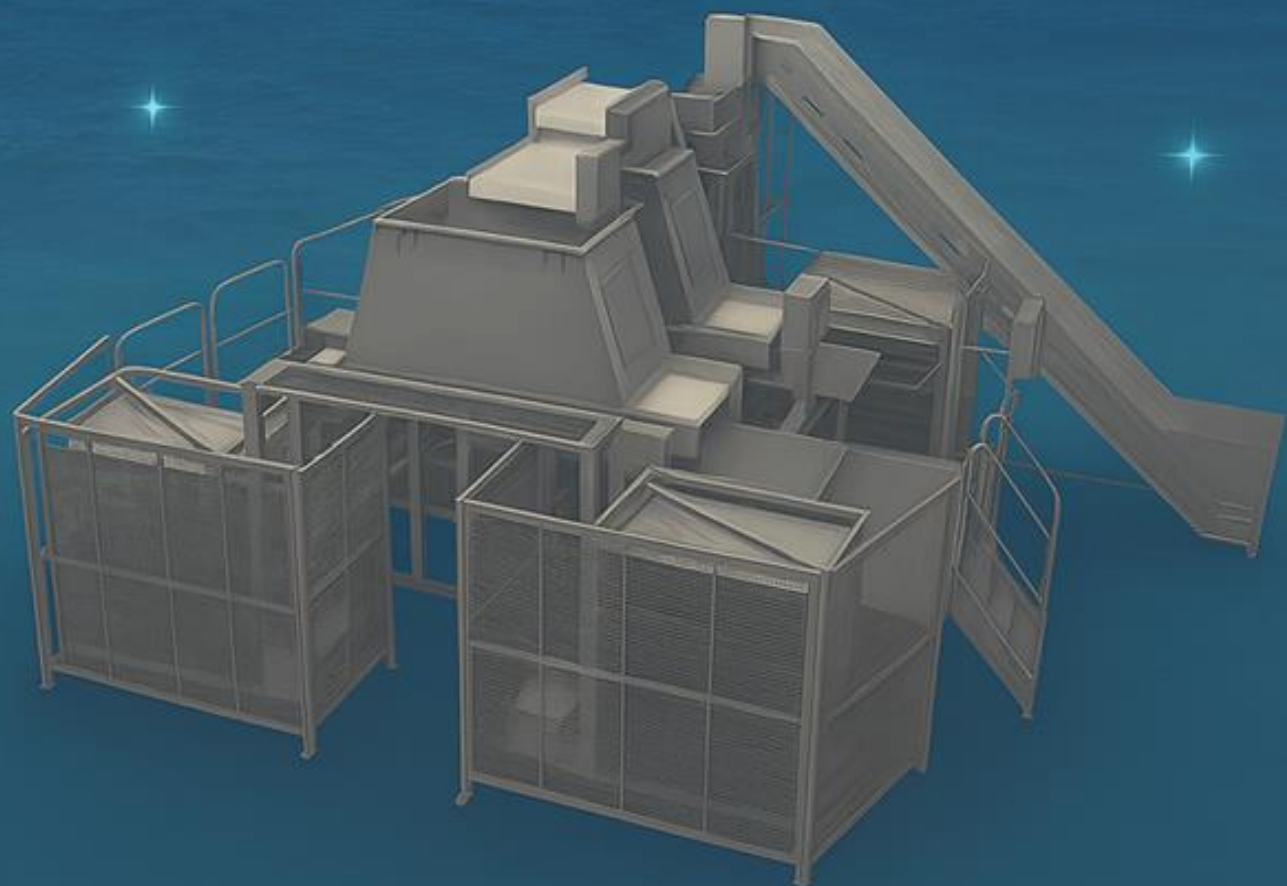


SIRPUTIS

Solutions from the Sea

*Equipment and Systems for Seaweed
Processing and Stimulant Extraction*

PRODUCT CATALOG



www.sirputis.com | info@sirputis.com

Direct seeding



Sirputis Direct Seeder

Function:

High-performance seeding system for commercial seaweed cultivation, designed to deliver speed, accuracy, and cost efficiency.

Design:

Operates at a line speed of **1 m/s ($\approx$ 3 km/h)**, ensuring precise glue and seed dosing. The automated rope handling system includes a cutter and length calculator for consistent rope preparation.

Operation:

Requires only **one operator**, reducing labour needs by up to **60%** compared to manual seeding. Capable of seeding **1 OCU (One Cultivation Unit $\approx$ 82,500 m)** in six days instead of 21, significantly improving productivity.

Construction:

Built for reliability and ergonomics, featuring fully automated rope control and easy maintenance.

Key Advantages:

- Up to 84% lower cost per kg of seeded biomass
- Precise and consistent dosing
- Safe, ergonomic, and low-maintenance design
- Proven performance in field trials (*Ocean Rainforest, Faroe Islands*)
- Developed in partnership with *SEAWISER*.



Twine seeding



Sirputis Twine Seeder

Function:

The Sirputis Twine Seeder is designed to improve seeding efficiency by minimizing seedling damage and maximizing yield during the cultivation process.

Design:

Constructed from corrosion-resistant AISI 304 stainless steel, the unit ensures durability and long-term performance in marine environments. The structure is optimized for gentle handling of delicate seaweed seedlings, preventing breakage and loss.

Operation:

Seedlings are evenly distributed onto the twine using a controlled vectorizing mechanism. Adjustable ratios between the grow-line and twine (1:1 to 1:1.5) allow users to tailor the process for different seaweed species and cultivation systems.

Benefits:

- Gentle seedling treatment minimizes mechanical stress
- Centrifugal protection prevents detachment and loss
- Customizable grow-line to twine ratio (1:1–1:1.5)
- Compatible with reels from 80 mm to 110 mm
- Modular system — capacity increases by adding units
- Designed for consistent, high-speed operation (up to 1000 m/h)
- **Gentle. Efficient. Scalable.**

Technical Data:

Dimensions: 2700 × 930 × 1435 mm

Material: AISI 304 stainless steel

Speed: up to 1000 m/h

Reel size: 80–110 mm



Seaweed harvester



Sirputis Seaweed Harvester

Function:

A modular seaweed harvesting system developed in collaboration with Norwegian seaweed farmers. Designed for safer, cleaner, and more efficient collection of brown seaweed species such as *Saccharina* and *Alaria*.

Design:

Equipped with a high-pressure water jet system that separates seaweed from ropes without damaging roots, enabling natural regrowth. Integrated rope cleaning removes remaining roots and marine debris.

Operation:

Easily installed on vessels and tested in currents up to **2 km/h** under variable weather conditions. Adjustable to different species and harvesting environments.

Construction:

Robust and low-maintenance stainless-steel design, ensuring durability and safety for operators.

Key Features:

- High-pressure water jet harvesting system
- No blades or metal shavings – cleaner biomass
- Integrated rope and debris cleaning
- Adjustable setup for various conditions
- Optional accessories: conveyors, tank loaders, rope winch systems



Seaweed processing

Modular design optimized for your end products

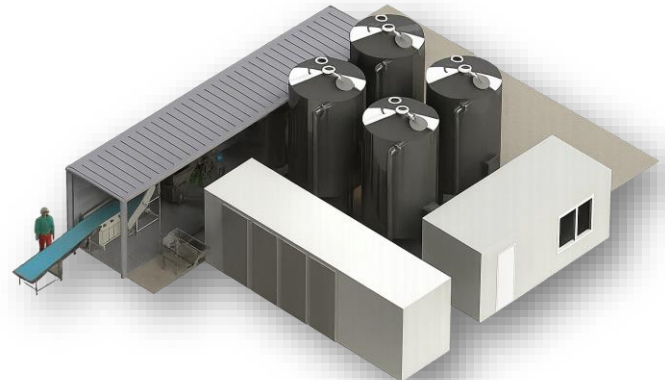
Overview and capacity

Containerized, modular system converts green biomass into marketable bio-ingredients and promotes the green transition in agriculture and other sectors.

