



PHD RESEARCH PROPOSAL

Doutoramento em Engenharia da Refinação, Petroquímica e Química (EngIQ)

ENHANCING MICROALGAE PRODUCTION TECHNOLOGY AND INDUSTRIAL OPERATION THROUGH DATA MINING

Summary / Framework

Microalgae production is comparable to agriculture. These aquatic photosynthetic microorganisms' industrial production is subject to identical challenges as conventional agriculture: atmospheric conditions or contaminants and plagues for instance. Traditional agriculture crops have extensive background, knowledge, data and information on its behaviour. However, microalgae industrial production is yet to reach the 100-year mark. Although the knowledge acquired over the past decades of production is extensive, data is scarce when it comes to key figures such as production quantities and species, let alone production data, culture media and cultivation conditions. Extensive, systematic and robust analysis on microalgae pilot and industrial production is still at bay [1][2] and hinders the possibility to unleash new models and operation regimes that aim to: (1) improve production technology; (2) improve production quantities and quality; (3) improve crop management; (4) decrease production costs; and (5) increase competitiveness of the microalgae sector when compared to its concurrent. The aim of this PhD proposal is to explore the microalgae production systems parameters and operating conditions via data mining methods in order to develop a robust and exploitable modelling tool for the optimization and thus implementation of new innovative strategies in microalgae production.