



Lamor Aquaculture

Your preferred partner on the journey
towards a cleaner tomorrow

lamor.com

LAMOR

Lamor in brief

Lamor is one of the world's leading providers of environmental solutions. For four decades, we have worked to clean up and prevent environmental incidents on land and at sea.

We have customers in both public and private sector:

- Energy
- Infrastructure
- Other industries

From environmental protection to remediation and material recycling

Our innovative technologies, services and tailored solutions, ranging from oil spill response, waste and water treatment to soil remediation and plastic recycling, benefit customers and environments all over the world.

We are capable of vast and fast operations thanks to our connected ecosystem of local partners, steered by our experts. Lamor's share is listed on the Nasdaq Helsinki, Finland.

Optimal solutions and technologies for some of the planet's harshest conditions

Lamor services for environmental protection, remediation, and material recycling, provide comprehensive solutions and expert support:

Environmental protection: Incident preparedness, cleanup

Prevention • Training • Consulting • Cleanup Technologies • Projects
Comprehensive solutions and 24/7 emergency hotline response

Remediation and restoration

Soil remediation • Soil washing • Comprehensive solutions
Project management Consulting

Material recycling: Waste, water, soil, plastics

Waste management • Wastewater treatment • Potable water production
Water treatment of aquaculture • Chemical recycling of plastic • Comprehensive solutions • Project management • Consulting

Introduction

As the global demand for seafood continues to surge, traditional wild fisheries alone cannot meet the rising needs of the world's growing population. Enter aquaculture, the practice of cultivating fish, shellfish, and aquatic plants in controlled environments.

We at Lamor have combined our know how from oil spill recovery, marine industry, waste management, and water treatment, and have created an extensive portfolio of sustainable solutions for the aquaculture industry.



Live fish carriers



Challenges

Salmon farming face the challenge of keeping farmed fish healthy while combating parasitic infestations such as sea lice. Traditional treatments, like thermal treatment, hydrogen peroxide and medicine treatment, has faced challenges such as inefficiency. Freshwater bath is the only method which is still effective against sea lice and AGD (amoebic gill disease). As a result, fish farmers and vessel owners are increasingly turning live fish carriers to more sustainable methods like freshwater treatments, which are both gentle on fish and effective in delicing.

The restricting factors to change the existing vessels to RO-treatment, are usually the limited footprint for massive underdeck installations and the available electricity.



Solution

Lamor's containerized and skid mounted reverse osmosis (RO) systems provide an efficient, environmentally friendly solution for freshwater production on live fish carriers. These systems purify seawater to create the fresh water needed to treat fish in a live fish carrier.

The water bath is used against the sea lice and AGD. During the sea lice treatment parasites like caligus detach from the fish in a freshwater bath and then the lice is captured thru filtration. By understanding the restrictions especially in retrofit vessels, Lamor's RO systems are designed to be the most energy-efficient, easy to operate, and can be customized to fit both new and retrofitted vessels.



Benefits

- **Effective Parasite Removal**
Freshwater treatment gently removes lice and parasites, keeping farmed fish healthy without the environmental risks of chemicals.
- **Effective amoebic gill disease treatment in fresh water bath**
- **Sustainability**
RO systems provide an eco-friendly method for water desalination, using minimal energy and ensuring sustainable aquaculture practices.
- **Customizable and Efficient**
Lamor's containerized and skid mounted RO systems are tailor-made for fish carriers, with rapid deployment, high water output, and easy integration into vessels.
- **Global Support**
Our systems are backed by years of research and development in the marine industry, offering reliable performance and global support for fish carriers worldwide.

Inland RAS -farms



Challenges

Inland Recirculating Aquaculture Systems (RAS) -farms are considered as sustainable and controlled environment to produce fish and seafood, using significantly less water than traditional flow thru farms. However, these RAS -farms still require salt free water for smolt production and in many locations the environmental permits won't allow to use fresh water from nature which means that salt free water need to be used as primary source.

Even tough RAS plants are considered as environmentally friendly, productions still generates waste water which need to be treated prior of the discharge or reuseage.

Sustainable production requires efficient inlet water treatment and waste water treatment to ensure the health of the fish and to prevent environmental contamination. Without a proper treatment, poor water quality can lead to health issues for the fish, lower product yield, poor product quality, and potential pollution to the surrounding the water bodies.



Solution

Lamor provides comprehensive water and waste treatment solutions specifically designed for inland fish farms. Our Reverse osmosis (RO) systems are designed to provide salt free water for smolt production. The treated water quality is optimized for hatchery and smolt production meaning that the mineral content is optimized in terms of fish health.

Our waste water flotation systems effectively remove nitrogen, phosphorus, fish grease and oil residues, providing the possibility for a closed water loops. . The mobile waste water treatment units are easy to deploy and offer cost-effective, energy-efficient waste water management. Additionally, Lamor's peroxide systems ensure the water remains microbiologically safe, while preventing off-flavors in fish caused by compounds like geosmine.



Benefits of RO

- Enables aquafarming in areas where fresh water is not available from nature
- Mobile structure enables fast and easy transportation and installation
- Optimized system design for smolt production guarantees the low capex requirements
- Local services personnel ensures the flawless operation and fast response time
- The local stock pile of consumables and spares enables easy and stress free operation

Benefits of waste water treatment

- Sustainability: Maximizes water efficiency by circulation and reuse and prevents pollution by treating waste waters to meet the legislation limits before discharge.
- Increased Profitability: Extracting valuables from waste, converts waste into resources like fertilizers and reduces operational costs.
- Ease of Deployment: Containerized, automated systems that are easy to transport, maintain, and integrate with existing farm operations.
- Enhanced Water Quality: Ensures clean and safe water for healthier fish and improved product quality.

Booms



Challenges

Especially tuna farmers face the challenge of controlling oily waste, which can float away and pollute nearby areas, impacting local environments, residents, and businesses. Commonly, fish farms produce waste from oily fish feed, which can drift to nearby beaches, causing environmental harm and public discontent. Managing this waste effectively is essential to avoid pollution and preserve the local ecosystem.



Solution

Lamor's decades of expertise in oil spill management led to the creation of specialized booms for the aquaculture industry. These booms contain oily waste and other biomaterials, preventing them from drifting into nearby areas.

By containing the waste, the booms protect the environment and also provide an opportunity for fish farms to recapture and sell the oily residue, transforming a challenge into a profitable resource.



Benefits



Environmental Protection

Prevents oily waste from polluting nearby beaches and marine environments



Sustainability

Supports cleaner, more sustainable aquaculture practices by efficiently managing waste.



Increased Profitability

Fish farms can generate additional income by selling the collected oily residue.



Enhanced Reputation

Helps fish farms maintain a positive relationship with local communities and businesses by minimizing environmental impact.

Waste water treatment in Aquaculture

Waste water treatment in aquaculture is necessary for maintaining water quality, supporting fish health, and preventing environmental contamination. The challenge lies in removing oil and grease, excess nutrients, and organic matter that accumulate from the production. Additionally, managing pathogens and controlling impurities such as geosmin in recirculating systems can be complex.



Challenges

Inland farms have usually strict environmental limits for discharge waters which restricts the water usage and forces the farms for water reuse. To be able to circulate the water, the oil/grease, phosphorus, nitrogen and geosmin levels need to be reduced.

Untreated water poses a significant risk for the rapid spread of pathogens, increasing the likelihood of disease outbreaks that can harm both marine species and the fish in the production cycle. In recirculating water systems, maintaining the microbiological cleanliness, minimizing the geosmine levels and controlling the nitrogen levels is a constant challenge.



Solution

UV disinfection and peroxide treatment are valuable tools for reducing geosmine and pathogen loads in the water, ensuring a safer environment for fish and other organisms. These methods help prevent the spread of diseases, making water systems more secure.

Optimized flotation units together with advanced membrane technologies, such as ultrafiltration, provide a high level of control over pathogens while effectively removing contaminants. These technologies ensure that water remains at the right balance and is free from impurities, contributing to the overall success of water management systems.



Benefits



Improves fish health and productivity

Ensures healthier fish by using gentle treatments that boost growth and reduce disease risks.



Enhances water reuse in RAS systems

Optimizes water recirculation, reducing the need for freshwater intake and supporting efficient aquaculture.



Reduces environmental impact and regulatory risks

Minimizes pollution and complies with environmental regulations by using sustainable water treatment solutions.



Lowers operational costs and water consumption

Cuts water usage, lowering expenses while maintaining effective fish farming operations.

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Let's clean the world

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