



Serving Environment Solutions



Air Poll Engineering

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Who we are?

Air Poll Engineering Company, is an engineering firm specializing in the design and manufacture of air pollution control equipments since 2005.

We regard "Honesty, innovation, and cooperation" as our business philosophy, focusing on international and domestic markets for excellence. We sincerely welcome our customer to create win-win situation.

Company have engineers having vast experience in the field of detailed design, project engineering, procurement services, who are capable of carrying out basic process design and engineering equipments by utilizing their knowledge and robust experience.

Vision and Values

We believe to provide high quality products at competitive prices.

We strongly believe in sustainable development and ethical business practices.

We welcome changes and views of customers as an opportunity to grow more and more.



Our Activities

We serves all the Major industries as mentioned below

- Chemical and Agrochemical
- Petrochemicals
- Food and Pharmaceuticals
- Dye and Intermediates
- Metal refining
- Fine Chemicals
- Edible Oil industry for removal of odors
- Chloralkali industry

Overview of engineering activities

We offer wide range of services

- Process Design
- Equipment design, modeling and drawings
- System simulation
- Fabrication drawings using Auto-CAD
- Project Management
- Feasibility Studies
- Inspection Studies
- Turn key solutions

Activities

- Techno commercial Proposal preparation
- Data sheet preparation
- After order review, approval of drawings and project inspection
- Mechanical Design Calculation
- Fabrication drawings with bill of material
- Prepare material requisition
- Purchase Requisition and Technical clarification

Engineering solutions offer by us

- System layout as per client's requirement
- Detailed Equipment Design and its layout
- General piping layout
- Nozzle orientation details
- Drawing reviews and comments
- Data sheet for valves, pump and blowers
- Pipe and vessel thickness calculation
- Design review with clients



Process Engineering

Having team of experienced Process engineers who are capable of carrying out basic engineering and Process design of equipments by utilizing their in-depth knowledge and robust experience.

Basic Engineering Solutions includes

- Equipment Sizing
- Process Flow Diagram
- P&I Diagram
- Heat and Mass balance
- Data sheets of Process and Equipments

Other Services

Our Procurement assistance includes:

- Vendor assessment
- Negotiation with vendors
- Techno commercial offers
- Purchase Order
- Inspection of project.
- Co ordination with Premises Persons and data generation

Software knowledge

- Hysys- simulation of the system for optimum solutions
- Aspen B-JAC for thermal design of heat Exchanger
- AUTOCAD FOR 2D drafting and 3D modeling
- In-house developed Spread sheets and widely accepted thumb rules for storage tank and tower design.

SCRUBBER SYSTEMS

Overview

The use of scrubbers for control of air pollution has gained wide acceptance throughout the industry. Particulate collectors such as cyclones and electrostatic precipitators cannot efficiently absorb gases or remove odors.

General Applications

- Storage tank vent emission treatment
- Industrial process toxic by-product removal
- Emergency venting
- Odor treatment
- Dust removal
- Ammonia Scrubbing / Recovery System
- Chlorine gas scrubbing and HCl gas scrubbing
- Sulfur dioxide scrubbing
- NO_x Scrubbing system
- Particulate removal
- Lime dust removal from storage vents
- Combustion off-gas treatment
- Water soluble VOC scrubbing
- Ammonia removal
- SO₂ and/or H₂S removal
- Treatment of laboratory off-gases
- Scrubbing of metal treating emissions
- Acid gas scrubbing
- As part of a multi unit system in removing sulphur monochloride
- Used to remove HCl fumes during tank venting

Scrubber Systems Types

1. Jet Venturi Fume Scrubber

Effective at removing noxious gases, particulates, odors, fumes and dusts from gas streams and are better able to cope with high temperatures and heavy contaminant loads than other scrubbers – no fan usually needed.

2. Vent Gas Scrubber System

Compact, light-weight and easy-to-install unit designed for economical and effective control of pollution from low volume sources.

3. High Energy Venturi Scrubber System

Designed to remove fine micron and submicron particulate from industrial and commercial effluent gases.

4. Packed Tower Gas Scrubber

Provides most efficient removal and absorption of noxious gases, performs best when gases to be handled are free of particles.

5. Packaged Scrubber

Includes recycle pump, instruments, piping as required to suit customer's needs, eliminating the burden of system design.

Material of Constructions

FRP using resin systems of Isophthalic, Bisphenol, Vinyl Ester, Superior Vinyl Ester and Epoxy.

PP/FRP, CPVC/FRP, PVDF/FRP, ECTFE/FRP, FEP/FRP, CS, MS, SS304, SS316, SS316L, PTFE etc.

Design Standards

We follow design standards like ASTM D2992, 3517, 3754, 3681 and BS4994.

