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A solar based, internally-illuminated bioreactor for microalgae cultivation

HORIZON 2020

A solar based, internally-illuminated bioreactor for microalgae cultivation

Rendicontazione

Informazioni relative al progetto

Brevel

ID dell’accordo di sovvenzione: 815821

Sito web del progetto

DOI
10.3030/815821

Progetto chiuso

Data della firma CE
27 Aprile 2018

Data di avvio
1 Aprile 2018

Data di completamento
30 Settembre 2018

Finanziato da
INDUSTRIAL LEADERSHIP - Innovation In SMEs

Costo totale
€ 71 429,00

Contributo UE
€ 50 000,00

Coordinato da
BREVEL
Israel

Questo progetto è apparso in...

15 Aprile 2019

Periodic Reporting for period 1 - Brevel (A solar based, internally-illuminated bioreactor for microalgae cultivation)

Periodo di rendicontazione: 2018-04-01 al 2018-09-30

Sintesi del contesto e degli obiettivi generali del progetto

Microalgae can be of great benefit as a food and feed source, a natural source for nutraceuticals, cosmetics and as biomass for production of biofuels. However, microalgae cultivation is expensive and inefficient as low production rates of less than 400 grams/m3 per day prohibit mass usage, limiting them to high-value markets.
Brevel has created a novel microalgae cultivation system based on an internally illuminated photobioreactor that concentrates and transports sunlight by optical fibers. Our system allows for microalgae production to be affordable and enables the stable cultivation of microalgae at a capacity with up to 400% higher than current systems.
We will produce Astaxanthin, a carotenoid used in the aquaculture industry as a feed additive, focusing on the Atlantic Salmon and Rainbow Trout market. The Astaxanthin market was valued in 2016 at € 478 million, out of which € 190 million in the aquaculture sector. The whole microalgae derived products market in which Brevel is placed is estimated at € 3.4 billion.
Objective: We wish to industrialize the technology that we have developed and scale-up Brevel’s systems to become fully market-ready.

Lavoro eseguito dall’inizio del progetto fino alla fine del periodo coperto dalla relazione e principali risultati finora ottenuti

The Brevel phase 1 project for a solar based, internally-illuminated bioreactor for microalgae cultivation was set forth to perform a techno-economical feasibility study, an in-depth market and business assessment and a better understanding of the regulatory and IP implications.
During the project an industrial-sized cultivation system was constructed and multiple small-scale prototype systems were tested and fine-tuned in order to arrive at an estimate of capital and operational expenses needed for fully operational pilot and industrial scale farms. Accordingly, a pilot

farm of 15 systems has been found to be economically viable, which is the aim for a subsequent phase 2 project.

Potential customers from the fish-feed industry, as well as experts in the field have been contacted and interviewed and accordingly, the business model has been updated to address the modified value proposition and marketing strategy. A market research has been conducted to map potential customers according to geography, size and openness to innovation.

Finally, risk, regulatory and IP assessments have been taken place and to our understanding the project is feasible and worth pursuing. As part of the project a patent has been filed and talks with potential investors have initiated in order to go forward with Brevel's vision.

Progressi oltre lo stato dell'arte e potenziale impatto previsto (incluso l'impatto socioeconomico e le implicazioni sociali più ampie del progetto fino ad ora)

The novelty of our innovation business project is the introduction of a disruptive paradigm shift in the microalgae industry and bioeconomy.

We believe that microalgae cultivation should be approached as a high-tech, modern, data driven industry which goes hand in hand with the frontiers of scientific research.

We introduce a cutting-edge technology for an internally illuminated microalgae photobioreactor based on natural sunlight. The system is designed to be completely automated and for this to be perfectly achieved, we will improve the system's characteristics on advanced image analysis, machine learning and continuous online monitor and control technologies.

BREVEL
a new era for algae

brevel-logotype-pantone.jpg

Ultimo aggiornamento: 29 Gennaio 2019

Permalink: https://cordis.europa.eu/project/id/815821/reporting/it