



BRINGING INDUSTRIAL PERFORMANCE TO LAND-BASED SEAWEED PRODUCTION

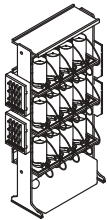
**Cultivate your vision
through innovation**

Modular design concept providing
scalable, consistent, and efficient
seaweed cultivation solutions for
various industries.

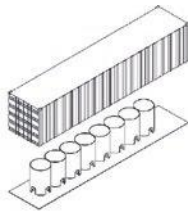
FEASIBILITY STUDY
CONSULTANCY SERVICES
LABORATORY SETUP
VALUEFARM CONTAINERS
VALUEFARM TOWERS

At Pure Algae, we deliver **reliable, high-performance solutions** for land-based seaweed cultivation, ensuring:

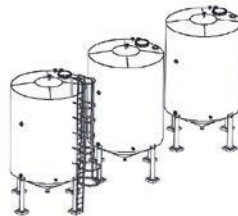
- **Ease of Use:** User-friendly systems, easy to operate and maintain
- **Complete Process Control:** Adjust and monitor all parameters
- **Custom Solutions:** Tailored setups to match your specific goals
- **High-Quality Seaweed:** Achieve unique products for market differentiation
- **Solid Data:** Consistent results with strong data for validation
- **Expert Support:** Knowledge and guidance from industry specialists



1 Laboratory setup



2 Valuefarm Containers



3 Valuefarm Towers

Designed for both **commercial production** and **research purposes**, our solutions enable superior outcomes while supporting sustainable and scalable operations.

We ensure you a stable production of high quality seaweed free of allergens and heavy metals. And the best part; independent of wind and weather - all year round!

Productivity

A review of scientific literature reveals that Pure Algae's VALUEFARM systems significantly outperforms the current state-of-the-art in land-based seaweed production. In a full-scale 1.2 m³ Photo BioReactor (PBR), it achieves peak yields of up to 15.6 kg fresh weight per week, averaging up to 1.7 kg per day using *Ulva* sp. achieving 10% dry weight. This exceeds the performance reported in comparable systems. The high yield is driven by optimized control of light, water flow, and nutrients – enabling consistent and efficient growth.

Thanks to Pure Algae's patented vertical light design, productivity scales by volume, not surface area; making VALUEFARM ideal for high-density, scalable production.



Key Benefits

Modular Design

Scalability from lab-scale to full industrial scale

Precision Control

Optimize growth conditions for superior outcomes

IoT Integration

Real-time data tracking and resource management

Resource Efficiency

Minimized energy use with cost-benefit optimization

Sustainable Focus

Solutions designed to capture emissions and support circular production

Plug-and-Play

Easy setup and operation for non-experts

Scalable Outputs

From small pilot projects to industrial production

Reliability

Engineered for consistent performance and minimal maintenance

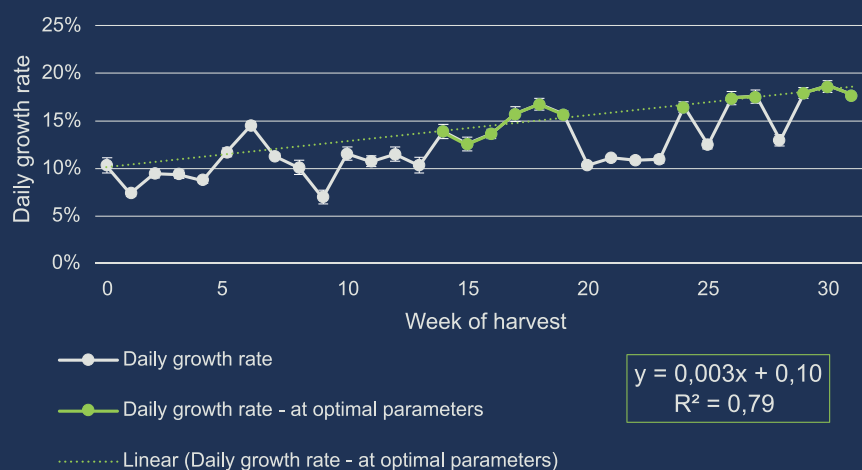
A professional setup with stable production, ensuring the desired quality and controlled quantity.