In-house Testing Facilities

- Hydro Test
- Vacuum Test
- Spark Test





Jet Venturi Fume Scrubber

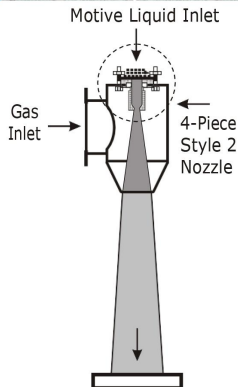


Figure: 1.1



Figure: 1.2

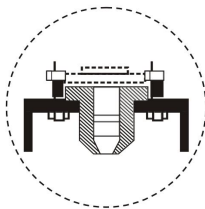


Figure: 1.3

Principle of Operation

In a **Jet Venturi Fume Scrubber**, there is sudden expansion and contraction near the venturi throat where the velocity of the gas is very high and separation takes place which is known as "Vena Contracta" by creating negative draft to remove gases from reactor /vessel.

Ejector Venturi Gas Scrubbers very effectively remove particulate contaminants through impaction by the high velocity spray of scrubbing liquid and absorption and/or chemical reaction between the gases and scrubbing liquid.

When properly matched to the application, these scrubbers are better able to cope with the high temperatures, heavy contaminant loads, and corrosive conditions.

It offers the following competitive advantages like low initial cost, low energy requirements, simple design with no moving parts which means low maintenance, continuous operation (as opposed to bag houses and precipitators), no electrical requirements, simultaneous gas absorption and particulate scrubbing.

This arrangement eliminates the requirement of blower at the tail end because it generates discharge pressure slightly above the atmospheric.

Applications

Ammonia scrubbing, Chlorine gas scrubbing, HCl gas scrubbing, Sulfur dioxide scrubbing and Particulate removal.



Vent Gas Scrubber

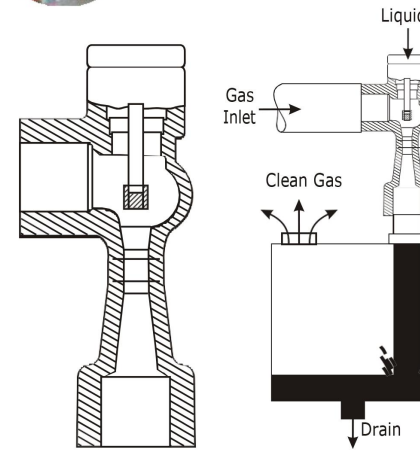


Figure: 2.1

Figure: 2.2

Principle of Operation

Vent Gas Scrubber System is a compact, light-weight and easy-to-install unit designed for economical and effective control of pollution from low volume sources. It operates on the gravity principle with the liquid directed to the bottom to run out a drain opening while the gas must make a 180 degree change of direction to exit through a top outlet. The unit is sized to allow low gas velocity so that gravity separation can be achieved.

Liquid Gas Separator is used where it is undesirable to discharge the entrained gas with the liquid into a drain. Alternatively, if using a large tank with Vent Gas Scrubber, such as for recirculation of the scrubbing liquid, Liquid Gas Separator is not necessary.

Applications

Typical applications include pollution from laboratory fume hoods, schools and industrial shops, pilot or bench scale plant equipment and smaller commercial and industrial uses.

High Energy Venturi Scrubber System

Principle of Operation

High Energy Venturi Scrubber Systems are designed to remove fine micron and submicron particulate from industrial and commercial effluent gases. It is a wet scrubbing system that combines a Scrubber with a Cyclonic Separator. These scrubbers are effective in the removal of dusts, fumes, vapors, and mists; as well as a variety of other air pollutants.

Cyclonic Separator operates on the inertial effect which makes the heavier liquid and solid materials travel in a path around the walls of the separator and the gas or vapor takes a path toward the center.

Applications

Lime dust removal from storage vents. Combustion off-gas treatment.

Removal of particles/SO₂ from boiler flue gases

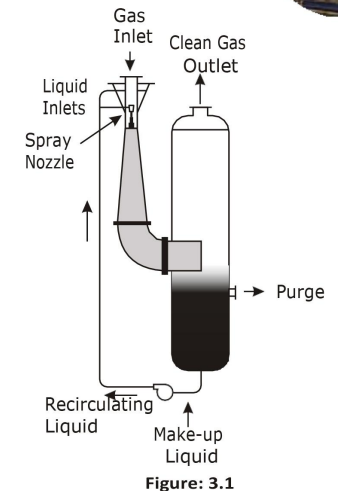


Figure: 3.1





Packed Tower Gas Scrubber

Principle of Operation

Packed Tower Gas Scrubbers are low-energy gas scrubbers. They are used for gas absorption, cooling, and recovery having high scrubbing efficiency and low power consumption. **This type of scrubber perform best when gases to be handled are free of particles, since these tend to clog the packing.**

