Phyco-Flow™

Serpentine Photobioreactor



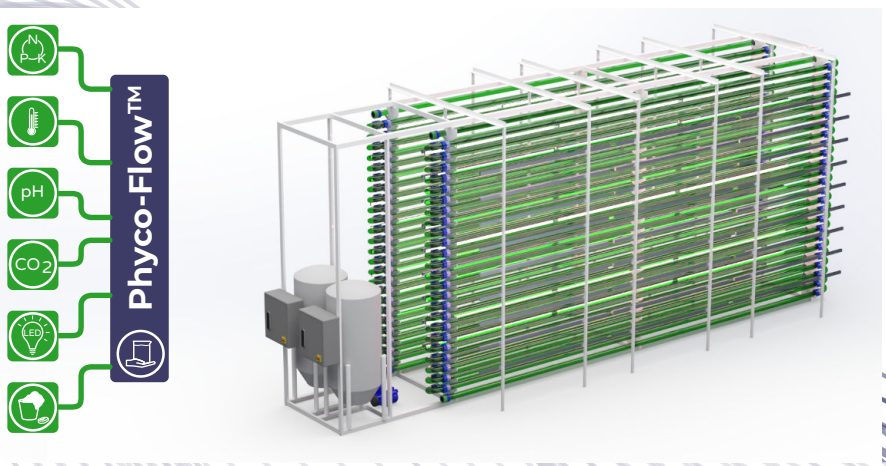
Varicon Aqua are specialists in the design, construction and deployment of algal growth platforms. With over **30 years of experience** and over **350 photobioreactor systems** deployed across the globe we are recognised as global leaders in the sector. Our close client engagement and supply chain relationships allow us to provide bespoke photobioreactor and cultivation systems for a broad range of applications; we have provided systems ranging in scale from **5 litres to 400,000 Litres**.

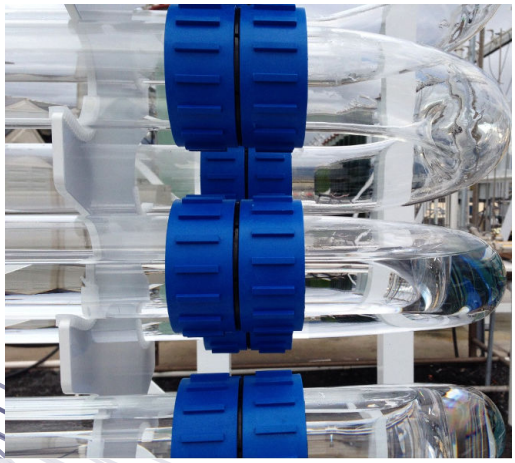
Our key algal growth platforms are represented within the **Phyco-™** line including the **Phyco-Flow™**, **Phyco-Pond** systems, **Phyco-Lift**, and **Phyco-Bubble**, each designed to meet specific needs and deliver optimal results in algal cultivation.

The **Phyco-Flow™** photobioreactor is an innovative serpentine system that scales easily to meet increased production requirements at both pilot and commercial scale (0.6 – 1500 m^3 in volume). The **Flow™** configuration has superseded our **BioFence** photobioreactor and offers numerous operational improvements. Including lower capital and operational costs, a minimum of moving parts for ease of operation; easy maintenance and reduced shut down time, Varicon Aqua's integrated propriety cleaning system facilitates removal of biofilms; and can be operated at any frequency to accommodate species specific requirements; thereby vastly reducing downtime between production runs. The photostage is made from **Schott Duran® grade borosilicate**, producing a highly productive system with a superior lifespan. Complete and integrated process control can be undertaken with a VAS control unit.

Phyco-Flow™ outline and options

All Phyco-Flow™'s are fitted as standard with Varicon Aqua's oxygen mitigation systems. Automated shading and coding options are available upon request.





Specifications and performance

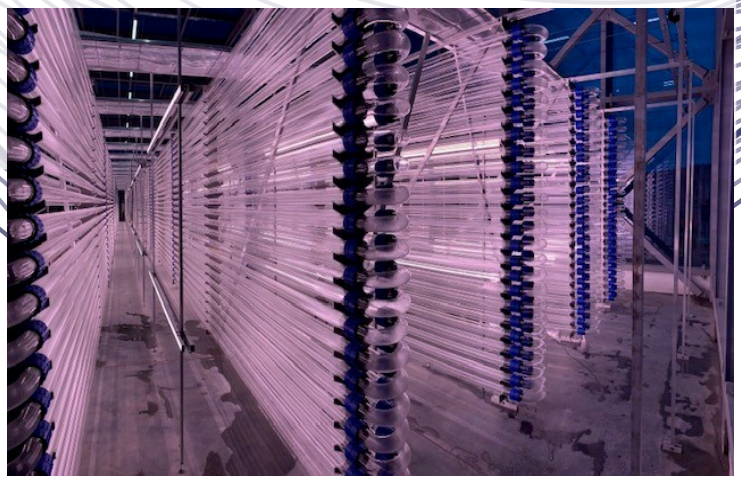
Standard Physical Specifications	
Volume/Height	≥ 600 L / ~2.5 m
Tube no.	28 per linear meter (14 on each side)
Tube ID - OD	50.4/61.4 mm - 54/65 mm
Tube length	5.5 m (max)
Tube volume	15.8 L (for 5.5 m, 65 mm)

Example Performance (details of other species available)	
Algae	*Chlorella sorokiniana* (species)
Density	0.5-2.5 g L^{-1}
Productivity	0.25-1.5 g L^{-1} d^{-1}
Max yield	2-3.5 g L^{-1}
dO_2	200 - 400 %

Engineering Performance (in house data)	
Liquid	0.1-1 m s^{-1} (max - velocity)
Reynolds	≥ 400 (number)
Maximum	2,500 µ E m^{-2} s^{-1} (light)
Temperature	10-45 °C
Mass	~0.005 s^{-1} (transfer coefficient)

Phyco-Flow™ installations





Algae Production

In addition to our photobioreactor systems we also specialise in providing the auxiliary equipment for process monitoring and control, LED solutions and downstream processing.

As a one-stop shop for algae production we have a full range of nutrient mixes from our **Cell-Hi All-in-One** line.

MAKING ALGAE EASY

Our guarantee.

As with all Varicon Aqua systems we pride ourselves on the high level of after sales support we provide to our clients whether it's a systems issue or a technical production question. We are highly approachable. Come talk to us about your needs!

Contact: variconaqua@variconaqua.com - www.variconaqua.com

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