

Extraction solid-liquid



EXPERIMENTAL CAPABILITIES

- Influence of the type of solvent
- Influence of the residence time.
- Influence of the operating principle.
- Study of the hydrodynamics of the column.
- Study of the separation of a binary or complex solution.
- Material balance.
- Calculation of the exchange coefficients of matter.
- Thermal balances.
- Determination of the number of theoretical plates (Mc CABE and THIELE, PONCHON and SAVARIT)
- Determination of the number of transfer units

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Dans le cadre de l'amélioration permanente de nos produits, ce descriptif technique est susceptible d'être modifié sans préavis
As part of the continuous improvement of our products, this technical specification may be modified without previous notifying

Operating principle

The solid-liquid extraction is a semi-continuous process, coupling a distillation with a soxhlet type cartridge containing the solid product impregnated with an active ingredient (solute) to be extracted by dissolution in a hot solvent.

The distillation column generates solvent vapors which are condensed, this pure hot solvent feeds the cartridge containing the inert solid and the solute.

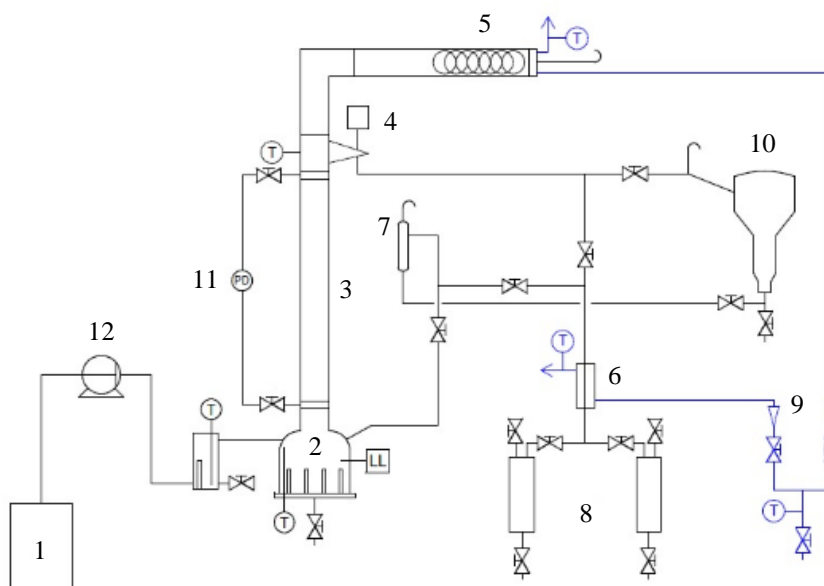
When the cartridge is full, the solution obtained (solvent and solute) empties automatically by siphoning (leaching) and then returns to the boiler where the solvent is again brought to the boil. The leaching can also be carried out by continuous passage of the solvent or by successive manual draining. The solvent can also be fed in a single "pass" for the infusion and the resulting extract is manually withdrawn.

The robust design of this device makes it suitable for use in schools.

The equipment is set up on an Anodized aluminium frame on casters wheels. This gives it great strength and a flexibility of integration into your premises.

The manufacture of this equipment complies with the European standard for machinery manufacturing.

Illustrations



Technical specifications

1. A feed tank

- Material: polyethylene
- Volume: 20 L

2. Boiler

- Material: borosilicate glass
- Volume: 5 L
- Heating cartridges $P_{total} = 3$ kW
- Pt 100 temperature probe
- Garbage truck
- Level sensor to cut the heater

3. Distillation column

- Material: borosilicate glass
- DN: 50 mm, Height: 1000 mm
- Rings of Rashig lining

4. Electromagnetic reflux head

- DN: 50 mm
- Pt100 temperature sensor
- Programmable timer from touch screen

5. Stainless steel condenser

- $S = 0.045$ m²

6. Distillate cooling exchanger

- Material: borosilicate glass

7. Extraction leg borosilicate glass

8. Two graduated recovery recipes

- Material: borosilicate glass
- Volume: 1 L

9. Two float flowmeters

- Scale: 30 - 300 L / h

10. Soxhlet extraction cartridge

- Material: borosilicate glass
- Lid with quick opening

11. Differential pressure sensor

12. Peristaltic pump

13. It includes an electrical cabinet with main switch and differential circuit breaker.

GPCEX1



Services required

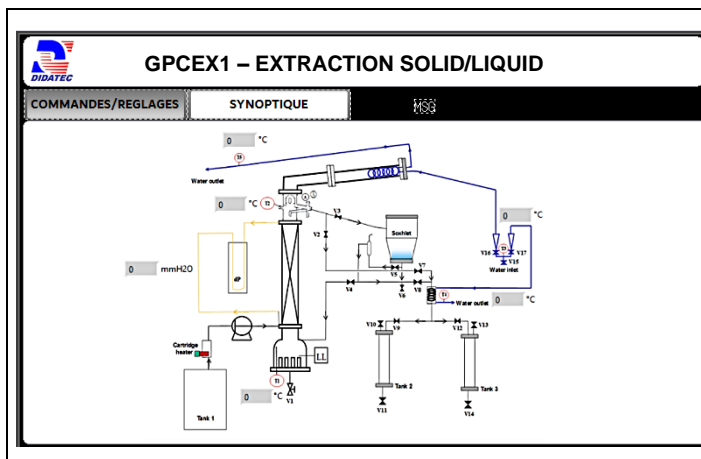
- Electrical supply : 230 Vac – 50 Hz – 20 A
- Electrical network: 1 phase(s) + Neutral + Earth.
- Water supply : 15 L/min – 2 bars
- Water drain : on the floor
- Dimensions: (LxWxH mm): 1850 x 800 x 2150
- weight (Kg): 200

Note : if the equipment installation is operated by our staff, all supplies and exhaust connections required must stand at less than 2m from the machine

Documentation

- User's manual
- Technical documentation of the components
- Lab exercises
- Wiring diagram
- Hydraulic diagram
- Software
- Certificate of conformity CE

Included with the installation: Touch screen



Control of the different actuators and display of the evolution of the process measurements:

- T1: boiler temperature**
- T2: reflux head temperature**
- T3: water inlet temperature of the two exchangers**
- T4: water outlet temperature of the cooling exchanger distillate**
- T5: condenser water outlet temperature**

Supervision: Measurements and curve plotting

The bench is also originally equipped with supervision and parameterization software. The connection to the PC is made by Wi-Fi. The software is divided into two parts:

SYNOPTIC:

In this window we find the synoptic of the machine with the location of the different measurements of the process and their values.

GRAPHIC:

We find in this graphic window, the possibility of drawing measurement curves according to time by selecting the desired quantities.

