

# Venturi Scrubbers

For wet scrubbing of particulates

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**ARMATEC**

## PRODUCT DESCRIPTION

Venturi scrubbers for a broad range of applications scrubbing gases with particulate loadings and soluble gases. Manufactured under licence to Ceilcote Air Pollution Control of the USA.

## WET SCRUBBING PRINCIPLES

Venturi scrubbers capture solid and gaseous contaminants by the following mechanisms:

- Absorption of pollutant vapours into scrubbing liquid
- Chemical reaction in scrubbing liquid.
- Condensation of odorous vapours
- Capture of particulates by inertial impaction.

## LONG THROAT VENTURI SCRUBBERS

Long throat venturi scrubbers provide removal efficiencies in excess of 99% when removing solid and liquid particulates of 0.1 to 5 microns from corrosive gas streams. They effectively remove submicron particles by inducing Brownian motion (side-to-side as well as forward) to facilitate collision with liquid droplets formed in the throat. They can also remove noxious gases with collection efficiencies as high as 95% where the gases are reactive or soluble in the scrubbing solution.

## VARIABLE THROAT VENTURI SCRUBBERS

A variable throat venturi has a moving "bullet" in the throat that can be set to automatically adjust its position to maintain the same pressure drop across the throat as the gas volume changes. This ensures that the same particulate removal efficiency is maintained.

## MULTI-THROAT VENTURI SCRUBBERS

Multi-throat venturi scrubbers ideal for gas streams with heavy particulate loading. They use a series of rods to create the throat where the gas and liquid are accelerated to bring intimate contact and hence particulate collection. Compact layouts that minimise ducting can be achieved.

## EDUCTOR VENTURI SCRUBBERS

Eductor venturi scrubbers use the pump pressure to move the gas stream so no fan is required. They are particularly adaptable to gas cleaning applications where gas flow is small and space is limited. Up to 99% efficiency on particles down to 3.0 microns. Up to 90% efficiency on gases, where the gas is highly soluble or reactive with the scrubbing liquid. Multiple-stage units can increase absorption efficiency to 99% plus.

## USES

### Long & Variable Throat Venturis

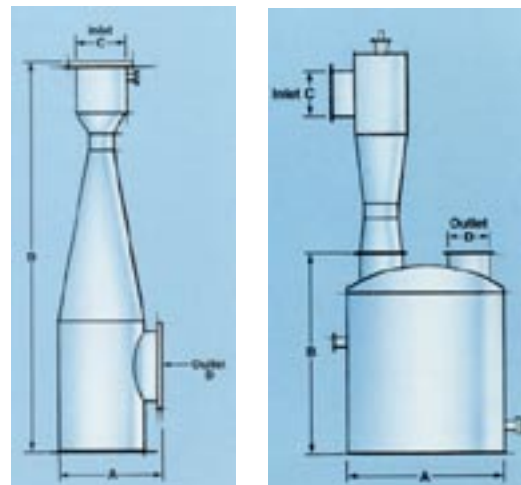
- Phosphate fertiliser manufacture
- Sulphur melter particulate collection
- Drier exhausts, especially for "sticky" materials
- Pharmaceutical manufacture
- Chemical manufacture
- Galvanising plants
- Incinerators
- Particulate from food driers

### Multi-Throat Venturis

- For heavy particulate loadings
- Sand and aggregate screening and drying
- Blast cleaning, grinding, sintering exhausts
- Wood and bark boilers

### Eductor Venturis

- Fertiliser den gas scrubbing
- Storage tank and chemical reactor vents
- Dust control at small mixing operations
- Cl<sub>2</sub>, phosgene, ammonia emergency vents



Typical long throat (left) and eductor venturi (right) with venturi mounted on top of separator tank.

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**FEATURES**

- Throat size matched to application to achieve design velocity and pressure drop for optimum mixing contact, both of entrained particles in the gas stream, and the liquid droplets generated in the liquid stream.
- Pressure drop selected with knowledge of particulate sizing and collection efficiency required.
- Units can be built of corrosion resistant FRP (fibreglass) for chemically aggressive environments or stainless steel for food grade applications.
- Often used in combination with a wet cyclone for mist elimination.
- Pilot plant available for site trials.



Venturi scrubber and wet cyclone on food product drier



Eductor venturi scrubber for collecting particulate and gaseous pollutants from sulphur melting operation. Unit has mesh pad type mist eliminator.



Horizontally mounted multi-throat venturi scrubber removing large particulate from moist exhaust gas stream at a food product drying operation.



Small eductor venturi scrubber for collecting cyanide dust from bag opening operation.

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