

GPC FL2

Study of fluidization or drying in fluidized bed: gas-solid

DESCRIPTION

- The unit is delivered complete with instrumentation, technical documentation, and instructions.
- This unit allows one to monitor a drying aluminum powder with known humidity in a fluidized bed.
- The frame equipped with wheels makes it easy to move the unit.
- The chamber is made from borosilicate glass allowing observation of the process. (The option to use stainless steel for this container is also available.)
- This unit is designed for various levels and fields of study.
- The testing chamber consists of transparent materials and is easily opened to change the material.



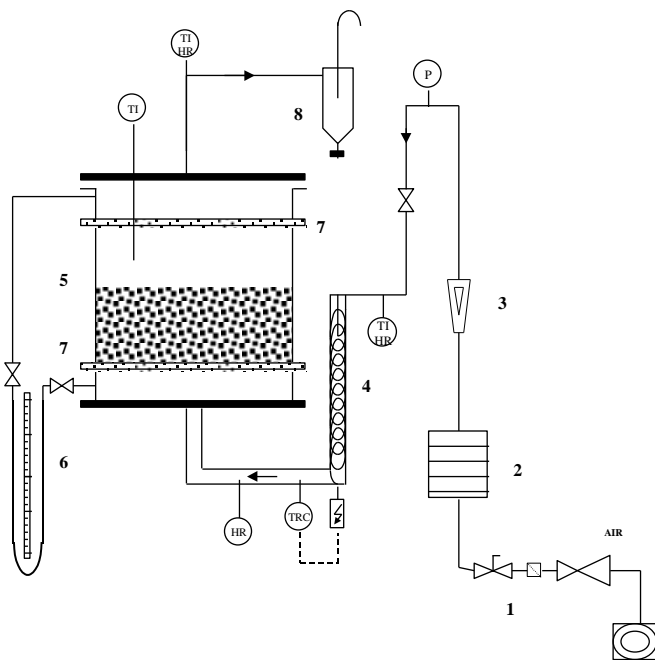
SUGGESTED APPLICATIONS

- Study of the behavior of various products in a fluidized bed.
- Study of the rate of air flow and the pressure in a fixed or fluidized product.
- Study of the heat transmission coefficient as a function of the superficial speed, the depth of immersion, and the size of the particles.

About the following of the drying operation:

- Mass and heat balances
- Using the humid air diagram (Mollier)
- Determining head losses
- Determining the rate of fluidization: kinetic computation

GPC FL2



1 & 3- Air network

- Linear filter
- Expansion valve
- Adjusting needle gate
- Two air flow rate measurement – small and large scale
- Air exhausting filter
- PVC expansion valve 0-3 bar (45 psi) with 1 upstream filter

2- Air drier and desoiler

- Drying by adsorption
- Cartridge of aluminum with activated aluminum
- cartridge - silicagel

4- Air heater

- Power 2000 W to 150 °C
- Minimal flow rate 120 kg/h
- Adjustable safety thermostat
- Stainless steel heating elements

5- Testing tank

- Borosilicate glass or 304 L stainless steel
- Ø 300 mm
- Capacity of the product: 5 L
- Air distribution chamber on bellowed part
- Air distributor
- Easy opening

6- Differential manometer

- Measurement of the pressure losses between the inlet and the outlet of the fluidization tank

7- Damming filter for particles

8- Solid-gas separating cyclone

- Borosilicate glass

9- Air compressor (option)

- Without oil
- Capacity 10 L
- 48 L/ min at 7 bar (100 psi)
- 270 W

Instruments

- Measurement of the pressure in the tank – adjustable in height
- Measurement of the temperatures and the air humidity at the inlet and outlet of the tank
- Adjustment of the temperature at the outlet of the heating element as a function of its power
- 4 measurements of relative humidity at the inlets and outlets of the heating element and the tank
- PID regulator for the air heating
- 1 PT 100 probe at the outlet of the heater

RUNNING PRINCIPLE

- After an expansion of the compressed air 1, the air is dried across a line cartridge 2 in order to improve future drying
- Then the air is directed into an air heater 4: the outlet temperature is adjusted and the inlet and outlet humidity are controlled
- The air comes (hot and dried) into the belt 5, it fluidizes the humid aluminum and dries it
- The head losses as well as the inlet and outlet humidity of the tank 5 are controlled
- The air leaves cooled and runs into a cyclone in order to return to the atmosphere, without dust
- With all the transducers of the circuit, a heat and mass balance can be done, the humid air diagram will be used, the efficiency of the drying chamber will be computed...

UTILITIES

Electricity : 380 VAC Three-phased 50/60 Hz - 0.3 kW
Compressed air: 12 m³/h at 1 bar (14.5 psi) minimum

DIMENSIONS AND WEIGHT

Length: 1200 mm
Width: 450 mm
Height: 1500 mm
Weight: 85 kg