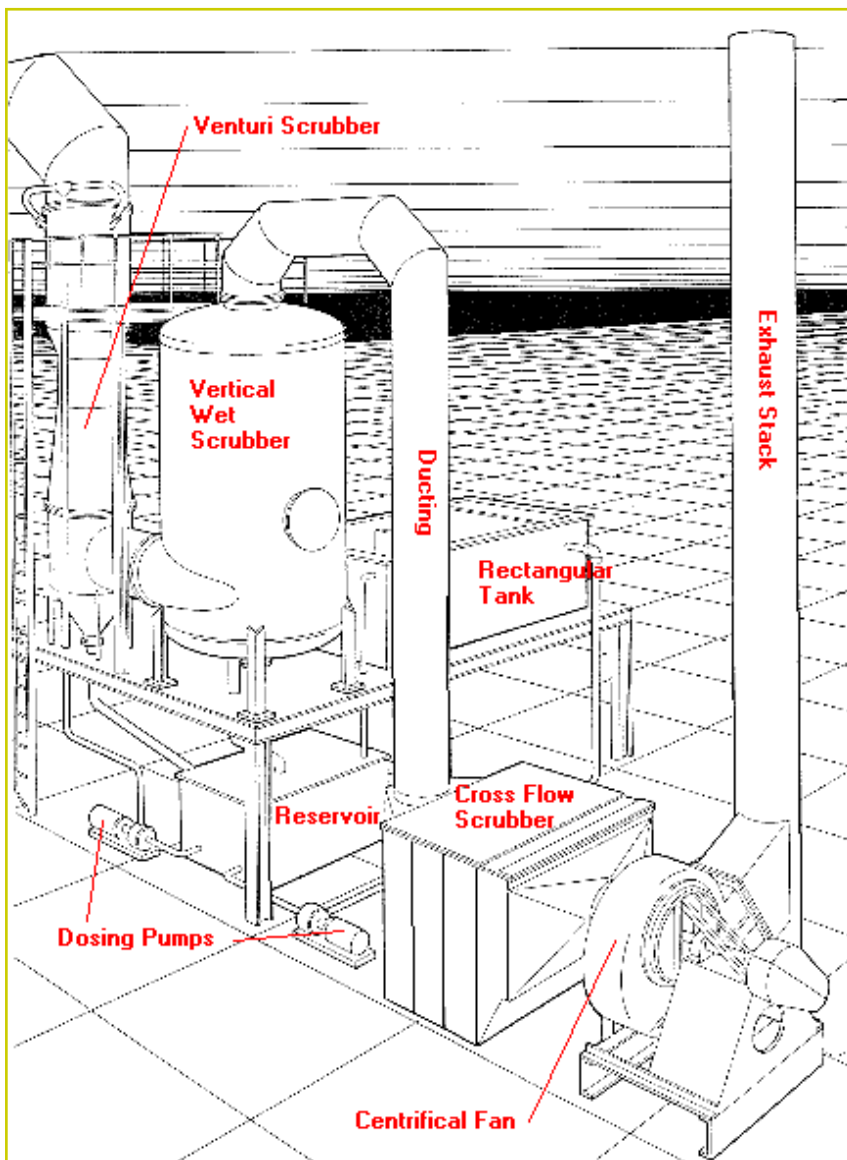


Odour Control Scrubbers

DESIGN AND BUILD

Maskell Productions has long enjoyed a reputation for its ability to engineer design and manufacturer complete systems to solve both commonplace and unique application problems.

From concept through completion, Maskell Productions gets the job done. For over 25 years we've designed and built scrubber systems for corrosive environments in all-types of industries. And since each application is unique, we've gained the knowledge and experience required to solve the toughest process and pollution control problems. We have the depth to help you analyse contaminants, conceptualise a system, specify materials and supply a complete package - from hoods, stacks and fans to liquid recirculation systems and instrumentation. Plus, Maskell Productions will procure and co-ordinate any ancillary equipment required to give you all the advantages of single source responsibility.



Whatever your needs - a standard scrubber unit or a complete engineered system - you can depend on Maskell Productions.

- ✓ Our customers demand it.
- ✓ Our reputation depends on it.
- ✓ Call us today.



