

Laboratory and Bench scale Distillation at VTT

Laboratory and bench scale distillation for fractionation of challenging matrices at VTT Espoo

Applications and Operation

Available systems include a laboratory scale batch distillation unit and a bench scale PULSE-DIST system, which combines the purity and flexibility of a batch distillation unit and the operational efficiency of a continuous distillation unit.

The systems can be applied to the thermal separation of mixtures with variable number of components in varying quantities. These include complex hydrocarbon mixtures, such as pyrolysis oils and waxes, biobased oils and Fisher-Tropsch crudes.

Feeds can be characterized beforehand, and the obtained results used for modeling to optimize the distillation parameters and to determine the number of desired fractions based on the temperature intervals.

In both units, operation is possible under atmospheric pressure or under vacuum down to 1.0 Torr pressure. The maximum operational temperature (flask) is 350 °C and the maximum vapor temperature 480 °C AET.

Available offline analytics

SimDist, sulfur, nitrogen, halogens, density, pour and cloud point bromine index/number, water/ O_2 , metals, GC-MS, PIONA.

Equipment specifications

Laboratory scale unit PD104HT

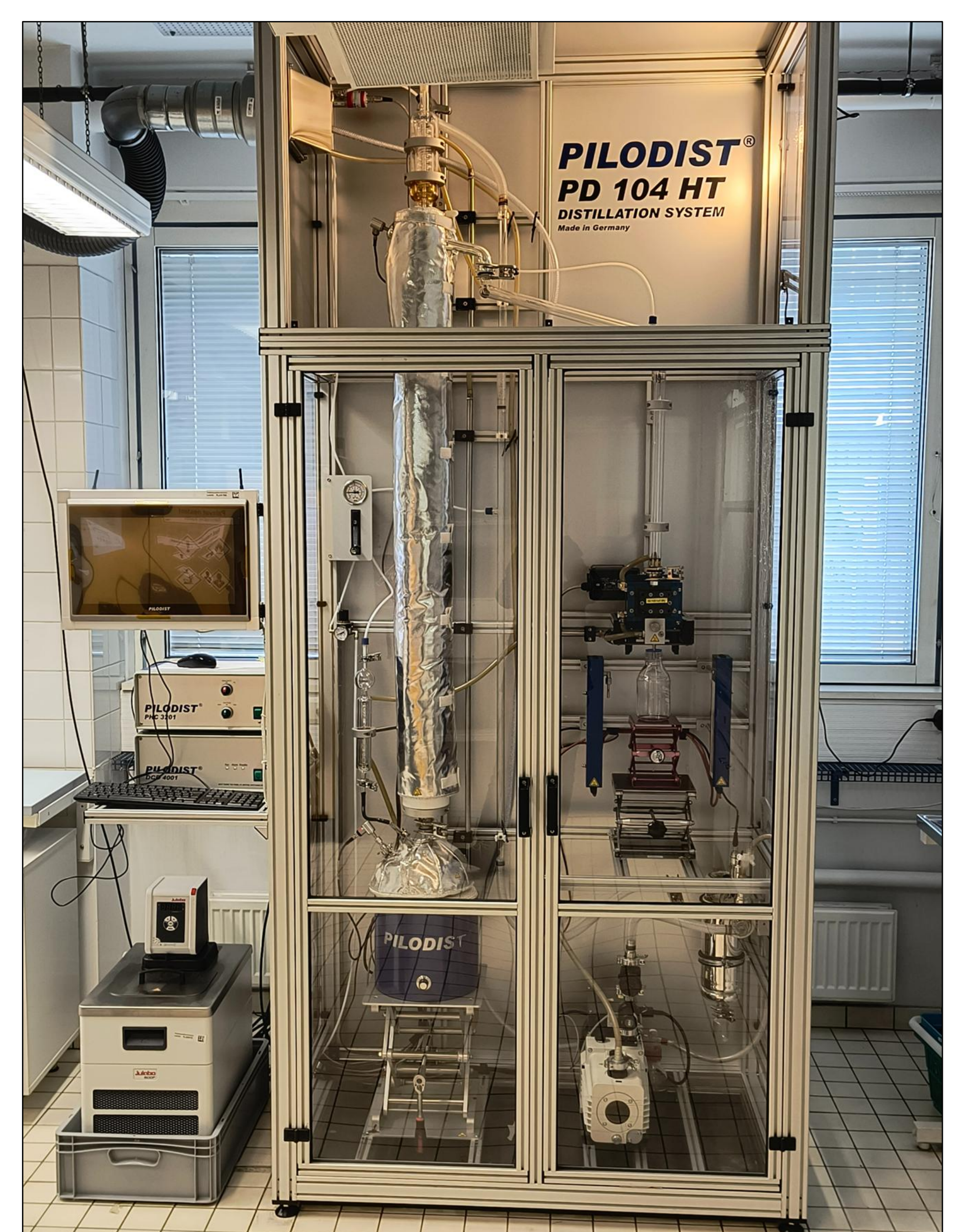
- Batch distillation system
- 2-6 L batch
- One distillate fraction line
- Manual distillation
- Automated data collection
- Materials: Borosilicate glass 3.3, stainless steel, PTFE, Viton, FEP, PEEK
- Column packing: wire mesh (up to 30 theoretical plates)

Bench scale unit PD256PB

- PULSE-DIST system
- 50 L batch
- Capacity (2:1 ratio): Up to 30 L/h
- 6 separate distillate fraction lines
- Manual and automated distillation
- Automated data collection
- Materials: Borosilicate glass 3.3, stainless steel, PTFE (Teflon), PVDF, FEP, FFKM (Kalrez)
- Column packing: wire mesh (5-30 theoretical plates)



Bench scale unit in Espoo



Laboratory scale unit in Espoo