- Processes wet or semi-dry seaweed (*Sargassum*, *Alaria*, *Kappaphycus*, *Saccharina*, *Giant kelp*, and others)
- Input: 0.75–2.0 t/h wet biomass | Operating time: 8–20 hours per day
- Output: Stabilized liquid biostimulant (500–2,000 l/h) + dried granules/powder (8–15% moisture)
- Compact footprint: 400–700 m² | Installed power: ~200 kW

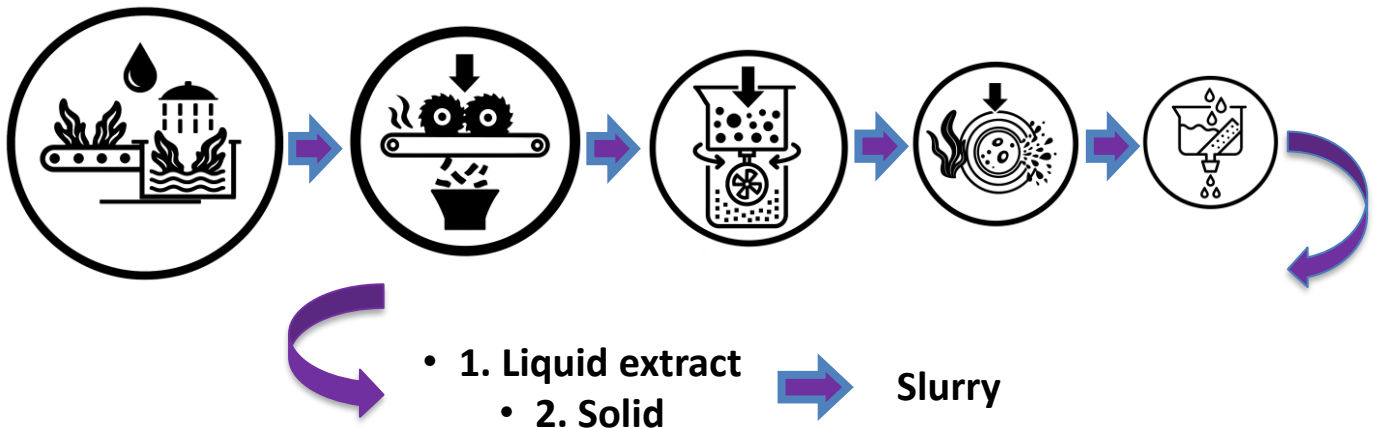
Key advantage

- Sirputis mechanical cell disruption releases intracellular alginate oligosaccharides, fucoidan, laminarin, and polyphenols



- Fully operational in 6–8 months, compared to 1–1,5 years for typical installations.
- Capacity can be increased in 0,5 tonne/hour increments through a standardized modular setup, enabling seamless scaling without redesigns or downtime.

High-level process flow



The process takes raw seaweed, breaks its cells mechanically in a water-based slurry, separates the valuable dissolved compounds into a liquid extract, and presses out the remaining fibrous pulp, which could be dried.



Seaweed processing



Sirputis Biostim 500 Compact

500kg/h wet weight input

Metric	Calculation (est.)	Parameter	Unit	0.5 t/h Line
CAPEX	300 000 €	Typical solids in fresh Asco	%	*20
Operating hours/year	8 h × 250 days = 2000 h	Wet seaweed input	kg/h	500
Throughput/year	$0.5 \text{ t h}^{-1} \times 2000 \text{ h} = 1000 \text{ t wet}$	Total feed slurry	kg/h	**1000
Annual utilities and biomass (Asco)	$1000 \text{ t} \times 160 \text{ €/t} = 160\,000 \text{ €}$	Dry matter in incoming seaweed	kg/h	100
Assuming conservative liquid extract price	1400liters (3% DM extract)/t (WW)*1,5€ /liter* $r^*=2100\text{€/t}$	DM retained in pressed cake	% of DM	79
Annual gross revenue (excluding pulp revenue)	$1000 \text{ t} \times 2100 \text{ €/t} = 2\,100\,000 \text{ €}$	Dry matter to cake	kg/h	79
		Pressed cake dry solids	%	26
		Pressed cake output	kg/h	300
		Liquid phase output	kg/h	700
		DM to liquid phase	kg/h	21



Seaweed processing



Sirputis Biostim 2000 Compact + Dryer

2000 kg/h wet weight input

Estimated performance

Metric	Calculation (est.)	Parameter	Unit	2.0 t/h Line
CAPEX (including dryer)	1 000 000 €	Typical solids in fresh Asco	%	*20
Operating hours/year	8 h × 250 days = 2000 h	Wet seaweed input	kg/h	2000
Throughput/year	2t h ⁻¹ × 2000 h = 4000 t wet	Total feed slurry	kg/h	4000
Annual utilities and biomass (Asco)	4000 t × 160 €/t = 160 000 €	Dry matter in incoming seaweed	kg/h	400
Assuming conservative liquid extract price	1400liters (3% DM extract)/t (WW)*1,5€ /liter*=2100€/t	DM retained in pressed cake	% of DM	79
Annual gross revenue (excluding pulp revenue)	4000 t × 2100 €/t = 8 400 000€	Dry matter to cake	kg/h	316
		Pressed cake dry solids	%	26
		Pressed cake output	kg/h	1200
		Liquid phase output	kg/h	2800
		DM to liquid phase	kg/h	84



Stainless steel process/storage tanks



Process/storage tank

Efficient blending for consistent seaweed processing.

The Mixing Tank is designed for the uniform preparation of seaweed-based liquids, extracts, and suspensions. It ensures reliable mixing, heating, or cooling to achieve the desired consistency and product quality. Built for hygiene and easy maintenance, the tank integrates seamlessly into automated processing lines.

Technical Data

Parameter	Value
Total volume	11 m³ (1 - 20 m ³ on request)
Material	AISI 316 stainless steel (food grade)
Mixing type	Top-mounted agitator with variable speed
Heating/Cooling	Jacketed shell for hot water or glycol
Working temperature	Up to 95 °C
Pressure rating	Atmospheric
Cleaning system	CIP (Clean-In-Place) nozzles
Connections	DN 50–100 (customizable)
Surface finish	Ra < 0.8 µm (internal polished)
Power supply	380 V / 50 Hz



Plastic process/storage tanks



Plastic storage tank

Process Tank 5 m³

- The tank is a robust, corrosion-resistant vessel designed for handling and processing seaweed biomass in industrial bioprocessing lines. Manufactured from high-density polyethylene (HDPE), the tank ensures excellent chemical resistance, mechanical durability, and long service life in marine-biomass environments.
- **Key Technical Features**
- **Working Volume:** 5,000 liters
Dimensions: Ø 650 mm diameter, 2100 mm height
- **Construction Materials:**
 - Cylindrical body and top cover made from PE for high corrosion resistance
 - Internal sloped PE bottom for improved drainage and solids removal
 - Structural support with external reinforced base
 - Yellow foam-type foundation layer under the bottom (load-distribution support)
- **Connections and Interfaces:**
 - **Inlet / Outlet ports** positioned on the top section
 - **Sampling valve** located near the lower section for product extraction
 - **Vent ports** for pressure equalization
 - **CIP spray nozzles** for automated tank cleaning
 - **Additional pH / temperature / level sensor ports** to integrate with process control systems
- **Mixing System:**
 - Integrated **agitator shaft** with mixing blades
 - Agitator mounted on the tank top
 - Suitable for suspending seaweed particles and homogenizing biomass slurry
- **Operational Characteristics**
- Designed for **seaweed biomass soaking, hydrolysis, conditioning, or extraction steps**
- Smooth PE surfaces minimize fouling and support sanitary operation
- Fully compatible with marine-biomass liquid media, salts, acids, and organic compounds
- Lightweight, corrosion-proof, and easy to integrate into modular containerized systems



Seaweed processing equipment



Seaweed Stabilization Module

Function:

Compact acid stabilization system for cultivated seaweed — ideal for onboard use or land-based facilities during peak harvest periods.

Design:

Quickly stabilizes fresh biomass using a low-energy acid treatment process, extending the shelf life without the need for drying or freezing.

Operation:

Processes 1–5 t/h (wet weight) and allows stabilized material to be stored in IBC tanks for flexible downstream use — food, extraction, or drying.

Construction:

Built for efficiency and mobility, suitable for both remote and stationary setups. Made of corrosion-resistant, food-grade stainless steel.

Key Benefits:

- Extends shelf life up to 3–6 months
- Low energy consumption
- Compact and mobile configuration
- Suitable for IBC tank storage
- Enables flexible processing and reduced waste



Fresh seaweed equipment



Ascophyllum Nodosum processing line

Function:

A complete processing line designed for handling freshly harvested *Ascophyllum nodosum* before drying. The system ensures continuous operation and consistent product preparation for further processing.

Design:

Includes integrated stages for manual sorting, metal detection, shredding, and grinding. The processed biomass is then distributed into pallets or drying containers for efficient downstream handling.

Operation:

With a capacity of **5,000–15,000 t/year (wet weight)**, the line is optimised for medium- to large-scale production. Requires only **3–5 operators**, thanks to its automation and continuous flow design.

Construction:

Fully constructed from stainless steel for durability, hygiene, and easy maintenance. Delivered as a turnkey solution — including design, production, installation, and commissioning.

Key Features:

- Continuous and automated operation
- Integrated metal detection and shredding
- Pallet and container distribution system
- Low labour requirement (3–5 operators)
- Ready for drying stage



Seaweed processing equipment



Seaweed Washer & Elevator

Function

The system performs initial seaweed cleaning using air–water agitation, followed by additional rinsing on the lifting conveyor. It removes sand, salt, and organic residues before further processing.

Design

A water-filled tank with an air–water mixing system and an overhead spray-rinse section ensures continuous, gentle handling and consistent cleaning quality.

Operation

Seaweed is loaded into the tank for primary washing. A belt conveyor lifts the material to the discharge point while spray nozzles provide final rinsing. Washing intensity and conveyor speed are adjusted from the control panel.