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Odour Control Scrubbers...Design and Build



720 Series Venturi Scrubbers

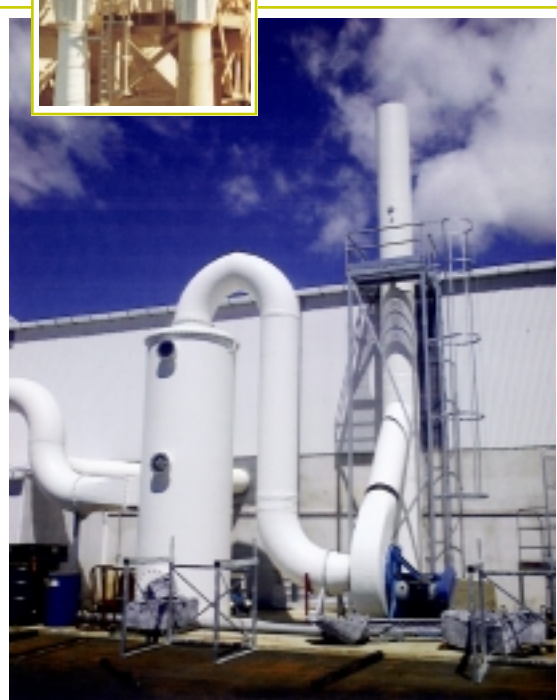
Maskell Productions 720 Venturi Scrubbers remove fumes, dust, solids and/or liquid particulate ranging in size down to 0.1 micron. Typical applications include - fertiliser and chemical plants, pulp and paper mills and smelting, galvanising and plating operations. Pollutants are removed by bringing the gas stream and scrubbing liquid into violent turbulent contact as they pass through a high velocity venturi throat section. The entrained droplets and particulates agglomerate in the diverging section and are removed in the lower sump and tangent cyclone separator. Cleaned gas exits the cyclone vertically and the recovered liquid is returned to the sump for recycle. 720 Scrubbers feature large orifice non-clogging spray nozzles for uniform wetting of high solids concentration or large particles. Units tend to be self-cleaning and have no moving internal components to wear. Throat sections are removable and an exterior recirculation system is available for maintenance ease. Sizes range from 2' thru 12' diameters with capacities up to 67,000 cfm per unit. Request bulletin B-720.

730 Series Packed Tower Scrubbers

Maskell Productions 730 Scrubbers remove soluble noxious gases and/or nuisance gasses like hydrochloric acid, sulfur dioxide, ammonia and mists 5 microns and larger. They also effectively recover production process by-products. Typical applications include - chemical plants, sewage treatment facilities, metal finishing operations and pulp and paper mills. Contaminants are removed by contacting the gas with a counter-current scrubbing liquid in a packed bed. The gas/liquid stream passes vertically through mesh pads or Heilex EB-2 bend mist eliminator blades which remove entrained liquid before exiting. Standard packing depths are 2', 5 1/2' and 10'. Low static pressure drops - generally less than 0.5 wc per foot of packing result in low fan horsepower requirements. The integral sump provides recirculation of scrubbing liquid for re-use with minimal fresh liquid requirements. Sizes range from 1' thru 12' diameter with capacities up to 65,000 cfm per unit. Request bulletin B-730

760 Series Crossflow Scrubbers

Maskell Productions 760 Scrubbers are used for gas absorption and removal of low particulate concentrations 5 microns and larger. Typical applications include - chemical and fertiliser plants and pulp and paper mills. 760 units offer low profile design and employ crossflow gas/liquid contact for fume absorption through the packed bed. Multiple spray headers provide continual irrigation for maximum absorption and prevent contamination build up. Units include a reservoir section permitting solution recirculation and overflow for collected contaminant removal. Standard units include 3' packed bed. Heilex EB-2 bend mist eliminator blades are incorporated to capture entrained moisture. Fractional collection may be used to control combination gasses with multiple packing beds and scrubbing solutions. Pressure drop characteristics through standard units are approximately 1.5" wc at rated capacities. Capacities up to 70,000 cfm per unit are available. Request bulletin B-760.



