Section Sciences et Ingénierie de l'environnement
Design Project 2019 (semestre de printemps)

Proposition n°28

Evaluation of CO2 Sources for the Microalgae Production

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Descriptif du projet

Enoil Bioenergies SA is a Swiss biotechnology and renewable energy company, headquartered in Geneva. The main areas of business are the production of renewable energy, development of biotechnology specifically on raw materials for the renewable energy, food, pharma and cosmetics industries.
Enoil Bioenergies is developing solar greenhouses for the farming of microalgae, spirulina, Chlorella and Astaxantina.
Algae, like any other plant, absorbs (or consume) CO2 when growing using sunlight and they release O2. For higher productivity, algae require more CO2, which can be supplied by emissions sources such as power plants, biogas plants, etc. Due to this, the production of algae is identified as one of the solutions of carbon sequestration. For our new production line of Spirulina in it is important to evaluate the possible sources of CO2.

Objectif et buts

Considering the location of the plant,

- What CO2 sources can be identified?
- Biogas from waste water (40% CO2, 60% CH4) can be an option. But separation of CO2 from the biogas can be costly and the level of impurities can be high. What options for separations are existing? What purity of CO2 can be obtained?

- What are the impurities? What could be the impact of those impurities on the production rate of algae?
- What could be the optimal choice? Considering environmental impact, cost and availability.
- Market evaluation.

Descriptif tâches

(Décrire 3 à 4 étapes de la démarche de projet en spécifiant s'il y a une partie expérimentale (terrain, mesures, prototypage)

- Collect necessary information which are needed to tackle the questions
- Assess the different options and pathways according to the goals of ENOIL BIOENERGIES