

Dewatering of Yeast Biomass for the Production of Single Cell Oils

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During the last years, the third generation of bio fuels has been arousing more and more interest. The so-called 'Single cell oils' (SCO), oils produced by micro-organisms: yeasts, algae, fungi and bacteria, are well known in this context. The traditional downstream process, nowadays used in feed and food industry, runs up to more than 50% of the total production cost of these SCO. This is one of the main limiting factors to make them commercially attractive for the production of bio fuels. *Cryptococcus curvatus*, the used model organism, is a yeast with industrial potential because it can grow and accumulate lipid (up to 50%) on a very broad range of substrates.

Traditionally yeast cells are harvested by centrifugation and further dewatered with a combination of different techniques (e.g. rotary vacuum drum, fluidized bed,...).

Our research is focused on the design and development of a dewatering facility using compaction, filtration and capillarity.

Centrifuged yeast (dry weight 20%) is enveloped in two layers of cloth: a filter cloth with pore size 5µm and a cotton absorbent cloth. This envelop is compressed using a series of consecutive roller pairs to expel excess water. The pressure is enhanced gradual by diminishing the spacing in the roller pairs.

Tests show an increase of bio dry mass up to 75%, which makes the biomass suitable for direct screw pressing, or roller compaction in combination with chemical extraction to harvest the SCO.