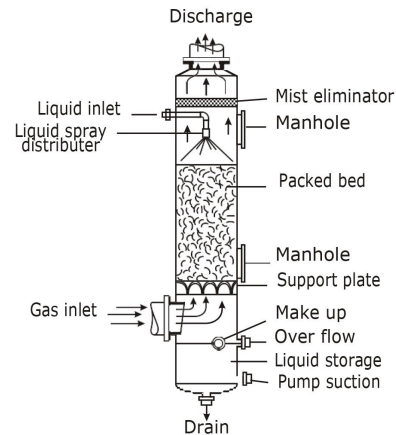
In operation, scrubbing liquid enters the tower through a nozzle and is sprayed uniformly across the top of a packed bed so that it trickles evenly through the packing material from top to bottom without channeling. Gas enters the tower through the inlet near the bottom and passes through the support plate into the packed bed, counter current to the flow of the scrubbing liquid, contaminants are removed.

After passing through the packed bed, the cleaned gas passes through a mist eliminator section near the top of the tower. Here, any entrained liquid is removed before the clean air is discharged through the outlet.

Types Of Packing Used: Pall Ring, Intalox Saddle, Bulk Saddles, Rasching Ring, Tellerette Ring, IMTP Ring

Applications

Chlorine and HCl removal, Watersoluble VOC scrubbing, Ammonia removal, SO₂ and H₂S removal.



Packaged Scrubber

Principle of Operation

Packaged Scrubber System is a completely "packaged", movable gas scrubber separator system that is especially designed for use in pilot plants, laboratories, or temporary locations in full size processing plants.

This system can achieve removal efficiencies as high as 99.99% in many applications. It consists of a Ejector Venturi Gas Scrubber and Separator with storage mounted on a steel base plate.

Depending on the customer's requirements, pump and recirculating piping may be supplied. Optional accessories may include a heat exchanger, a level gauge or alarm or an additional liquid storage tank. Since all Packaged Scrubber Systems are customized and designed, design temperature and pressure will be accounted for on an individual basis.

Applications

Treatment of laboratory off-gases, Scrubbing of metal treating emissions and Acid gas scrubbing.





What Our Customers say about us?



Unit Conversions

Basic Units

- 1 Foot = 12 inches;
- 1 Meter = 39.37 inches;
- 1 M³ = 61023.378 / 1728 = 35.314 ft³
- 1 ft³ = 1728 / 61023.378 = 0.028317 M³
- 1 liter = 61 / 61023.378 = 0.001 M³
- 1 ft³ = 12 • 12 • 12 = 1728 in³
- 1 M³ = 39.37 • 39.37 • 39.37 = 61023.378 in³
- or 1 M³ = 61023.378/61 = 1000 liter
- or 1ft³ = 1728/61 = 28.328 liter
- or 1 liter = 61 / 1728 = 0.0353 ft³

Volume Per Unit of Time

- 1 CFM = 0.028317 M³ • 60 = 1.699 M³ / hr
- 1 M³ / hr = 35.314 ft³ / 60 = 0.58857 CFM
- liter/min = 0.0353 CFM
- or 1CFM = 28.328 liter/min
- or 1 M³ / hr = 1000 / 60 = 16.667 liter / min
- or 1 liter / min = 0.001 M³ • 60 = 0.06 M³ / hr

Pressure Conversion Chart

Kg/cm ²	bar	atm	Psi lb/in ²	KPa	MERURY Hg		WATER H ₂ O <Aq>	
					m	in	m	ft
1	0.9807	0.9678	14.22	98.07	0.7356	28.96	10.000	32.81
1.0197	1	0.9869	14.50	100.00	0.7501	29.53	10.197	33.43
1.0332	1.0133	1	14.70	101.32	0.760	29.92	10.33	33.90
0.0703	0.0689	0.0680	1	6.894	0.0517	2.036	0.703	2.31
0.0102	0.0100	0.0099	0.1451	1	0.0075	0.2959	0.1020	0.3343
1.3595	1.3332	1.3158	19.34	133.32	1	39.37	13.6	44.60
0.0345	0.0338	0.0334	0.491	3.383	0.0254	1	0.345	1.133
0.1000	0.0981	0.0967	1.422	9.807	0.0735	2.896	1	3.281
0.0305	0.0299	0.0295	0.4335	2.991	0.0224	0.88	0.305	1

Miscellaneous

- Celsius to Fahrenheit (°C × 9/5) + 32 = °F
- Fahrenheit to Celsius (°F - 32) × 5/9 = °C
- 1 kcal = 3.96832 BTU
- 1 kWh = 3600000 joule (J)
- 1 kJ = 238.84589 cal
- 1 hp = 0.7456998715823 kW
- 1 Acre = 4046.8564224 m²
- 1 yd² = 9 ft²

