



Tesca Venturi Air Scrubber System 32478 is used to demonstrate dust pollution control and the effect of liquid-to-gas ratio (L/G) on separation efficiency. The system comprises of a venturi tube, separation chamber, dust feeding system, water recirculation system and a variable speed air blower. The venturi tube is made of transparent and rigid plexi-glass for the observation of flow. A differential pressure transducer is used to measure pressure drop across the venturi. The cylindrical separation chamber is also made of transparent, rigid plexiglass with a diameter of 500 mm and height of 1.6 meter. At the side bottom of the separation chamber is a circular inlet which is connected to the outlet of the venturi. The chamber also houses a mist eliminator at the top which prevents water droplets from escaping the chamber.

A collecting plastic tank is provided to collect the mixture of dust and water at the bottom of the separating chamber. The water recirculation system comprises of a water tank, pump, flow meter, pressure gauge and pressure regulator. The stainless steel water tank is located below the separation chamber and supplies water to the pump. A filter is attached to the pump inlet to prevent dust and debris from damaging the pump.

The air blower is used to draw air at a maximum rate of 300 m³/hour through the separation chamber. The inlet air velocity can be adjusted by varying the air blower speed. The dust feeding system is used to simulate pollution in the air stream before entering the separation chamber.

The system's main frame is made of welded mild steel. The frame is epoxy-coated for aesthetics, durability and heat and corrosion resistance. A control panel is mounted on the steel frame as well to house all the electrical and electronic components.

Training Aims / Experiments List

- Understanding of air scrubber system.
- Understanding the working principles of air scrubber system.
- To demonstrate and simulate dust pollution control using a venturi scrubber.
- To study the effect of air velocity and water flow rate on separation efficiency.

Technical Specifications

Venturi tube

- Made of transparent rigid PVC for easy observation and durability
- Throat ID : 30 mm

Note: Specifications are subject to change.

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- Inlet & outlet ID : 100 mm
- Convergence angle : 10°; Divergence angle : 5°
- Tappings at inlet & outlet for pressure drop measurement

Separation chamber

- Made of transparent rigid plexiglass for easy observation and durability
- Cylinder ID : 500 mm; Height : 1.6 meter
- Tangentially connected to a circular inlet
- Mist eliminator at top made of stainless steel
- Plastic collecting tank at the bottom

Water recirculation system

- Stainless steel tank with a capacity of 60 L c/w level switch
- Centrifugal pump capable of delivering up to 25 LPM
- Flow meter 0 - 10 LPM

Air blower

- High pressure blower capable of delivering 300m³/hour @ 3000 rpm
- Able to withstand up to 20kPa static pressure
- Comes with inverter for regulating blower speed
- Instruments & accessories
- Venturi type air flow meter with differential pressure gauge. DP range : max 20kPa
- Feeding system made of stainless steel tank and flow regulating valve

Control Panel

- Epoxy coated steel box
- Water proof panel sticker
- Housing for electrical and electronic components

Optional accessories

- Digital indicators with selector switch (2 units)
- Differential pressure transmitters (3 units)
- Liquid flow meter (1 unit)
- Data acquisition system

Components List

- Epoxy coated steel frame.
- Clear plexiglass separating chamber.
- Clear plexiglass venturi tube.
- Stainless steel water tank.
- Centrifugal pump.
- Differential pressure gauge.
- Frequency inverter.
- Control panel.
- Plastic collecting tank.
- Air blower.
- Flow meter.
- Water filter.
- Stainless steel dust tank.

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