Construction

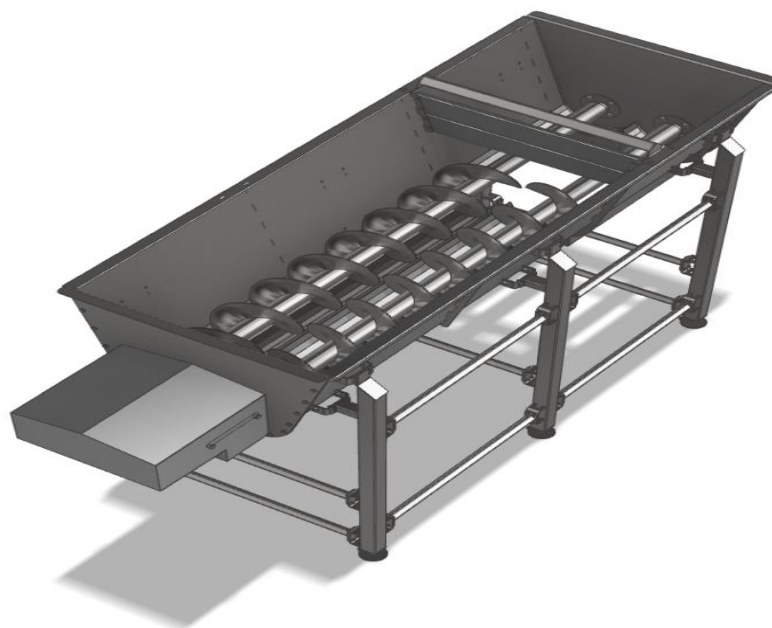
The frame is made from **AISI 304**, and the washing tank from **AISI 316** stainless steel for superior corrosion resistance. The conveyor includes variable-speed control and a water-drainage system. All components are hygienic and easy to maintain.

Key Benefits

- Efficient removal of sand, salt, and debris
- Gentle product handling
- Adjustable conveyor speed and washing intensity
- High automation reduces labor
- Durable stainless-steel construction
- Continuous operation with capacity up to **2000 kg/h**



Seaweed processing equipment



Double-Screw Doser

Function:

The first stage of fresh seaweed processing — ensures consistent and controlled feeding of raw material into the production line.

Design:

Seaweed is loaded into a hopper positioned above two rotating screws. As the shafts turn at a controlled speed, the product is evenly discharged through the bottom outlet onto a conveyor belt.

Operation:

Provides accurate dosing and stable product flow to downstream equipment, preventing clogging or overfeeding.

Construction:

Made of food-grade stainless steel, featuring a compact, hygienic, and easy-to-integrate design.

Key Features:

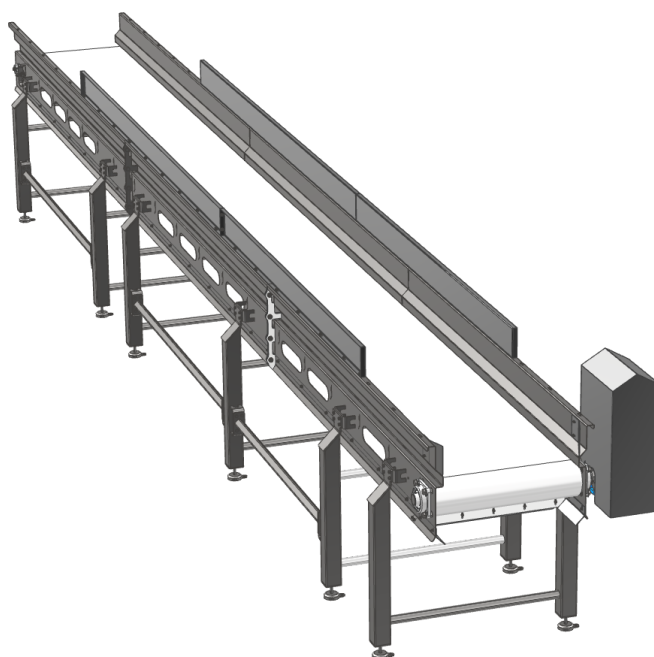
- Smooth and reliable operation
- Adjustable screw speed for precise dosing
- Efficient transfer to following process units
- Hygienic and durable stainless steel structure

Technical Data

Total length	3742 mm
Overall width	1321 mm
Total height	2300±50 mm
Capacity volume	2000 l
Product mass	793 kg
Supply voltage	380 V/ 50Hz
Total Power	1,1 kW



Seaweed processing equipment



Buffering Conveyor

Function:

Ensures smooth, clean, and continuous product transfer between processing stages in seaweed or food production lines.

Design:

Compact and hygienic structure with adjustable belt speed and integrated scraper for automatic belt cleaning.

Operation:

Easily connects between line units, maintaining steady product flow and preventing accumulation or interruptions.

Construction:

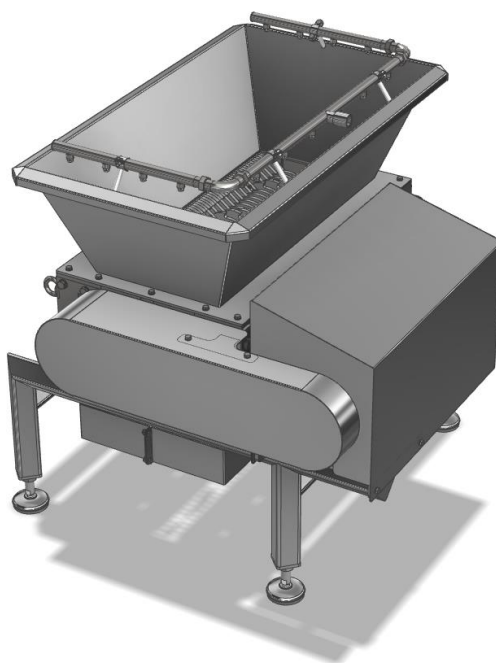
Made of food-grade stainless steel for durability, hygiene, and easy integration into various processing setups.

Technical data:

Total length	8160 mm
Overall width	1184 mm
Total height	1454±50 mm
Working width	640-722 mm
Working height	192-1491 mm
Product mass	750 kg
Linear speed of the belt	25 m/min
Supply voltage	380 V/ 50Hz
Total electrical power	3 kW



Seaweed processing equipment



Shredder

Function:

Designed for shredding seaweed into smaller, uniform fractions for downstream processing.

Design:

Raw material enters the hopper from above and is drawn in by rotating shredding blades. The shredded product exits through the outlet at the bottom of the unit.

Operation:

Torque from the main motor is transferred to a secondary shaft via a chain and gear system. Chain tension is maintained by adjustable tensioning screws to ensure consistent performance. The shredded fraction size can be adjusted or modified by changing the knife configuration.

Construction:

All components in contact with the product are made from food-grade stainless steel and mounted on a durable, hygienic frame.

Key Features:

- Adjustable shredding size
- Reliable double-shaft chain drive
- Easy knife replacement and maintenance
- Hygienic stainless-steel construction

Technical Data

Diameters of rotors	up to 200 mm
Capacity	Up to 5t/h
Total length	1153 mm
Overall width	1078 mm
Total height	1087±50 mm
Working width	559 mm
Working height	997 mm
Product mass	482 kg
Linear speed of the belt	37,8 1/min
Supply voltage	380 V/ 50Hz
Total electrical power	2,2 kW



Seaweed processing equipment



Elevating Conveyor

Function:

Designed to lift and transport seaweed products to the next processing stage, ensuring smooth and efficient material flow.

Design:

Mounted on adjustable supports, allowing easy height and angle alignment. The upper section can be seamlessly connected to various equipment within the production line.

Operation:

The conveyor features adjustable belt tension for stable, continuous operation and minimal maintenance.

Construction:

All components and structural frames are made of high-quality stainless steel, ensuring hygiene, durability, and long service life in demanding environments.

Key Features:

- Adjustable height and belt tension
- Modular and compact design
- Easy integration into existing lines
- Food-grade stainless steel construction

Technical Data

Total length	3437 mm
Overall width	966 mm
Total height	1687 mm
Working width	476-506 mm
Working height	192-1491 mm
Product mass	187 kg
Linear speed of the belt	19,3 m/min
Power supply voltage	380 V/ 50Hz
Total electrical power	1,5 kW



Seaweed processing equipment



Distributor – Seaweed Palletizing Unit

Function:

Designed to efficiently distribute raw seaweed from the main conveyor onto pallets for drying or transport. A key component of the fresh seaweed processing line.

Design:

The unit features a hopper that feeds seaweed onto a belt conveyor positioned below. The operator manually controls the conveyor's direction, precisely guiding the material flow across pallets.

Operation:

Once filled, pallets are transferred into drying containers — each accommodating up to **16 pallet units** — for further processing or transport.

Construction:

Built from food-grade stainless steel, ensuring durability, hygiene, and long-term performance in demanding environments.

