Order Code - 32107
Flow-Through Particle Layers Apparatus

Features:

- Experiments in the fundamentals of fluid mechanics on particle layers
- Flow-through fixed beds
- Flow-through fluidized beds
- Pressure loss in fixed beds and fluidized beds

Flow-through particle layers are widely encountered in process engineering. In reactors, fixed and fluidized beds are subjected to through-flow by liquids and gases. The separation of solids from suspensions by cake and depth filtration is another area of application.

With Tesca Flow-Through Particle Layers Apparatus the fluid mechanic principles involved in flow through fixed beds and fluidized beds can be investigated. For this purpose, a fillable test tank made of glass is provided, through which water can be made to flow from both ends. A sintered-metal plate serves as the base for bulk solids.
Water from the laboratory water connection flows into the test tank. To investigate flow through fixed beds, the water enters the test tank from the top. It flows through the fixed bed and the sintered-metal plate and passes by way of a distributor to the outlet.
The experimental setup can be modified by means of quick-release couplings. This also enables the flow through the test tank to be reversed and fluidized beds to be investigated. The water flows upwards through the porous sintered-metal plate and the fixed bed. If the velocity of the water is less than the so-called fluidization velocity, the flow merely passes through the fixed bed. At higher velocities, a fluidized bed is formed. The water flows from the head of the test tank into an expansion tank. From there it flows into the outlet.
Regardless of the specific setup, the flow rate is adjusted by a valve and indicated by a flow meter. To determine the pressure loss via the fixed bed or fluidized bed, two manometers with different measuring ranges are provided. The desired manometer is selected by way of valves.

Specifications:

1. Investigation of the properties of fixed and fluidized beds subjected to liquid flow
2. Glass test tank with sintered filter medium on its base
3. Test tank removable for filling
4. Downward flow to investigate fixed beds
5. Upward flow to investigate fluidized beds
6. Flowmeter with valve for adjustment
7. 2 manometers with different measuring ranges to measure pressure loss through the test tank
8. Steel rule to measure the height of the fixed or fluidized bed

Note: Specifications are subject to change.

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Technical Specifications:

Test tanks
- Length: 510mm
- Inside diameter: approx. 37mm
- Material: DURAN glass

Filter medium
- Thickness: 2mm
- Material: sintered metal

Expansion tank
- ▪Capacity: approx. 4500mL
- ▪Material: PVC

Measuring ranges
- Flow rate: 60…820mL/min
- Tube manometers: 2x 0…500mmWC
- Manometer: 0…250mbar
- Steel rule: 10…500mm

Requirements:

- Mains Power 220 – 240V @ 50Hz, 1Ph

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