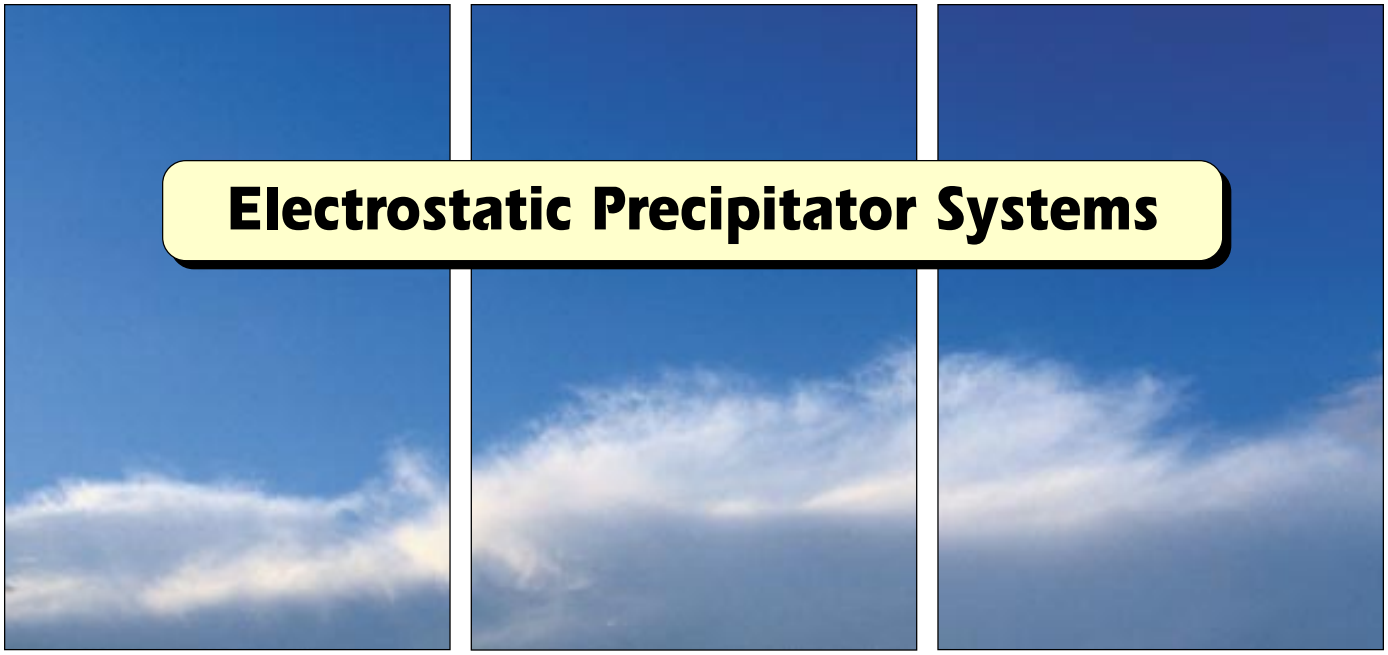
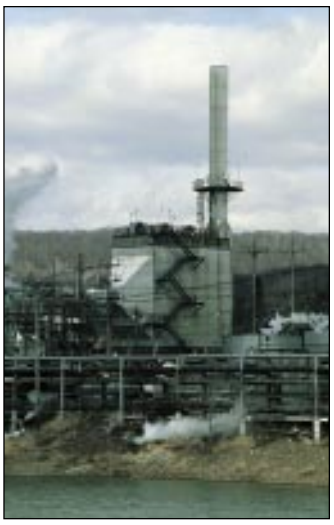


