

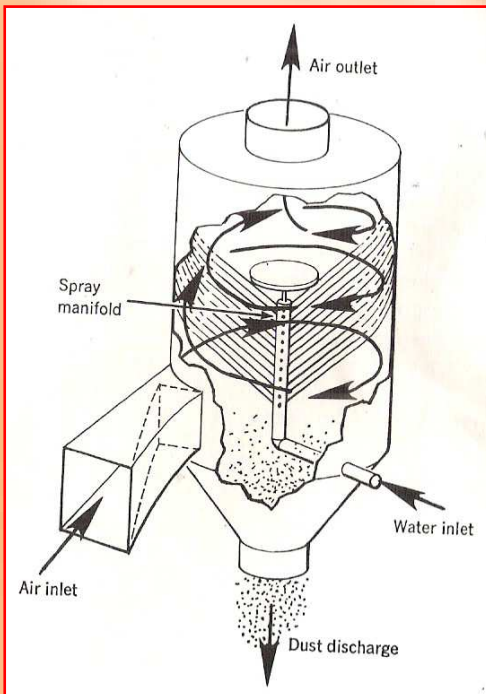
Introduction

Types of Scrubbers

- Plate type
- Spray type (Header)
- Spray type (Nozzles)
- Ventury Scrubbers
- Ventury Scrubbers with cyclone separator

Construction

Applications



Catering to industry needs since 1981

Air Blowers
Oil Combustion / Heat recovery
Double stage Air Blowers
Axial Flow Fans
Air Heating Systems
Air Filtration Systems
Dust Collection Systems
Air Pollution Control Systems
Air Pre heaters
Cyclone Separators / Multiclones
Bag Filter Houses (Manual Shaking /
Motorized Shaking / Air Compressor
Pulsing)
Gray Oxide Ball Mills
Rotary Valves
Screw Conveyors
Industrial Ovens
Vibrosieves
Venturi Scrubbers
Fume Exhaust Systems
Thermic Fluid Heating Systems
Oil Burners & Ancillary Equipment
Rotary Furnaces
(Lead / Copper smelting)
& other Industrial machinery's

Thermal Engineering Corporation

E - 168,
Kavi Nagar Industrial Area
Ghaziabad, U.P, India

Tel: + 91 120 2700429 , 2702196
Fax: +91 120 2702352

E-mail: - thermalenggz@yahoo.co.in
thermalengg@indiatimes.com

Wet Scrubbers



Thermal Engineering Corporation

Air scrubbers, wet scrubbers, and gas scrubbers are air pollution control devices that use a high-energy liquid spray to remove aerosol and gaseous pollutants from an air stream / flue gases

The fumes / gases are removed either by absorption or chemical reaction. In addition to fume and gas abatement, scrubbers may be used for process air cleansing and dust collection.

The flue gases that are emitted from the combustion process are passed through tanks containing a lime substance (often a limestone slurry) that can capture and neutralize the sulphur dioxide.

Scrubbers have no moving parts & hence require very little maintenance.

Thermal Engineering Corporation offers sturdy & heavy construction Wet Scrubbers for use in fume exhaust systems.

Sturdy construction & low energy costs have won us many accolades in the last 10 years.

We can also offer services for complete plant erection, commissioning & installation at customer's site.

Introduction

In a wet scrubber, the polluted gas stream is brought into contact with the scrubbing liquid, by spraying it with the liquid, by forcing it through a pool of liquid, or by some other contact method, so as to remove the pollutants.

The design of wet scrubbers or any air pollution control device depends on the industrial process conditions and the nature of the air pollutants involved.

Inlet gas characteristics and dust properties (if particles are present) are of primary importance.

Scrubbers can be designed to collect particulate matter and/or gaseous pollutants.

Wet scrubbers remove dust particles by capturing them in liquid droplets. Wet scrubbers remove pollutant gases by dissolving or absorbing them into the liquid.

Any droplets that are in the scrubber inlet gas must be separated from the outlet gas stream by means of another device referred to as a mist eliminator or entrainment separator (these terms are interchangeable).

