

DIVERSIFIED USES

Diversified uses

ecoduna's world-patented vertical photobioreactor constructed with glass tubes from SCHOTT AG at ecoduna's plant

SCHOTT

IMPROVING ALGAE PRODUCTION FOR ECODUNA WITH GLASS COMPONENTS

Photo: ecoduna

International
technology group
SCHOTT and
ecoduna, an Austria-
based commercial
technology and
algae producer,
have teamed up
to maximize algae
production efficiency
while cutting expenses
by using glass tubing

ALGAE PRODUCTION

ecoduna produces and harvests different algae such as chlorella or spirulina, blue-green algae used for dietary supplements and animal feeds, in vertical photobioreactors and previously changed its production technology from plastic panels to SCHOTT 65mm glass tubes. Glass tubes, in fact, require less cleaning and downtime while generating the same biomass output. After switching to glass tubing at its Austrian plant in June, ecoduna's photobioreactors ran continuously for months, simultaneously increasing output and reducing operating costs.

Algae manufacturers are increasingly replacing plastic with glass in their photobioreactor components, favouring glass' cleanability, strength and clarity – important parameters that affect output and cost for large scale algae production. Moreover, the material's longevity is one of its key advantages: ecoduna says it scheduled replacing of plastic plates every 10 years, but the 50-year lifespan of glass tubing makes a full system replacement far less common.

GLASS INSTEAD OF PLASTIC

ecoduna's world-patented vertical photobioreactors, which eliminate pumps and where CO₂ and nutrients are introduced continuously at the bottom, are highly efficient and guarantee maximum purity. However, biofilms accumulate on the walls of the plastic panels that require frequent cleaning, leading to regular shutting down of the production systems. Because SCHOTT's high quality, round DURAN® glass tubing has a smooth inner surface, biofilm formation is strongly reduced and are on the brink of self-cleaning, which extends production to a near-continuous process. The cleanliness of the glass allows the system to run on a continuous industrial scale, making cultivation possible 365 days of the year.

"Bacteria are algae's enemies, and the scratches that are common on the inside of plastic tubing after many cleaning cycles make the perfect breeding ground for those enemies. The robustness of SCHOTT's glass tubing makes the photobioreactor strong without the risks of contamination," said Johann Mörwald, CEO at ecoduna. "Using glass tubing has proven to be a smart investment that pares operating expenses and practically eliminates replacement costs."

ecoduna plans to use glass tubing at its new production facility in Austria, and in a facility that it runs with a partner in Denmark.

"As commercial algae producers work to improve biomass yields and harvests, it's clear that the hardware in photobioreactors plays a critical role in algae growth," said Dr. Niko Schultz, PBR Designer at SCHOTT Research and Development. "Glass tubing has proven effective in both horizontal and vertical photobioreactors, and its robustness and cleanliness extend the lifespan of these systems by mul-

iple factors. Our work with ecoduna will continue as together we find ways to improve system efficiencies, enhance algae growth, and increase biomass yields."

ABOUT SCHOTT

SCHOTT is a leading international technology group in the areas of specialty glass and glass-ceramics. The company has more than 130 years of outstanding development, materials, and technology expertise and offers a broad portfolio of high-quality products and intelligent solutions. SCHOTT is an innovative enabler for many industries, including the home appliance, pharmaceutical, electronics, optics, automotive, and aviation industries. SCHOTT strives to play an important part in everyone's life and is committed to innovation and sustainable success. The group maintains a global presence with production sites and sales offices in 35 countries. With its workforce of approximately 15,400 employees, sales of USD 2.55 billion were generated in fiscal year 2013/2014.

ABOUT ECODUNA

ecoduna is the global technology leader in the construction of algaculture systems. The company's worldwide-patented process enables continuous, industrial-scale production of biomass with the greatest possible conservation of resources and the environment. ecoduna specializes in the research, development and operation of efficient systems for the cultivation of microorganisms on an industrial scale.

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