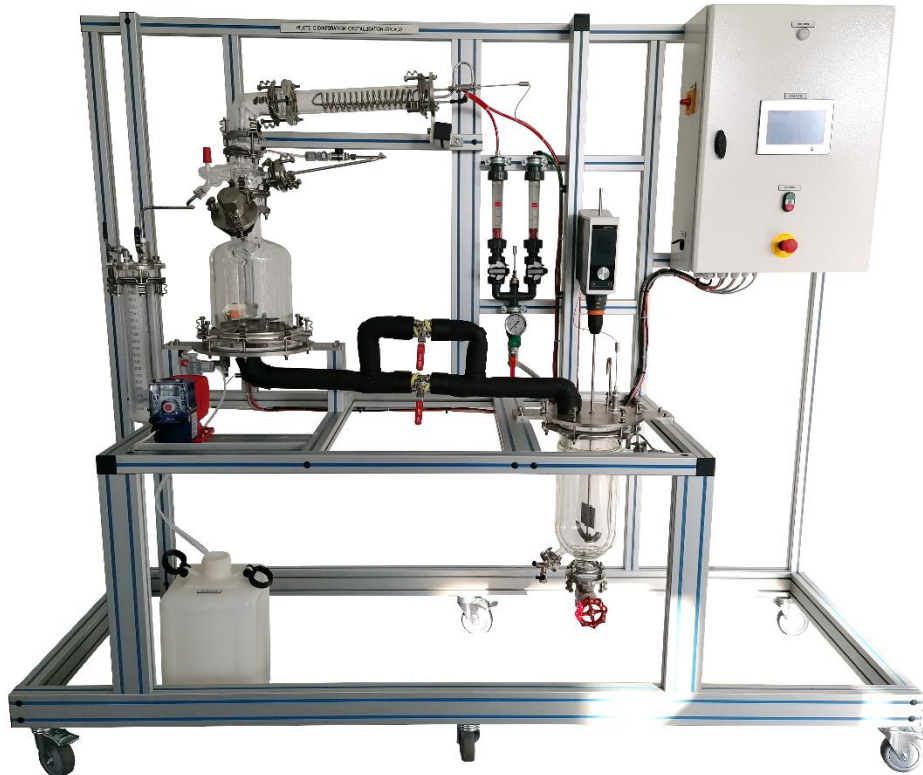


Evaporation-crystallization pilot



Experimental capabilities

- Study of the batch process
- Thermal and material balances
- Study of the crystallization equilibrium
- Effect of agitation and of temperature

Operating principle

The GPCVC0 bench allows the study of crystallization by evaporation.

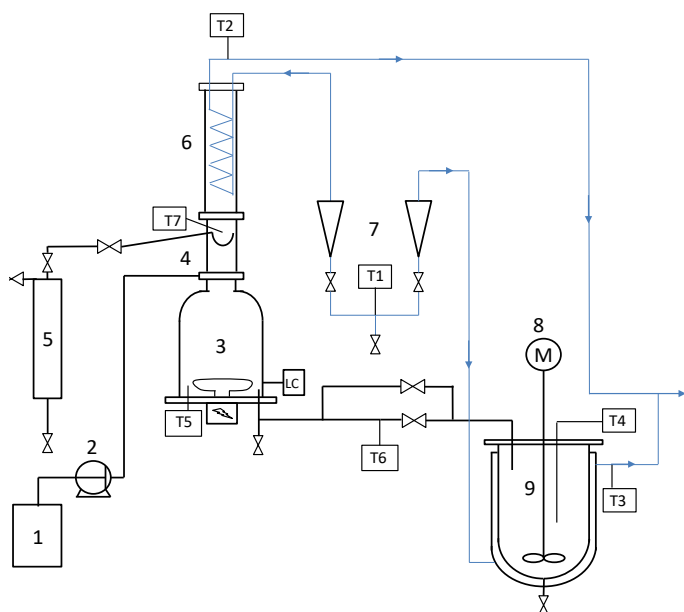
An aqueous solution of copper sulfate is introduced into a boiler and then boiled to increase its concentration of copper sulfate. Then the solution is sent into the crystallizer, which is colder, will transform the solution into crystals.

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



The bench is installed on an aluminum profile structure equipped with four directional brake casters. It has an electrical box with general power disconnecter and 30mA differential circuit breaker.

1. Supply tank

- Material: polyethylene
- Volume: 20 L with drain valve

2. Feeding pump

Peristaltic pump

3. Boiler 5L

- Material: borosilicate glass
- Electric heating 2000W
- Measure of power
- Adjust of the heating by setpoint with the touch screen
- Level sensor for cutting heat

4. Manual reflux head

- DN: 50 mm
- Temperature probe Pt 100
- Manual needle valve

5. Graduated Receiver

- Material: borosilicate glass
- Volume: 2 L

6. Condenser

- Material: borosilicate glass
- Stainless steel coil ²

7. Float flowmeters

- Scale: 30-300 l/h

8. Agitator

- Variable speed: 10-2000 rpm

9. Crystallizer

- Material: borosilicate glass
- Equipped with a double jacket for cooling
- Adjustable cooling and stirring system
- Boiler-crystallizer connection is equipped with a 120 W pipe heater

10. 7 Temperatures probes

Services required

Documentation

- Electrical supply: 230 VAC – 50 Hz – 20 A
- Electrical network: 1 phase + Neutral + Earth
- Water supply: 15 L/min – 3 bars
- Water drain: on the floor
- Dimensions: (LxWxH mm): 2245 x 800 x 1950
- weight (Kg): 200

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

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

GPC VC0



Touch screen display

Display of the evolution of measures process

- T1: Water inlet temperature**
- T2: Water condenser outlet temperature**
- T3: Water crystallizer outlet temperature**
- T4: Crystallizer temperature**
- T5: Boiler temperature**
- T6: Junction line temperature**
- T7: Reflux head temperature**

Measurement of heating power
Measurement of the power of the line junction

GPCVC0 - PILOTE EVAPORATION / CRISTALLISATION

COMMANDES / REGLAGES SYNOPTIQUE

123.4 °C (T1), 123.4 °C (T2), 123.4 °C (T3), 123.4 °C (T4), 123.4 °C (T5), 123.4 °C (T6), 123.4 °C (T7)

PUISSANCE RECHAUFFEUR: 1234 W
 PUISSANCE BOUILLEUR: 1234 W

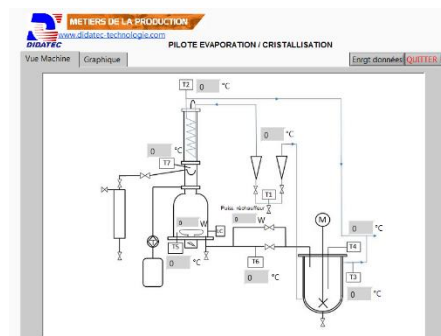
Measurement of heating power
 Measurement of the power of the line junction

Supervision: Parameter setting, Plot of curve

The bench is also equipped as standard with a monitoring and configuration software. The connection towards the PC is made via Wi-Fi. The software is divided into two parts:

BLOCK DIAGRAM:

One finds in this window the block diagram of the machine with the location of various measures of the process and their values.



GRAPH :

Included in this graph window, the possibility of drawing the measurements curves as a function of time by selecting the desired quantities.