Also, the resultant scrubbing liquid must be treated prior to any ultimate discharge or being reused in the plant.

A wet scrubber's ability to collect small particles is often proportional to the power input into the scrubber.

Low energy devices such as Spray towers are used to collect particles larger than 5 micrometers.

To obtain high efficiency removal of 1 micrometer (or less) particles generally



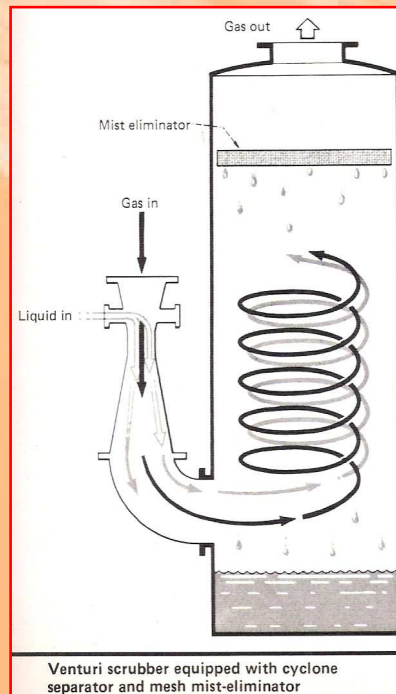
requires high energy devices such as venturi scrubbers or augmented devices such as condensation scrubbers.

Additionally, a properly designed and operated entrainment separator or mist eliminator is important to achieve high removal efficiencies.

The greater the number of liquid droplets that are not captured by the mist eliminator the higher the potential emission levels.

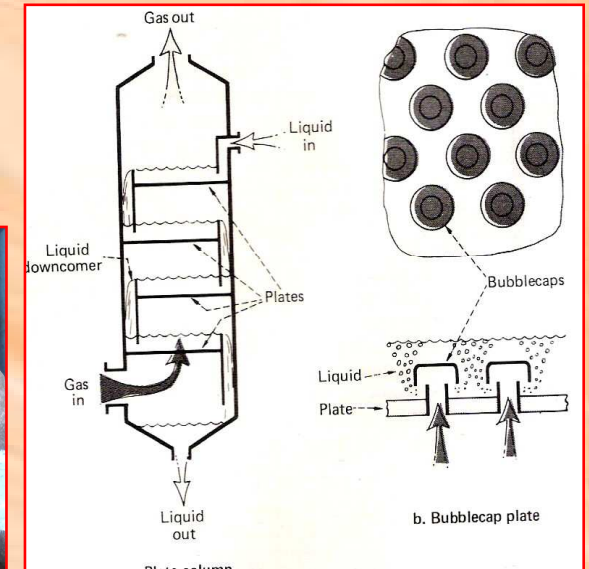
Wet scrubber systems generally consist of the following components:

- Ductwork and fan system
- A saturation chamber



Scrubbers may be classified by pressure drop as follows:

- Low-energy scrubbers have pressure drops of less than 12.7 cm (5 in) of water.
- Medium-energy scrubbers have pressure drops between 12.7 and 38.1 cm (5 and 15 in) of water.
- High-energy scrubbers have pressure drops greater than 38.1 cm (15 in) of water.



Construction

- Scrubber material of construction - M.s with FRP / stainless steel lining or PP / FRP lining.
- PP / SS chemical handling pumps & pipe line fittings

Advantages

Small space requirements - Scrubbers reduce the temperature and volume of the unsaturated exhaust stream. Therefore, vessel sizes, including fans and ducts downstream, are smaller than those of other control devices. Smaller sizes result in lower capital costs and more flexibility in site location of the scrubber.

No secondary dust sources - Once particulate matter is collected, it cannot escape from hoppers or during transport.

Handles high-temperature, high-humidity gas streams - No temperature limits or condensation problems can occur as in baghouses or ESPs.

Minimal fire and explosion hazards - Various dry dusts are flammable. Using water eliminates the possibility of explosions.

Ability to collect both gases and particulate matter