A facility designed for the production of seaweed in consistent, superior quality.

A production process with documented control over all stages.

As a supplier of seaweed to the cosmetics, food, feed, and/or pharmaceutical industries, you are guaranteed an optimal and well-proven production system.

Laboratory Setup for peak performance!



Unlock the Full Potential of Seaweed Cultivation Before Investing

Scope

- **Strain Performance** to identify high-yielding or compound-rich strains suitable for your needs.
- **Growth Optimization** for fine-tuning key parameters like light, nutrients, water flow, and temperature.
- **Production Projections** for estimating biomass yield under real-world conditions.
- **Scalability & ROI** to assess economic feasibility before investing in full-scale operations.

- **PowerPoint Presentation:** Growth performance and key insights for decision-making, presented by an experimental manager
- **Grow-Out Samples:** Delivery of cultivated seaweed biomass for downstream testing and product development.
- **Tailored Recommendations:** Evaluation of next steps toward your vision

- ✓ Strain viability testing
- ✓ Compound optimization
- ✓ De-risking upscaling

 RAS
Biotech

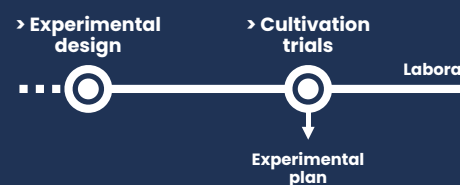
- Reduce uncertainty before committing investment capital
- Data-driven decisions based on parameter testing
- Close communication with experts and tailored recommendations

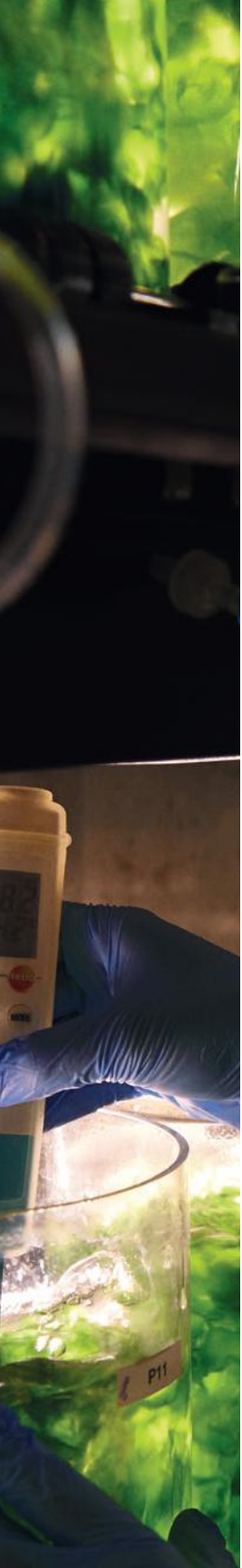


Step 1: Strain Selection and Stock Establishment



Step 2: Cultivation Trials and Param





Consultancy Services

From strategic clarity to technical execution

At Pure Algae, we offer consultancy services that span the entire seaweed value chain – from supporting you in strain selection and cultivation strategies to system integration, bioprocess design, and business modelling. Our expertise combines scientific insight, hands-on production experience, and a deep understanding of emerging markets for seaweed-based products.

Whether you're a startup looking to validate your business case or an established player exploring new opportunities, we tailor our advisory to your specific needs.

Our consultancy services include:

- **Business Model Validation:** SWOT analysis, Business Model Canvas, and Product Roadmap Canvas to support early-stage decisions and investments.
- **Technical Feasibility & Pre-engineering:** Guidance on system configuration, light and mixing strategies, flow dynamics, and preparation for custom integration or facility planning.
- **Literature Studies & Research Summaries:** Targeted reviews to inform decisions – for example, on preservation techniques, biomass composition, or downstream processing.
- **Tailored Recommendations:** Clear next steps based on your goals – from identifying the right strain to optimizing for target compounds or future production scale.
- **Add-on Services:** Consultancy hours can be combined with product purchases such as our Lab Setup or Feasibility Studies for a seamless transition from planning to implementation.

