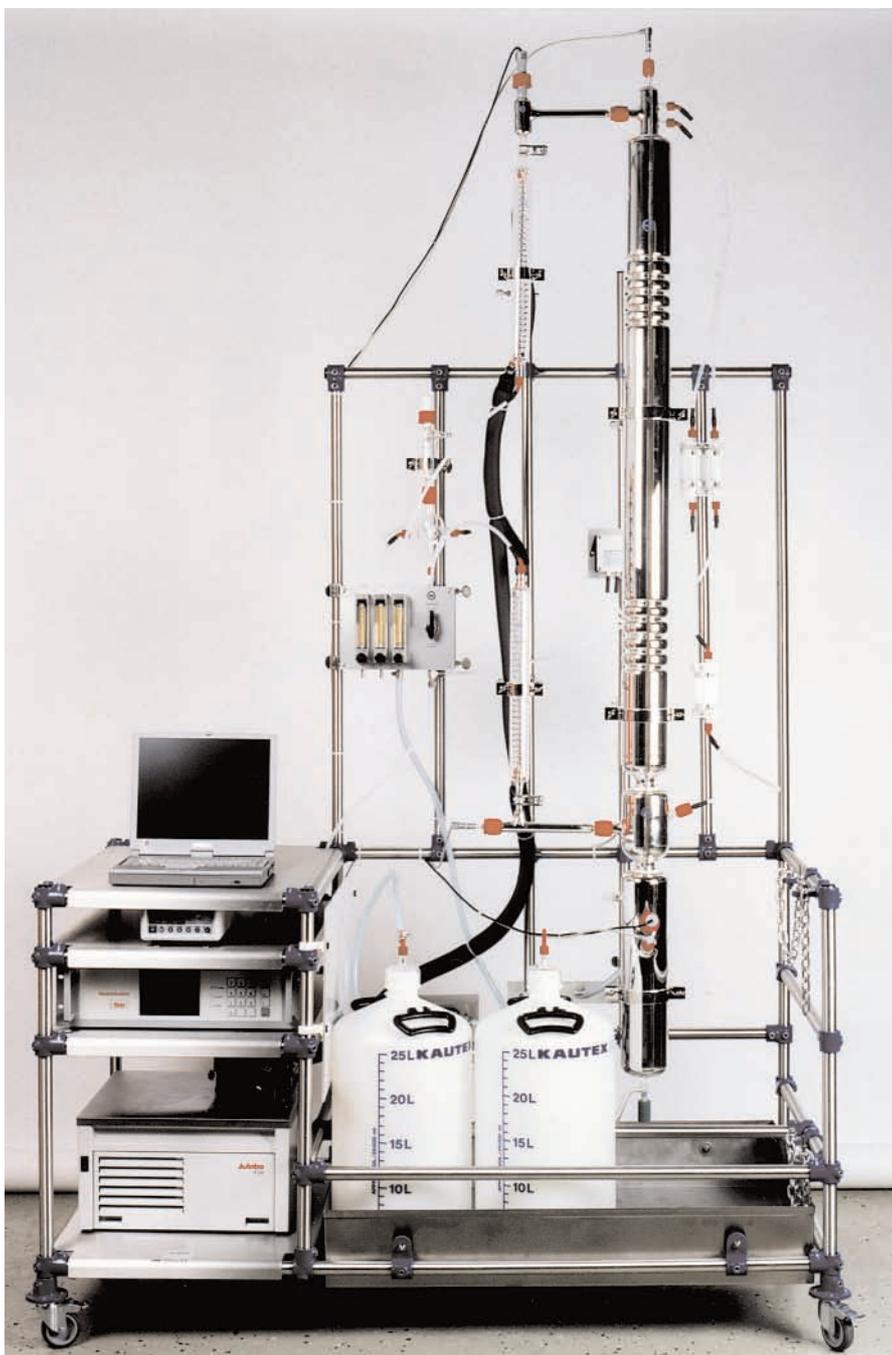


LABORATORY UNIT FOR GAS ABSORPTION

GENERAL

Absorption is the intake of gases in a washing liquid by physical solving or reversible chemical reaction. Depending on whether the gas by physical solving or by chemical binding is bound it is a physical or a chemical absorption. When a mixture CO_2/air gets in touch with water, the CO_2 gas is absorbed in the water but the air is not solved. The absorption capacity of the water for carbon dioxide depends on the influence time, the pressure and the temperature. This unit provides the facility the carbon dioxide to wash out of the carbon dioxide/air mixture. Due to the ratio of the both components determining the separating effect, the solvent flow and the gas flow are aimed varied.



Pict. 1
Laboratory unit for gas absorption

The unit offers the following advantages:

- Due to the slight construction height, use in almost all laboratories is possible.
- All media-touching parts are made of Borosilicate glass 3.3 or PTFE.
- The single components of the unit are connected with standardised connectors.

Construction of the Laboratory unit for gas absorption

The core of the unit is the absorption column consisting of the absorption tube (K), a gas inlet (G) and a siphon part (S). The mentioned parts are connected with conical ground joints NS 45/40 and fitted with a silver coated high vacuum jacket. The absorption column has an inner diameter DN 50 and a length of approx. 1400 mm. The inlet component (E) seats on the upper end of the column and at the lower end seats the siphon part with the drain valve.