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Odour Control Scrubbers...Design and Build

770 Series Water Jet Eductor - Venturi Scrubbers

Maskell Productions 770 scrubbers remove soluble gases and particulate matter and are often used as direct contact condensers for removing and condensing steam. Typical applications include - semi-conductor manufacturing, chemical plants, pulp and paper mills, fertiliser plants and food processing operations. The open design permits collection of sticky or gummy particulate without the risk of plugging. A high liquid flow rate at pressures up to 100 psig includes a draft drawing gas through the venturi throat. Gas/liquid contact occurs in the venturi throat where the containment gas or particulate is removed. Static pressures from 0 to 6" wc and air flows up to 70,000 cfm can be generated using an optional recirculating system with pressures up to 100 psig. 770 Scrubbers are designed to provide continuous make-up solution for maximum absorption. Overflow drains permit collected contaminant removal. The mist eliminator located at the outlet provides efficient moisture removal prior to cleaned air discharge. Request bulletin B-770

Pilot plant and Field Testing

Maskell Productions have available a pilot plant and can perform field tests to collect information on pollutants and monitor scrubber efficiencies. This data provides guidance in determining the correct selection of scrubber type, size, construction materials and ventilation requirements. It is also the basis of our continuing research for improved equipment efficiencies.

Pilot plant tests involve complete evaluation of various scrubber designs, packing's, blowers, hoods and other auxiliary equipment. Field tests evaluate our equipment systems under actual operating conditions. Reports from both evaluation methods are made available, whenever possible, as reference and cover most industrial applications.

Scrubber Selection

The following factors should be considered when selecting scrubbing equipment to remove pollutants in corrosive environments:

- 1 Chemical and physical composition of contaminated gas stream and available scrubbing liquid.
- 2 Type and nature of contaminate.
- 3 Objective of scrubber, ie. operating priorities, removal efficiencies, etc.
- 4 Possible chemical reactions between gas stream contaminants and scrubbing liquid.
- 5 Solubility of contaminant gases in the scrubbing liquid.
- 6 Absorption reaction - liquid or gas film phase controlling.
- 7 If packed tower is required, packing size, shape, mass transfer characteristics and material.
- 8 Construction material of components and auxiliary equipment.
- 9 Design of liquid distribution system to assure complete gas-liquid contact.
- 10 Maintenance and access.
- 11 Design and correct sizing of internal components.



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Quality Endorsed Company
ISO 9001
LIC. No. REC. 6641
Standards Australia

Odour Control Scrubbers

Standard Scrubbing Equipment

Maskell Productions offers four standard scrubber series in a variety of sizes with unit capacities up to 70,000 cfm. The following advantages are built into our standard units:

Low Initial Cost - Units are pre-engineered, resulting in reduced design and engineering costs.

High Operating Efficiencies - Standard units are field tested and time proven from years of service resulting in low power and water requirements.

Extended Service Life - Standard units are designed for maximum corrosion resistance and minimum maintenance.

Prompt delivery - Standard units reduce lead times from drawings to fabrication.

Low maintenance Costs - Standard units have no moving internal parts to wear.

Low Installation Costs - The comparative light weight of our standard units provides ease of installation and permits their use on roof areas.

Recovery of Valuable Chemicals - When chemical recovery is desired, standard units are easily equipped to handle it.

Scrubber Selection Chart

The selection chart presented here is offered as a guide for preliminary evaluation of scrubber series and control plant. It is based on pilot plant and from test data and covers the general range of contaminants found in most processes. However, if the contaminant in your process is not listed, please contact Maskell Productions for selection assistance. Removal efficiency ratings are as follows:

- A** = Excellent
- B** = Good
- C** = Satisfactory
- D** = Adequate
- NR** = Not Recommended

After the series is selected, the unit must be properly sized. Sizing the unit to the process is a critical factor in obtaining the required results. If for example, the scrubber is to be operated at high temperatures or under vacuum or pressure conditions, special designs may be required.

Unit size will depend on a number of variables including:

- Air volume required to ventilate process
- Amount of contaminant and desired efficiency
- Unit placement and access requirements.

Detail sizing information may be obtained by contacting Maskell Productions for the appropriate technical bulletins and consulting with our engineers or by having one of our qualified field representatives conduct an on-site quotation.