Electrostatic Precipitator Systems

Industrial Projects

Pulp and paper recovery boiler

Wood-waste-fired cogeneration facility



Oil refinery catalytic cracker

Pulp and paper power boiler

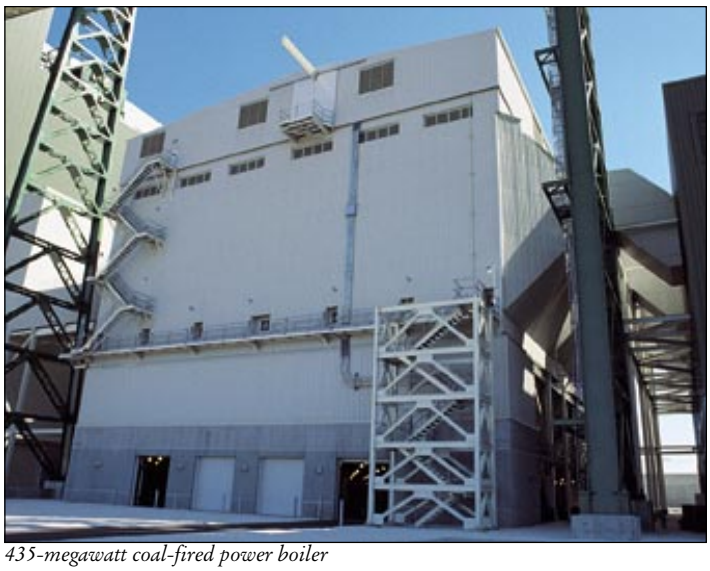
A History of Success

Innovation, experience and a tradition of quality have made Wheelabrator an acknowledged world leader in air pollution control technology for more than 85 years.

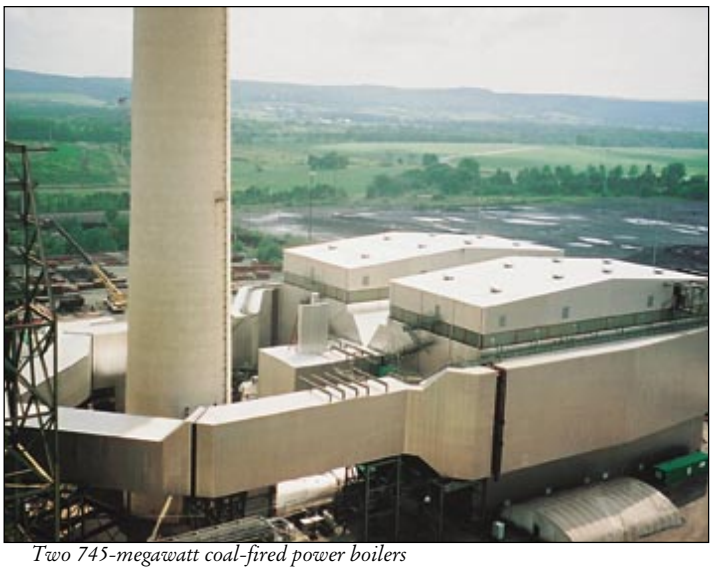
Our record of technological firsts includes the introduction of the Rigid Frame Electrostatic Precipitator to North America in 1965. Today, Wheelabrator technology encompasses all major designs in electrostatic precipitators to clean gases from industrial and utility processes ranging from 30,000 to 5 million ACFM.

Designs include the Wheelabrator HaRDE® Rigid Discharge Electrode with tumbling hammer rapping and the Wheelabrator VIGR™ Rigid Discharge Electrode with magnetic impulse rapping.

Utility Projects



435-megawatt coal-fired power boiler



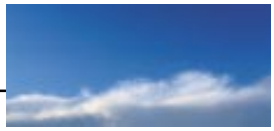
Two 745-megawatt coal-fired power boilers

Precipitator with 16-inch wide plate spacing on a 320-megawatt coal-fired power boiler

Precipitator and Wet FGD System controls emissions from two coal-fired boilers producing 440 megawatts of power

