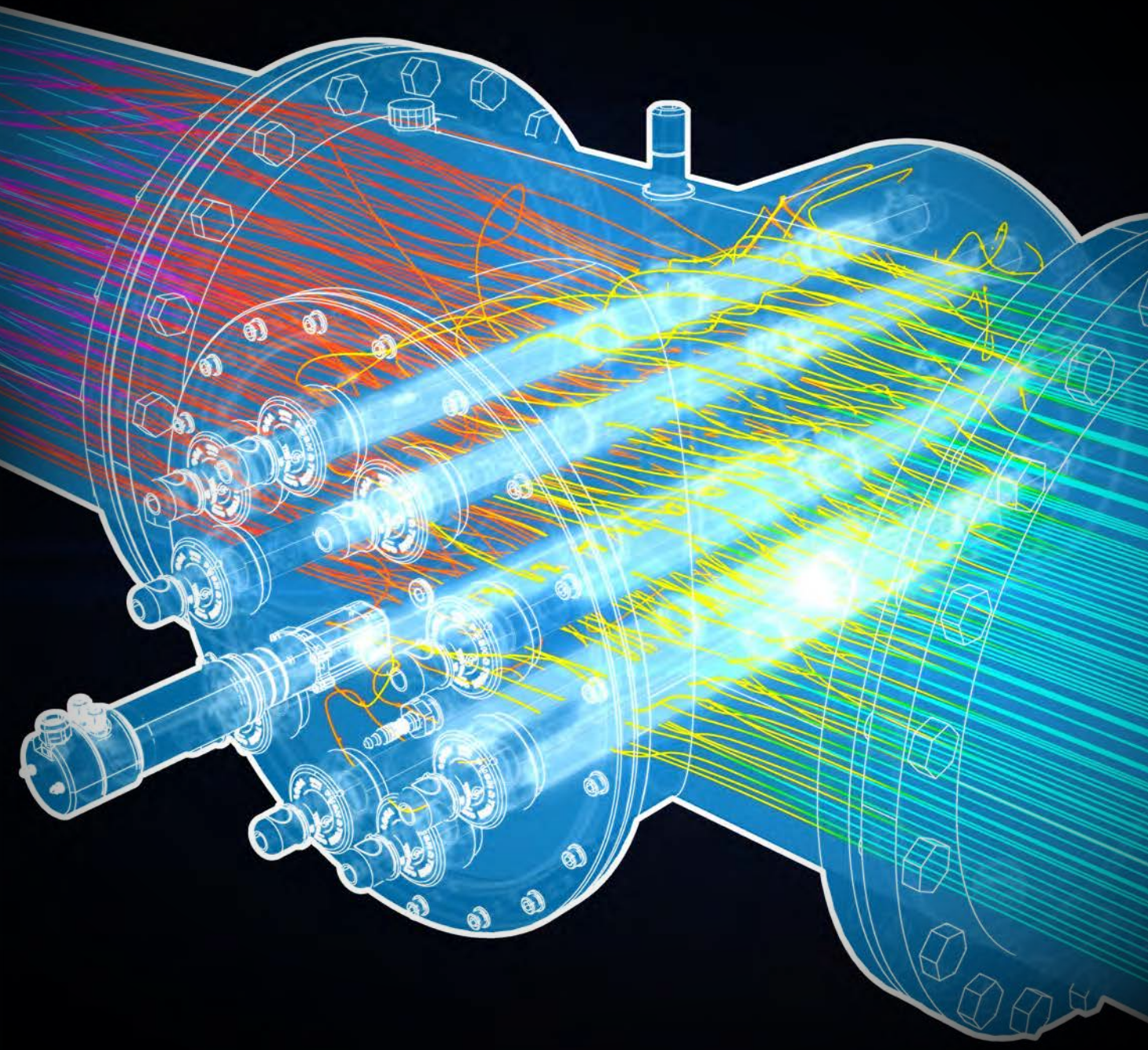
- 🔧 Integrated CFD Analysis
- 🔧 Particle tracing modeling analysis
- 🔧 Determining fluence rate
- 🔧 Physical testing
- 🔧 Onsite validation testing
- 🔧 Advanced UV disinfection support

Customized products

- 🔧 Custom UV systems for advanced applications
- 🔧 Packaged plant equipment
 - 🔧 Including mobile treatment container
 - 🔧 Skid packages

Comprehensive technical knowledge makes the engineers able to assist with installation details such as weir design, water level control devices, and many other project-specific matters.