Let's turn your vision into reality. Reach out for a dialogue on how we can support your project.

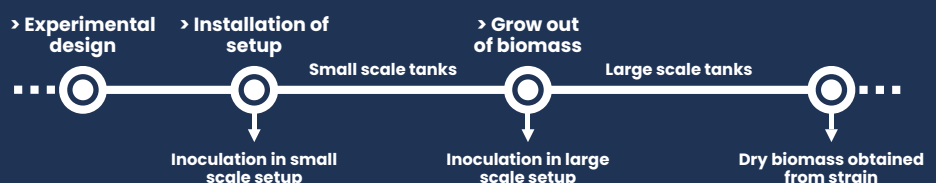
” Working with Pure Algae has been a real boost for Olgram, allowing us to make a real leap forward in the development of our pharmaceutical grade algae culture, mastering and adjusting multiple parameters simultaneously with great scientific rigour and flexibility – all in a great collaborative atmosphere.

- Pierre, CEO, S.A.S. Olgram

eter Optimization



Step 3: Testing of Cultivation Parameters at Commercial scale



Laboratory Setup

Data-Driven Insights to Optimize Seaweed Cultivation Before Scaling

The **Laboratory Setup** is designed for controlled seaweed cultivation validating hypotheses at small scale. It is ideal for universities, biotech companies, and small-scale producers conducting strain selection or optimizing growth conditions before scaling up.

Description

This modular system enables precise control over key growth parameters and is characterized by:

- **12 bioreactors**, each with a **4-liter capacity** (total: **48 liters**)
- **Adjustable water flow control** for optimized nutrient and CO₂ supply and continuous filtration, with **optional direct cooling or heating**
- **Adjustable air flow control** ensuring optimal gas exchange with easy adjustments
- **User-friendly design** for high-precision data collection, minimal human error, and standardized, time efficient processes
- **Optional sensors & IoT integration** to monitor parameters such as temperature, pH, flow, salinity, and even real-time biomass growth
- **Relevant supplementary options**, including a unique pressing unit, starter kits, and cleaning technology

With its plug-and-play design, the system is easy to install, operate, and maintain with minimal time investment and low skill requirements.

Ideal for:

- ✓ Strain selection & comparison
- ✓ Cultivation parameter testing
- ✓ Growth optimization

Best suited for:

- 🔬 Research
- 🌱 Seaweed Grow-out
- 💡 Biotech

Why choose it:

