

Scrubbing System for Chemical, Fertilizer, Petrochemical, Refinery, Pharmaceutical and other Allied Industries





OVERVIEW



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Scrubber Systems are globally used in industries for treatment of exhaust / vent gases and are an effective method in prevention of Air Pollution. The industrial exhaust / vent gases may also at times contain harmful particulates which may affect the environment / health of human beings.

Traditional methods of Particulate Collectors for Air Pollution control such as Cyclones and Electrostatic Precipitators cannot efficiently absorb gases or remove odor. Scrubbing Systems are now finding preference compared to these traditional methods for treatment of industrial exhausts because of the economics and efficient method for removal of particulates and odors.

APPLICATIONS

Application of Scrubbing Systems include removal of particulates, dust, odor from industrial exhaust / venting systems, or by-products, under continuous operation or emergency control systems of chemical, fertilizer, petrochemical, refinery, pharmaceutical and other allied industries.

Exhaust systems treated consist of removal of Acid Mist, Ammonia (NH₃), Carbon Monoxide, Chlorine (Cl), Dimethyl Sulphate (DMS), Hydrochloric Acid (HCL), Hydrogen Sulphide (H₂S), Oxides of Nitrogen, Sulphur Dioxide (SO₂), OxaHexaChloroxalence, Tri-Chorosylene, and other industrial exhausts.



PRODUCT RANGE



Type of Scrubbing Systems regularly supplied by Crystal for chemical, fertilizer, petrochemical, refinery, pharmaceutical and other allied industries include :

- Ejector-Venturi Scrubbers
- High Energy Ejector -Venturi Scrubbers
- Packed Tower
- Package Scrubbing Systems
- Condenser Scrubbers
- Emergency Chlorine Scrubbers – Multi Venturi Packless

Depending upon the type of exhaust / vent gas being handled, Client requirements, the Material Of Construction shall be :

- Fiber Reinforced Plastic (FRP)
- Fiber Reinforced Vinyl Ester (FRVE)
- Carbon Steel lined with PVDF, ECTFE
- Austenitic Stainless Steel – 304,316
- Hastelloy C -276, C -2000
- Inconel 625, 825 and Monel

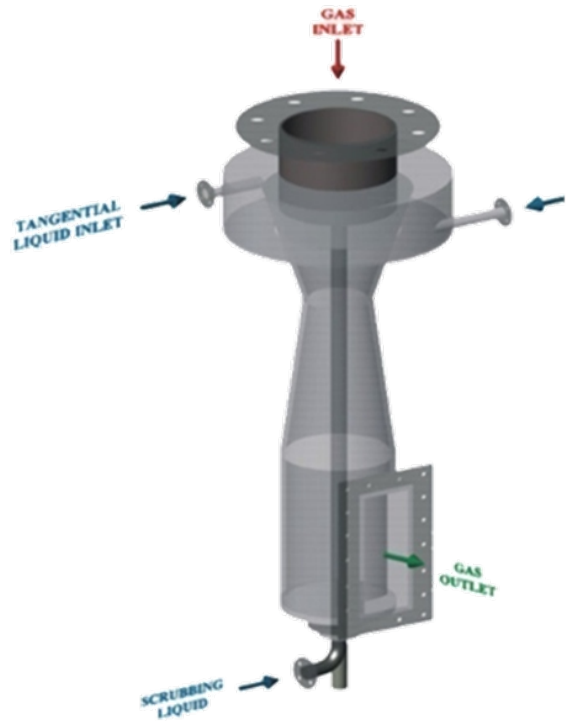


SCRUBBING SYSTEM- TYPES



Ejector Venturi Scrubber utilize the energy of the scrubbing liquid to effectively entrain and remove noxious gases particulates odors, fumes and dusts from the gas. The particulates are removed through impaction of the solids by the high velocity spray liquid. Gaseous pollutants and odors are removed through absorption and/or chemical reactions between the gases and scrubbing liquid.

The contaminated gas is drawn into the scrubber by means of ejector action. The system is designed for high velocity liquid spray directed into a venturi throat. The spray impinges on the Venturi Throat to induce the Draft Producing Action. The scrubbed gases depart the throat area with the contaminants impacted or absorbed into the scrubbing liquid. The clean gas with entrained contaminants droplets are discharged from the scrubber to a gas-liquid separator



High Energy Venturi Scrubber are designed for the removal of sub-micron fumes, mist and particulates. The gas is accelerated into the throat of the venturi where the high velocity gas stream shatters the scrubbing liquid into fine droplets which mix with and impinge on the fine fumes, mists and particulates to effect the required removal efficiency .

