

PARTICULATE CONTROL

Wet Electrostatic Precipitator



ISO9001&14001



OHSAS18001



SEMS 2

ACTIVE

www.ATEI8.com

The spirits of "Innovation", "Integrity & Credit" and "Service" are our team members' focus on providing our customers professional services in environmental projects. We pursue the respect of natural environment, and execute effectively the energy economization & waste reduction operation, in order to reduce the pollution and impact to the environment.

SYSTEM DESCRIPTION

ACTIVE Wet Electrostatic Precipitators (WEP) are designed to meet the needs of the most demanding applications. Particle collection occurs in an electric field. This minimizes energy costs compared to scrubbers and baghouses which require large amounts of energy to overcome the resistance to air flow. Wet Electrostatic Precipitators may also be designed with an optional scrubber section for removal of acid gases. This makes this unit the most versatile air pollution control system on the market. Wet operation offers several advantages to the operation of an electrostatic precipitator.

- Gas absorption can take place.
- The water tends to provide a continuous cleaning action.
- Water acts as a quenching medium to cool the inlet gas to its adiabatic saturation temperature, eliminating the need for a heat exchanger.
- With re-entrainment eliminated, performance levels can be very high.

PRINCIPLES OF OPERATION

Stack gases containing particles or acid mist to be removed, flow upward through an electrically grounded tube (collector cell). A concentric discharge electrode is maintained at a high negative DC electric potential. Particles or acid mist passing through the intense electromagnetic field (corona) are charged negatively and are attracted to the grounded collector cell. Collector surfaces are kept wet and ash resistivity minimized by using water sprays. Particles reaching the collector walls are captured and drain down into a sump for removal.

ACTIVE WET ELECTROSTATIC PRECIPITATOR

ACTIVE Wet electrostatic precipitator is designed to collect sub-micron solid particles and acid mist, which is also the major opacity source of a variety of industrial emissions. The WEP is a unique high-voltage vertical hexagonal tube type collector.

□ MATERIAL OF HOUSING

For corrosion resistance, fiberglass reinforced polyester materials are generally used, stainless steel is also available.

□ PRE-SCRUBBER

The gas passes through the Pre-Scrubber where it is cooled to its adiabatic saturation temperature. Particles in the gas stream above five microns are removed. Vapors are condensed into a fine mist. It consists of a series of plastic piping, spray nozzles and demister (option), it can be installed in the inlet ductwork to save system space.

□ CONDITIONING SECTION

The gas enters through the air distribution baffles. Small, liquid drops are added to the gas stream from nozzles on the fog headers.

□ COLLECTION SECTION

The particles, mist and drops are charged and removed from the gas by the high voltage, electrical field. It consists of solid round discharge electrodes mounted concentrically in a grid of collector tubes. Hexagonal tube geometry minimizes overall size of the unit by maximizing the amount of collector surface area per unit volume of collector section. High removal efficiencies are assured by unique discharge electrode design which features multi-point ionizers for producing a very intense corona.

□ OUTLET SECTION

The particles, mist and drops coalesce and drip into the conditioning section and are removed via the drain.

The clean, cool gas leaves the Wet Electrostatic Precipitator. It consists of a plenum, a wash header with nozzles, discharge electrode support, the wash header set at the top of the precipitator washes down the collector and electrodes, this is operated on a periodic basis.

□ TRANSFORMER RECTIFIER (T/R) SET

This system transfers primary low voltage to secondary high voltage (40~75KV), and uses mineral oil to be the insulating fluid.

□ MAGNEHELIC PRESSURE GAUGE

A magnehelic gauge is used to measure the pressure drop (ΔP) in a WEP and hot air purge system (option).

□ ACCESS DOOR

Top and side locations facilitate easy access and removal of electrodes, plenum neoprene gasket for air tight seal.

□ PUMP AND PIPING

This system is designed to supply the water for pre-scrubber, conditioning section and spray wash header for cleaning collector & electrodes.

□ FAN

This is a heavy duty (centrifugal type) industrial FRP or stainless steel fan, mounted on a spring isolated unitary base. It is supplied with clean out door, shaft and bearing guard, extended grease fittings, and flanged inlet and outlet connections.

□ CONTROLS

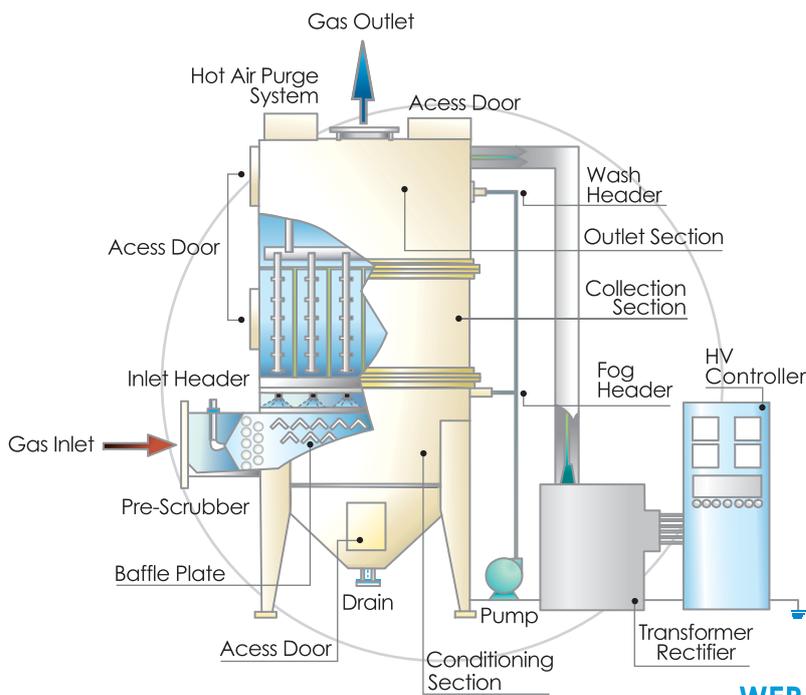
The controls consists of AC to DC control information, automatic voltage controller, ΔP meters, pump & fan status and safety interlock system for opening, entering & closing WEP.

