

Biodegradable Illuminating Tube for better water quality in a pond

Development status

Phase 2

Feasibility study. There is a realistic design of the technology and the initial tests in the laboratory are leading to the specification of the technology requirements and its capabilities.

IP protection status

CZ Patent 305945 Device for enhancing quality of standing water of outdoor water storage reservoirs

Partnering strategy

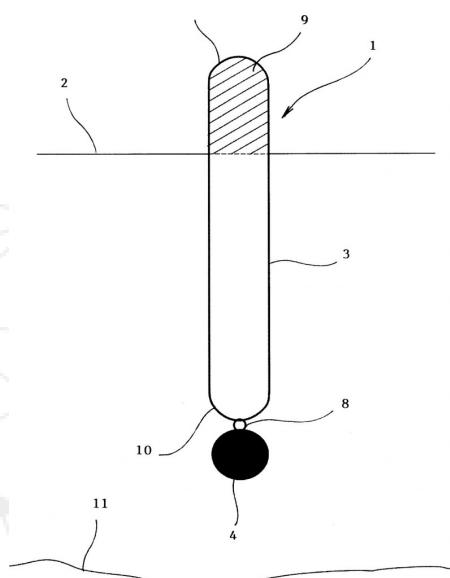
Co-development, investment

Challenge

The essence of the technology is to improve the quality of standing waters of outdoor water reservoirs by reducing the emergence of oxygen deficits. The technology submitted allows to maintain an optimal balance between the biomass of algae and recois, zooplankton and fish in water reservoirs. In eutrophic (high content of nutrients dissolved in water) and hypertrophic (loaded with nutrients from different sources) of water reservoirs, oxygen deficits often occur from the peak of the growing season. Due to these deficits, anaerobic processes occur in the water column, which are usually caused by the excessive development of single-celled algae and cynucleics, which is manifested in the form of a so-called water flower. As a result, a large part of the water column finds itself in the dark, and assimilation processes take place only in the upper 10 to 30 cm.

Description

It is a simple device that allows light to enter the water column, which has low transparency. Biologically strongly revived sites, such as hypertrophic and eutrophic ponds, have had low water transparency since the peak of the growing season. The light tube by its construction also brings light to the deeper layers of the water column, allowing assimilation of a larger volume of water. Thanks to this, it is possible to ensure the functioning of photosynthesis under the water level on a much larger scale and without the use of energy-intensive technical means. This will improve the quality of water - oxygen content, without the need for energy inputs. The device is cylindrical in shape made of transparent, biodegradable material that allows light to be transmitted from the surface of the water surface to the deeper layers of the water column. Its design ensures the course of photosynthesis under the water level to a much greater extent (involvement of recois and algae in the process) and without energy-intensive means, resulting in a significant improvement in water quality. The illuminating tube works by transmitting light from the surface of the water surface through its transparent walls and hollow body under the water surface. This



Institution



Jihočeské Univerzitní
a Akademické centrum
transferu technologií

University of South Bohemia in
České Budějovice

benefit is achieved passively, without the need for energy. In general, wherever the aquatic environment suffers from low water transparency due to strong vegetation turbidity. A great advantage of the light tube is the fact that it is a passive device that does not require energy.

Commercial opportunity

The use of a lightning tube is mainly in hypertrophic and eutrophic reservoirs, biological ponds or ponds suffering from low water transparency due to strong vegetation turbidity. It can therefore be used both in fishing and, where appropriate, in the wastewater treatment sector .