



Tesca Spray Chamber Trainer System 32477 has been designed to demonstrate the spray chamber operations using five different spray nozzles, and for students to study the effects of droplet size on separation efficiency. Students can also investigate the effects of liquid-to-gas (L/G) ratio upon separation efficiency.

The system comprises of a spray (separation) chamber, a water circulation system, a dust feeding system and a variable speed air blower. The spray chamber is fabricated from rigid transparent acrylic measuring approximately 0.3m in diameter and 2m in height. The spray chamber can be fitted with five different spray nozzles to produce five different droplet sizes. The top of the spray chamber is equipped with a mist eliminator to prevent any water droplets from escaping. The water circulation system consists of a water tank, water pump, liquid flow meters, a pressure gauge and a pressure regulator. An air blower installed at the outlet is capable of drawing 198 m<sup>3</sup>/hr of air through the system.

The air inlet velocity can be varied by means of adjusting the air blower speed. A dust feeding system is provided for introducing a desired amount of dust particles into the air stream before entering the separation chamber. The pressure drop,  $\Delta P$  across the separation chamber can be measured by a differential pressure meter. The entire system is mounted on a skid platform with an epoxy-coated steel frame and lockable castor wheels for mobility. All the necessary instruments are housed within a dust and splash proof control console with IP 55 rating. The system comes with complete PVC and stainless steel piping connections.

### Experiments

- To study the effects of droplet size on separation efficiency
- To investigate the effects of liquid-to-gas (L/G) ratio on separation efficiency
- To verify the relationship between pressure drop,  $\Delta P$  and inlet velocity,  $v_i$

### Technical Specifications

#### a) Spray nozzles

- Material : Stainless steel
- No. of sizes : 5
- Droplet size : 100, 200, 300, 500 and 1000 $\mu$

Note: Specifications are subject to change.

### **Tesca Technologies Pvt. Ltd.**

IT-2013, Ramchandrapura Industrial Area, Sitapura Extension,  
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

**b) Separation chamber**

- Material : Durable clear acrylic
- Size : 0.3 m (D) x 2 m (H)
- Accessories : Spray nozzle mount and mist eliminator

**c) Water circulation system**

- Tank material : Stainless steel
- Tank size : 55 L
- Protection : Low level pump cut-off switch
- Pump type : Centrifugal
- Max. flow rate : 25 L/min
- Flow meters : 0 to 1 L/min and 0 to 20 L/min
- Pressure gauge : 0 to 6 bar

**d) Air blower**

- Rated power : 2 hp
- Max. air delivery : 198 m<sup>3</sup>/hr @ 2800 rpm
- Max. static pressure : 69 in H<sub>2</sub>O
- Speed control : Frequency inverter

**e) Air flow meter**

- Type : Venturi with differential pressure gauge
- Material : Durable clear acrylic
- DP gauge range : 0 to 16 in H<sub>2</sub>O

**f) Feeding system**

- Material : Acrylic cylinder with conical bottom
- Feed control : Flow regulating valve

**g) Differential pressure**

- Type : Panel mounted Bourdon type differential pressure gauge
- Range : 0 to 100 mm H<sub>2</sub>O

Note: Specifications are subject to change.

***Tesca Technologies Pvt. Ltd.***

IT-2013, Ramchandrapura Industrial Area, Sitapura Extension,  
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