ADVANCED SOLUTIONS FOR GEOSMIN ISSUES

THROUGH DECADES IN THE AQUACULTURE INDUSTRY, THERE HAS BEEN A LACK OF SOLUTIONS TO CONTROL GEOSMIN ISSUES, WHICH HAS LED TO HIGH ECONOMIC LOSSES EVERY YEAR DUE TO PROLONGED PRODUCTION TIMES.

Geosmin and Methyl-Isoborneol (MIB) are naturally occurring compounds that are commonly found in the fish production of RAS. Both substances accumulate in the fat tissue of the fish which can lead to a muddy taste. This has made rejection of production output more common while inducing a need to off-flavor the fish in purge tanks, ultimately resulting in high economic losses.

The usual method to remove geosmin is by using large high-purity water tanks that are rich in oxygen. When putting the fish in the tanks, the geosmin from their bodies gets transferred to the water until it reaches equilibrium. However, this is a relatively costly method to ensure proper removal, as large quantities of pure water are required. Additionally, the purge process adds on average an extra 10 days of fish delivery time, required for the geosmin to be reduced to limits of 5ng/L.

The ULTRAAQUA UV research department has first-hand experience in solving and documenting geosmin control. Our R&D engineers and chemists have developed quantification tools to model and predict geosmin formation rates in RAS systems. The results of the different scenarios can then be used to make decisions regarding how to best implement a geosmin mitigation strategy.

R&D CAPACITIES

SINCE 1996, THE R&D DEPARTMENT HAS BEEN THE BACKBONE OF ULTRAAQUA.

Employing the brightest industry specialists with great diversity for continuous innovation has been vital to the success of the company.

The ULTRAAQUA R&D department conducts, supports, and pioneers some of the latest developmental work within the water industry. These projects are often done in collaboration with specialists from municipalities, universities, top tier consultancies and international companies. The projects are primarily focused on developing unique and advanced chemical free disinfection solution for some of the worlds most complex water quality problems.

The comprehensive in-house testing area facilitates optimal conditions for research, development, and innovation. With the ability to run full scale pilot trials and a 40 ft research container to support local testing combined with cutting edge engineering, makes us confident that ULTRAAQUA is the right partner for your organization.

This ultimately allows ULTRAAQUA to position itself amongst the industry leaders within UV disinfection, supplying customers with the best available solutions.

ULTRAAQUA
UV DISINFECTION SYSTEMS



COMPANY HISTORY

ULTRAAQUA IS AN INTERNATIONAL MANUFACTURER OF ADVANCED UV WATER DISINFECTION SYSTEMS FOR A WIDE RANGE OF WATER TREATMENT APPLICATIONS.

The company was founded in 1996 by two Danish scientists, with the mission of solving the increasing global water safety challenges, by combining extensive research, innovation, and technology. Today, more than 10.000 UV disinfection systems has been supplied worldwide, to help create a more sustainable world.

ULTRAAQUA operates through a carefully selected partner network, with activity in more than 120 countries. The partner network has been key to the success of ULTRAAQUA, making it possible to deliver cutting-edge UV disinfection systems across the globe.

Continuous research and innovation activities have made it possible to maintain the position of delivering cutting-edge solutions to clients with diverse requirements in different applications.