The both gases air and CO₂ are introduced via the connections 1 and 2, adjusted with the valves (V2) and (V3) and mixed together in the mixer (M) then fed over the heat exchanger into the absorption column which is filled with Raschig rings 4/4 mm. The absorption liquid water is directed from the top towards the gas in counter flow from vessel (B1) with the pump (P) and over a flow meter (Q1) and the heat exchanger (W1).

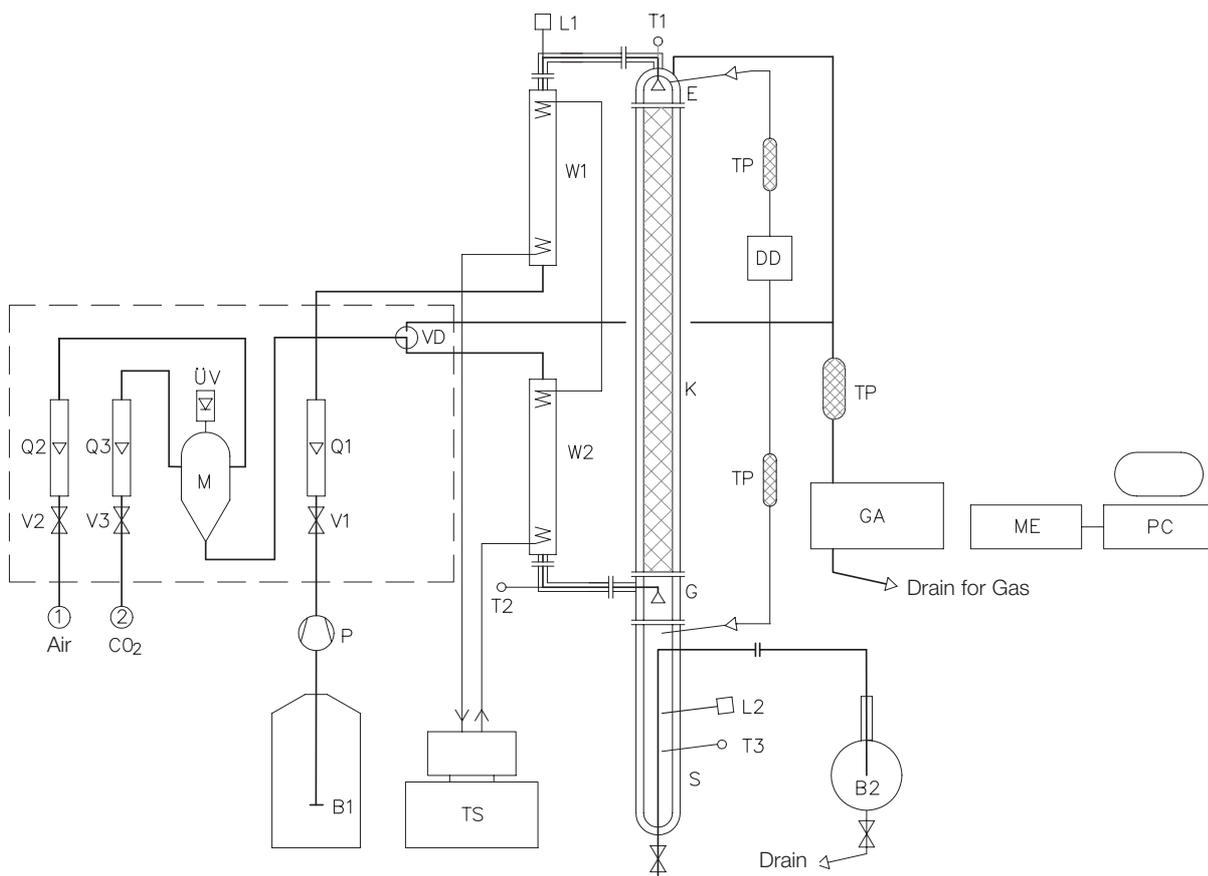
The both heat exchanger (W1) and (W2) are connected with a thermostat (TS). Through this is reached that absorption gas

and absorption liquid are fed with the same temperature into the absorption column. The issued gas is directed for analysis into a gas analyser (GA). The inlet gas can be also analysed by switching of the three way stopcock (VD). Following data can be captured via a data logger in the unit:

- Temperature at the water inlet (T1)
- Temperature at the gas inlet (T2)
- Temperature in the siphon (T3)
- Electric conductivity at the water inlet (L1)
- Electric conductivity in the siphon (L2)
- Differential pressure above the column (DD)
- Gas concentration (GA)

The measuring can be analysed at the PC with a suitable software.

We will be pleased to submit you our detailed offer.



Legend:

B1,B2 - Vessels
 DD - Differential pressure sensor
 E - Inlet part
 G - Gas inlet part
 GA - Gas analyser
 K - Absorption tube

L1,L2 - Conductivity sensor
 M - Mixer
 ME - Data logger
 P - Pump
 Q1 - Flow rate meter
 Q2,Q3 - Rotameter
 S - Siphon part

TP - Cartridge
 TS - Thermostat
 T1-T3 - Pt 100-thermometer
 ÜV - Overpressure valve
 VD - Three way stopcock
 V1-V3 - Valves
 W1,W2 - Heat exchanger

Pict. 2 schematic description