

Wet Packed Scrubbers

Vertical & Horizontal Crossflow Styles

Jun 04



ARMATEC

PRODUCT DESCRIPTION

For the removal of corrosive, noxious and odourous gases from airstreams. Designed for high collection efficiency, maximum corrosion resistance. Availability of standard models reduces design engineering and shortens delivery. Scrubber design is characterized by low liquid irrigation rates, high volume air flow and low pressure drop. Manufactured under licence to Ceilcote Air Pollution Control of the USA.

WET SCRUBBING PRINCIPLES

The basic process involved in wet scrubbing is the contacting of a polluted gas stream with a scrubbing liquid to transfer sufficient of the pollutants into the liquid stream to allow discharge to atmosphere of the cleaned gas. The transfer of the pollutants from the gas stream into the liquid stream is by one or more of the following mechanisms:

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

VERTICAL PACKED TOWERS

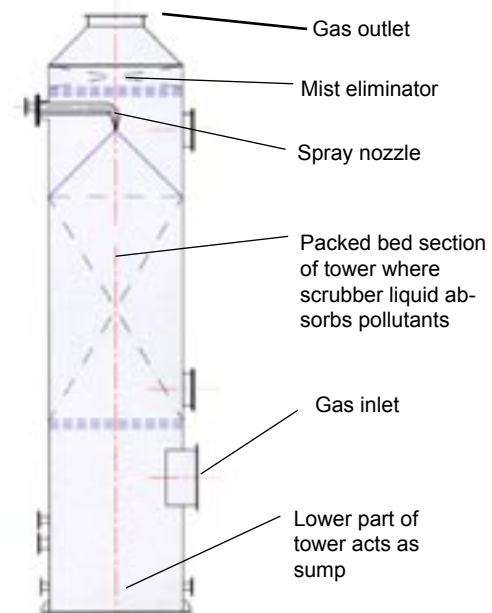
The most efficient scrubber design for gas absorption is the packed tower. This offers true counter-current flow with the gas stream typically moving vertically upwards through the tower and with the scrubbing liquid passing downwards counter-current to the gas stream. The tower contains a bed of packing where the gas stream containing pollutants contacts the liquid. After being scrubbed, the gas then passes through a mist eliminator to prevent scrubber solution carry-over. Ideal when high efficiencies and a small footprint are required.

HORIZONTAL CROSSFLOW SCRUBBERS

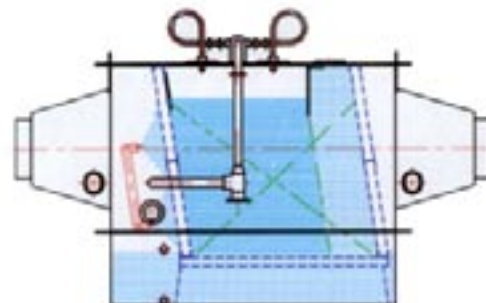
The gas stream flows horizontally through the packed scrubbing vessel where the gas stream containing pollutants contacts the liquid. The scrubbing liquid is irrigated on the top of the scrubber and flows downwards across the gas stream, hence the name crossflow. After being scrubbed, the gas passes through a mist eliminator to prevent scrubber solution carry-over. The scrubbing liquid passes into a sump beneath the gas stream. Ideal where ceiling height is limited or where roof mounting is required. A multi-bed crossflow scrubber can remove two or more gaseous contaminants by accommodating chemically different liquids in two or more packed bed sections in series without mixing of scrubbing solutions.

USES

- Chemical plants for noxious gas control
- Waste water treatment plants for odour control
- Rendering plants for odour control
- Tanneries for hydrogen sulphide control
- Pulp & Paper plants for noxious gas control
- Particle Board plants for formaldehyde control
- Food processing plants for odour control



Vertical Packed Tower Scrubber



Horizontal crossflow scrubber showing top mounted spray nozzles, packed section and liquid sump beneath.

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FEATURES OF WET SCRUBBERS

- Gaseous contaminants can be removed at up to 99.99% efficiency rate depending on bed depth, liquid flow rate and scrubbing-liquid composition.
- Can remove particles down to 7 microns in size.
- Lower scrubber shell serves as integral sump for recirculating liquid supply.
- A multi-bed crossflow scrubber can remove two or more gaseous contaminants by accommodating chemically different liquids in two or more packed bed sections in series without mixing of scrubbing solutions.
- Spray nozzles can be serviced when in operation.
- Standard units includes access doors, spray headers, piping connections and nozzles, internal structure supports, Tellerette tower packing, support plates and hold-down lugs.
- Circulation pump can be mounted on side of scrubber to minimise footprint and minimise site installation work.
- Pilot plant available for site trials.

AIR WASHERS

A variation of the wet packed scrubber is the air washer designed to remove liquid droplets and a portion of gaseous contaminants from an airstream with a short irrigated packed bed. Available in either vertical or crossflow styles. Ideal for emissions from anodising and electroplating operations.



Part of three stage horizontal crossflow scrubber system removing sulphides from gases from black liquor oxidation process at pulp and paper plant.



Vertical air washers removing liquid entrainment and fumes from electroplating operation.



Vertical packed tower removing hydrogen sulphide from air discharge from tannery operation.



Horizontal crossflow scrubber at particle board plant. This unit has two separate scrubbing beds in series for removing formaldehyde.

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