ULTRAAQUA
UV DISINFECTION SYSTEMS



TECHNOLOGY OVERVIEW & VALIDATIONS



The **NIPH (Norwegian Institute of Public Health) type approval** ensures that all UV disinfection units meets the requirements for UV dosage. The approval means that ULTRAAQUA is able to distribute selected UV systems in Norway and The Faroe Islands.



The **DVGW certification** assures that critical technical requirements are met regarding hygiene, safety, and general functionality. DVGW is an unbiased technical-scientific association based in Germany, specialized in gas and water industries.



The **AMS (Analog Mixed Signal) verification** ensures that the electronic components are compliant with the latest industry-standard, allowing smooth and quick signal transmission among the electrical components used in data tracking and storage.



The **ETV-EU verification** is a third-party validation of new innovative environmental technologies, ensuring product credibility for the buyer.

PRODUCT OVERVIEW FOR RECIRCULATING AQUACULTURE SYSTEMS (RAS)

EASY TO INSTALL, MAINTAIN, THOROUGHLY COST OPTIMIZED, AND CAPABLE OF MEETING THE STRICTEST DISINFECTION REQUIREMENTS.



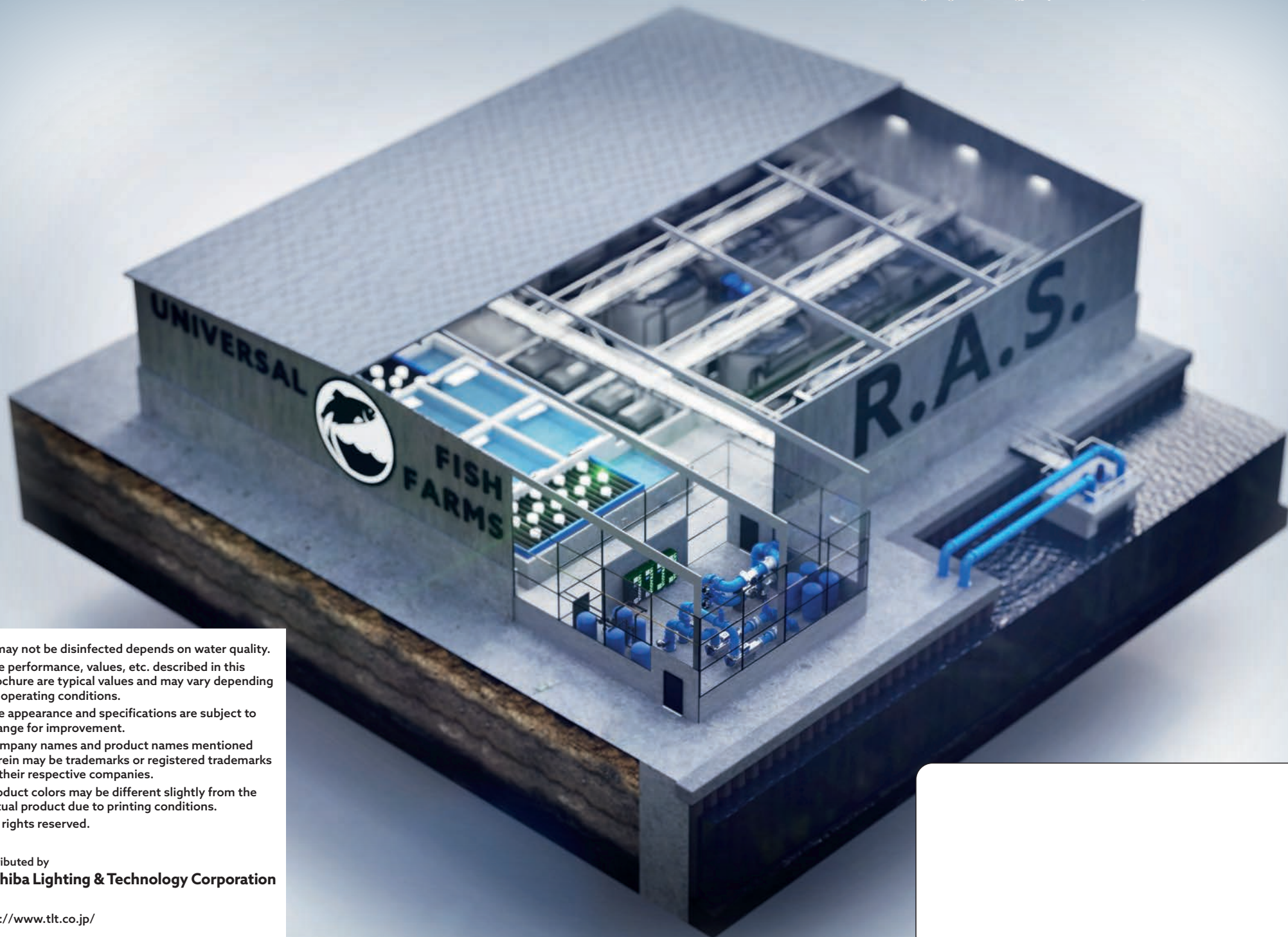
	OPEN CHANNEL SYSTEMS (SS)	OPEN CHANNEL SYSTEMS (PP)	INCLINED OPEN CHANNEL SYSTEMS (SS)	MONORAY™	ULTRATRON™
UV FUNCTION / APPLICATION	DISINFECTION			DISINFECTION / DE-OZONATION / AOP	DISINFECTION / DE-OZONATION / DE-CHLORINATION / AOP
LAMP TECHNOLOGY	LOW PRESSURE				MEDIUM PRESSURE
LAMP LIFETIME	16.000 HOURS				9.000 HOURS
REACTOR CONFIGURATION	OPEN CHANNEL - VERTICAL	OPEN CHANNEL - VERTICAL, INCLINED	OPEN CHANNEL - INCLINED	U, L & Z SHAPE	INLINE
FLOW CAPACITY (SINGLE UNIT ONLY)	5 M3/H (22 GPM) – 16.000 M3/H (100 MGD)	5 M3/H (22 GPM) – 8.000 M3/H (50,7 MGD)	5 M3/H (22 GPM) – 16.000 M3/H (100 MGD)	5 M3/H (22 GPM) – 6.000 M3/H (38 MGD)	11 M3/H (50 GPM) – 8.000 M3/H (50,7 MGD)

