



## MAKING ALGAE EASY

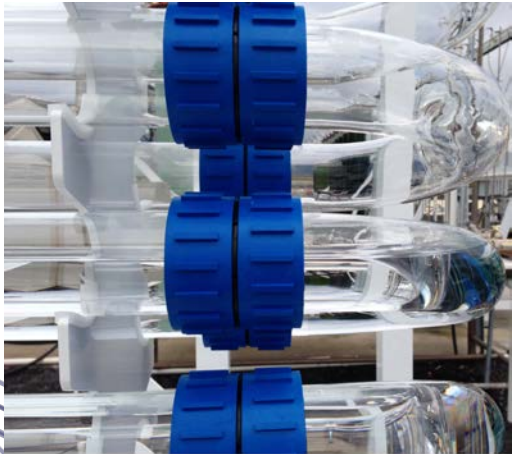
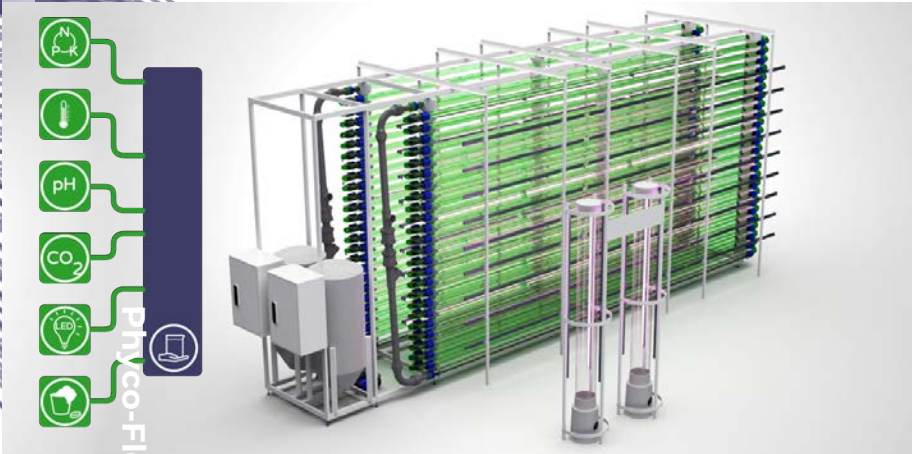
**Varicon Aqua** is the manufacturer of the **Phyco-™** range of photobioreactors with more than 30 years' experience designing, constructing and deploying **algal photobioreactors**, high rate algal ponds and aquaculture algae production systems worldwide. As a global leader in this sector our close client engagement and supply chain relationships allow us to provide bespoke photobioreactor and cultivation systems for a broad range of applications. To date we have deployed over 270 photobioreactor systems across the globe, ranging in scale from 5 L to 400,000 L. Prominent products in the Phyco-™ line include **Phyco-Flow™**, **Phyco-Pond** systems, the **Phyco-Lift** and **Phyco-Bubble**.

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<sup>3</sup> 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 The **Flow™** configuration has superseded our **BioFence** photobioreactor and offers numerous operational improvements.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	<i>Chlorella sorokiniana</i> (species)
Density	0.5-2.5 g L <sup>-1</sup>
Productivity	0.25-1.5 g L <sup>-1</sup> d <sup>-1</sup>
Max yield	2-3.5 g L <sup>-1</sup>
dO <sub>2</sub>	200 - 400 %
Engineering Performance (in house data)	
Liquid	0.1-1 m s <sup>-1</sup> (max - velocity)
Reynolds	≥ 400 (number)
Maximum	2,500 μ E m <sup>-2</sup> s <sup>-1</sup> (light)
Temperature	10-45 °C
Mass	~0.005 s <sup>-1</sup> (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.

### 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!

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