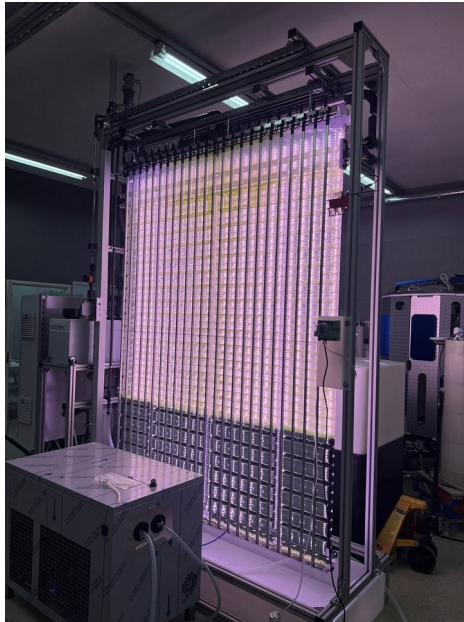


AIRCOHOL OY • USED LABORATORY EQUIPMENT

FOR SALE

Subitec LS180 – Photobioreactor Lab System

180 L Flat-Panel Airlift reactor | full B&R automation | remote access | Lahti, Finland



A turn-key production platform for microalgae cultivation

Manufactured by Subitec GmbH (Germany) • built 2025 • commissioned 07/2025 • as-new condition

Why the LS180

A complete, ready-to-run turn-key platform for microalgae cultivation and process development. This is not a bare reactor frame — it is a fully working, tested package that only needs to be connected to run: reactor, high-power lighting, gas management, cooling and a modern industrial automation system with touchscreen and secure remote access, all in one compact unit.

Superior, proven performance. In-house cultivation has demonstrated excellent productivity, with growth rates exceeding 5 g/L/day and biomass densities of up to 14 g/L achieved with *Chlorella vulgaris*.

Powerful lighting, high-efficiency light path. Strong double-sided LED lighting (~4,080 W, full 400–780 nm spectrum, dimmable 0–100%) combined with the flat-panel reactor's short, high-efficiency light path makes the system exceptionally capable for high-density cultivation — and an ideal platform for studying and optimising versatile light regimes across the full spectrum.

Easy to run, easy to keep clean. The flat-panel geometry and gentle airlift circulation (no mechanical stirring) keep the process uniform and low-shear. The transparent panel is easy to clean and maintain, with no gradual film build-up on the light path over time, and the intuitive touchscreen with pre-configured automation makes day-to-day operation straightforward.

Compact footprint. Unlike bulky tubular reactor systems, the LS180 delivers serious cultivation capability in a compact vertical package (approx. 2.6 × 0.8 × 3.2 m), making it easy to fit into a lab or pilot space.

Tailor-made beyond the standard design. This unit has been customised with additional features over the original Subitec configuration: automatic CO₂ dosing via a Bürkert control valve, and real-time concentration measurement of the outgoing (off-gas) CO₂ for carbon-uptake monitoring.

Data-ready automation. All key process variables (pH, temperature, CO₂ dosing and off-gas uptake) are continuously logged, and the open B&R automation platform provides a solid basis for data-driven process optimisation and future AI/ML-assisted control development.

Species consultation and data sharing to get started. To help the new owner hit the ground running, we can advise on the best use of *Chlorella* strains, recommend species that perform well in this reactor, and share relevant cultivation data.

Key features

- **Automatic CO₂ dosing** — a Bürkert 8741 mass flow controller meters CO₂ precisely and repeatably, with automatic pH-based control via the PLC's PID controller.
- **CO₂ off-gas measurement** — a Norsk Analyse GD10P NDIR analyser measures off-gas CO₂ concentration (0–100 vol-%) in real time for carbon-uptake monitoring.
- **Integrated chiller & cooling** — two reactor-integrated heat exchangers plus a chiller keep the cultivation temperature stable even at full lighting power.
- **Full B&R automation** — an industrial-grade B&R X20 PLC with a complete I/O set controls the entire process — ready, tested and operational.
- **12" touchscreen panel** — a B&R Power Panel T80 12.1" touchscreen with clear process graphics for both manual and automatic operation.
- **Secure remote access** — a Tosibox Lock 670 router enables secure remote monitoring and control from anywhere.
- **Double-sided LED lighting** — dimmable LED lighting on both sides of the panel, up to ~4,080 W, spectrum 400–780 nm, adjustable 0–100%.
- **Sterile process design** — filtered gas supply, dedicated sampling and feed ports, and an integrated cleaning and disinfection routine.