PRODUCT OVERVIEW FOR RECIRCULATING AQUACULTURE SYSTEMS (RAS)

EASY TO INSTALL, MAINTAIN, THOROUGHLY COST OPTIMIZED, AND CAPABLE OF MEETING THE STRICTEST DISINFECTION REQUIREMENTS.



	ULTRABARRIER™ (SS)	ULTRABARRIER™ (PP)	NON-CORROSIVE PP SYSTEMS	NON-CORROSIVE PEHD SYSTEMS	LOW FLOWRATE PP SYSTEMS
UV FUNCTION / APPLICATION	DISINFECTION		DISINFECTION / DE-OZONATION		
LAMP TECHNOLOGY	LOW PRESSURE				
LAMP LIFETIME	16.000 HOURS				9.000 HOURS
REACTOR CONFIGURATION	L SHAPE	U, L & Z SHAPE			
FLOW CAPACITY (SINGLE UNIT ONLY)	5 M3/H (22 GPM) – 3.000 M3/H (19 MGD)		5 M3/H (22 GPM) – 6.000 M3/H (38 MGD)	5 M3/H (22 GPM) – 3.000 M3/H (19 MGD)	1 M3/H (22 GPM) – 30 M3/H (38 MGD)



- It may not be disinfected depends on water quality.
- The performance, values, etc. described in this brochure are typical values and may vary depending on operating conditions.
- The appearance and specifications are subject to change for improvement.
- Company names and product names mentioned herein may be trademarks or registered trademarks of their respective companies.
- Product colors may be different slightly from the actual product due to printing conditions.
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