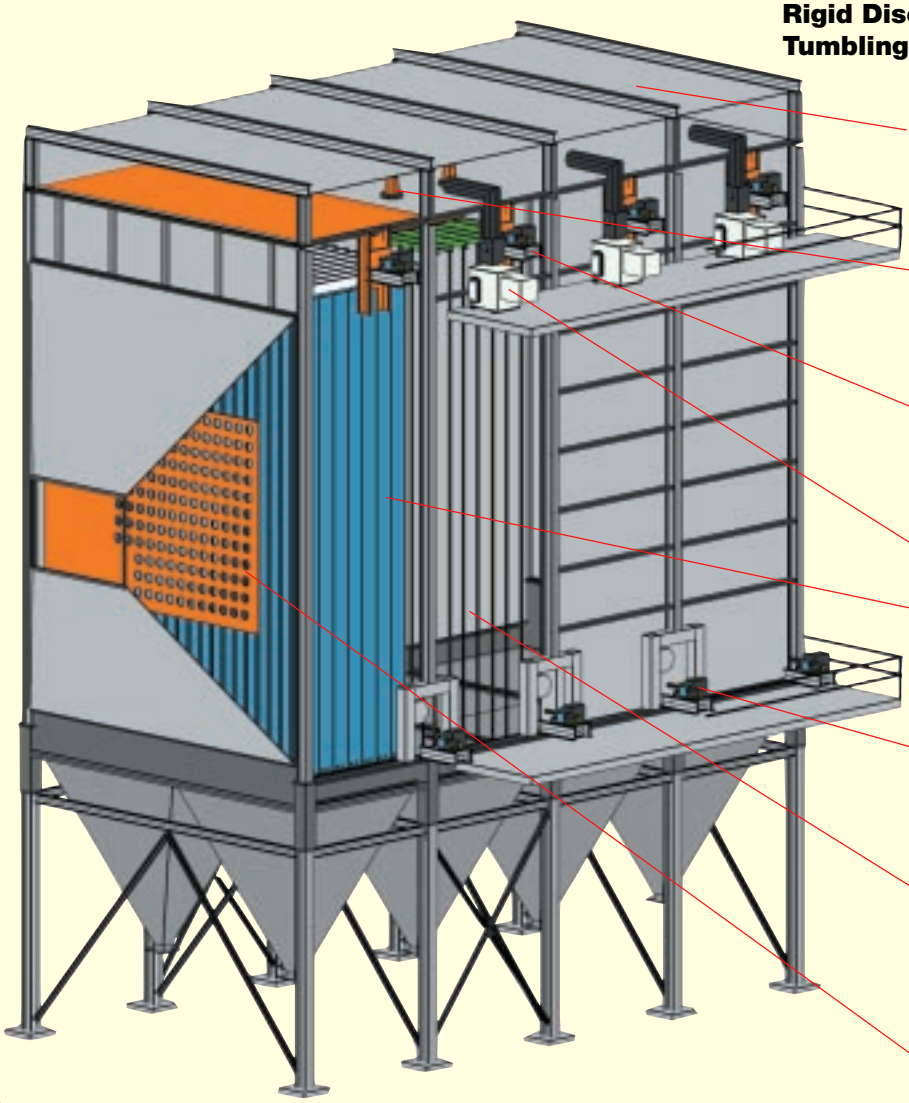
We have applied these designs to coal-fired boilers, pulp-and-paper recovery boilers, bark boilers, catalytic crackers, refuse-to-energy facilities, cement plants, cogeneration facilities and a wide variety of other processes. Among our achievements is the world's largest electrostatic precipitator system on a coal-fired boiler.

We continue to serve major companies throughout the world with one of the most experienced technical staffs in the air pollution control industry, offering advanced equipment and a level of service few other air pollution control specialists can match.



Wheelabrator HaRDE®

Rigid Discharge Electrode Precipitator with Tumbling Hammer Rapping



Penthouse Roof *- clean roof design, no penetrations to cause leaks, cold spots or corrosion*

Suspension Insulators *- 4-point suspension of each electrical section provides longer insulator life and less downtime*

Electrode Rapper Drives *- more intense rapping directly on rigid electrodes removes difficult dusts better*

Transformer Rectifier

Collecting Plates *- individual interlocking strips designed for narrow and wide spacing*

Plate Rapper Drives *- bottom rapping produces the highest force where most dust collects*

Rigid Discharge Electrode (RDE) *- available in different designs and spike spacing arrangements to suit various process requirements*

