Jaime Finguerut, J Fundam Renewable Energy App 2016, 6:5(Suppl)
http://dx.doi.org/10.4172/2090-4541.C1.017

Industrial production of bioethanol from sugarcane; Use of a large-scale non-sterile self-adaptive bioprocess for fermentation

Jaime Finguerut
CTC- Centro de Tecnologia Canavieira, Brazil

Even Brazil being well known by its successful bioethanol production from sugarcane that make possible to replace a large proportion of the Otto cycle fuel used by a very large car fleet most formed by flexible fuel engines, since 1975, but, not many people know how this ethanol is being produced. In this paper, the main characteristics of the bioprocess that is being used in Brazil since the 30's of last century and its evolution will be discussed. This process was intensified by the use of a total cell recycle by means of centrifugation that separates selectively the larger particles and rejects the smaller, so favoring the yeasts to the bacteria. Also an acid shock was used which makes the competition with acid producing bacteria more favorable to the yeasts and also kills the newcomers, the contaminant yeasts that are not used to acid shocks. The feedstocks added to the process changes every day since sugarcane has to be harvested fresh and is not storable, and the sugarcane fields extends to a larger diameter around the plant (30 km) with different types of soils and uneven local climates, as well as different sugarcane varieties. These conditions makes its variation intrinsic to the business, so this process will adapt itself every day. After many changes, the heterogeneous yeast population grows differently and only the most adapted ones will be enriched and recycled to the next cycle. Concentrating on all this makes a very high productivity, low fermentation time, high robustness and resilience, with low operational and fixed costs.

Biography

Jaime Finguerut is a Chemical Engineer since 1975 and completed his Post-graduation studies at the University of São Paulo in Biochemical Engineering. He worked in the São Paulo Environmental Protection Agency (CETESB) developing a hybrid process for making biogas from sewage and domestic residues and also developed fermentation process to produce Single Cell Protein from low value petroleum fractions in Industrial Engineering Faculty (FEI) where he also teached Biochemical Engineering (Bioprocesses). From 1980, he started working for CTC- Sugarcane Technology Center, where he leaded engineers and other technicians on optimization of Brazilian industrial large scale process and currently developing its second generation technology for making sugarcane cellulosic ethanol.

jaime@ctc.com.br

Notes: