

Preprocessing

Flaking Mill

VAN MOURIK, TYPE VMG650

- Minimal capacity 100 – 2000 kg feed/h
- Rolls: 600 mm diameter, 500 mm length, cast steel
- Adaptable inter-roll distance
- Supply with homogenization screw
- Sampling possible during run
- Adaptable and trackable process parameters incl. roll and screw speed, roll temperature

Part of the tour



Oil press

KEK, TYPE P0103

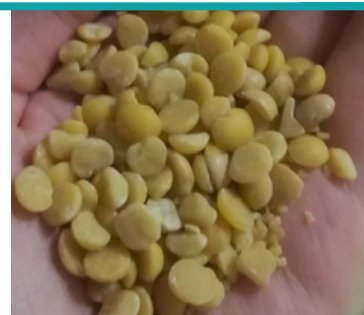
- Squeezes oil from seeds
- Type 'cold press' with transporting screw
- Capacity 100 kg/h

Part of the tour



Sorting, cleaning, dehulling

- Sorting on size and colour
- Cleaning mechanism separates impurities
- Dehuller breaks the hulls
- Location equipment: ILVO-Plant Merelbeke



Incubator vessels

For microbial production (not yet available)

- Fermentation microorganisms
- 1 vessel of 20 L
- 6 parallel vessels of 1 L
- Adaptable pH, temperature and gas supply

Cell disruption

- Ball mill: mechanical breakdown of cell wall
- Pulsed Electric Field (PEF) device: makes cells brittle by application of electrical pulses
- High pressure homogenizer

Part of the tour



Extraction



Reaction vessels

GEA, 400 L

Part of the tour

- Volume 400 L
- Equipped with stirrers
- Adaptable pH (with acid and/or base)
- Adaptable temperature (double wall)
- Broad T° and pH range
- Adaptable and trackable process parameters incl. pH, temperature, rotation speed stirrers, ...

Decanter

ALFA LAVAL FOODEC 100

Part of the tour

- Two-phase decanter
- Capacity 5 – 500 L/h
- Diameter bowl 200 mm
- Max. speed 5300 rpm
- Max. G-force 3146 g
- Broad T° and pH range



Centrifuge

GEA, SSE-10

Part of the tour

- Disc type bowl
- Two-phase separation
- Capacity 30 – 250 L/h
- Up to 12.000 rpm
- Broad T° and pH range
- Separation: separated solid fraction (during operation) and liquid fraction (under pressure)



Filtration unit

ALFA LAVAL MF/UF/RO

Part of the tour

- Processes:
 - Micro/Ultra/Nanofiltration
 - Reversed osmosis
- Replaceable membrane units (2)
- Spiral, tubular and ceramic membranes
- Feeding tank (50 L)
- Capacity membranes: 50 – 3000 L/h
- Broad pressure, pH and T° range
- Adaptable and trackable process parameters incl. flow rate feeding-, (re)circulation- and high-pressure pump, temperature of filtration unit etc.



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Drying

- Spray dryer, centrifugal atomizer type
- Drum dryer will be purchased in near future to dry slurries, e.g. microbial mass, with drying capacity of 1 m²

Extrusion



Extruder

Part of the tour

CLEXTRAL, EXTRUDER TYPE BC 45

- Co-rotating twin screw extruder
- 5 modules of 200 mm
- Possibility to co-extrude (co-extrusion mold, mix container with injection system, conveyor and crimper cutter)
- Temperature range: 50 - 200°C
- Auger speed: 0 - 612 rpm
- Capacity 20 - 60 kg/h

High moisture extruder

Part of the tour

- For the production of wet extrudates
- 8 cooling units
- No expansion occurs, but a fiber-like structure is obtained. These structures can be used in burgers and snacks.



Lab-scale pilot testing



For research in exploratory phase

- Batch size: 1 - 5 kg
- Explore process feasibility when product availability is low
- Processes: Fermentation vessels, mixers, decanter, centrifuge, filtration unit, spray dryer, fluidized bed dryer, high moisture extruder

Part of the tour