Gas Distribution Devices

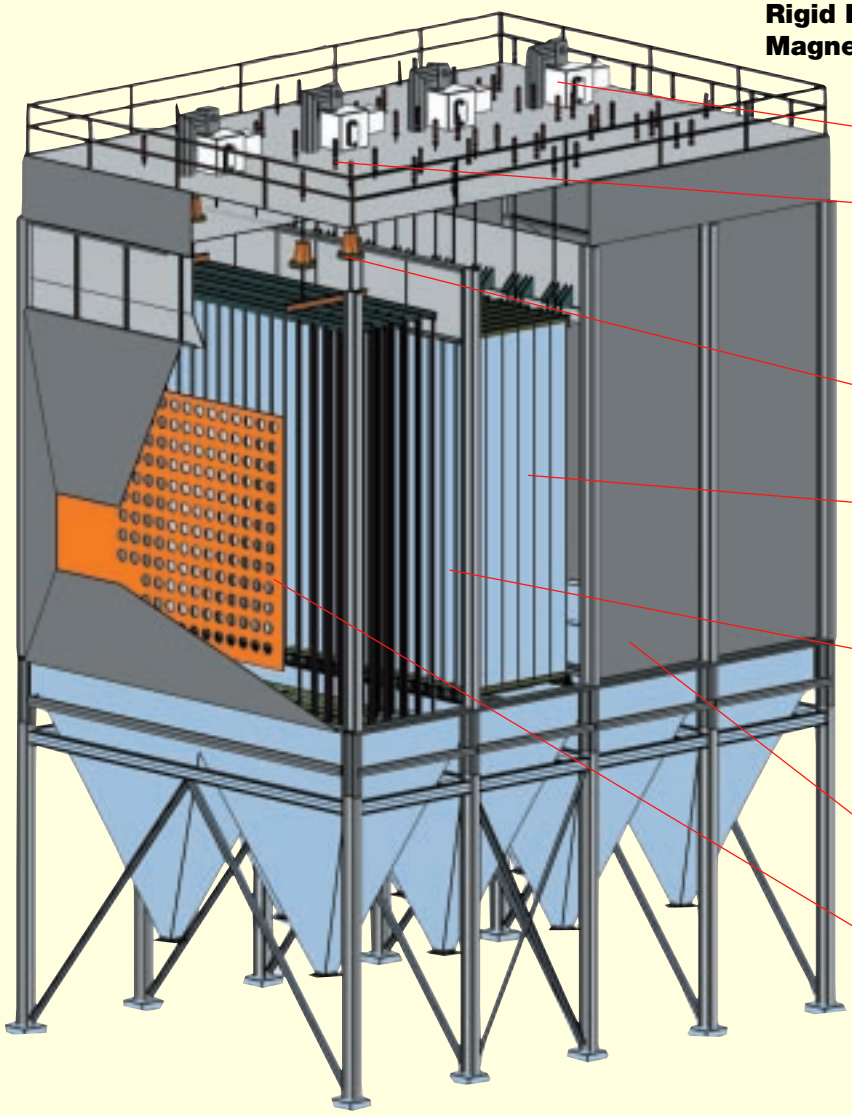
The Wheelabrator HaRDE® Electrostatic Precipitator is ideal for sticky, tenacious and high-resistivity dusts. Unbreakable electrodes efficiently transmit rapping forces from internal tumbling hammers that swing freely under the most adverse conditions. Staggered hammer positions reduce the collecting plate and discharge electrode surface that is rapped at any instant, minimizing particulate re-entrainment and opacity spikes.

Tumbling hammers strike the collecting plates and rigid electrodes directly, so that all areas receive proper rapping acceleration and no energy is lost to the support structure.

Maintenance is simplified by convenient side access and internal access walkways. Minimal casing penetrations ensure long life.

Wheelabrator VIGR™

Rigid Discharge Electrode Precipitator with Magnetic Impulse Rapping



Transformer Rectifier

Rappers *- variable intensity gravity impact rappers are roof mounted outside the gas stream. On-line adjustment of rapping intensity and frequency is available.*

Suspension Insulators *- 2-point or 4-point suspension designs available*

Collecting Plates *- complete shop-assembled panels designed for wide or narrow spacing*

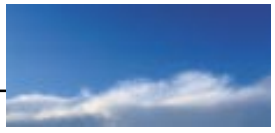
Rigid Discharge Electrode (RDE) *- available in different designs and spike spacing arrangements to suit various process requirements*

Casings *- compact casing. No moving parts in the gas stream.*

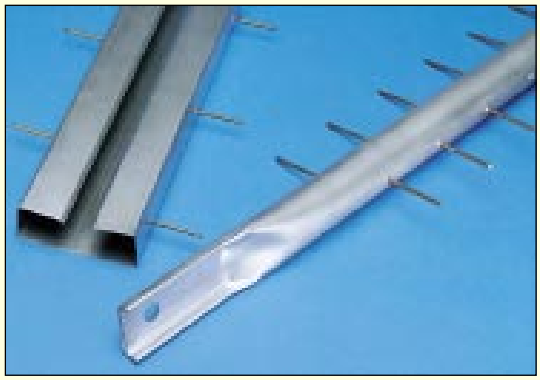
Gas Distribution Devices

The Wheelabrator VIGR™ Precipitator features rigid electrodes and external rapping. It is widely used for particulate emission control in electric power generation, metals, petrochemical, bark boiler and refuse-to-energy industries, as well as product recovery in pulp and paper plants.

