

Method and system for the enhancement of productivity of hydrogenotrophic micro-organisms

Summary

Profile type	Company's country	POD reference
Technology offer	Belgium	TOBE20240906003
Profile status	Type of partnership	Targeted countries
PUBLISHED	Investment agreement Commercial agreement with technical assistance	• World
Contact Person	Term of validity	Last update
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General Information

Short summary

A Belgian SME has developed a patented method for the enhancement of (biomass) productivity of hydrogenotrophic micro-organisms. The method uses hydrogenotrophic microorganisms, such as bacteria and/or algae, for the production of biomass. The company is looking for an industrial partner that wants to apply and commercialise the patented invention.

Full description

The company is a spin-off from Ghent University (Belgium) with expertise in Microbial Resource Management.

The company has developed a patented method and system for the enhancement of productivity of hydrogenotrophic micro-organisms. The method comprises the steps of: providing a reactor comprising a reactor vessel, at least one gas inlet and/or hydrogen production system, at least one fluid inlet, and at least one fluid outlet; charging the reactor with a hydrogenotrophic micro-organism culture; providing a gas feed to the at least one gas inlet with the gas feed comprising an amount of hydrogen gas and/or producing hydrogen gas with the hydrogen production system; providing a fluid feed to the at least one fluid inlet; growing biomass; and removing and/or taking up of hydrogen (H₂), carbondioxide (CO₂) and/or NH₃/NH₄⁺. Preferably, the method further comprises the steps of: charging the reactor with at least one phototrophic micro-organism culture, and in-situ forming of oxygen (O₂) by the phototrophic micro-organisms.

Advantages and innovations

In general, biomass is produced under influence of light. For example, algae are produced and commercially applied in food products and feed.

Growth rate of the biomass is limited to the availability of the gases that are involved in the reactions to grow the biomass. This limited availability of required gaseous components is caused by the relatively low solubility of these relevant gasses and thereby the relatively low gas-to-liquid transfer rate. Also, in practice often valuable hydrogen gas is lost via the so-called bioreactor off-gas.

When air is used as oxygen source, gas needs to be vented to prevent gas accumulation in the process. This reduces the efficiency of the biomass growth. Furthermore, there is a safety risk involved when using a mixture of hydrogen (H₂) and oxygen (O₂). This provides restrictions to the process that thereby hinder optimal biomass growth.

An objective of the present invention is to provide a method for the enhancement of the biomass productivity and/or concentration that obviates or at least reduces the aforementioned problems and/or is more efficient as compared to conventional methods for producing biomass.

Technical specification or expertise sought

Stage of development

Lab tested

IPR Status

IPR granted

IPR Notes

BE; NL; EP granted

Sustainable Development goals

- **Goal 9: Industry, Innovation and Infrastructure**
- **Goal 3: Good Health and Well-being**

Partner Sought

Expected role of the partner

The company is looking for (industrial) co-operation partners, licensees and/or investors to apply the patent, further develop the products and commercial applications.

Type of partnership

Investment agreement

Commercial agreement with technical assistance

Type and size of the partner

• **SME <=10**

• **SME 50 - 249**

• **SME 11-49**

• **Other**

• **Big company**

Dissemination

Technology keywords

• **08002002 - Food Microbiology / Toxicology / Quality Control**

Targeted countries

• **World**

Market keywords

• **04010 - Microbiology**

Sector groups involved