Decreasing Carbon Dioxide Emission with Chlorococcales Microalgae Farm

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The rapid development of industry in Gebze – Dilovasi region where our school is located, the environment is under great threat by industrial gases released into the atmosphere. Never the less, filtering and planting trees does not completely solve the problem of carbon dioxide emission. Our project, designed to solve this very problem, aims to establish a fertile mechanism, in which Chlorococcales microalgae can produce biofuel with high defined photosynthesis ability for our heating system at school. A prototype of mixed microalgae culture farm reduces the carbon dioxide emission to the atmosphere. The clear spiral pipes and recirculation of the system helps microalgae to be exposed to the sunlight more efficiently. It also occupies as little space as possible. First the prototype was given carbon dioxide from Saccharomyces cerevisae fermentation to calculate the efficiency of the system. Later, whether the gas emitted from the system is oxygen or not was tested with an oxygen sensor. Then the amount of oxygen emitted was measured by a pressure sensor when the system is and is not working. According to the results, it is observed that when the system is off, the pressure in the system increased 5.85 kPa in 10 minutes. Whereas when it is on, the pressure increased 27.75 kPa in 10 minutes. As far as the data obtained from the prototype is concerned, the designed regular circulation pipe system microalgae farm was 4.74 times more effective in comparison to a normal microalgae farm. As a result, this microalgae farm to be built on our school heating system will not only reduce the carbon dioxide emission, but also provide biofuel for the school. This project can be modified to be used in different facilities and it can help prevent the harmful results of CO2.

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