Key Features:

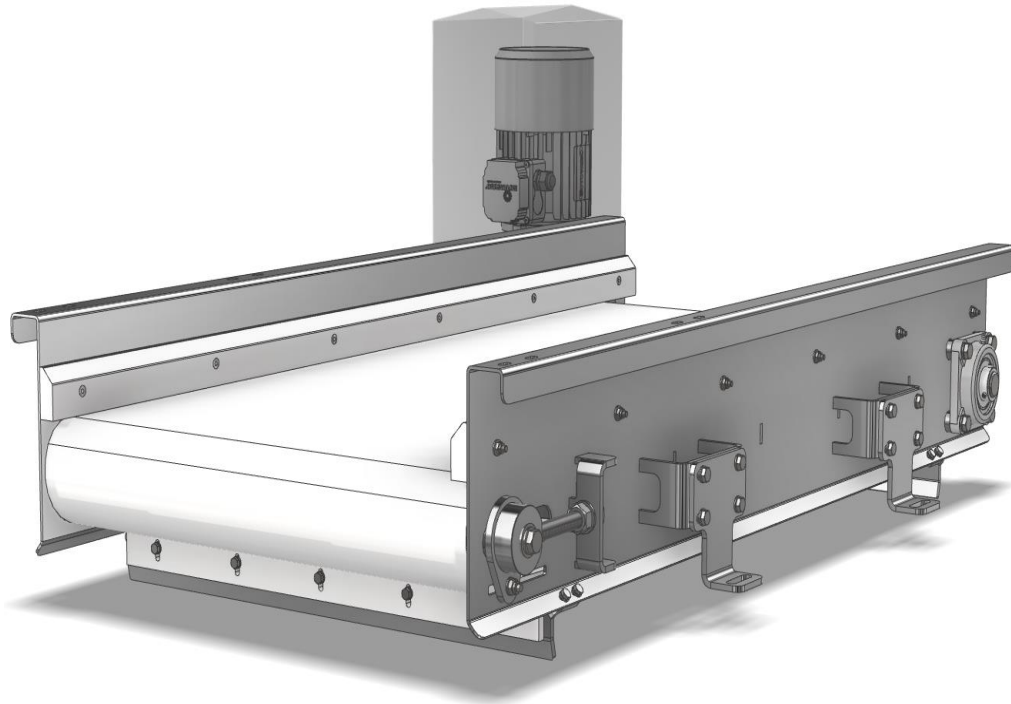
- Efficient material distribution from main conveyor
- Precise manual flow control
- Compatible with drying and transport containers
- Hygienic and robust stainless steel frame

Technical Data

Total length	2731 mm
Overall width	1136 mm
Total height	2315 mm
Working width	726-756 mm
Working height	1175±50 mm
Capacity volume	1000 l
Product mass	374 kg
Linear speed of the belt	9,23 m/min
Power supply voltage	380 V/ 50Hz
Total electrical power	1,1 kW



Seaweed processing equipment



Reverse Conveyor

Function:

Transports seaweed raw material or packaged products in either direction.

Design:

Equipped with an adjustable belt tension system. The conveyor is fixed to other line equipment or directly to the floor for stable operation.

Options:

Can be fitted with a belt scraper that removes product residues adhering to the belt.

Construction:

All components and frame structures are made of stainless steel, ensuring strength, hygiene, and long service life.

Technical Data

Parameter	Specification
Capacity	300–500 kg/h
Material	AISI 304 stainless steel
Power supply	3 × 400 V, 50 Hz
Installed power	1,1 kW
Control system	PLC-based with touchscreen HMI
Linear belt Speed	Approx. 12,4 m/min
Dimensions (L × W × H)	1,500 × 1,450 × 0,900± ±50 mm
Weight	2,200 kg
Operating temperature	+5 °C to +40 °C
Protection class	IP65



Seaweed processing equipment



Modular size reduction: Shredding & Grinding System

Function:

Designed for controlled size reduction of seaweed biomass — ideal for biostimulant and food ingredient production.

Design:

Includes two main units — a shredder and a grinder — connected by integrated screw conveyors for smooth product transfer and consistent feeding.

Operation:

Can operate as part of a complete processing line or as a standalone pre-processing unit. Ensures uniform particle size and steady throughput.

Construction:

Modular, efficient, and easy to maintain. Built from food-grade stainless steel for long-term reliability and hygienic performance.

Key Features:

- Two integrated processing stages
- Adjustable feed and speed control
- Scalable and modular design
- Compact, hygienic, and reliable build



Seaweed processing equipment



Rising Z-Type Conveyor

Function:

Ensures reliable and hygienic transfer of seaweed or other food products between processing stages.

Design:

Compact Z-shape configuration with adjustable speed control. The conveyor is designed for smooth, continuous, and clean product flow, minimizing handling and maintaining product quality.

Operation:

Easily integrates into various processing lines, acting as a buffering or elevating conveyor between units.

Construction:

Made entirely of food-grade stainless steel, ensuring durability, hygiene, and easy maintenance.

Key Features:

- Adjustable belt speed
- Food-grade construction
- Compact Z-shape design
- Easy integration into multiple line layouts

Technical Data

Total length	5344 mm
Overall width	1123 mm
Total height	4172 mm
Working width	540-610 mm
Working height	528-3698 mm
Product mass	592 kg
Linear speed of the belt	25,6 m/min
Supply voltage	380 V/ 50 Hz
Total electrical power	3 kW



Seaweed processing equipment



Screw Press for Slurry Seaweed

Function:

Designed for continuous dewatering of seaweed slurry, reducing moisture content before drying or extraction. The screw press separates liquid from fibrous biomass, producing a concentrated, semi-solid seaweed cake with reduced water load.

Operation:

Seaweed slurry is fed into the press chamber, where a rotating screw gradually compresses the material. The pressure increases along the screw length, forcing water out through the perforated screen while retaining solids. The adjustable back-pressure cone at the outlet ensures stable dryness of the discharged cake.

Main Process Steps:

- Slurry feeding by pump or conveyor
- Progressive compression by screw shaft
- Filtration through perforated screen
- Discharge of concentrated seaweed cake
- Collection of filtrate water for reuse or disposal

Benefits:

- High dewatering efficiency for marine biomass
- Continuous, low-energy operation
- Compact footprint and easy integration into processing lines
- Corrosion-resistant stainless steel construction
- Simple cleaning and low maintenance requirements
- Reduced drying energy costs and environmental impact

Technical Data

Parameter	Specification
Capacity	300–500 kg/h (wet seaweed slurry)
Final moisture content	70–80 %
Screw speed	5–10 rpm
Motor power	4 kW
Construction material	Stainless steel AISI 304 / 316
Filtration screen	Perforated stainless drum, 0.5–1.0 mm openings
Discharge system	Adjustable back-pressure cone
Dimensions (L×W×H)	Approx. 2200 × 700 × 1300 mm
Weight	~650 kg



Dried seaweed equipment



Dried *Ascophyllum Nodosum* Processing Line

Function:

A complete processing line for dried *Ascophyllum nodosum*, designed to produce high-quality seaweed flakes or powder for a wide range of industrial applications.

Design:

The system includes equipment for flaking, grinding, weighing, and bagging, allowing continuous and efficient material handling. Optional modules can be integrated depending on processing goals — from coarse flake production to fine powder milling for extract manufacturing.

Operation:

Capable of processing up to **2,000 t DW/year** (1–2 t/h). The line ensures consistent product quality and precise dosing for downstream use.

Construction:

Built from durable stainless steel and designed for easy cleaning, reliability, and long-term performance in demanding environments.

Applications:

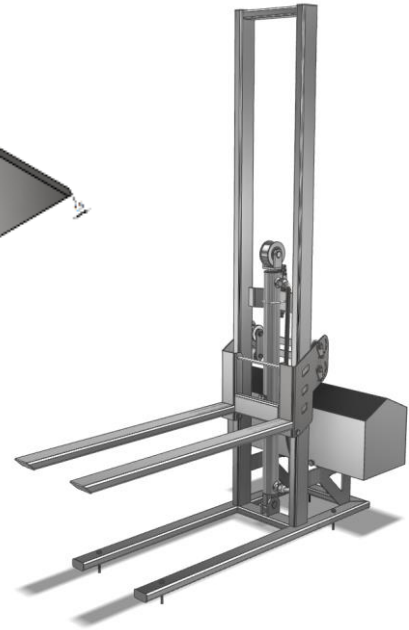
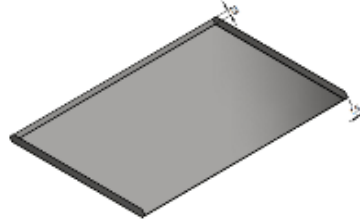
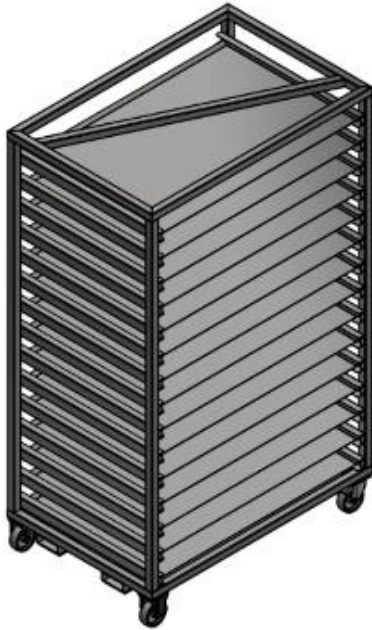
- Feed and fertilizer production
- Extract and biostimulant manufacturing
- Food and cosmetic ingredient processing

Available Configurations:

Customizable line layouts and capacities to match specific production volumes and product requirements.



Seaweed processing equipment



H2000 Lift with Shelf Container

Function:

Semi-automated lifting system designed to load shredded seaweed into multi-shelf containers for drying, transport, or further processing.

Design:

The lift raises the container to the required height, where each shelf is sequentially filled with shredded seaweed. The system then lowers the container step by step until all **16 shelves** are evenly loaded.

Operation:

Automates the vertical filling process, reducing manual work and ensuring consistent, uniform product distribution. Ideal for integration in fresh seaweed processing lines.