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Odour Control Scrubbers

CONTAMINANT	720 SERIES	730 SERIES	760 SERIES	770 SERIES	CONTAMINANT	720 SERIES	730 SERIES	760 SERIES	770 SERIES
Acetic Acid	C	A	B	C	*Hydrogen Sulfide	D	A	B	B
Alum	A	A	A	A	Incinerator Dust	A	NR	NR	C
Acetone	NR	A	B	C	Kraft Liquor	A	A	A	A
Alkaline Cleaners	A	A	A	A	Lime Kiln Dusts	A	NR	NR	C
*Aluminium Bright Dip	NR	A	B	D	Lithium Chloride	A	C	D	C
Aluminium Chloride/Fluoride	A	D	D	C	Magnesium Chloride	A	D	B	C
Ammonium Chloride	A	D	D	C	Magnesium Hydroxide	A	D	B	C
Ammonia	D	A	C	C	Magnesium Sulfate	A	D	B	C
Amines	D	A	C	C	*Mercaptans	NR	A	B	B
Ammonium Hydroxide	D	A	C	C	Maleic Acid	C	A	B	B
Ammonium Nitrate/Sulfate	A	NR	NR	C	Nickel Chloride	A	B	B	B
Anodising	A	A	A	A	Nickel Sulfate	A	B	B	B
Calcium Chloride	A	NR	NR	C	*Nitric Acid Mist	NR	A	C	C
Caustic Soda/Cleaners	A	A	A	A	*Nitric Hydrofluoric Acid Mist	NR	A	C	C
Chlorine Dioxide	NR	A	C	C	Phosgene	NR	A	B	NR
*Chlorine/Fluorine	NR	A	C	C	Phosphate Salt Baths	A	A	A	A
Chromic Acid Plating	A	A	A	A	Phosphoric Acid/Phosphates	A	A	A	A
Cyanide Plating Solution	A	A	A	A	Potassium Chloride/Dichromate	A	A	A	A
Disodium Phosphate	A	A	A	A	Silicon Tetrachloride	B	NR	NR	A
Ethyl Alcohol	NR	A	B	C	Sodium Chloride	A	A	A	A
Ferric Chloride	A	A	A	A	Sodium Fluoride	A	B	C	C
Ferrous Sulfate	A	A	A	A	Sodium Hydroxide	A	A	A	A
Fertiliser Granulator/Dryer/Cooler	A	NR	NR	C	*Sulfur Dioxide	D	A	B	B
Fly Ash	A	NR	NR	C	Sulfuric Acid Pickle	A	A	A	A
Foundry Dust	A	NR	NR	C	Sulfur Trioxide	C	NR	NR	D
Frit Smelter	A	NR	NR	C	Tin Chlorides	A	NR	NR	C
Galvanising	A	NR	NR	C	Tanning Liquids	A	A	A	A
Green Liquor	A	A	A	A	Vinegar	NR	A	B	B
Hydrochloric Acid	D	A	B	B	White Liquor	A	A	A	A
*Hydrogen Cyanide	NR	A	B	B	Urea	A	C	C	B
Hydrofluoric Acid	NR	A	B	B	Zinc Chloride/Sulfate	A	NR	NR	C
Hydrofluosilicic Acid	A	NR	C	B					

* Requires use of caustic recirculation solution, pH 9 or higher

NOTE: Modification to basic scrubber design can result in higher efficiencies.

Materials of Construction

Maskell Productions fume scrubbers are fabricated from a variety of corrosion resistant materials. The standard material is FRP which incorporates the highest grade polyester and vinyl ester resins. Additionally, thermoplastics like polyvinyl chloride (PVC) and alloys like stainless steel may be incorporated.

As a service to its customers, Maskell Production offers material selection assistance. Maskell Productions will recommend the proper material for the service conditions and warrant its performance.

Engineering Assistance

Maskell Productions engineers are available to assist you in determining the proper type and size of scrubber, the ventilation requirements for various processes and construction material. Additionally they will review your preliminary selection and discuss alternative solutions and provide specific quotations. For assistance contact Maskell Productions engineering department.



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