

WET SCRUBBERS

● For Particulate Control



AirPol = EXPERTISE

AirPol engineers were instrumental in developing the modern Venturi from the original prototype. This is particularly true for scrubbers with large gas volumes and with hot corrosive gases.

The AirPol Venturi is now used all over the world in all kinds of industries, especially for removal of sub-micron particulates with very high efficiency.

We have proven over and over again that we can handle the most difficult challenges by applying unique design approaches or specially designed equipment. AirPol has never come upon a system where the gas is too hot, too corrosive, or too abrasive. Our expertise is unparalleled in wet scrubbing applications.



AirPol Blast Furnace Venturi, silicon carbide brick lining with double damper adjustable throat for 500,000 ACFM



Retro-fit Variable Venturi scrubber throat with dual damper blades, double-acting pneumatic cylinder with positioner, inlet and converging to replace existing equipment on a pulp mill power boiler.



For over 50 years, we have designed and built over 1,400 systems for all conceivable applications in many different industries.

AirPol = TOTAL SERVICE

AirPol offers a "Total Service" concept. Every system is specially designed for each specific application.

We provide in-depth process knowledge and engineering expertise, and offer a complete package to meet any need. AirPol supplies air pollution control systems on an "Engineering Only" or a complete "Turnkey" basis, as well as everything in between.

In addition to engineering and equipment supply, we provide installation and start-up service, and maintain a very qualified staff for commissioning, operator training and after-sales service, as well as repairs, spare parts, maintenance, and trouble-shooting.



Installation of "Turnkey" AirPol Power Boiler Venturi Scrubber System to handle 275,000 ACFM



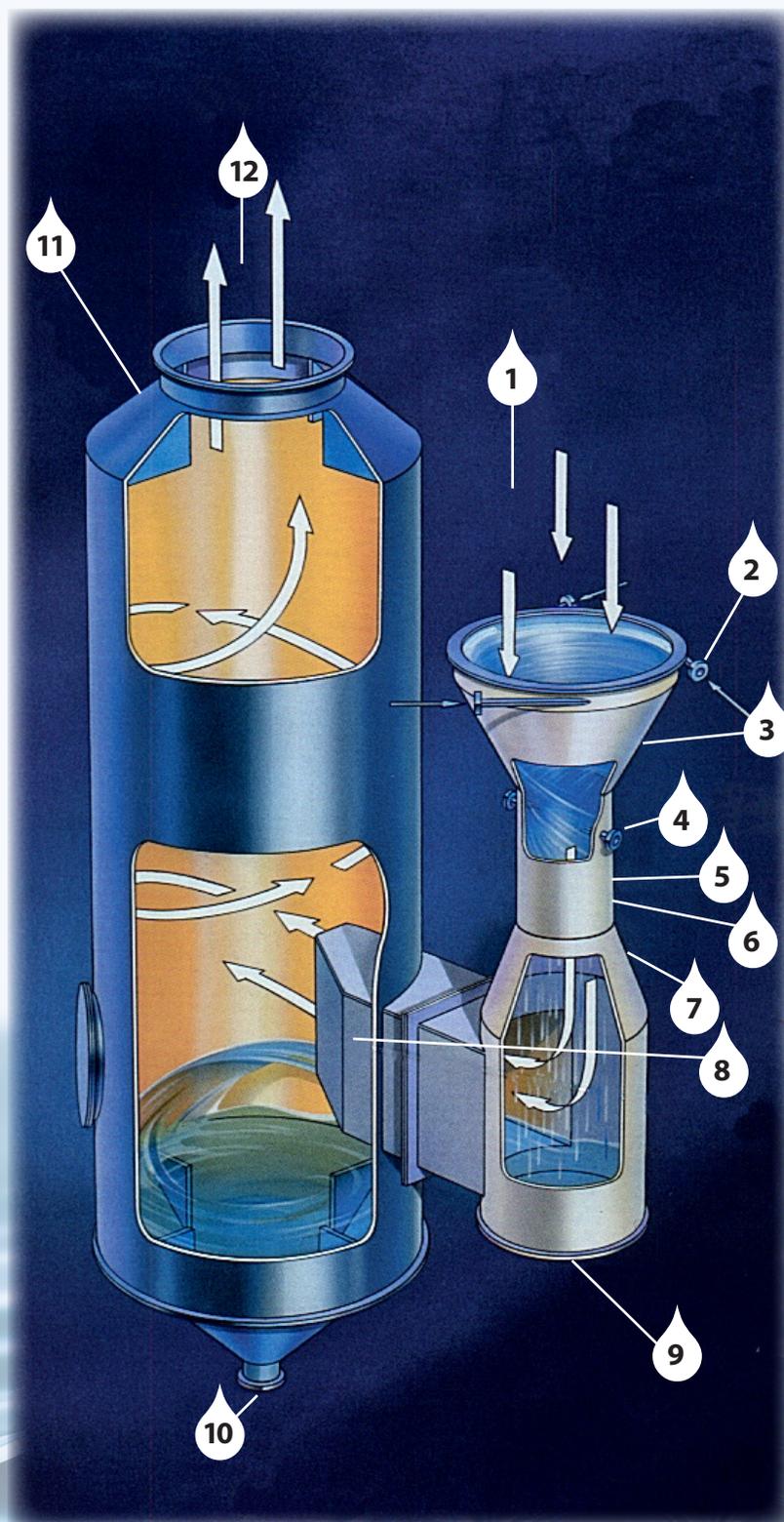
AirPol double-bladed adjustable throat "Boiler type" Venturi for 450,000 ACFM, with custom-designed feed manifold.

AIRPOL = QUALITY

AirPol has earned a reputation for supplying innovative engineering solutions and top quality scrubbers.

