



Programa EngIQ – Edição 13 – Informação adicional dos projetos

Projetos de doutoramento com início em outubro de 2021.

**EngIQ\_BD2021-10:** Upcycling of Industrial Effluent Streams for Use in Microalgae Culture Medium Formulations. **Empresa:** A4F

Every industrial site activity is far more than the desired product. For each production step, there is usually an effluent output which must be managed. Aside gaseous or solid wastes, the release of liquid effluents in water bodies may cause eutrophication events caused by anthropogenic activities [1] and it is therefore crucial to develop efficient methods for the removal of nutrients from these. Current methods provide satisfactory levels of nitrogen and phosphorus removal. However, these involve high energy consumption, complex operation and high volumes of waste sludge production [2]. Microalgae may be used as an alternative for the treatment of industrial wastewaters [3], mainly due to their capacity of removing high nitrogen and phosphorus content, which is essential for plant growth and production of proteins, chlorophyll and nucleic acids. On the other hand, from the microalgae farmer perspective, this method can be a turnaround by significantly reducing production costs. Working alongside, both identities can therefore reduce their OPEX costs by avoiding either extensive treatment, in the case of industries, or an excessive need to purchase nutritive medium, in the case of the microalgae farmers. The aim of this PhD proposal is to understand the technical and economic impact of the usage of industrial effluent streams in microalgae production, from laboratory to industrial scale, based on a solid characterization of the industrial effluent streams to be used as well as of different microalgae culture media.

O diretor do EngIQ

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