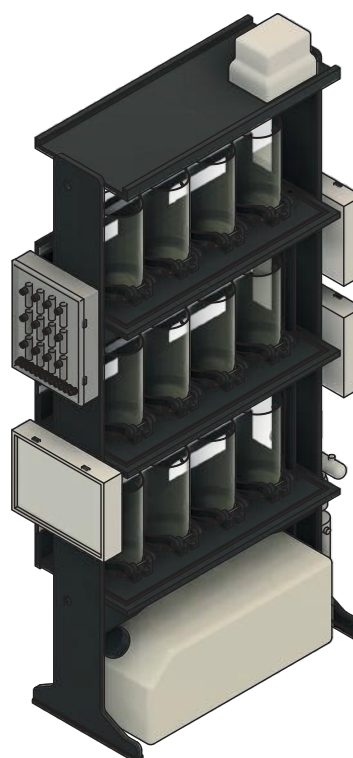
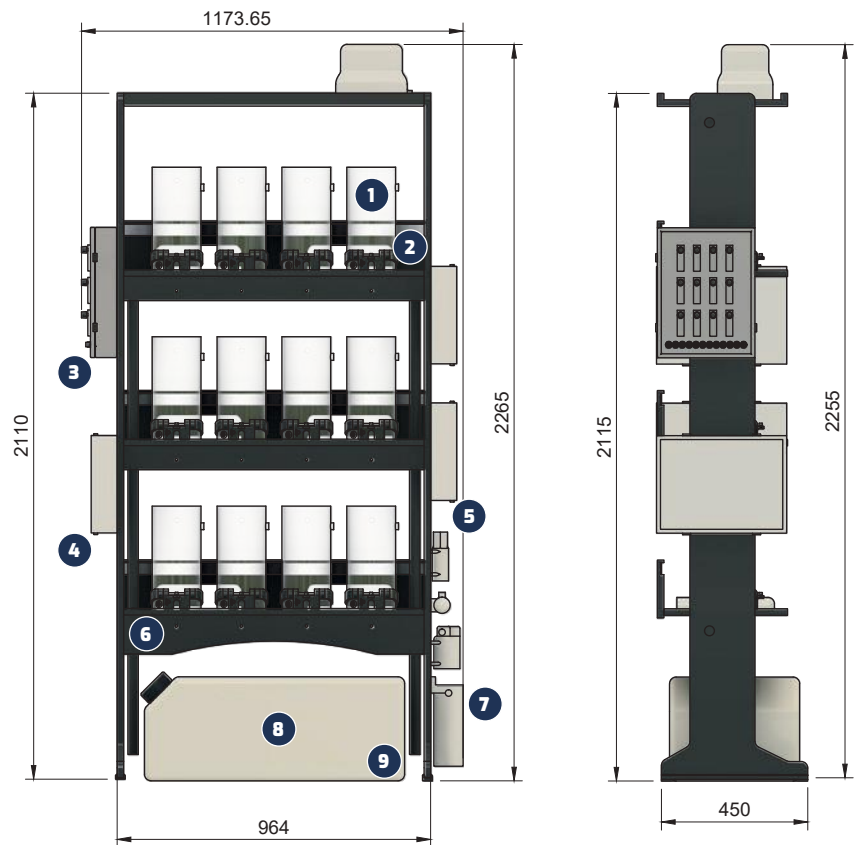
- Designed specifically for seaweed cultivation
- Plug-and-play setup – fast and intuitive installation
- Standardized design for replicable, high-quality data



We were impressed by how quickly the Laboratory Setup was set up and running – it truly is plug-and-play.

- Marie, Production Manager, Polar Algae





- Bioreactors [1]
- Easy harvesting module [2]
- Air flow control [3]
- Water flow control [4]
- Light control [5]
- Unique shelf systems with drains [6]
- Pumps, filtration, and sterilization [7]
- Buffer tank [8]
- Optional cooling and/or sensors [9]



Technical Specifications

Power Supply:	Universal power supply 220 V, 50 Hz
Max Power Usage:	300W (750W with cooling)
System size:	2105 x 964 x 450 mm (H x W x D)
Bioreactors:	H: 300 mm, Ø: 150 mm, Functional volume: 4 L
Buffer tank:	330 x 820 x 415 mm (H x W x D), Functional Volume: 90 L.
Net Weight:	100 kg (250 kg with water)

VALUEFARM Containers

Modular, High-Yield Cultivation for Commercial Seaweed Production

The **VALUEFARM Container** is a compact, scalable seaweed cultivation system designed for both research and commercial production. It ensures optimal growth conditions and integrates seamlessly with RAS facilities or functions as a stand-alone unit for biotechnology and commercial seaweed production.

Description

This scalable system is available in two standard sizes and offers high-yield, controlled production:

- **20' unit** with **3 Photo Bio Reactors (PBRs)** of **1,200-liter capacity** (total: **3,600 liters**)
- **40' unit** with **8 Photo Bio Reactors (PBRs)** of **1,200-liter capacity** (total: **9,600 liters**)

Designed for flexibility and performance, the **VALUEFARM Container** is a compact, plug-and-play solution for land-based seaweed cultivation. Whether for commercial use or research, it offers consistent output and simple operation in a modular format.

