

Scrubber:

Wet scrubbers include a variety of devices that remove pollutants from gas streams by a dispersed liquid. The scrubbing liquid performs this separation by dissolving, trapping, or chemically reacting with the contaminant. The difference in the design of various scrubbers is preliminary due to the mechanism by which the liquid is dispersed.

Advantages:

- collecting flammable and explosive dusts safely
- Ability to handle high temperatures and moisture
- Flue gases are cooled, resulting in smaller overall size of equipment
- Removing both gases and particulate matter
- Neutralizing corrosive gases

Applicable Codes and Standards:

- ASME Sec. VIII, div. 1

Types:

There are numerous configurations of scrubbers and scrubbing systems, all designed to provide good contact between the liquid and polluted gas stream. Depending on the size of particle and the kind of gas which shall be removed, a special type will be selected. Kara Sanat scrubbers contain a wide range of applications for collecting different sized particulates and removing pollutants.

- **Jet Venturi Scrubber:**

Ejector makes the gas enter the scrubber and motive nozzle inside the ejector removes pollutants. It is unique among available scrubbing systems because of no need to a blower or fan.

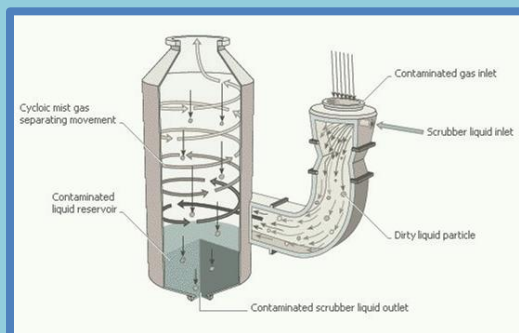
- ✓ Capable of handling a wide range of corrosive and/or sticky particles
- ✓ Effective in removing particles larger than 1.0 μm in diameter
- ✓ Higher liquid to gas ratios than most other particulate scrubbers
- ✓ Can be effective if the gas is very soluble or if a very reactive scrubbing reagent is used



- **Venturi Scrubber:**

They use a change in gas velocity to shear liquid streams into tiny target droplets which particulate and soluble gases are transferred.

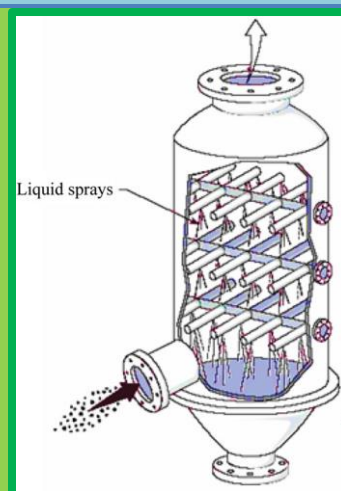
- ✓ Effective in removing particles larger than $0.6\ \mu\text{m}$ in diameter
- ✓ Simple configuration and reliability
- ✓ Can be effective if the gas is very soluble or if a very reactive scrubbing reagent is used



- **Spray Tower Scrubber:**

Spray towers use spray nozzles to extend the surface area of the scrubbing liquid and enhance mass transfer of contaminant gas into the liquid.

- ✓ Open vessel design where plugging or scaling may occur
- ✓ Lower cost alternate for high gas volume scrubbing applications
- ✓ Removing particles larger than $10\ \mu\text{m}$ in diameter
- ✓ Capable of a small amount of gas absorption



- **Packed Tower Scrubber:**

Packed towers are gas absorption devices that utilize internal media of a variety of types to enhance the mass transfer of gases into an absorbing liquid.

- ✓ Both air pollution control and recovery of process gases
- ✓ control of soluble gases such as halide acids and to remove soluble organic compounds such as alcohols and aldehydes

