

LUNDBERG IS THE LEADER

Since 1984 Lundberg engineers have designed, delivered and installed more than 200 of our unique Geoenergy® E-Tube® Wet Electrostatic Precipitators (wet ESPs), helping our clients control emissions and meet demanding air quality regulations with excellent availability and low operational overhead.

For complete engineering, project management and construction services, as well as comprehensive aftermarket service and spare parts supply, contact Lundberg today.

LUNDBERG

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GEOENERGY® E-TUBE® WET ESP



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WET ELECTROSTATIC PRECIPITATORS

The Technology Choice For Fine Particle Collection

The collection of fine particulate emission is often one of the most difficult environmental control problems faced by industry. These sub-micron particles present a significant threat to human health and are one of the leading causes of visibility degradation. Thus, there is increasing regulatory pressure to reduce the emission of these particles to the environment. Industrial operators are looking for technologies that can meet this challenge at reasonable capital and operating costs.

The E-Tube® Wet Electrostatic Precipitator (ESP) is just such a technology. Developed by Geoenergy® International Corporation and now part of the Lundberg family of emission control products, E-Tube® Wet ESPs have been successfully applied to hundreds of tough particulate control applications around the world. Presently over 8 million CFM of emissions are being treated with E-Tube® Wet ESPs.

TYPICAL INSTALLATIONS

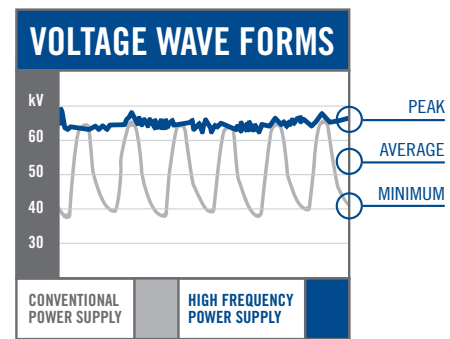
- Biomass-fired boilers
- Sewage sludge incinerators
- Wood dryers in the panelboard and pellet industries
- Hazardous waste incinerators
- Fiberglass/mineral wool forming and curing operations
- Fine particle sources at many other process applications

GEOENERGY® E-TUBE® WET ESP

Advanced Technology Means Top Performance

The basic E-Tube design features a number of technologies that ensure the best particle collection performance and ease of operability. Each of these has been proven in full scale operation at many installations.

In addition, each E-Tube project is custom designed to fit the requirement of a particular installation. This includes inlet/outlet ductwork, supports and access facilities and integrated water recycling and treatment systems. Finally, each E-Tube project is supported by the entire Lundberg engineering and project management team whether it is an equipment-only project or a complete turnkey installation.



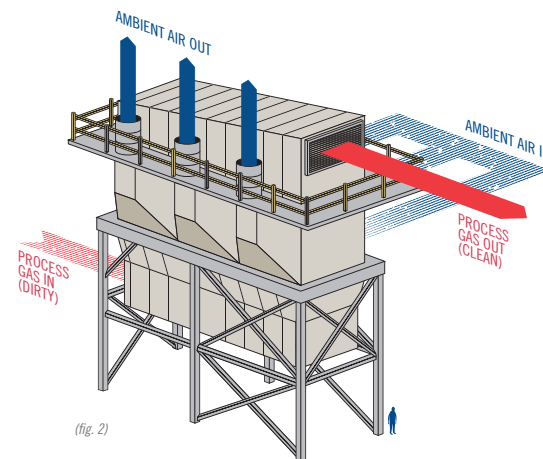
(fig. 1)

High-Frequency Transformer-Rectifier Sets

Exclusive to the Geoenergy design, our high frequency transformer rectifiers (TR sets) maximize the total electric field, and reduces energy consumption compared with traditional 60 Hertz designs. (see fig. 1)

External Tube Cooling

Improves performance and reduces water consumption because tubes are cooled with external air, allowing for natural condensation to collect within the tube walls, aiding in irrigation (see fig. 2)



(fig. 2)

