

# EQUIPMENT

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## Production



### REACTOR VESSELS (-15 TO 150°C, MAXIMUM 10BAR)

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- 3 x 690 liter (Glass lined)
- 3 x 2500 liter (Glass lined)
- 2 x 4000 liter (Glass lined)
- 2 x 4000 liter (Stainless Steel)
- 2 x 6000 liter (Glass lined)
- 2 x 6000 liter (Stainless Steel)

### CENTRIFUGES

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- 1 x 1000 mm (Horizontal, Hastelloy)
- 1 x 1000 mm (Vertical, Stainless Steel)
- 2 x 1250 mm (Horizontal, Stainless Steel)

### DRYER

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- 30 m<sup>2</sup> Tray dryer (Vacuum, Stainless Steel)
- 40 m<sup>2</sup> Tray dryer (Circulating air, Stainless Steel)
- 1 x 1000 liter Bi cone dryer (Vacuum, Glass lined)
- 1 x 1000 liter Paddle dryer (Vacuum, Stainless Steel)
- 1 x 2000 liter Paddle dryer (Vacuum, Stainless Steel)
- 1 x Vacuum distillation column (28 theoretical plates, Glass)
- 1 x Jet Mill (300 mm, Milling surface in Stainless Steel, Teflon or Ceramics)

# Laboratory

## CHROMATOGRAPHY

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- 6 HPLC (Agilent) with diode array detector (DAD)
- 5 GC and GC/HS (Perkin Elmer) with FID and ECD
- Chromeleon CDS
- TLC testing incl. photo documentation

## TITRATION

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- Potentiometric titration (Metrohm)
- Karl-Fischer titration (Metrohm)
- Tiamo titration software
- Manual titration

## SPECTROSCOPY

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- Ultra violet spectroscopy
- Infra red spectroscopy

## MELTING POINT DETERMINATION (METTLER TOLEDO)

## DIFFERENTIAL SCANNING CALORIMETRY (METTLER TOLEDO)

## POWDER X-RAY DIFFRACTION

## PARTICLE SIZE DETERMINATION

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- Laser diffraction (Malvern)
- Sieving

## SINGLE LAB INSTRUMENTATION

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- Balances (e.g. Mettler Toledo)
- pH measurement
- Drying ovens
- Turbidity measurement
- Refraction index
- Density determination
- Liquid handling

## CLIMATIC CHAMBERS

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- 25°C/60% r.H. (about 2000 liter)
- 30°C/75% r.H. (about 1000 liter)
- 40°C/75% r.H. (about 240 liter)

## Pilot Plant

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- one 400 liter and two 200 liter reactors (glass lined), tempered by temperature control units
- one 350 mm centrifuge (horizontal, stainless steel)