

PILODIST®

laboratory & process technology

PETRODIST® 400 CC



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COMBINED

FULLY AUTOMATIC DISTILLATION SYSTEM

PETRODIST® 400 CC

Processor controlled combined crude oil distillation system for fully automatic operation according to ASTM D-2892 (TBP) and ASTM D-5236 (Potstill). PETRODIST 400 CC is a combination of the following systems:

- PETRODIST 100 CC – (ASTM D-2892)
- PETRODIST 200 CC – (ASTM D-5236)

The combination system provides a central vacuum supply, thermostat and computer control and evaluation station for alternative use of either of the two distillation systems. System provides Windows(R) -based software with fully automatic data acquisition and analysis as well as LIMS connection. Both systems provide weight measurement as well as volume measurement.

The systems can be operated alternatively in fully automatic, uninterrupted and unattended mode.

The data evaluation software provides also a combined TBP-curve for both systems.

Compact design with control system and safety items for unattended operation. No operator intervention and no intermediate stops are required.

All necessary accessories will be supplied together with the turn-key system. The installation requires water, nitrogen, compressed air and electricity.

The optionally quoted accessories will enable the user to run both systems simultaneously.

1. Distillation acc. to ASTM D-2892 (PETRODIST 100 CC)

PETRODIST® 100 CC



Picture represents new version of PETRODIST 100 CC – 50 L with optional dehydration

1.PETRODIST® 100 CC **(new edition 2018)**

Turn-key processor controlled crude oil distillation system for fully automatic unattended operation exactly conforming to ASTM D-2892 (TBP), latest revision.

The system is computer controlled and designed for fully automatic operation throughout the different distillation runs at different pressure levels which includes:

- debutanization
- 1. run at atmospheric pressure
- 2. run at vacuum 100 Torr
- 3. run at vacuum 10 Torr
- 4. run at vacuum 2 Torr

These different distillation runs are performed automatically without any intervention of the operator. The system automatically manages the changes of all involved operation pressure changes from atmospheric to the different vacuum conditions. The duration of the intermediate cooling procedure in between the different runs is minimized by an intensive cooling of the flask charge.

The system measures online the volume of each fraction before each cut is being discharged into an automatic fraction collector with 20 receivers. The fraction collector is equipped with an inbuilt electronic balance to measure the weight of each fraction. By replacing filled receivers even during operation the system can handle up to 80 cuts for the distillation of one sample. The receiver change is performed according to pre-selected cut temperatures or when a receiver is filled up to continue the cut sampling in the next receiver (to avoid overfilling of the receiver).

After the distillation the operator needs to weigh the gas trap as well as the flask residue by the external balance (part of delivery), the weights are automatically taken by the system and as a result the final data evaluation and TBP-curves in weight-% and volume-% are printed out and can be stored.

A data station for overriding parameter input as well as for display and print-out of all operation parameters, distillation results and TBP-curve, as well as an external balance is included.

The system is modularly constructed and provides the possibility to allow several options like online density measurement, water removal (prior to the start of the distillation), stainless steel flasks, gas detector, hydrogen sulphide-alarm and trap as well as a complete sheathing of the system. The TBP-curve will then be printed out in weight and volume percent.

The system requires for operation water, nitrogen, compressed air and electricity to be supplied by lab infrastructure.

Key features:

- Computer controlled fully automatic process without any interruption
- PILODIST IP65 control panel with 15,6" touch screen mounted at the side of framework or alternatively stand alone as table top unit
- continuous monitoring of distillation process and data storage
- boil-up rate controlled by differential temperature, differential pressure, power regulation and distillate volume
- all distillation parameters can exactly and reproducibly be selected
- fraction and receiver changes are performed acc. to preselected cut temp.
- fully automatic product discharge into sealed final receivers without any influence on the distillation process
- automatic debutanization process
- adiabatic operation due to column heating jacket
- reduced cooling periods between runs by using a quench cooler and nitrogen
- cooling down process after each run automatically
- precise vacuum control
- electrical lifting platform for flask
- evaluation of the "final data" and printout of TBP-curve in Microsoft Excel
- several safety and alarm options available
- automatic online volume **and** automatic **weight** measuring
- all distillation data (results) will be stored even in case of an alarm, followed by automatic shut down
- optional automatic online density measurement
- optional water removal (dehydration)
- various further options available to customize the system

Technical Data:

Flask Size:	various volumes available
Flask Charge:	Up to 60 % of flask charge
Receiver capacity:	20 x 2000 ml
Operation Temperature:	Up to 350° C
Operation Pressure:	Vacuum down to 1 Torr
Final Cut Temperature:	Up to 420° C AET
Power Consumption:	4500 W (without options)
Mains Supply:	230/400 V 3-phase, 5-wire, 50 Hz (60 Hz upon request) power converter for other voltages are optionally available

2. Distillation acc. to ASTM D-5236 (PETRODIST 200 CC)

PETRODIST® 200 CC



PETRODIST® 200 CC

(new edition 2018)

Processor controlled crude oil distillation system for fully automatic operation according to ASTM D-5236 (Standard Test Method for Distillation of Heavy Hydrocarbon Mixtures, Vacuum Potstill Method).

The system is designed for unattended operation (during the distillation), the safety devices are designed accordingly. Data station for data input as well as for display and print out of all operation parameters, distillation results and distillation curve.

The distillation ensues automatically from the start to the pre-selected or detected end point. The unit does not contain any intermediate receiver i.e.: to avoid reblend of the distillate. The weight of each fraction is automatically taken by an integrated electronic balance.

The volume calculation is expressed as percentage corresponding to the weight and the density of the flask charge or total recovery. The distillation curve is printed out in weight and volume percent.

The fraction changes are carried out automatically, alternatively according to a pre-selected boiling temperature or when the receivers are filled up. The vacuum-tight fraction collector contains 20 receivers with a capacity related to the flask size. The boil up rate is controlled according to a pre-selected distillation rate in ml/min. An accurate vacuum control guarantees the required stability of the distillation pressure.

All necessary accessories will be supplied together with the system. The installation requires water, nitrogen and electricity.

Technical Data:

Flask Size:	various volumes available
Flask Charge:	Up to 60% of flask volume
Material	Borosilicate glass 3.3
Receiver Capacity:	20 x 1000 ml
Operation Temperature:	Up to 400° C (750° F)
Operation Pressure:	Vacuum down to 0.1 Torr
Final Cut Temperature:	Up to 565° C AET (1050° F)
Power Consumption:	5000 W
Max. Ambient Temperature:	25° C
Mains Supply:	230/400 V 3-phase, 5-wire, 50 Hz (60 Hz upon request) power converter for other voltages are optionally available