Construction:

Built from stainless steel for hygiene and durability. Compact, reliable, and easy to maintain.

Key Features:

- Semi-automatic loading operation
- Consistent filling across all shelves
- Space-efficient vertical design
- Low manual handling requirements
- Suitable for drying or transport preparation

Technical Data

Total length	1887 mm
Overall width	930 mm
Total height	2535 mm
Working width	490 mm
Working height	1253 mm
Product mass	554 kg
Power supply voltage	380 V/ 50Hz
Total electrical power	2,2 kW



Seaweed processing equipment



Seaweed grinder

Function:

Efficient grinding and particle size reduction of dried seaweed and other dried food materials.

Design:

Compact semi-automatic hammer mill constructed entirely from AISI316L stainless steel. Equipped with replaceable sieves (200, 500, 1000 microns) for adjustable fineness and designed for hygienic operation, easy maintenance, and optional mobility with lockable wheels.

Operation:

Dried seaweed mass is fed into the grinder, where a high-speed hammer mill ensures uniform grinding. The ground material passes through the selected sieve for precise particle sizing. Optional aspiration and dust extraction systems ensure safe and clean operation.

Key Advantages:

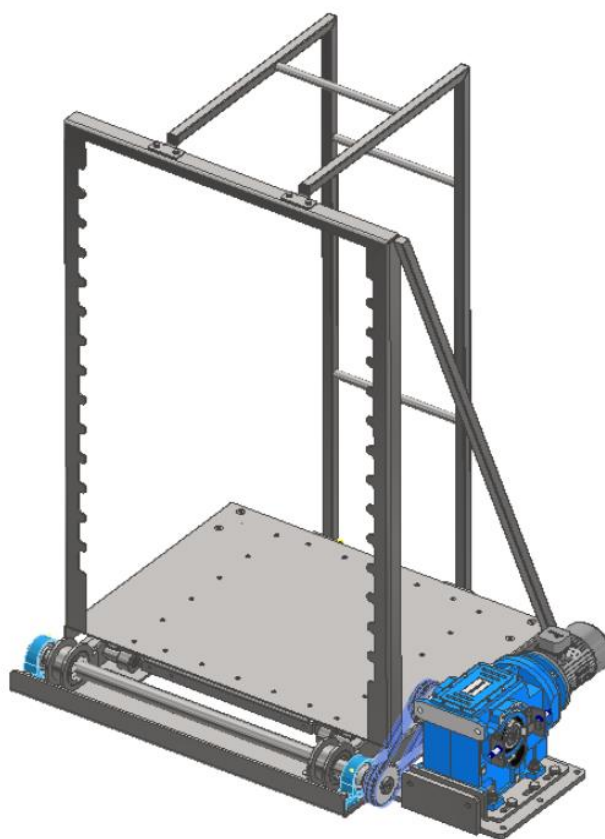
- AISI316L stainless steel construction for maximum hygiene and durability
- Customizable sieving for desired particle size
- Optional aspiration system for safe, dust-free processing
- Easy cleaning and maintenance
- Compact design with optional lockable wheels for mobility

Technical Data

- Capacity: 20 kg/h
- Power: 3 kW
- Dimensions: 660 × 550 × 1350 mm
- Weight: 92 kg
- Certification: CE



Seaweed processing equipment



Tipping Device ZVE-01

Function:

Designed to transfer seaweed from pallets into a transport cart.

Design:

The loaded carriage is pushed along the ramp in the direction indicated by the arrow until it reaches the rear stop. The carriage, together with pallets, is placed on a rotating base driven by a motor–reducer via a chain transmission. The rotation axis is mounted between bearings for stable operation.

Operation:

During tipping, the carriage rests on dedicated frame supports that keep the pallets securely in place.

Construction:

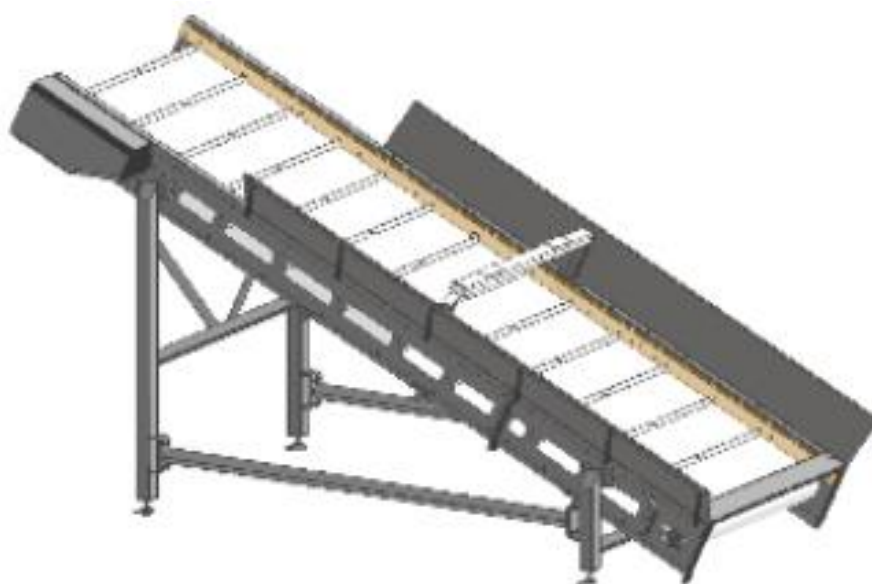
All components are mounted on a stainless steel frame, ensuring durability, corrosion resistance, and easy maintenance.

Technical Data

Total length	1516,5 mm
Total width	1455 mm
Total height	2322 mm
Working width	900mm
Working height	136 mm
Product weight	525 kg
The linear speed of the belt	12,4 m/mi
Supply voltage	380 V/ 50Hz
Total electrical capacity	3 kW



Seaweed processing equipment



Belt Conveyor TMK1200/L4200

Function:

Transports fully dried seaweed from the turner to the shredder.

Design:

Driven by a motor–reducer through a shaft mounted between bearings. Ensures smooth and consistent material flow.

Operation:

Product enters from above and is guided by side panels toward the next processing unit.

Construction:

Stainless steel frame for durability, hygiene, and easy maintenance.

Technical Data

Parameter	Specification
Capacity	300–500 kg/h
Material	AISI 304 / PE
Power supply	3 × 400 V, 50 Hz
Installed power	1,5 kW
Control system	PLC-based with touchscreen HMI
Linear belt Speed	Approx. 20 m/min
Dimensions (L × W × H)	4,200 × 1,700 × 1,500 ±50 mm
Weight	6,200 kg
Operating temperature	+5 °C to +40 °C
Protection class	IP65



Seaweed processing equipment



Cyclone Separator

Function:

An essential component of the dry seaweed processing line, designed to separate fine seaweed particles from the air stream — ensuring efficient product recovery and cleaner working conditions.

Design:

Creates a powerful swirling airflow, using centrifugal force to direct solid particles toward the chamber walls. The separated material settles into the lower collection container, while purified air exits through the outlet.

Operation:

Removes dust and airborne particles, protecting downstream equipment and improving workplace safety. Prevents loss of valuable product and contributes to a more efficient, closed-loop air system.

Key Features:

- Efficient fine particle separation
- Reduced dust and cleaner air output
- Improved product recovery and yield
- Safe and hygienic stainless-steel design
- Compact and low-maintenance

Technical data

Compact **800 L**, stainless-steel unit engineered for reliability and easy integration with mills, grinders, and pneumatic transport systems.
Valve motor- reducer 1:50: 0,55 kW
4pn2-28rpm; M2-131Nm



Seaweed processing equipment



Mill – 30 kW

Function:

High-performance grinding unit for producing fine, uniform seaweed flour — one of the final stages in the dry seaweed processing line.

Design:

Features a high-speed rotor with hammers that propel material through a perforated sieve. The final particle size is determined by the selected sieve and can be easily adjusted to meet specific requirements.

Operation:

Prior to milling, dried seaweed is pre-crushed to a defined fraction using an integrated upstream crusher. The milled product is discharged via an exhaust outlet and pneumatically conveyed to a cyclone separator by a fan system.

Construction:

The robust 30 kW mill ensures stable operation, consistent grinding quality, and high throughput, suitable for continuous industrial use.

Key Features:

- Precision grinding for fine seaweed powder
- Adjustable sieve sizes for flexible particle control
- Pneumatic product transport with cyclone separator
- Durable stainless-steel housing and rotor system
- High-efficiency 30 kW drive

Technical Data

Rotor diameter (working position): Ø 583 mm

Number of hammers: 15 pcs

Hammer thickness: 8 mm

Rotor speed: 3000 rpm

Installed power: 30 kW

Overall dimensions:

Length: up to 1510 mm

Width: up to 800 mm

Height: up to 900 mm

Operating personnel: 1 person

Machine weight: up to 500 kg



Seaweed processing equipment



Screw Conveyor

Function:

A precision transport unit designed to convey ground seaweed meal from the cyclone separator to the weighing and dosing hopper within the dry processing line.

Design:

The fully enclosed screw conveyor ensures consistent product flow and prevents material loss or contamination. Optimised for controlled feeding and stable transfer between processing stages.

Operation:

Maintains a continuous, dust-free material stream, improving hygiene and safety in the working environment. Ideal for integration with packaging and dosing systems.

