

Recovery of hexane (acetone) from hexan/oil extraction liquids in the edible oil industry



Project: CS-10-18
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Partners: SolSep / MACT, Cargill, Loders Croklaan, Akzo Nobel, NL GUTS
Budget: 50.000 €



Objective:

Demonstrate the use of solvent resistant nanofiltration (SRNF) in the processing of vegetable oils in the processes:

- A. Oil-rich phase with solids (miscella extract to remove as much solvent as possible).
- B. Oil-rich phase without solids (refined oils; removal of triglycerides is envisaged).
- C. Fatty acids including solids.

Motivation:

The use of membrane technology has been considered in several processes in edible oil processing. However, trials of membrane technology in organic solvent processing were hardly successful.

Applicability:

- A. Energy savings
Existing hexane (acetone)-recovery systems in edible oil refinery demand evaporation of the hexane (acetone). Membrane technology have the potential for huge energy savings.
- B. Improved product quality
The previously mentioned substrates have the potential to lead to improved products (e.g. removal of triglycerides).

Project scope:

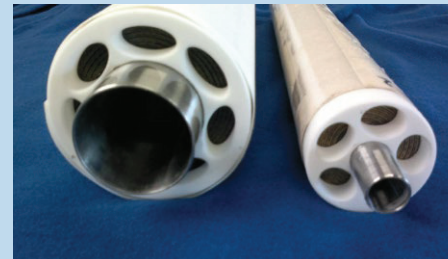
Demonstrate the use of the newest solvent resistant nanofiltration (SRNF) membranes in the processing of edible oils.

The project focuses on:

- a. SRNF-membranes (Solsep).
- b. Compare spiral wound technology with vibration enhanced systems (V-SEP).
- c. Cleaning methods in organic environments.
- d. Test in the extremes of the possible window(s) of operation.

Results:

- Retention of target compounds high
- Recovered solvents of good reuse quality
- Debottlenecking of distillation seems technically and economically feasible
- Decision to pilot in industrial environment



Solsep SWEs Membranes



V-Sep setup