Phyco-Bubble



Airlift Photobioreactor

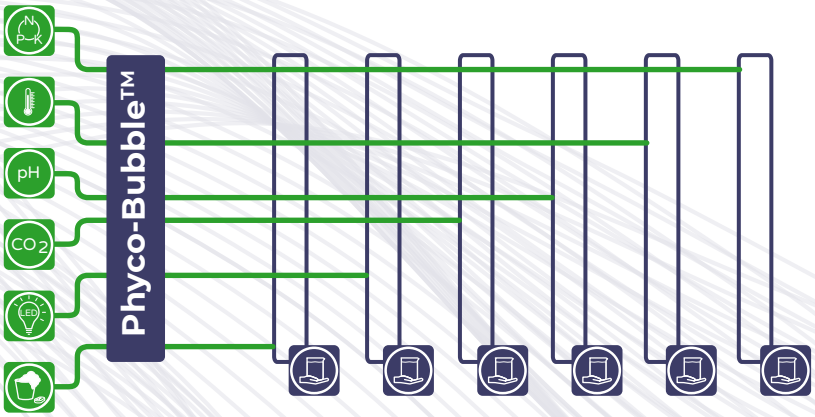
Varicon Aqua are specialists in the design, construction and deployment of algal growth platforms. With over **30 years of experience** and over **350 photobioreactor system**s deployed across the globe we are recognised as global leaders in the sector. Our close client engagement and supply chain relationships 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**.

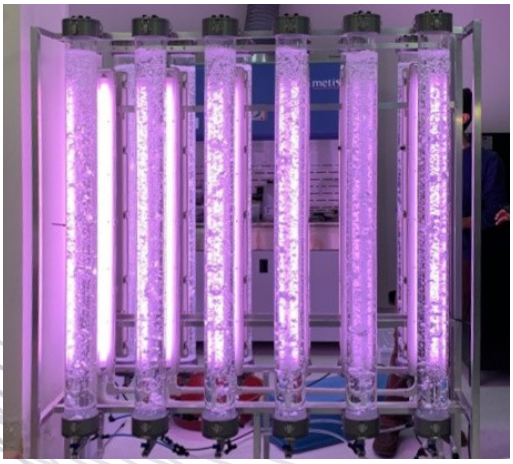
Our key algal growth platforms are represented within the **Phyco-™** line including the **Phyco-Flow™**, **Phyco-Pond** systems, **Phyco-Lift**, and **Phyco-Bubble,** each designed to meet specific needs and deliver optimal results in algal cultivation.

The **Phyco-Bubble** photobioreactor is an airlift system that provides a fully controllable laboratory scale column reactor system to the microalgae industry. The **Bubble** configuration is available in a range of incremental sizes from 5 - 15 L, and can be illuminated with LED or fluorescent Gro-Lux back lighting that can be tailored to specific photosynthetic requirements. The system is mixed by aeration which significantly reduces mechanical shear, and display excellent levels of turbulence and mass transfer. Standard fabrication is with fittings and connectors made from machined plastic, aluminium or stainless steel. The photostage is made from **Schott Duran® grade borosilicate**, producing a highly productive system with a superior lifespan.

Phyco-Bubble outline and options

All Phyco-Bubble™'s can be fitted with a variety of ports for inlet/outlet and sensor functions dependent on requirements upon request.





Specifications and performance

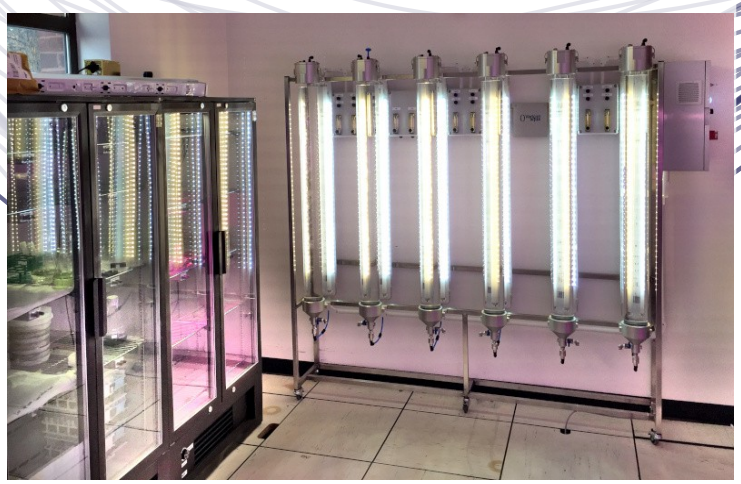
Physical Considerations	
Volume/Height	5-15 L (12 L standard)
Tube OD	110 mm
Tube length	0.5-2 m (1.5 m standard)
Shape/mixing	Single tubular, mounted/aeration
Electricals	Lights, aerator, VAS control unit

Example Performance (details of other species available)	
Algae	*Chlorella sorokiniana* (species)
Density	1-2 g L^{-1}
Productivity	0.1-0.3 g L^{-1} d^{-1}
Max yield	1-2.5 g L^{-1}
dO_2	≤ 150 %

Engineering Performance (in house data)	
Liquid	0.1-0.2 m s^{-1} (max - velocity)
Reynolds	≥ 10 k (number)
Maximum	2,000 µ E m^{-2} s^{-1} (light)
Temperature	10-40 °C
Mass	~0.007 s^{-1} (transfer coefficient)

Phyco-Bubble configurations





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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