Construction:

Made from food-grade stainless steel, ensuring durability, easy cleaning, and reliable performance in continuous industrial operation.

Key Features:

- Consistent and accurate material transfer
- Fully enclosed, dust-free operation
- Hygienic and corrosion-resistant design
- Seamless integration with weighing and packaging units

Technical Data

1. Screw Conveyor Variant
Dimensions: 4900 × 700 × 400 mm
2. Motor-Reducer – NMRV075
Ratio: $i = 50$
Power: 0.55 kW (4 poles)
Output speed: $n_2 = 28$ rpm
Torque: $M_2 = 131$ Nm
Service factor: 1.7 s.f.
3. Bearings
Type: UCF 208
4. Screw
Diameter: 230 mm
Length: 4000 mm



Seaweed processing equipment



Dosing & Weighing System

Function:

A precision unit designed to automatically weigh and dose ground seaweed flour into bags with high accuracy and minimal waste.

Design:

The system integrates all key components for efficient portioning and packaging:

- **Hopper** – collects milled seaweed prior to dosing
- **Weighing cells** – ensure precise portion control based on target weight
- **Electric valve** – releases material according to programmed settings
- **Dust extraction fan** – maintains a clean and safe filling environment

Operation:

Fully automated control enables consistent, repeatable results and seamless integration with downstream bagging or sealing units.

Benefits:

- Accurate and consistent dosing
- Hygienic, dust-free operation
- Reduced material loss
- Compact, easy-to-clean stainless-steel design

Technical Data

- **Fan – LFA/2-160A/62-055T**
Power: **0.55 kW**
Voltage: **230/400 V**
Current: **2.15 / 1.25 A**
Speed: **2870 rpm**
Airflow: **1125 m³/h**
Max pressure: **920 Pa**
- **2. Electric Valve** thr. 2al seal
SiD2502V2AeIAT230V.
Rohr 250
- **3. Beam load cell** with a high performance: Wide range of capacities from 250 kg to 2500 kg



Seaweed processing equipment



Semi-Automatic Seaweed Cutter

Function:

Efficient, semi-automatic solution for cutting raw seaweed into defined fraction sizes. Suitable for food, feed, and aquaculture applications.

Design:

Made from food-grade AISI 316L stainless steel with IP67 waterproof housing and motor protection. The system allows both longitudinal and transverse cutting (10, 20, or 50 mm), providing flexibility for different production requirements.

Operation:

Raw seaweed is fed into the cutter, where adjustable blades perform precise cuts at controlled speed. The process ensures uniform sizing and continuous material flow for downstream handling.

Benefits:

- Adjustable cutting size and speed
- Hygienic, food-grade construction
- Reliable and safe operation
- Compatible with existing processing lines
- Custom configurations available (extra blades and bushings)

Adjustable. Hygienic. Built for performance.

Technical Data:

Dimensions: 2650 × 950 mm

Height: 1300 ± 50 mm (adjustable legs)

Weight: 370 kg

Power: 4.28 kW

Capacity: up to 3000 kg/h



Seaweed processing equipment



Seaweed Slurry Transfer System

Function:

Equipment system designed for the efficient transport of shredded or ground seaweed in semi-liquid (slurry) form. Ensures smooth and continuous flow of material between processing stages such as stabilization, extraction, or container filling.

Design:

Engineered for high-capacity operation, handling throughput from 1,000 to 15,000 kg/h. The system eliminates the need for full liquefaction, minimizing energy consumption and mechanical wear. Built with food-grade materials for hygienic and reliable performance.

Operation:

The seaweed slurry is conveyed through a closed transfer system designed to maintain consistent pressure and flow, ensuring uninterrupted operation even with variable product viscosity.

Benefits:

- Continuous transport of semi-liquid seaweed
- No need to fully liquefy material
- Energy-efficient and low-maintenance
- Hygienic, food-grade design
- Easy integration into stabilization, biostimulant, or IBC filling lines
- Scalable throughput up to 10 t/h

Technical Data:

Capacity: 1,000 – 15,000 kg/h

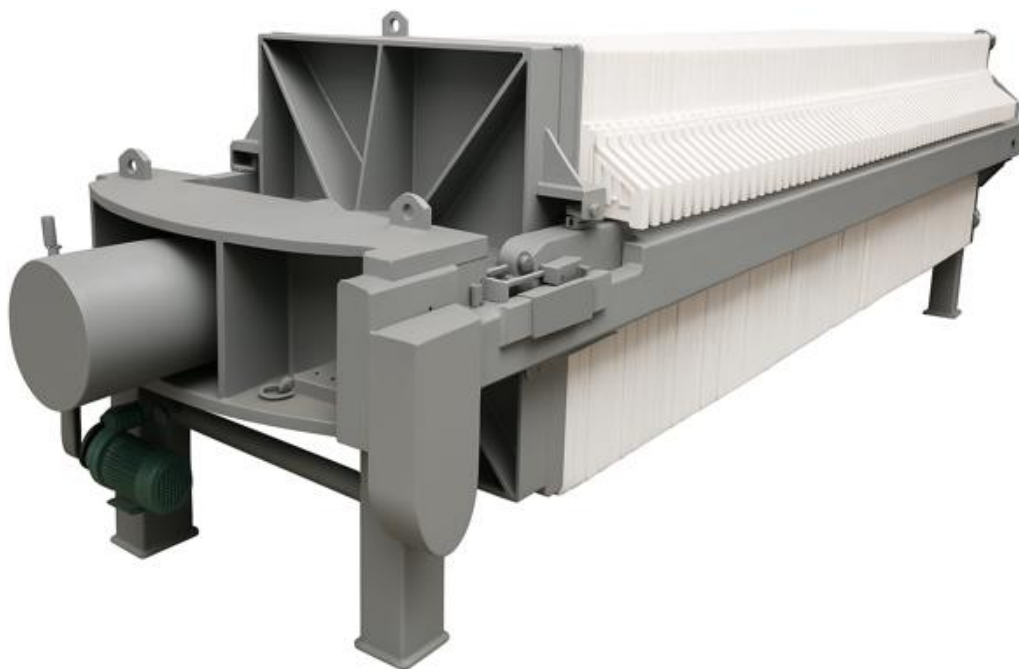
Construction: Food-grade stainless steel

Integration: Compatible with existing process lines.

Depending on seaweed and consistency lifting height up to 5m



Sirputis Filter press



Automatic Gel Dehydration Filter Press

Function

Automatic filter press designed for dewatering seaweed gel, alginate, agar, and other hydrocolloid slurries. It separates water from gel solids under high pressure, producing a dense filter cake suitable for further drying or processing.

Operation

The slurry is pumped into the filter chambers under controlled feeding pressure. Filtration occurs through filter cloths, and additional squeezing is performed hydraulically using water pressure. The system operates automatically through a PLC control panel, optimizing cycle time and moisture reduction.

Benefits

- High dewatering efficiency with minimal operator supervision
- Uniform cake dryness and easy discharge
- Fully automatic control for consistent performance
- Suitable for continuous seaweed gel processing lines

Technical data (variant)

Parameter	Specification
On request	On request
Max feeding pressure	< 2.0 MPa
Max squeezing pressure	< 2.5 MPa
Max operating temperature	60 °C
Estimated weight	17 t
Dimensions (LxWxH) ~	10 × 2,0 x 2,0 m



Sirputis, All-in-one dryer



Seaweed Belt Dryer

Efficient Continuous Drying System for Seaweed Processing

The **Seaweed Belt Dryer** is a fully automatic, continuous drying system designed specifically for processing a wide range of marine biomass — including seaweed, kelp, and algae.

Using a **high-efficiency heat pump system**, the dryer provides uniform drying performance at low operating costs, ensuring that the product retains its natural color, nutrients, and structure.

Its modular stainless-steel design ensures easy maintenance, hygiene, and long-term durability even in harsh marine environments.

Key Features

- **Energy-efficient drying:** Advanced heat pump technology minimizes energy consumption.
- **Continuous operation:** Designed for 24/7 processing with minimal supervision.
- **Hygienic stainless-steel construction:** Ensures food safety and corrosion resistance.
- **Uniform drying performance:** Multi-layer belt design for consistent heat distribution.
- **Customizable configuration:** Adjustable layer thickness, capacity, and airflow settings.
- **Easy installation and maintenance:** Modular, all-in-one structure simplifies setup and servicing.

Category

Drying Material

Input Capacity

Working Mode

Heat Source

Model

Total Power

Material

Drying Time

Specification

Seaweed and other marine biomass

100–250 kg/h

24-hour continuous operation

High-efficiency heat pump

BX Series – 8 m (L) × 2 m (W) × 4 layers

59.9 kW

SS304 stainless steel (food grade)

1–5 hours (depending on material thickness and moisture)

Seaweed processing



Semi-Automatic Drum Seaweed

Dryer

Function

Designed for efficient batch drying of seaweed and similar biomass. Ensures uniform drying, high energy efficiency, and preservation of product quality.

Operation

The unit operates on hot air convection. Seaweed is placed in an electrically driven rotary drum that rotates in both directions. Hot air (70–110 °C) enters from the front, while moist air exits from the rear. The drum's front section can be hydraulically lifted for unloading.

