

# BioLab Equipment

## Pilot production Ingredients

### GRINDING/MIXING/MILLING:

- Mincer: Bankeryds Maskin AB type A90B
- Grinders (3): Jäckering UR III AS/CS (Milling to 10 - 50 µm. Capacity: 60 - 300 kg/hour); Retsch ZM 1; Fryma MK-957R (for wet milling).
- Cutter/Mixers (4): Stephan UM12 (with vacuum); Horizontal cutter MTK 10; Robot Coupé R25; Ide-Con 20 I.
- Homogenizer: Rannie

### DRYERS/EVAPORATORS:

- Hot air batch dryer, Proctor (Capacity: 5 - 20 kg water/hour)
- Spray dryer: NIRO P-6.3. (Capacity: 25 kg water/hour)
- Indirect steam dryer (2): Stord Bartz Rotadisc (Capacity: 10 kg water/hour); Forberg FT-200 (hot air with mechanical fluidization. Capacity: 60 kg water/hour).
- Mill dryer: Jäckering UR III AS/CS (Hot air/Superheated steam. Capacity: 110/40 kg water/hour).
- Mechanical fluidization dryer: IdeCon (Hot air or superheated steam. Capacity: 10 kg water/hour)
- 4-step falling film evaporator: APV Anhydro (Capacity: 120 kg water/hour)
- 1-step falling film evaporator: Br. Hetland. (Capacity: 40 kg water/hour)
- Evaporator: Alfa Laval ConVap.

### FRACTIONATION:

- Ultra and micro filtration unit: DDS Lab-Module
- Semi-preparative LC: Gilson 331/332 pumps (30 ml/min), fraction collection, ELSD, UV or charged aerosol detection.
- Rotary fluid sieve: Jesma VS 20/65. (Capacity: 0 - 40 m<sup>3</sup>/hour. Sieving net: 10 - 100 µm)
- Separator: Westfalia separator SA1. Capacity: 120 l/hour

- Molecular distillation plant (short-path distillation plant): UIC KD-6

### VARIOUS PRODUCTION EQUIPMENT:

- Boiler: 500 kg steam/hour
- Meat separator: Bibun NF 20X. Drums: 3 and 5 mm opening. Capacity: 200 - 300 kg/hour
- Heating (3): Cooking vessel, 150 l, with stirrer; Continuous cooker for 130 - 200 kg fish/hour; Alfa Laval Contherm 4x6.
- Double Screw Press (2): Stord Bartz P-10. Capacity: 60 kg fish/hour; Stord Bartz P-13. Capacity: 150kg fish/hour
- Powder Fillers: All-Fill S10
- Vacuum and Nitrogen packaging (2): Webomatic C 60-W-DS; Henkovac VA-1
- Centrifuge: Sorvall RC5C
- Kneading machine: Meteor AR10
- Rolling machine: CIM S.R.L. Baby 500
- Pasta machine: Italgil P9A
- Oil Refining: Pilot plant for deacidification, bleaching, and deodorisation
- Laboratory scale oil refining equipment: Various

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### SPECTROSCOPY

- UV-Visible Spectrophotometers (3): Various
- Luminometer: BioOrbit 1251
- Spectrofluorometer: Jasco FP-650
- Atomic absorption spectrophotometer (AAS): PerkinElmer A-Analyst 400.

### CHROMATOGRAPHY/ELECTROPHORESIS:

- HPLC-systems (5): Various separation modes and detectors (UV, Fluorescence, ELSD, CAD).
- Gas Chromatographs (2): Thermo Trace GC Ultra; Carlo Erba Mega series HRGC 5300.

- GC-MS: Agilent 5890/5972
- Gel Electrophoresis (2): Horizontal and vertical systems

### MICROBIOLOGY:

- Real-Time PCR: Roche LightCycler 1.5

### PHYSICAL AND RHEOLOGICAL TESTING

- Universal testing machine: Instron 1100
- Viscosity meters (3): Contraves Rheoscan 30; Contraves Rheomat 108; Brookfield DV II
- Texture Analyzer: Model TA-HDi, Stable Micro Systems, England.
- Phase Transition Analyser (PTA): Wenger,
- Rapid Visco Analyzer (RVA): Newport Scientific
- Pellet testers (3): Lingo (Simulates mechanical and pneumatical stress); Holmen (Simulates pneumatical stress); Matador (Simulates mechanical stress)

### VARIOUS:

- Protein, Kjeldahl: Foss, 2400 Kjeltet Analyzer Unit
- Protein, Combustion: LECO TruSpec N
- Water in Oil: Mettler Toledo DL38 Carl Fisher titrator
- Energy: Bomb Calorimeter
- Microscopes (3): Michellaneous, one video microscope.
- Oxidation (3): Rancimat (Metrohm); Oxycons; Oxipress

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