- **Production capacity:** Each PBR yields **5–13 kg of fresh biomass per week** at **10% dry weight**
- **Integrated harvesting system** with tanks, pumps, and a **unique press** for easy biomass handling
- **CE-marked** and compliant with **EU regulations** for work safety and food contact materials
- **Optional service and maintenance agreements** for optimized operation and long-term support
- **Optional sensor & IoT monitoring** of parameters such as temperature, pH, flow, salinity, and **real-time biomass growth**

A 40' container unit can produce up to **5.4 tonnes of fresh weight per year** (10% dry weight) for a high-performing *Ulva* strain. The **Laboratory Setup** or a **Feasibility Study** can support strain selection or optimization for target compounds such as proteins or polysaccharides.

Ideal for:

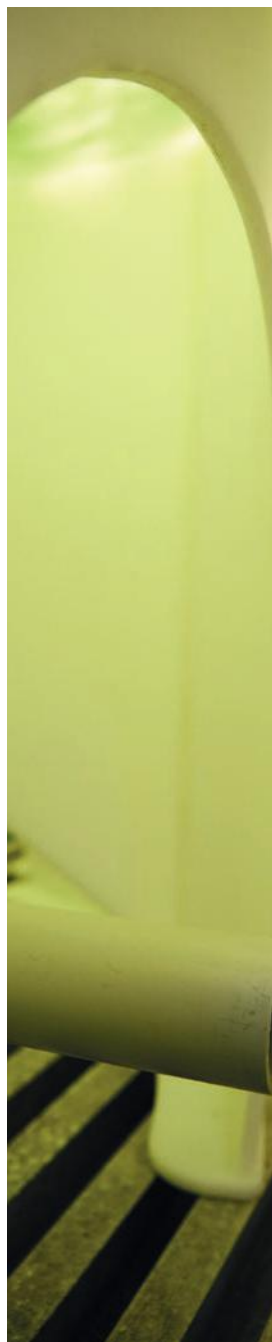
- ✓ Commercial production
- ✓ Reliable biomass supply
- ✓ High quality output

Best suited for:

- 💧 RAS
- 🌱 Seaweed Grow-out
- 💡 Biotech

Why choose it:

- Plug-and-play modular design with relevant certifications
- Works stand-alone or integrated with RAS farms (IMRAS)
- Easy to operate and service – no experience required