Main Process Steps

Loading of fresh or partially dried seaweed

Drum rotation and hot air supply

Controlled moisture removal

Unloading of dried product

Benefits

- Adjustable drying parameters to match seaweed type and moisture content
- Uniform and gentle drying preserving product quality
- Energy-efficient batch process
- Robust stainless-steel construction for industrial applications

Parameter

Specification

Batch capacity	50–200 kg
Drum dimensions	Ø 900 mm × 4900 mm
Internal volume	~ 3.9 m ³
Drying air temperature	70–110 °C
Air velocity	1–3 m/s
Material	AISI 304/ 316 stainless steel
Drive type	Electric motor with bi-directional rotation
Hydraulic lift	For loading/unloading section

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Seaweed processing



Advanced Seaweed Extraction Solutions

Function:

Industrial extraction systems designed to unlock valuable bioactive compounds from seaweed — including **alginate**, **carrageenan**, and **agar** — for use in food, pharmaceutical, agricultural, and cosmetic industries.

Design:

Our modular extraction lines combine controlled temperature, optimized mixing, and precise pH regulation to ensure maximum yield and purity. Built from food-grade stainless steel and engineered for energy efficiency and easy maintenance.

Operation:

The process begins with finely ground seaweed mixed with hot water or tailored acid/alkali solutions. This controlled reaction releases target compounds, followed by filtration, separation, and concentration stages.

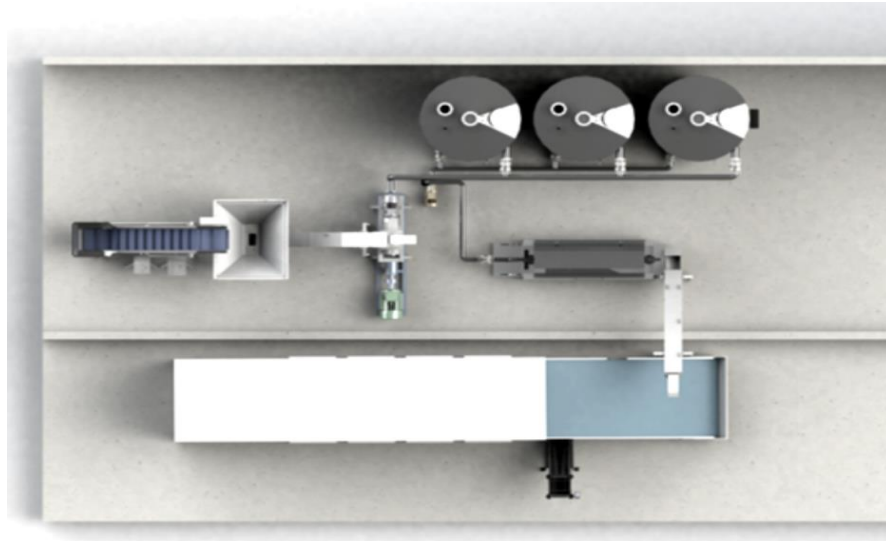
Benefits:

- High extraction efficiency and product purity
- Adaptable to different seaweed species and compounds
- Scalable for R&D or full industrial production
- Sustainable, low-waste process design

Innovation-driven. Efficient. Sustainable.



Seaweed processing



Biostimulant Production Line Project

Function:

Modular biostimulant production systems for processing brown seaweeds such as *Ascophyllum nodosum*, *Saccharina latissima*, *Laminaria digitata*, *Alaria esculenta*, *Fucus vesiculosus*, and *Macrocystis pyrifera*.

Design:

Each line is engineered for scalability, durability, and easy maintenance. Modules can be configured for different extraction technologies, allowing flexibility for diverse biostimulant formulations and process scales.

Operation:

Key process stages include:

- Washing and sand removal
- Size reduction and homogenization
- Extraction and solid-liquid separation
- Filtration, concentration, and final treatment

Benefits:

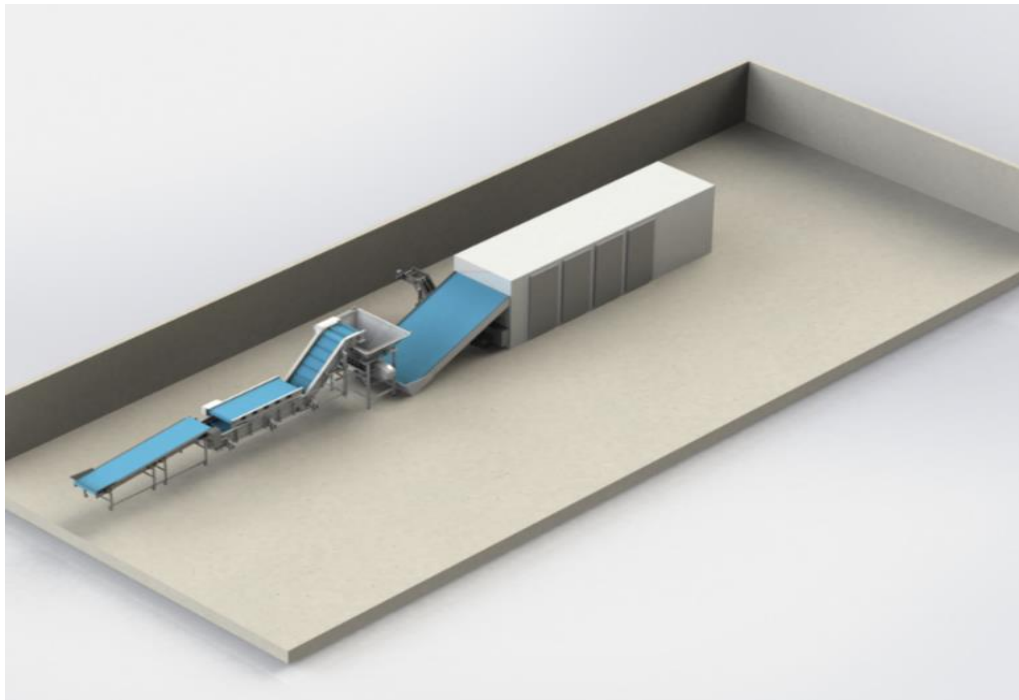
- Modular, easily scalable design
- Compatible with multiple extraction methods
- Reliable performance for both small and industrial-scale processors
- Converts seaweed into high-value bio-based products

Residual Press Cake Applications:

Use	Process Example	Product
Fertilizer pellet	Dry → Mill → Pelletize	Soil amendment
Feed supplement	Dry → Grind → Add to feed mix	Livestock additive
Bioplastic filler	Dry → Fine grind → Blend with starch/plastic	Bio-composite material



Seaweed processing



Dry Seaweed Processing Line

Function:

A complete modular line for processing dried seaweed, engineered for efficiency, hygiene, and flexibility. Designed to handle various species — including *Saccharina*, *Alaria*, *Macrocystis*, *Bull kelp*, *Dragon kelp*, and *Ascophyllum nodosum* — while maintaining consistent product quality and high throughput.

Design:

Each line is custom-built to meet specific production capacities and processing requirements. The system integrates food-grade stainless steel construction, automated controls, and transport components to ensure smooth, continuous operation across all stages.

Operation:

The process begins with raw seaweed sorting and proceeds through washing, shredding, drying, and milling. All operations are synchronized via belt and screw conveyors, minimizing handling time and maintaining product integrity.

Main Process Steps:

- **Sorting** – Reliable material feeding and inspection
- **Washing & Blanching** – Integrated iodine reduction system (1–2 t/h)
- **Shredding** – Optimized for leaf-type seaweed (2–6 t/h)
- **Drying** – High-efficiency container dryer (0.1–1 t/h)
- **Grinding** – Flake or powder processing (0.5–1.5 t/h)

Benefits:

- Scalable capacity from pilot to industrial scale
- Fully food-grade and corrosion-resistant materials
- Modular integration of conveyors and dosing units
- Designed for stable, continuous production flow
- Custom configuration for species and moisture levels

Technical Data:

Throughput: up to 2,000 t DW/year (1–2 t/h)

Construction: AISI 304 / 316 stainless steel

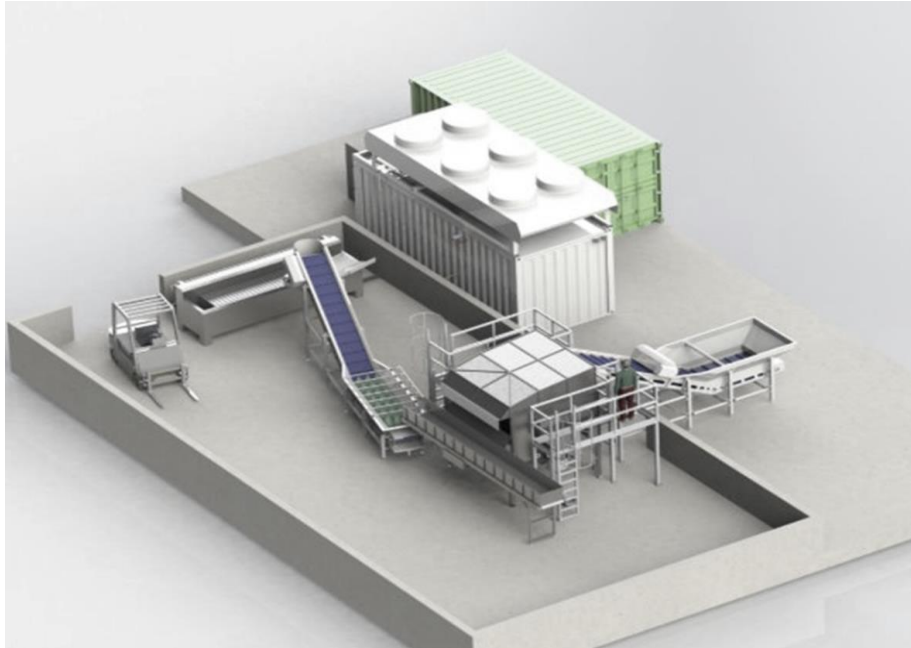
Automation: PLC-based control

Line integration: Belt and screw conveyors

Efficient. Scalable. Designed for results.



