Analysis of any fluid flow problem depends upon the laminar, transitional or turbulent nature of the fluid flow. Visualization and understanding of the laminar, transitional and turbulent nature of flows is important for students of fluid mechanics, hydraulics and related areas in science and technology.

Tesca Osborne Reynolds Demonstration Apparatus is a benchtop flow visualization unit and has been designed to demonstrate the laminar, transitional and turbulent flows. The apparatus consists of a vertical flow visualization glass pipe with a bell mouth entry through which water flows with minimum flow disturbances. The laminar, transitional and turbulent flows can be obtained by varying the water flow rate using the membrane type flow control valve fixed at the exit of the flow visualization pipe. Water flow rate and hence the flow velocity is measured by the volumetric measuring tank (of the hydraulic bench). Water is supplied to the flow visualization pipe from the supply tank at a constant head. The supply tank consists of glass beads to reduce flow disturbances. Flow patterns are visualized using dye injection through a needle valve. The dye injection rate can be controlled and adjusted to improve the quality of flow patterns. The complete unit is manufactured from corrosion resistant materials. The 32096 Hydraulic Bench or any other standard hydraulic bench models can be used to supply water.

Bell Mouth Entry

Note: Specifications are subject to change.

Tesca Technologies Pvt. Ltd.
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Near Bombay Hospital, Vidhani Circle, Jaipur-302022, Rajasthan, India,
Tel: +91-141-2771791 / 2771792; Email: info@tesca.in, tesca.technologies@gmail.com
Website: www.tescaglobal.com

Option:

Computer based learning software is included to enable students understand and conduct experiments, tabulate results and plot graphs. The Osborne Reynolds Demonstration Apparatus is an important experimental set up for any Fluid Mechanics and Hydraulics Engineering Laboratory of an educational institution.

Experiments

1. Dye flow visualization of laminar, transitional and turbulent flows.
2. Study of change of flow pattern from laminar to turbulent type as a function of Reynolds number.
3. Calculation of critical velocities and critical Reynolds numbers.
4. Study of pipe flows and related Reynolds number correlations.
5. Correlation of Reynolds number and the nature of flow and comparison with the data avail able in the literature.

Important Specifications:

1. Flow visualization pipe, glass, 10mm internal diameter, 700mm long with membrane type flow control valve at exit.
2. Supply tank, 4 liters capacity, with glass beads for flow improvement and bell mouth at the exit.
3. Dye reservoir and injector, 0.45 liter capacity, with needle valve at exit.

Options

A) Interactive Computer Aided Instruction Software System

B) Horizontal type Osborne Reynolds Demonstration Apparatus available.

C) A self-contained unit of Osborne Reynolds Demonstration Apparatus mounted on a mobile platform with a flow controlled closed circuit water circulation unit consisting of centrifugal pump, flow meter, corrosion resistant sheet metal measuring tank and a sump tank will be supplied on request.

Services Required:

1. Water Supply.
2. Electrical Supply, 240 V, single-phase, 50 Hz.

Overall Dimensions

Height: 1.20m, Width: 0.45m, Length: 0.45m.

Instruction Materials

The manual describing the theoretical and practical aspects of the apparatus, operation, analysis of results, and sample of results will be supplied with the equipment. In addition, one bag of glass beads and two bottles of dye will also be supplied.

Note: Specifications are subject to change.

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