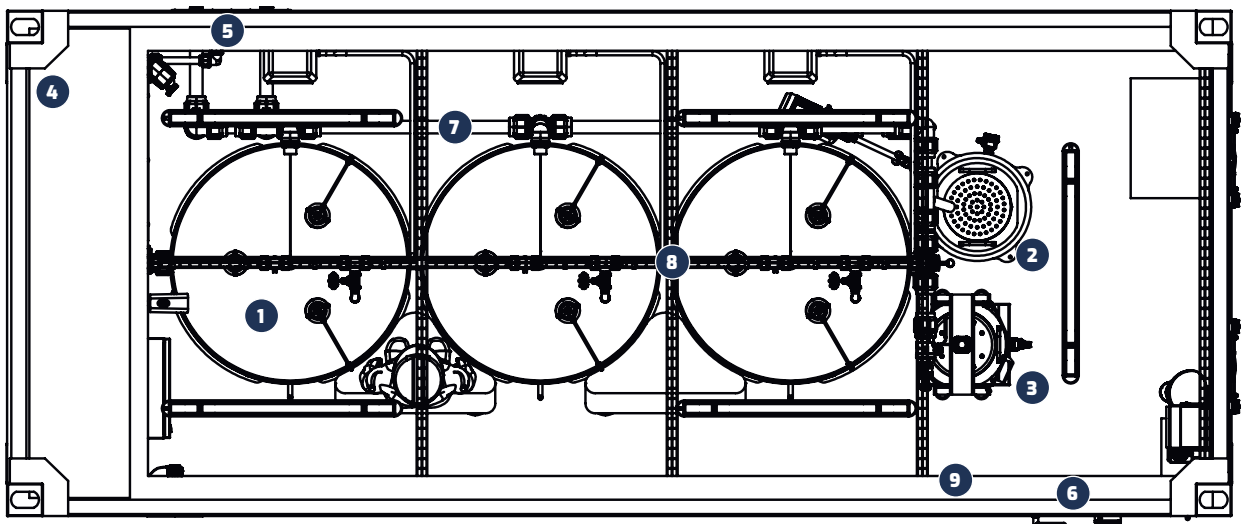
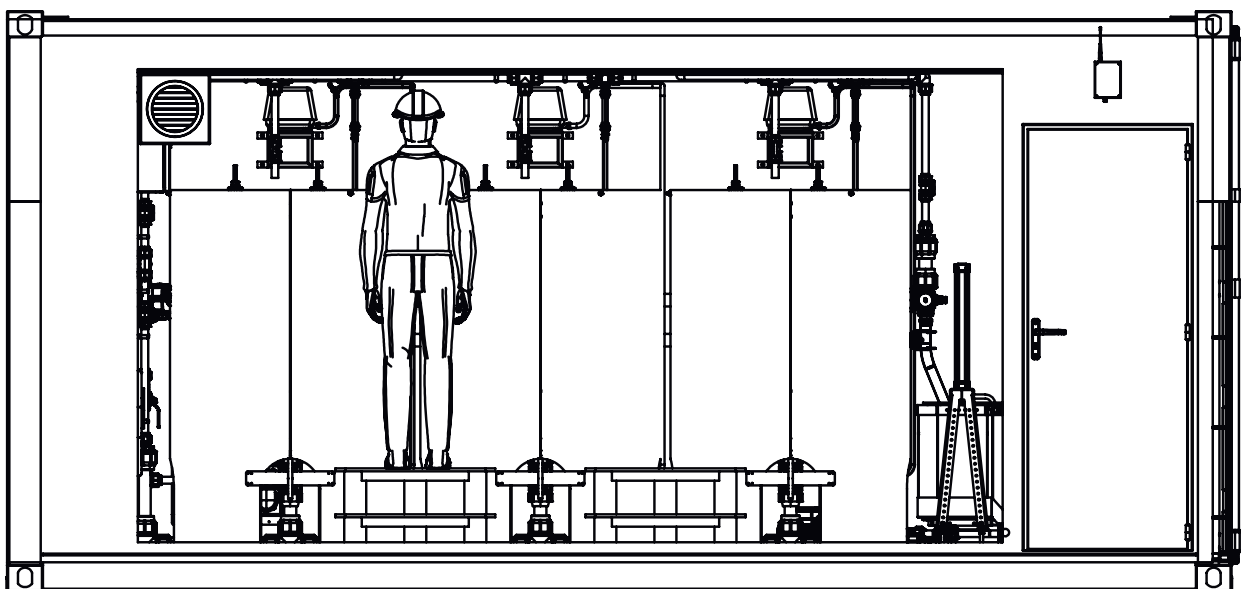


Photo Bio Bioreactors [1]
Harvesting System [2]
Seaweed Pressing Unit [3]

20' or 40' High Cube Reefer [4]
Plug and Play Connection Hub [5]
Easy Entrance [6]

Flow Through System [7]
Sensors and monitoring [8]
IoT Control Panel [9]

VALUEFARM Towers

Modular, High-Volume Cultivation for Industrial Seaweed Production

The **VALUEFARM Tower** system is designed for land-based seaweed production at industrial scale. Built on the same high-performance technology as our container solutions, the Towers eliminate the spatial limitations of containers and allow seamless upscaling with greater flexibility. Ideal for large-scale producers and aquaculture integrations, **VALUEFARM Towers** offer automated, controlled, and space-efficient seaweed cultivation.

Description

This scalable system is available in two standard volumes and designed for modular installations:

- **5,000-liter** tower (approx. Ø1.5 m, H3.5 m)
- **10,000-liter** tower (approx. Ø2.0 m, H4.5 m)

Each installation typically consists of at least 8 towers, configured for your site and needs. The towers are best placed indoors but can be designed for outdoor installations when required.

Designed for industrial scalability and process control, the **VALUEFARM Tower** system delivers high yields while maintaining low labor requirements and strong performance predictability.