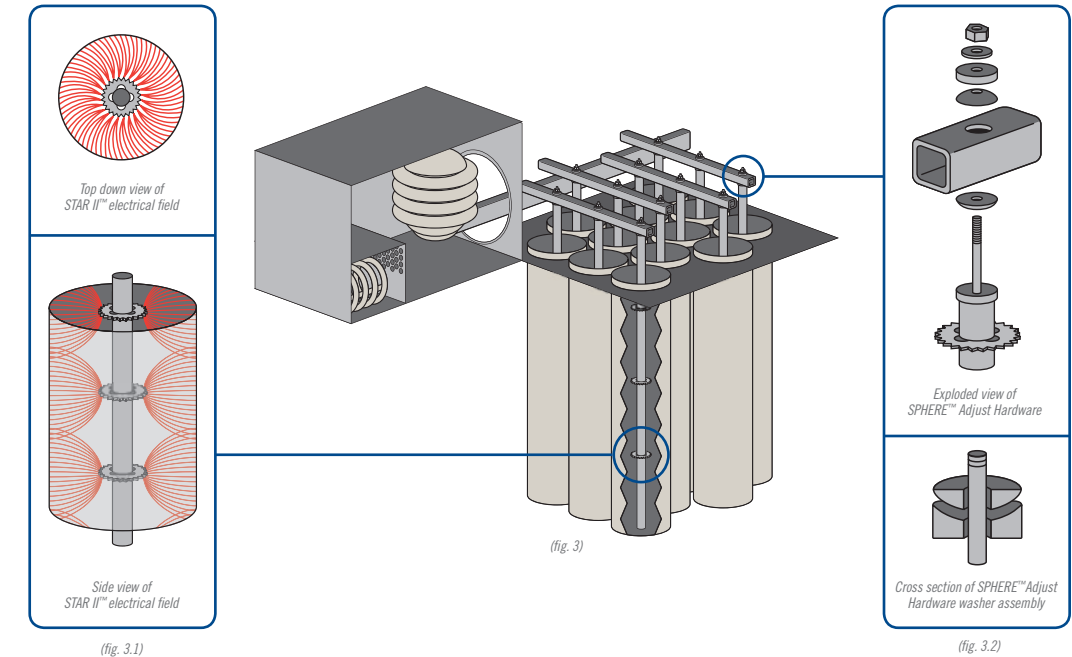
STAR II™ Electrode Design

Maximizes electrical field and secondary current output through unique shape and design enhancing improving efficiency and reducing wet ESP size requirements. (see fig. 3.1)

SPHERE™ Adjust Hardware

Lowers installation and maintenance costs through our unique one-bolt design. It also eliminates the requirement for a lower alignment frame, simplifying assembly and upkeep (see fig. 3.2)

The Geoenergy Wet ESP has been deployed in hundreds of facilities including a half-dozen installations in the last three years, all of which meet the strict new Boiler MACT requirements. Since its original design in 1984, the E-Tube Wet ESP has been steadily refined and perfected, taking advantage of improvements in materials and technologies and rising to meet ever more stringent emission control standards.



Circular E-Tube Design

Increases efficiency, lowers operating costs and reduces footprint by maximizing exposure to the electrical field while reducing corrosion common in hexagonal or square designs (see fig. 3)

The Lundberg Difference

For nearly 80 years, our engineers have proudly carried the Lundberg name, analytically applying technologies to industry and helping our clients find solutions and adapt to changing technologies and emissions requirements. Today we continue that tradition, offering complete engineering, project management and construction services, as well as comprehensive aftermarket service and spare parts supply.

30 YEARS OF INNOVATION

1984

1st wet ESP on veneer dryer

DESIGNATED BACT BY OREGON DEQ

1988

1st wet ESP on particleboard dryer

1995

Louisiana Pacific selects E-Tube units for all northern division OSB mills

BOILER MACT I

2004

1st Boiler MACT compliant unit

2006

World's largest OSB mill installs E-Tube units

2010

World's largest pellet mill installs E-Tube units

BOILER MACT II

2013

IP selects E-Tube wet ESPs for Boiler MACT compliance

Contact Lundberg today to learn more about our Geoenergy E-Tube Wet ESP and other emissions control solutions.

Call 425-123-4567 or email info@lundberg-us.com