The scrubber are vertical flow, wet approach type where the scrubbing liquid is introduced at the top of the converging section of the venturi. The wet approach feature allows the scrubber to be used in hygroscopic or highly abrasive applications. These units are capable of scrubbing with recirculated slurries having a solids content as high as 30%. The throat area of the venturi can be selected to operate at pressure drops between 6" to 120" water gauge



TYPES OF SCRUBBING SYSTEM



Packed Tower scrubber is a low energy, contact bed type of wet scrubber for gas absorption, for gas cooling, and for stripping of the contaminants from process liquid. The units are specifically engineered to give the highest efficiency with the lowest power consumption without sacrificing performance reliability. These scrubbers are available in standard design from 6" to 144" diameter and with capacities to 50,000 ACFM.

Contaminated gas enters bottom side of the scrubber and flows upward through the packed bed. The scrubbing liquid is introduced through a distributor at the top of the packed section and trickles downward through the packing, removing the contaminants from the gas through the interaction of the gas, liquid and packing media. The scrubbing liquid falls to the recirculation sump at the bottom of the unit. The cleaned gas proceeds upward through a mist eliminator to the gas outlet.



Emergency Scrubber System consists of a dry scrubbing media to neutralize gases, the media reacts with the gas and reduces the concentration at the scrubber discharge to within the guidelines as set forth by the prevailing codes. The new media & used media is non-hazardous since the media substrate permanently bonds with the chemical impregnate and the unused chemical and the reaction process respectively .

Dry scrubbers are safe, user friendly, low maintenance system tested and proved for use in municipal and industrial applications where the potential exist for the accidental release of heavier-than-air hazardous gases. Dry chlorine scrubber do not require liquid chemical leak containment or double wall vessel construction and operate at sub-zero temperatures without the use of heaters



QUALITY CONTROL SYSTEM

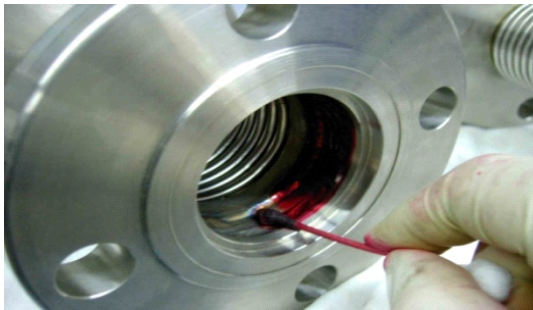
Crystal follows stringent quality control system so that all the parameters are complied and customer get high quality product:



ULTRASONIC TESTING



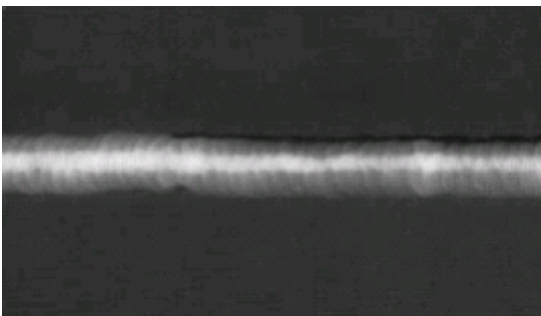
HARDNESS TESTING



DYE PENETRANT TESTING



MAGNETIC PARTICLE INSPECTION



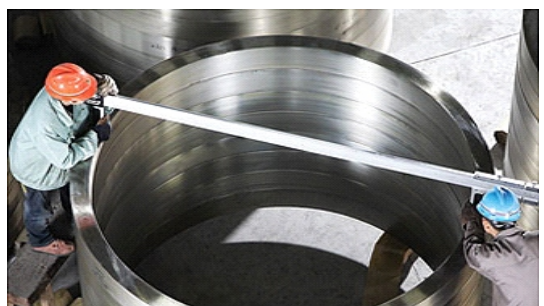
RADIOGRAPHY



HYDROTESTING



POSITIVE MATERIAL IDENTIFICATION



DIMENSIONAL INSPECTION



Crystal industrial

CERTIFICATIONS



- ✓ ISO 9001 : 2008 Certificate
- ✓ ISO 14001:2004 Certificate
- ✓ OHSAS 18001 : 2007 Certificate
- ✓ ASME Stamp Certificate
- ✓ National Board Registration
- ✓ IBR Approved

CLIENTS



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