

Making Algae Smart



algen

algal technology centre

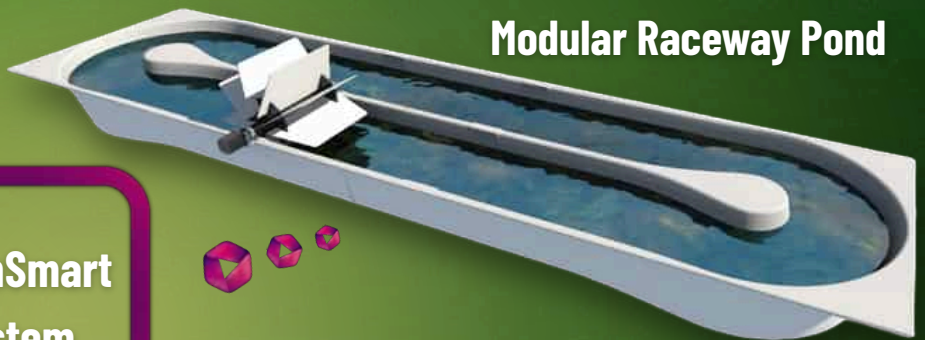


AlgenSmart cultivation system integrates advanced sensing, control, and data management technologies to enable precise monitoring and optimization of microalgal growth under controlled conditions. Designed as a modular and scalable platform, it can be configured with open raceway ponds or closed photobioreactors and incorporates a networked monitoring and control infrastructure for real-time acquisition of key process parameters. The system provides laboratory-grade precision in outdoor or pilot-scale settings, supporting reproducible experimentation, process optimization, and the development of innovative algal biotechnology.

Make your research and cultivation easy with AlgenSmart products:



**AlgenSmart
System**



Modular Raceway Pond

Large Ponds

Photobioreactor



Algen is specialized in the **development and design of algal equipment and systems**, drawing on over 15 years of experience from successfully implemented projects across the EU. Algen delivers **rigorously tested, field-proven solutions** that meet the highest standards in algal technology, while remaining **cost-effective, functional, and versatile** across a wide range of applications.



Product Overview

AlgenSmart Box

A compact and waterproof control unit for **real-time monitoring and automation** of aquatic systems. It is specifically designed for water and algal applications to be deployed in rough environmental conditions, demanding networking requirements and intended to be massively replicated (one per PBR or pond). Versatile networking functionality enables integration of almost **any external sensor or actuators**. Standard configuration: pH, EC (impedance spectrum), DO (optical), ORP, multispectral PAR (8-channel), and turbidity sensors. Each box has a built-in web interface for local monitoring, calibration, and control. Integration into legacy centralized system may be done in several **standard** ways. The default centralized user interface is based on open source ThingsBoard and PostgreSQL for visualization and remote access. AlgenSmart Box and centrally collected data is available for integration with different **kinetic models** and **AI data analysis** solutions to form a truly predictive control and optimization system.



Photobioreactor

Compact system for efficient microalgae cultivation. Combines high-intensity **adjustable LEDs**, precise **CO₂ and mixing control**, and real-time process monitoring in 22 L or 44 L PMMA vessels. Engineered for stable growth, easy operation and cleaning, research-grade performance at a significantly more **accessible price** than market alternatives – all components 24 V, IP65 rated.



Multispectral PAR Sensor

This robust, waterproof 8-channel multispectral sensor (400–700 nm) functions both as a **high-dynamic range PAR sensor** and as an **underwater turbidity sensor** with calibrated LEDs in a reflective tube. It provides real-time monitoring of culture growth dynamics and connects via Modbus.



Modular Raceway Pond series L06 to L15

The Modular Raceway Pond series L06 to L15 is a state-of-the-art system for algal cultivation, ideal for research, pilot-scale, and inoculum production. Designed for **durability, efficiency, and simplicity**, it is constructed from high-quality ABS/PMMA materials that withstand demanding environmental conditions while maintaining **food-grade safety**.

Key Features: modular design with lengths from 6 m to 15 m; optimized hydrodynamics; durable construction; simple assembly; low-maintenance operation; operator safety.

Optional Add-Ons: CO₂ diffuser; paddlewheel cleaning/washing; pond wall automatic cleaning; electrical foil heater with PID controller; recirculation, filling, or emptying pumps, valves, and piping; pond cover; LED lighting.



No. of modules	Pond length (m)	Pond Width (m)	Volume at 20 cm (m ³)	Water surface
2	6	1.52	1.5	7.5
3	9	1.52	2.25	11.3
4	12	1.52	3	15
5	15	1.52	3.75	18.8

Contact:

info@algen.eu

www.algen.eu

+386 41 613 746



AlgEn, Algal Technology Centre
Brncičeva 29
1231 Ljubljana, Slovenia