□ DUCTWORK

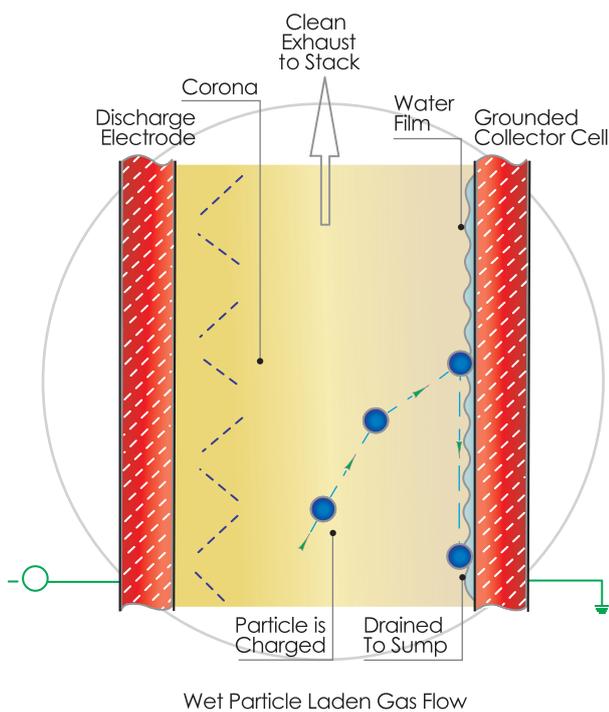
FRP, SUS304 and SUS316 material.

□ STACK

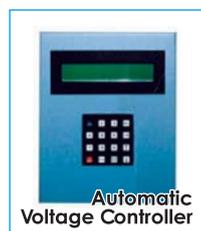
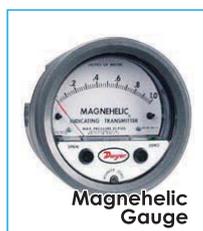
The stack is furnished to discharge the cleaned exhaust at a specified elevation. The stack is fabricated of FRP or stainless steel with sampling platform.



WEP System



WEP Collection Mechanism



CHARACTERISTICS

- ❑ Unique system supplier with ISO9001&14001, OHSAS18001 Certification.
- ❑ Complete air pollution control system supplier for fabric filter, scrubber , rotor & oxidizer, carbon tower, etc.
- ❑ The solid electrodes virtually eliminate maintenance, since there are no broken wires to replace.
- ❑ Wider spacing, along with tubular configuration, greatly lessens sparking and shorting of cells. Therefore, this design will effectively abate process exhaust which contains high concentration of particulate. Lower pressure drops (0.25 in. w.g. vs. 6-10 in. w.g.) and the elimination of broken or blinded bags makes this precipitator design highly desirable in lieu of fabric collectors.
- ❑ Wider tube spacing also enables the precipitator to operate continuously or intermittently wet.
- ❑ Re-entrainment problems due to highly resistive or highly conductive materials have been eliminated by operating the precipitator wet. As soon as the particle adheres, it is swept away.
- ❑ Because of its "insensitivity to wetness", the precipitator can be installed down stream from existing wet scrubbers, bringing these scrubbers into compliance with today's more stringent codes.
- ❑ ACTIVE can supply an optional scrubber (or carbon bed) in combination with the precipitator. This will enable the system to control gaseous as well as particulate emission.
- ❑ Automatic voltage control can optimize the system performance.

OPTIONS

- ❑ Special finishes
- ❑ Inlet and outlet dampers
- ❑ FM sprinkler
- ❑ Hot Air Purge System for Insulator
The insulators which support the high voltage grid in the precipitator, are the large, industrial, heavy duty type. These are completely isolated on the clean side of precipitator. To prevent water vapor, particle or acid mist to contaminate the insulator, a hot air purge system is designed to eliminate this problem. The system consists of a fan with heater and a high efficiency inlet air filter.
- ❑ Automatic Voltage Controller
An automatic controller keeps the voltage at a maximum at all times, as process conditions vary. Sparking rates controlled to the desired level.
- ❑ Optional scrubber
An optional scrubber to remove waste gas (ex. HCl, SO₂, NH₃, etc.) can be installed in the lower part of the housing. It consists of a spray header with nozzles, demister and pH controller.

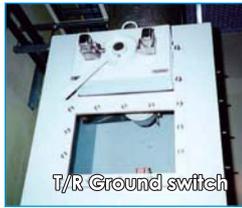
OTHER QUALITY PRODUCTS

- ❑ Dry electrostatic precipitator
- ❑ Collector maintenance
- ❑ Parts Replacement

INDUSTRIAL APPLICATIONS



Inlet Spray Piping



T/R Ground switch



Pump & Piping



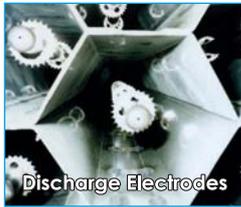
T/R set



Wash Nozzles



Collector Cells



Discharge Electrodes



Rigging



Discharge Electrode Support



Discharge Electrode Support



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Textile
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Phosphoric Acid Manufacturing
Waste Incinerators
Corn Drying
Sulfuric Acid Plants
Cement

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