Seaweed processing



Seaweed Blanching & Freezing Line

Function:

An industrial solution for preserving freshly harvested seaweed at peak quality. Designed for *Saccharina latissima*, *Alaria esculenta*, *Laminaria digitata*, *Undaria pinnatifida*, *Ascophyllum nodosum*, and similar species.

Design:

The modular line integrates gentle blanching, chilling, and rapid plate freezing to ensure minimal product loss, excellent color retention, and full compliance with EU food-grade standards.

Available in manual or automatic configurations.

Operation:

The process includes:

- **Bulk infeed** – loading raw seaweed onto the line
- **Blanching (optional)** – enhances color and deactivates enzymes
- **Size reduction (optional)** – for easier downstream handling
- **Chilling** – pre-cooling before freezing
- **Freezing** – rapid plate freezing at -18°C or colder

Benefits:

- Maintains original texture, nutrients, and bioactive compounds
- Reduces enzymatic degradation and microbial growth
- Modular and easy to integrate into existing processing lines
- Suitable for food, nutraceutical, and biostimulant industries

Reliable preservation. Consistent quality.

Built for efficiency.

Technical Data:

Capacity: 500 kg/h – 2 t/h

Temperature: down to -18°C

Operation: manual or automatic

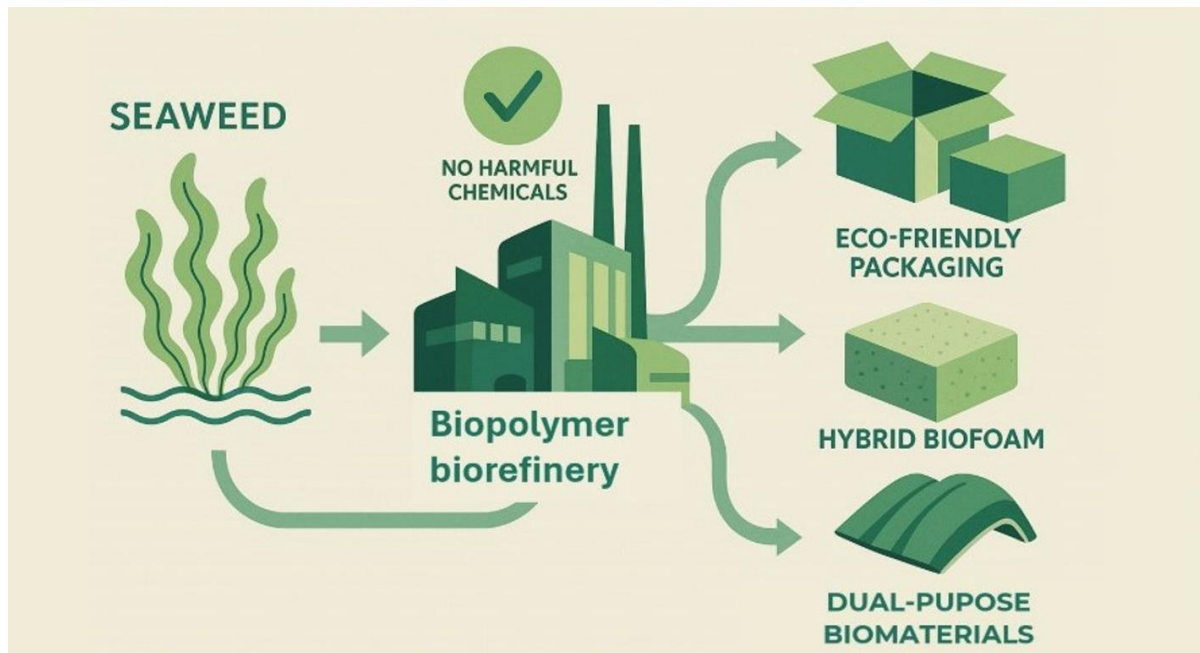
Construction: food-grade stainless steel

Applications:

- Biostimulants and plant enhancers
- Food products (salads, soups, ready meals)
- Nutraceuticals (fucoidan, alginate extracts)
- Animal feed supplements
- Cosmetics and biomaterials



Turning Seaweed into Sustainable Value

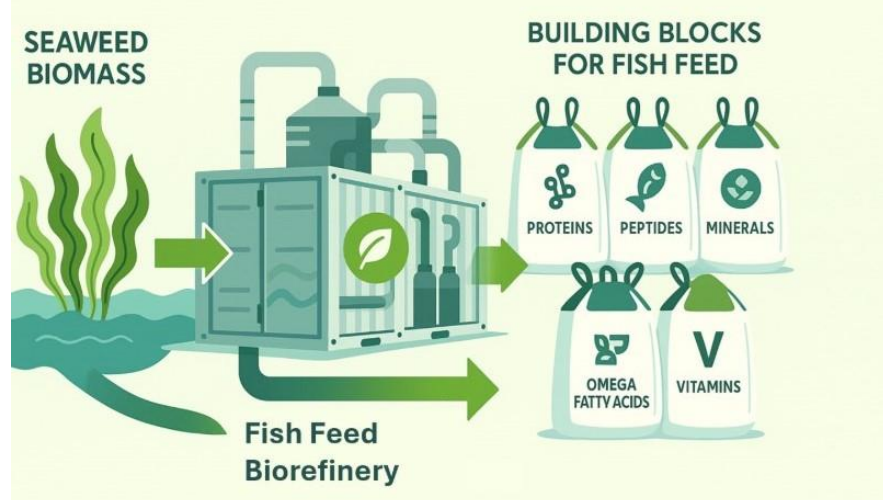
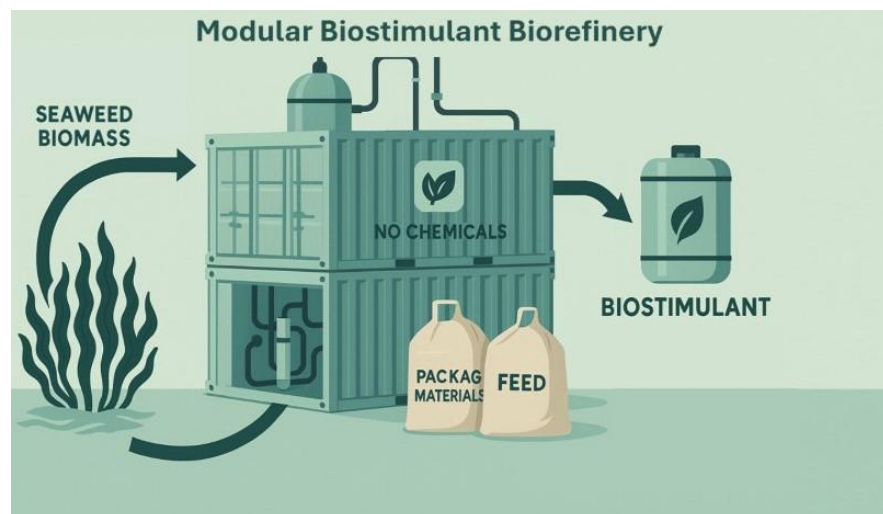


At **Sirputis**, we transform seaweed potential into practical, scalable solutions for the blue bioeconomy. Our modular biorefineries enable efficient, chemical-free processing — converting seaweed biomass into high-value products that support agriculture, aquaculture, and sustainable materials.

Three pillars of our technology:

- **Biostimulant Biorefinery** – transforms seaweed into natural plant growth enhancers and feed ingredients.
- **Biopolymer Biorefinery** – produces eco-friendly packaging, hybrid biofoam, and biomaterials with no harmful chemicals.
- **Fish Feed Biorefinery** – extracts valuable nutrients such as proteins, omega fatty acids, and vitamins to create premium aquafeed components.

By integrating these systems, Sirputis helps seaweed farmers and processors unlock new revenue streams while reducing waste and protecting the environment — building a cleaner, smarter, and more sustainable future.



The most common types of seaweed and our technology users

Ascophyllum nodosum



Eucheuma spinosum



Saccharina latissima



Cottonii



Alaria esculenta



Sargassum



Macrocystis pyrifera



Ulva



Where We Deliver



[Project references link](#)

*Tailor-made solutions for your business efficiency.
From concept to fully operational production line.*

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Creating Value from the Sea

Our equipment transforms raw seaweed into high value-added products — from dried seaweed to bioactive compounds.

Rely on **Sirputis** expertise and technological excellence.

Partners and Clients