As a rule, we supply high quality fabrication and heavier duty materials of construction than our competition. Our minimum design standards are to provide a system that will exceed specifications and withstand high temperatures and severe corrosion or a combination of these adversaries to yield a maximum life.

HOW THE AIRPOL VENTURI WORKS



1. Raw Gas Inlet
2. Scrubbing liquid from recycle pump
Straight pipes: no nozzles, no plugging
3. Liquid swirls with “dentist bowl” effect and prevents particulate build-up and erosion.
4. Additional recycle liquid for complete liquid coverage in the Venturi throat
5. Collision zone. Particulates get entrapped in the recycle liquid
6. Pressure drop (gas velocity) in Venturi throat determines collection efficiency. At fluctuating gas volumes, a damper in the throat maintains constant pressure drop (=constant efficiency)
7. Long diverging section promotes extended contact of particulates & liquid and increases pressure drop regain
8. Gas/liquid mixture enters Separator spin zone. Liquid (with entrapped particulates) drains via bottom cone to recycle pump. Clean gas swirls upward to gas exit.
9. Liquid reservoir in “flooded” elbow bottom prevents abrasion of metal surfaces
10. Liquid with entrapped particulates drains to the pump for recycle back to Venturi and to bleed for disposal
11. Anti-spin baffles stop gas spin and straighten the flow before gas enters the stack.
12. Clean Gas Outlet

AND THE AIRPOL ADVANTAGES

- ◆ Can be designed and operated with virtually any desired particulate removal efficiency
- ◆ Is a very effective device for collection of sub-micron particles, and thus even more effective for coarser particles at lower pressure drop
- ◆ Requires no spray nozzles or jets that can cause plugging or wear problems
- ◆ Has different types of throat dampers to maintain constant pressure drop (constant removal efficiency) at fluctuating gas volumes
- ◆ Can withstand corrosion or abrasion by selection of suitable materials such as carbon steel, alloy steel, rubber-lined steel, FRP, brick lining, etc.
- ◆ Proven to have negligible maintenance
- ◆ Will operate year after year without causing shutdowns.



Venturi throat with pneumatic rotary actuator, and flanged diverging and converging sections to fit existing scrubber.

INDUSTRIES SERVED

AirPol serves almost all industries, although we have concentrated on the industries listed below. As a rule, the air pollution problems are many and varied in each category.

Since AirPol has so many installations, we have elected to arrange separate lists for each application, 14 in total. Upon request, we will send a copy of the list of the AirPol installations for your particular application.

How they are used

PULP AND PAPER The pulp and paper industry has many and diverse air pollution problems both particulate and acid gas, e.g. for recovery and power boilers, lime sludge kilns, dissolving tank vents, slakers and bleach plants.

WOOD PRODUCTS In the wood products industry there are several challenging problems; the "blue haze" which is organic compounds originating from dryers, being the most difficult one.

BLAST FURNACES Blast furnaces, basic oxygen furnaces and scarfing machines are some of the most demanding problems. Incineration presents both very high temperatures and, at the same time, extremely corrosive conditions necessitating the use of sophisticated alloys in the scrubber.

CHEMICAL INDUSTRY The chemical industry has many different pollution problems, always challenging, but as a rule, smaller gas volumes.

PHARMACEUTICAL INDUSTRY The pharmaceutical industry is, to a certain extent, similar to the chemical industry, but in addition, requires solutions for thermal oxidation of solid and liquid hazardous waste, which presents the same type of problems as incineration above.

APPLICATIONS

BASIC General purpose use for a number of diverse applications.

FLOODED WALL For applications with high dust loadings or difficult dust.

BOILER With double-bladed throat damper specifically developed for boilers or applications with wide fluctuations in gas flow and requirements for constant efficiency.

QUENCHER Used at gas temperatures of 800-2,200°F, or for cooling of gases before absorption.

IMPACTOR A compact unit using multiple scrubber principles with lower pressure drop, primarily used for smelt dissolving tank vents on recovery boilers in the pulp & paper industry.

LIME SLAKER A very special Venturi mounted on top of a pulp mill lime slaker. Uses the green liquor slaker feed as scrubbing medium and returns it to the slaker tank.

BLAST FURNACES Specifically developed by AirPol to handle the extraordinarily demanding conditions for blast furnaces in steel mills in the form of high gas temperatures and extremely high and abrasive dust loads. Designed for 10 years of uninterrupted operation.

BASIC OXYGEN FURNACE Specially developed by AirPol to handle very large gas volumes (up to 1,000,000 ACFM) with high and abrasive dust loadings

TYPE C-V Combines a low pressure drop Venturi and a Cyclonic Separator in one vessel. Highly effective for collection of larger particles (above one micron) and the removal of low concentration acid vapors. This is achieved by centrifugal action of the gas passing through highly atomized multiple water curtains. Operates at 3" to 6" WG pressure drop.

COMBINATION SYSTEMS Venturi scrubbers are often combined with a subsequent acid gas Absorber, either in the form of a separate vessel or as a section of the Separator. A reasonably good acid gas absorption efficiency can be obtained just by adding a reagent to the scrubbing liquid in the Venturi.

AirPol SYSTEMS

- ◆ **Particulate Control**
- ◆ **Venturi and Cyclonic Scrubbers**
- ◆ **Acid Gas Control**
- ◆ **Absorbers**
- ◆ **Particulate/Heavy Metal Control**
- ◆ **Wet Electrostatic Precipitators**
- ◆ **Integrated Systems**

***Air Pollution Control Systems
The ULTIMATE Choice***

*Services: Engineering ◆ Design ◆ Consulting ◆
Pilot Testing ◆ Turnkey Systems*



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