Technical data

General / reactor	
Model	Subitec LS180 – Lab System 180 L
Reactor type	Flat-Panel Airlift (FPA), 180 L, transparent PVC
Dimensions (L × W × H)	approx. 2.6 m × 0.8 m × 3.2 m
Frame	Aluminium profile frame
Year built / commissioned	2025 / 07/2025 — as-new, laboratory use only
Temperature range	5–30 °C
Noise level	< 70 dB(A)

Electrical & media	
Supply voltage	3 × 230 VAC / N / PE, 16 A
Control voltage	24 VDC
Compressed air	> 1 bar(g), max. 2.0 m ³ /h, dry and oil-free
CO ₂ supply	> 2 bar(g), max. 0.1 m ³ /h, technical CO ₂
Cooling water	1 bar(g), approx. 4 °C
Lighting	LED, double-sided, ~4,080 W, 400–780 nm, max. 500 μmol m ⁻² s ⁻¹ / panel, dimmable

Automation, control and remote access

The system comes with a fully functional, industrial-grade B&R automation system — this is not a bare reactor frame, but a complete, tested control package that has been in operation. The control cabinet is built into a Rittal enclosure (800 × 1200 × 300 mm) and professionally equipped.

- B&R X20 PLC (X20CP1685 / X20EM1612), 4 GB eMMC, Profinet
- Complete I/O set: digital inputs and outputs, analog inputs (4-channel) and output, relay outputs
- B&R Power Panel T80, 12.1" glass-front touchscreen (OP1) with clear process graphics for manual and automatic operation
- Tosibox Lock 670 router for secure remote access and monitoring
- Planet industrial Ethernet switch, Weidmüller 240 W power supply
- Hager main switch, 3-phase residual-current device and circuit breakers



Control cabinet in service — touchscreen and a neatly equipped Rittal enclosure.

Gas management and measurement

Carbon dioxide management is implemented with high-quality measurement and control components that enable precise, repeatable process control and carbon-uptake monitoring.

- **CO₂ dosing** — Bürkert 8741 mass flow controller (0–10 NI/min, Modbus TCP, 24 VDC), connected to the PLC and adjustable either manually or automatically via a pH-based PID controller.
- **CO₂ off-gas measurement** — Norsk Analyse GD10P NDIR analyser (0–100 vol-%, CH₄-immune) with a duct-mounting kit in the off-gas line.
- **Gas-mixing unit** — with pressure regulators and a rotameter for air-flow adjustment; filtered (0.2 µm) supply air to maintain sterility.

Cooling system

During high-light cultivation the heat generated by the LED lighting is removed efficiently. Two parallel heat exchangers are integrated into the reactor, with flow set by flow limiters. A solenoid valve regulates cooling according to the reactor temperature setpoint, and the system includes automatic bleeding. A chiller is part of the package to maintain a stable cultivation temperature.

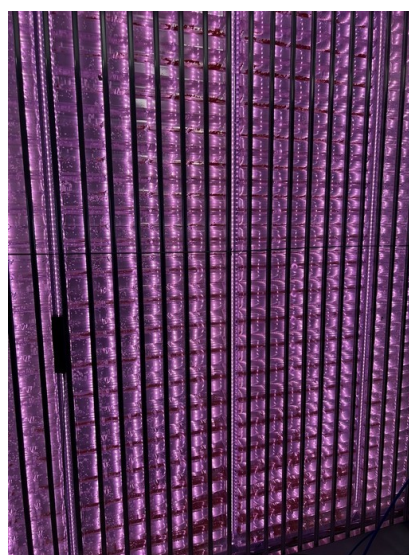
Scope of delivery

Sold as a single, working package. Included, among others:

- 180 L FPA photobioreactor in aluminium frame
- Double-sided, dimmable LED lighting unit
- Gas-mixing unit and filtered gas supply
- Bürkert 8741 CO₂ mass flow controller
- Norsk Analyse GD10P CO₂ off-gas analyser
- Chiller and integrated cooling system
- Periphery: media and harvest lines, filters, sampling unit
- Exhaust unit (foam trap + air lock)
- Rittal control cabinet with B&R automation and 12" touchscreen
- Tosibox remote access, temperature and pH sensors



Control cabinet — B&R PLC, I/O and power supplies



FPA panel illuminated during cultivation

Support included for the buyer

- Operator training for the new owner is included, so the system can be taken into use with confidence. Training can be delivered remotely, or on-site by agreement (e.g. within Finland).

Location and contact

The unit is located in Lahti, Finland, and can be viewed by appointment.

Aircohol Oy

Alavankatu 2, 15610 Lahti, Finland

Contact: Tomi Sundström

Tel. +358 40 720 4249 • tomi@aircohol.com

Price and delivery terms by agreement — request a quote.

Images and technical data are indicative. Specifications subject to change.