Shop-assembled collecting curtains allow for faster and easier construction. Variable intensity rappers mounted on the precipitator roof allow for easy on-line maintenance and adjustments.



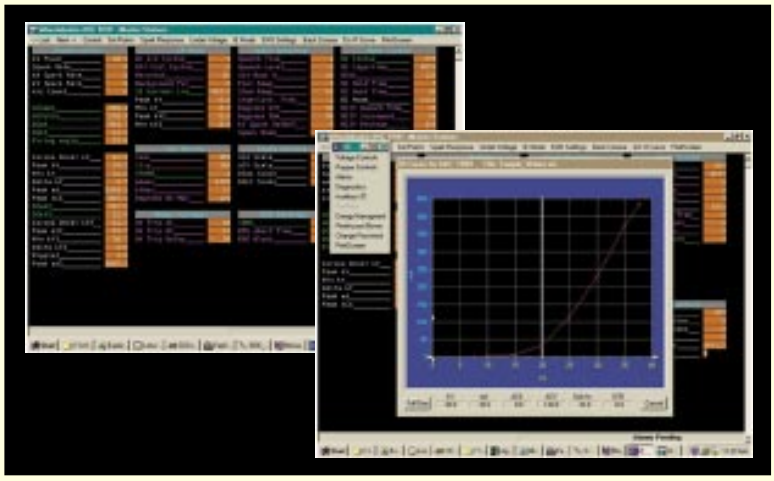
Technology



Rigid Discharge Electrodes

Rappers

Automatic Power Control



Central Computer Control

Rigid Discharge Electrodes (RDE)

One-piece, unbreakable RDEs efficiently transmit rapping forces and greatly reduce maintenance costs. Available in proprietary roll-formed "C" channel design (READI-C™) or in tube-and-spike design (READI-T™).

Rappers

Tumbling hammers used in our HaRDE Rigid Electrode Precipitator provide high level rapping "g-forces" to effectively clean electrodes and collecting plates.

Our VIGR Rigid Electrode Precipitator uses a variable intensity, gravity impact rapper design for rapping flexibility and high reliability for the collecting plates and electrodes.

Automatic Power Control

The WAPC-2000™ is designed to solve many common precipitator problems by reducing electrode failures, lowering power consumption, virtually eliminating control downtime, lowering maintenance costs and reducing opacity spikes.

Central Computer Control

The CCC™ is the most efficient way to monitor, operate and maintain your precipitator. It monitors stack emissions and precipitator operating functions and compares them with desired levels, adjusting automatically to save energy and reduce emissions. DCS interface is, also, available.

Aftermarket Services

Conversion from hot-side to cold-side operation. Upgrade from weighted-wire to a Wheelabrator VIGR for a chemical processing plant.

Upgrade of a rigid frame design to a Wheelabrator RDEF design for a utility power plant.

Upgrade of a weighted-wire design to a Wheelabrator VIGR for a utility power plant.

Upgrade of a weighted-wire design to a Wheelabrator VIGR for a steel plant.

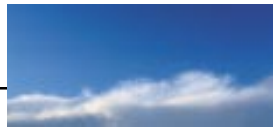
Rebuild on Our Experience

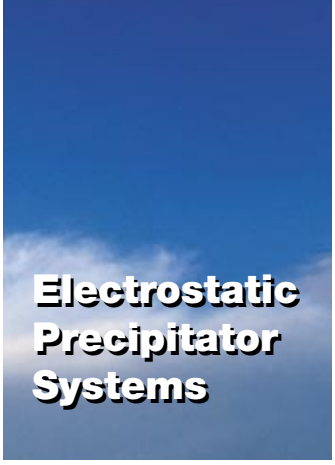
With more than 35 years of experience in the design and supply of electrostatic precipitators, Wheelabrator is uniquely qualified to offer the technical expertise for innovative, cost-effective upgrade and rebuild services — for all precipitator designs, regardless of manufacturer.

Our state-of-the-art equipment includes micro-processor controls (WAPC-2000™) and energy management systems (CCC™) to upgrade older analog control systems.

We can rebuild precipitators with the same type of internals or upgrade to the latest design. Older weighted-wire precipitators can be rebuilt with our VIGR rigid electrode design for improved reliability and performance. For existing rigid frame designs, we offer an upgrade of the electrode system to our unbreakable Rigid Discharge Electrode Frame (RDEF) design.

From control upgrades to total rebuilds, we can do it all, including installation.





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