

OVERVIEW TECHNICAL FACILITIES BODEC

1. Unit operations at Pilotplant area (450 m²)

- True Moving Bed (TMB)
- Ceramic filtration (Type MF)
- 0.25m² + 0.5 m² Agitated thin film dryers (vacuum drying system)
- Equipment for measuring drying curve with conditioned air or superheated steam.
- Membrane filtration 4-8m² effective surface, spiral wound or tubular (MF / UF)
- Membrane filtration unit suitable for ultrafiltration and microfiltration (UF/MF), equipped with three membrane modules of 75 m² each, providing a total membrane area of up to 225 m².
- Two spray dryers, 10 kg/hr water evaporation capacity,
- Vacuum drum dryer (Andritz) 1,5 m² Surface dryer, product rate 20kg/hour
- Atmospheric drum dryer (Tummers) product rate 10kg/hour
- Pasteur unit max 250l/h capacity plate type heat exchanger
- Three phase separator GEA ± 500 kg/h
- Disc Stack Centrifuge GEA ± 400 kg/h
- Two Phase decanter GEA ± 2800 kg/h
- Filter press
- Rotating drum sieve
- Membrane



Agitated Thin Film Dryer



Membrane unit

2. Unit operations at production plant area (400 m²)

- Falling Film Circulation Evaporator: 250-300 kg water evaporation capacity Spray Dryer 80 - 100 kg/h water evaporation capacity. Pressure nozzle tower, internal fluid bed,
- external vibrated fluid bed, fines return on top, internal bed & external bed. Cyclone, bag filter.



Spray dryer with internal & external fluid Bed



Falling film

3. Tanks

- 10 m³ jacketed atmospheric tank Anchor stirrer (2.2kW – 11 RPM) including Teflon based scrapers. Heating / cooling optional.
- 10 m³ jacketed atmospheric tank Anchor stirrer (2.2kW – 11 RPM) including Teflon based scrapers. Heating / cooling in place. Heating capability: 20°C/hr, Cooling capability: 20°C/hr Optional Aspiration
- 10 m³ jacketed atmospheric tank. Anchor stirrer (2.2kW – 11 RPM) including Teflon based scrapers. Heating / cooling optional.
- 6 m³ jacketed atmospheric tank Anchor stirrer (2.2kW – 11 RPM) including Teflon based scrapers. Agitation stirrer (11kW – 1000 RPM) Heating / cooling in place. Heating capability: 20°C/hr, Cooling capability: 20°C/hr Aspirated by external ventilator
- 6 m³ jacketed atmospheric tank. Anchor stirrer (2.2kW – 11 RPM) including Teflon based scrapers. Heating / cooling optional.
- 1 m³ jacketed atmospheric tank Anchor stirrer (2.2kW – 11 RPM) including Teflon based scrapers. Agitation stirrer (5.5kW – 1450 RPM) Heating / cooling in place. Heating capability: 20°C/hr, Cooling capability: 20°C/hr
- 1,5 m³ jacketed atmospheric cooking tank Stirred; steam injection; heating / cooling in place
- 0,25 m³ standalone process tank
- Agitation stirrer (5.5kW – 1450 RPM)
- Heating / cooling optional. 0,3 m³ standalone process tank 2x Anchor stirrer (2.2kW – 11 RPM)
- Heating / cooling medium: Water (4 – 100°C)



Tank & Reactor Area

4. Utilities

- **Chiller** 365 kW cooling capacity Chiller medium: Water / Glycol Cooling medium (factory): Softened water
- **Hydrophore** 15 m³/hr @ 3 bar
- **Softener** Nominal capacity: 5 m³/hr, Nominal hardness water: 11.7°D
- **Steamboiler** 700 kW heating capacity 1000 kg/hr Nominal pressure: 6 barg
- **Compressed air** 7.5 kW 1.8 m³/min 3°C dew point Nominal pressure: 7 barg
- **Steam generator** 16,5 KW, 2,5 barg 25 m³/h



5. Interconnecting piping

5 service points;

- 1x pre-treatment area
- 3x pilot plant
- 1x production plant

Provided with connections for;

- Compressed air Steam
- (supply) Condensate
- (retour) Chilled water
- (supply & retour) Process water
- (softened) Steamwater mixing device
- Product supply from switchboard
- Product return to switchboard

Switchboards / transfer panels:

Discharge tanks to several unit operations in production facility;

- Pretreatment
- Adsorption unit
- Filtration unit(s)
- Evaporator
- Spray dryer
- ATFD

CIP unit

Truck (un)loading dock



Service Point



6. Laboratory facilities (45m2)

- Weight balances (several ranges; 0,1 mg – 25 kg)
- Fume Cupboard
- MMS triple system - membrane screening unit (MF / UF / NF / RO) max 40bar Viscosity analyzer
- Water bath
- Rotary evaporator
- Centrifuge
- UV detector
- Ultra Turrax pH meter Stirrer
- Magnetic stirrer/hot plate
- Sieves
- IR Moisture analyzers
- Aw analyzer
- Colloid mill Autoclave

7. Add. unit operations incl. partners Food Tech Brainport

- Pascal Processing - HPP testing and tolling 350 l batch vessel Avure Disc Dryer
- Stephan cutter
- Colloid mills
- Kilia industrial grinder
- Tube heat exchanger
- Additional rental equipment from a strong network of suppliers when needed