



VNP + Lamb Weston: Techniques to concentrate or recover starch from process water streams.

Problem description

VNP and Lamb Weston (LW) both have starch containing process water streams within their production facility. At VNP, starch is coming from re-pulping of recycled paper as well as from 'broke' of virgin paper. Starch is initially added during paper production to add specific functionalities. At Lamb Weston, starch will remain in the process water during peeling, cutting and boiling of potato's. Both companies currently use the starch containing process water as influent for an anaerobic bioreactor to produce biogas, but are looking for ways to recover the starch. VNP can potentially reuse the starch later in the paper production process and Lamb Weston can upgrade the process water starch to food grade. Both companies are looking for techniques to recover the starch from the process water streams. The suggested approach is to increase the solid content of the starch effluent to >10% (VNP) and >15% (LW).

Input specification VNP:

- About 8% starch content in recycled paper
- Starch concentration in process water and material water (stofstroom) ~ 0.17% - 0.8%
- Dry matter content 0.1-5 g/l
- Process water has a matrix of other materials and chemicals (that can inhibit concentration techniques)
- pH 6-7
- Temperature 35 – 55 °C

Input specification Lamb Weston:

- 1% solid content concentration in process water
- Solid content (60-70% starch, 10% fibres, 10-15% proteins, 5% minerals)
- Temperature 40 – 90 °C
- Pectin in solution

Objective(s)

- Quality (e.g. feed grade, GMP+, <100.000 CFU)
- Cost efficient
- Separation of solid content (starch, proteins, fibres)
- Quick process (starch is preferably not degraded too far when isolated)

Constraints - must haves

- Starch content >10% dry matter (VNP)
- Starch content >15% dry matter (LW)
- Separated water can be reused (>50%)
- Process speed >50 m³/h

Current known technique(s)

- Membrane filtration
- Microbiology