- **Production capacity:** Up to 5–13 kg of fresh biomass per m³ per week at 10% dry weight
- **Integrated harvesting system:** Tanks, pumps, and our unique press unit for smooth biomass handling
- **Full automation:** Patented built-in lighting system and unique cleaning- and water delivery systems
- **CE-marked and compliant** with EU regulations for work safety and food contact materials
- **Optional sensor & IoT monitoring** of parameters such as temperature, pH, flow, salinity and real-time biomass growth
- **Custom configuration** for stand-alone operation or seamless RAS integration

One 10,000-liter tower performs on par with a full 40' container – reaching up to 5.4 tonnes of fresh biomass per year with a well-performing Ulva strain. Our Laboratory Setup or Feasibility Study can help ensure the right strain and parameters before scaling up.

Ideal for:

- ✓ Industrial production
- ✓ High emission capture
- ✓ High quality output

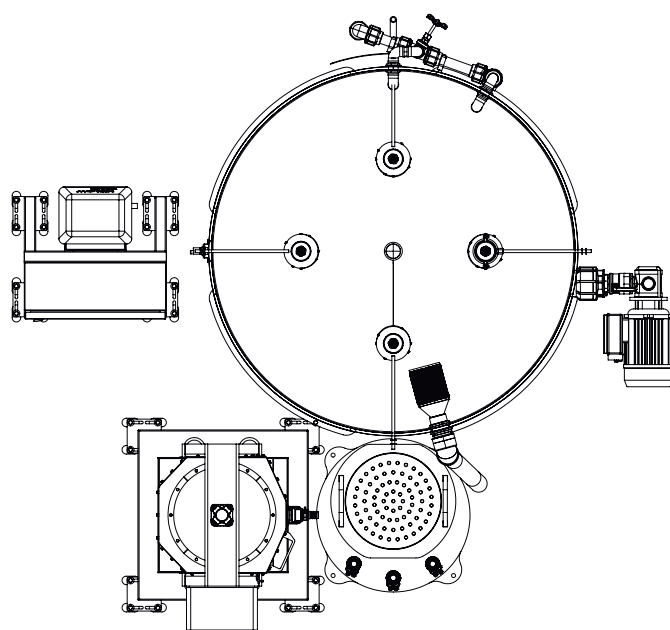
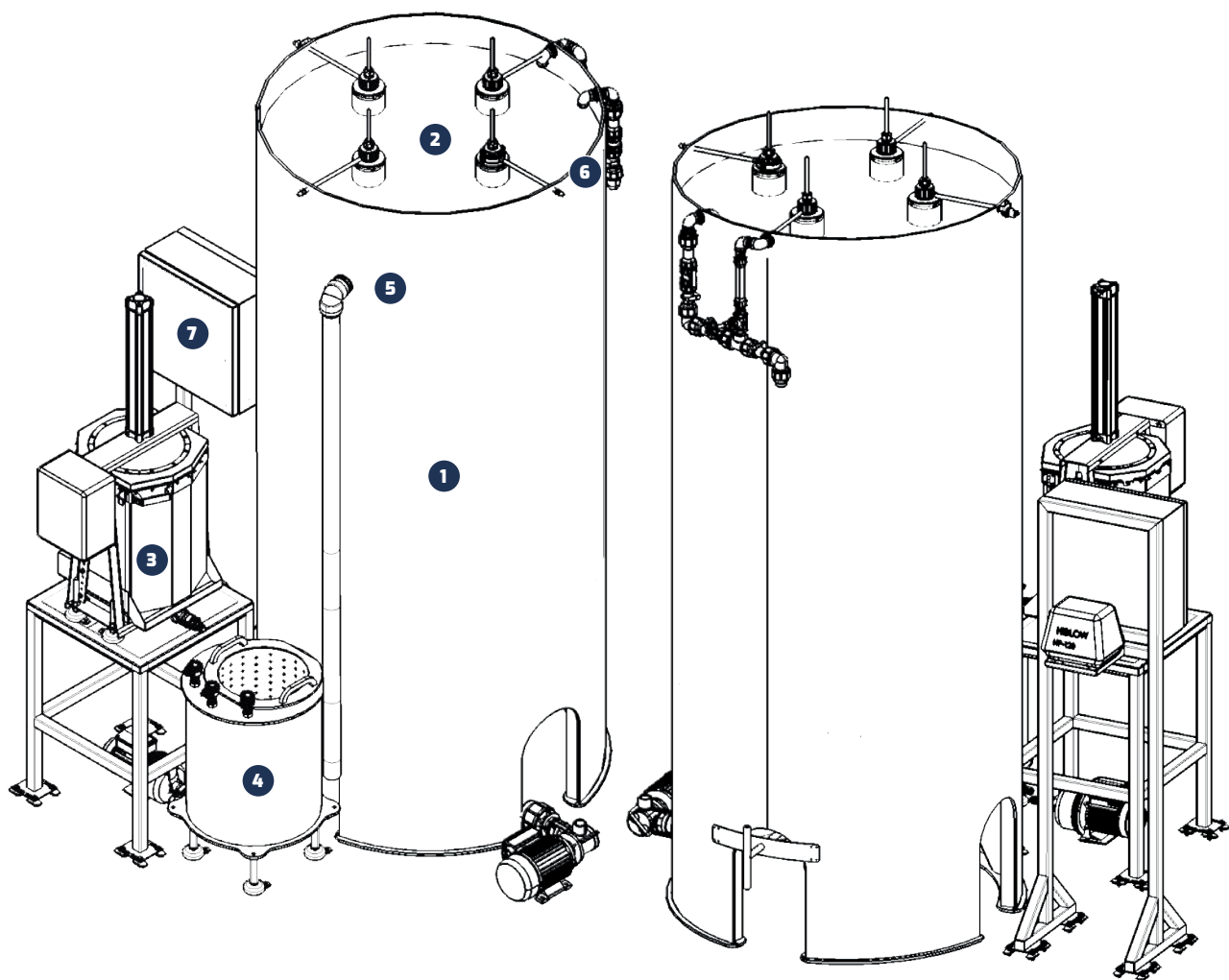
Best suited for:

- 💧 RAS
- 🌱 Seaweed Grow-out
- 💡 Biotech

Why choose it:

- Modular tower format: 5m³, 10m³ or 20m³ per unit
- High level of automation: harvesting, cleaning, operation
- Max efficiency without container constraints





- Photo Bio Bioreactors [1]
- Patented Light Modules [2]
- Seaweed Pressing Unit [3]
- Harvesting System [4]
- Flow Through System [5]
- Sensors and monitoring [6]
- IoT Control Panel [7]

About Pure Algae

Pure Algae Denmark was founded in 2018 by Esben Rimi Christiansen. The idea behind founding the company comes from a mission to safeguard the oceans' natural resources.

In 2018 Esben published his thesis on seaweed where he showed the positive potential for sea lettuce in public health and within the area of sustainability. It became the first seed for Pure Algae.

The global demand for seaweed is on the rise and Pure Algae's vision has been to become Denmark's first supplier of a technology that enables a stable and sustainable production of seaweed on land.

With our closed, controlled systems, you can grow high quality and allergen free seaweed, benefiting our environment and health – while at the same time ensuring a revenue for your business.

Contact Us

Get in touch for expert advice on your tailored solution.

Let me help you optimize your seaweed production with our state-of-the-art technology. Contact me today!

Founder and Leader

Esben Rimi Christiansen

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Phone: **+45 60 535 642**



purealgae.dk



See Pure Algae's intro video
purealgae.dk/about-us



Based on our experience with Pure Algae, we consider the company a highly reliable partner – committed to generating robust data while advancing equipment designed for large-scale, land-based cultivation systems for Ulva. Their team consist of skilled professionals, with in-depth knowledge on both project planning and management – as well as the engineering and biological side of their field of work.

- Teis, Seaweed Scientist, Aarhus University

Pure Algae Denmark

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