SPEED POST

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SARDAR VALLABHBHAI NATIONAL INSTITUTE OF TECHNOLOGY, SURAT-395 007.

No. DoME/AFD Lab/4153/ 3153 /2021-22 Date: 7 /02/2022

To,
Institute Website

SPEED POST

18 FEB 2022

***SUB: - Enquiry for* experimental setups for Advanced Fluid Dynamics laboratory.**

Dear Sir,

You are requested to quote your prices for supply of stores listed overleaf. The quotations may be sent to the undersigned in a sealed envelope and subscribed as: "Quotation with reference to Enquiry No. DoME/AFD Lab/4153/ /2021-22 dtd: 7 /02/2022. Your quotation should reach the undersigned on or before **21/02/2022 at 5:00 pm.**

The quotations should be furnished with the following information.

1) The brand or make of each item should be specifically stated and wherever necessary, Complete set of specifications and dimensions should be given.
2) If asked, samples are accompany the quotations
3) Sales tax, General tax, Central Sales tax, Custom duty, Insurance charges, Packing and Forwarding charges, if not included in the prices quoted, should be clearly specified.
4) The period of validity of the quotation should be at least 45 Days. Offers subject to prior sale may please be avoided.
5) The delivery period is to be clearly mentioned in the quotation.
6) The mode of delivery of the stores may be mentioned. The delivery should be F.O.R. Surat or at the Institute.
7) All concessions available to an educational institution should be specified and also taken into account while quoting.
8) This Institute is located within the limits of S.M.C. & exempted from the paying of octroi duty on incoming goods from outside limits of S.M.C.
9) This Institute is registered with the dept. of scientific & industrial Research (DSIR) for the purpose of availing custom duty exemption & central excise duty exemption, and hence the certificate to this effect will be issued wherever it is necessary on demand.
10) Payment is normally made by cheque drawn on the S.V.N.I.T. Branch Office of State Bank of India, Surat-395007 within a period of thirty days from the date of receipt of stores.
11) Your specifications & terms- conditions should be as per the format attached, must be on your company letterhead & signed by an authorized person.
12) Offered quotation may be rejected if any ambiguity is found in offered specifications, terms & conditions supplied by party in specified tabular format.
13) The Director reserves the right to accept stores, which are not strictly in confirming with the specifications but otherwise, found suitable.

Yours faithfully,

07/02/22

Head, Mech. Engg. Dept

Specification

Sr. No.	Item Name
1	**OSBORNE REYNOLD'S APPARATUS** **Description** The Osborne Reynolds experiment is used to display laminar and turbulent flows. During the experiment it is possible to observe the transition from laminar to turbulent flow after a limiting velocity. The Reynolds number is used to assess whether a flow is laminar or turbulent. With this apparatus the streamlines during laminar or turbulent flow are displayed in colour with the aid of an injected contrast medium (ink). The experimental results can be used to determine the critical Reynolds number. The experimental unit consists of a transparent pipe section through which water flows, with flow-optimised inlet. A valve can be used to adjust the flow rate in the pipe section. Ink is injected into the flowing water. A layer of glass beads in the water tank ensures an even and low-turbulence flow. The experimental unit is positioned easily and securely on the work surface of the base module. The pump draws in water from the tank on the base module . The flow rate is determined volumetrically by flowing back into the measuring tank. **Learning objectives/experimentation** ▪ visualisation of laminar flow ▪ visualisation of the transition zone ▪ visualisation of turbulent flow ▪ determination of the critical Reynolds number **Specification** 1. visualisation of laminar and turbulent flow in the Osborne Reynolds experiment 2. water as flowing medium and ink as contrast medium 3. vertical glass pipe section 4. water tank with glass beads to stabilise the flow 5. flow rate in the pipe section can be adjusted via a valve 6. flow rate determined by base module for experiments in fluid mechanics 7. water supply using base module for experiments in fluid mechanics **Technical data** Water tank ▪ capacity. 2200mL Pipe section ▪ length: 675mm ▪ Ø, inner: 10mm Tank for ink capacity: approx. 250mL
2.	**METHODS OF FLOW MEASUREMENT** **Description** With this equipment students should be able to familiarize themselves with various methods for measuring flow in pipe system and apply them in practice. The experimental unit should contain different measuring instruments to determine the flow rate. These instruments should be designed with transparent case in order to visualize how they operate and function. The methods should include, for example rotameter, a Venturi nozzle or orifice plate flow meter and measuring nozzle. 6 tube manometers should be used to determine the pressure distribution in the venturi nozzle or the orifice plate flow meter and measuring nozzle. The total pressure is measured by a pitot tube. It should be compatible with the base module for experiments in fluid mechanic. **Learning objectives/experiments** ▪ Flow measurement with • Orifice plate flow meter and measuring. Nozzle • Venturi nozzle • Rotameter ▪ Pressure measurement with pitot tube ▪ Comparison of different instruments for flow measurement ▪ Determining the corresponding flow coefficients ▪ Calibrating measuring instruments **Technical data** Venturi nozzle: A=64 ...338mm² Angle at the inlet:10.5° Angle at the outlet:4° Orifice plate flow meter:Ø14mm Measuring nozzle: Ø18.5mm Rotameter, max. 1700L/h

	Measuring ranges ▪ Pressure: 6x0…390mmWC **Specification** 1. Different methods of flow rate measurement 2. Measuring instruments: orifice plate flow meter/measuring nozzle, venturi nozzle and rotameter 3. 6 tube manometers to determine the pressure distribution in venturi nozzle, orifice plate flow meter and measuring nozzle 4. measurement of the total pressure with pitot tube 5. flow rate determined by base module for experiments in fluid mechanics 6. water supply via base module or via laboratory supply
3.	**STABILITY OF FLOATING BODIES** **Learning objectives/experiments** study and determination of ▪ buoyancy, centre of buoyancy ▪ centre of gravity, metacentre, stability ▪ heel **Specifications** 1. investigating the stability of a floating body and determining the metacentre 2. transparent floating body with rectangular frame cross-section 3. one horizontally movable clamped weight for adjusting the heel 4. one vertically movable clamped weight for adjusting the centre of gravity 5. clinometer with scale for displaying the heel 6. other floating bodies with different shapes of frame available as accessories: **Technical data** Floating body ▪ LxWxH: 300x130x190mm ▪ mast height: 400mm Horizontal scale: 180mm Vertical scale: 400mm Height scale of the floating body: 120mm Clinometer scale: ±30° Weights ▪ floating body without clamped weights: approx. 2,7kg ▪ vertical clamped weight: 575g ▪ horizontal clamped weight: 196g Tank for water: 50L