

1. General

Didacta's rotating drum continuous filtration plant, IC26D (Code 991800), allows to study and carry out experiments on a particular type of filtration system.

Filtration is one of the relevant methods for separating solid particles in suspension from a liquid.

The solution with solid particles in suspension goes through a baffle, where a difference of pressure is impressed so as to force the liquid to pass. As a result, the solid particles will deposit onto the baffle surface.

In some performances the baffle is just a porous membrane, retaining the solid particles which form subsequently a kind of porous wall where the liquid passes through.

The liquid-solid solution can flow by:

- centrifugal force
- gravity
- pressure gradient.

The unit is supplied with manuals which describe all parts of the plant, the installation and utilisation procedures, as well as many exercises with the relative results.

2. Composition

- 12 sector rotary drum, made of stainless steel, 500 mm diameter, variable speed;
- 200 l capacity feed tank (plastic material);
- electric stirrer for feed tank, 0.37 kW;
- electrically operated feed pump, 0,7 kW for pumping thick, abrasive and sandy fluids;
- filtered product circulation pump of plastic material, electrically operated, 0.37 kW;
- filtered product tank of plastic material, 200 l capacity;
- electrically operated vacuum pump: 1,45 kW, 100 to 650 mm Hg vacuum, 18 to 7 m³/h flow rate;
- 60 l capacity mud collection tank;
- on-off valves;

- electrical control board:
 - automatic circuit breaker;
 - key operated selector;
 - emergency push-button;
 - service socket;
 - overload cut out switches for pump starting;
 - drum speed regulator;
 - voltage warning lamps;
 - synoptic.

3. Description

The IC26D teaching unit consists of a cylindrical drum resting at its ends on two supports and rotating by means of a suitable drive. The drum reinforcement is formed by boards parallel to the axis so that it is subdivided into sectors or cells; each sector has one or more suction tubes connected to the central part of the drum. The assembly rotates slowly around its axis and is nearly half immersed in a tank containing the solution to be filtered. During operations, each sector behaves independently of the others and each tube departing from them connects to one of the ends of the drum shaft housing an automatic control unit and remains in suction for almost a whole turn. While the single sector passes under the liquid surface, vacuum is produced by a special pump. A knife for scraping is used to removed the “cake” of filtered material at the very moment it reaches the fixed thickness. The plant is completely self sufficient.

4. Experiments

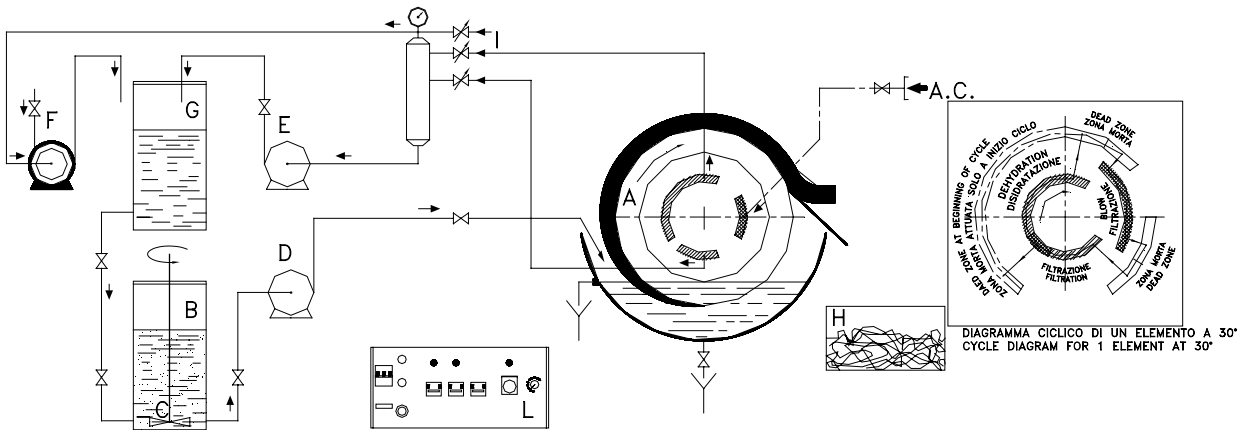
- Effect of vacuum variation
- Effect of rpm variation
- Effect of knife distance variation
- Effect of different types of solution
- Effect of air flow variation

5. Required services

- Electric supply: 380/440 V three-phase, 50/60 Hz, max power input 3 kW
- Water supply: 600 l/h
- Compressed air feeding: 3 bar, 1 m³/h

6. Weight and dimensions

- Dimensions: 2000 x 1800 x 1700 h mm
- Net weight: 320 kg



General Synoptic

- A. Rotary drum
- B. Feed tank
- C. Stirrer
- D. Feed pump
- E. Circulation pump
- F. Vacuum pump
- G. Filtered product tank
- H. Mud collection tank
- I. On-off valves
- L. Electrical control Board

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