

# Electrostatic Precipitator Technology, Parts and Service



# Making your ESP system work

Existing electrostatic precipitators (ESPs) tend to age poorly due to a combination of lack of support from the original equipment manufacturer and on-going wear and tear. Additionally, in the hunt for higher production, it's common for the ESP to be handling larger gas volumes and higher dust loads than it was originally designed for.

That's where PrecipTech fits in.

Our products and services are designed with one goal in mind—to help your ESP achieve performance requirements in both reliability and efficiency.

Our combination of innovation and experience is unparalleled in our industry



*The Electrostatic Precipitator Specialists*

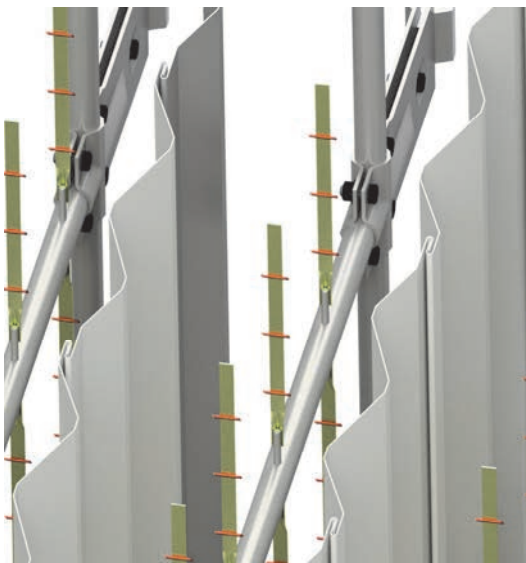
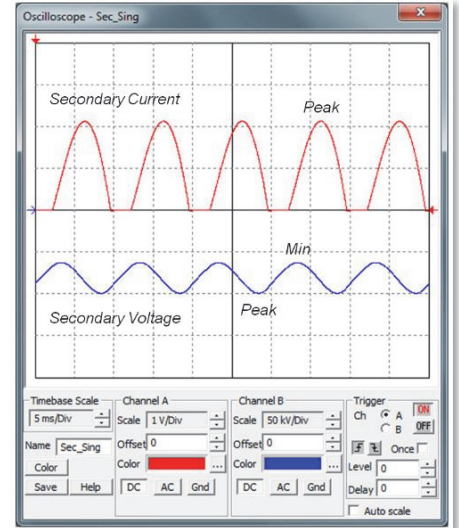
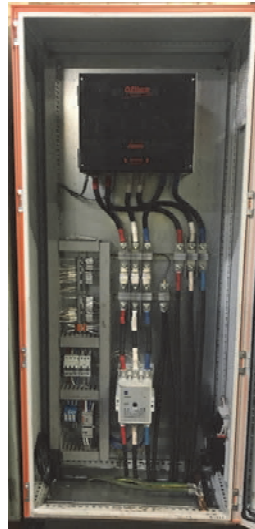


# Innovative Technologies

## Advanced power supplies and control systems

Optimising the supply and regulation of power to high voltage electrostatic precipitator fields is essential to maximising efficiency. Our systems utilise the latest technologies from our international partners including:

- Advanced Microprocessor Controllers
- Single phase transformer rectifiers
- 3 phase transformer rectifiers
- Pulse energisation systems
- High Frequency IGBT systems
- High voltage capacitance filters



## Innovative Component Design

Most electrostatic precipitators in operation today contain parts and components designed decades ago. We provide upgraded parts to both improve the performance and reliability of any precipitator.

### *Discharge Electrodes and Collecting Plates*

Discharge Electrode design have evolved significantly allowing for higher current density at lower voltages. By simply changing the electrode design we may be able to improve the performance of your precipitator significantly.

### *Design improvements for greater reliability*

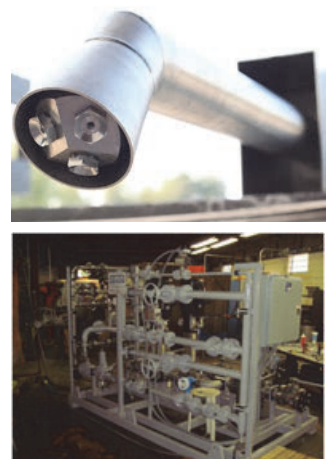
We have a series of improved designs for most makes of electrostatic precipitator. These designs have been created following many years of repairing and maintaining precipitators. Call us today to ask how we can help reduce your emergency breakdowns and improve reliability.

## Gas Conditioning

Electrostatic are designed for specific gas conditions. Over time many sites seek to increase or change their production which leads to changing gas conditions. One simple method to improve electrostatic precipitator performance is to modify the gas conditions prior to entry into the unit. This can be achieved in a number of ways:

- Water spray injection to both decrease the gas temperature and to increase the humidity
- Sulphur trioxide injection to decrease the resistivity of the dust particles
- Ammonia injection to improve the agglomeration characteristics of the particles.

Contact us today to see what is the right solution for your plant.



# Inspections and Troubleshooting

## Inspections

Electrostatic Precipitators are a very complex piece of equipment with many variables that can affect their performance. Only through detailed examination can issues be identified and repaired.

### On-line Inspections

During operation it's not possible to enter an electrostatic precipitator however many faults and issues can be determined with careful examination. During an on-line inspection our technicians will examine the following areas:

- Electrical waveforms and readings
- Rapping sequencing and audible striking
- External spark identification and location

Various remedies can be implemented while the unit is operating including rapping intensity modification and fine tuning of the voltage controllers.

### Internal Inspections

Due to the many and varied issues that can occur within an ESP only experienced inspectors know where to look. Luckily Preciptech has the most experienced inspection crew in Australasia. Preciptech personnel have inspected almost every operating ESP in this region and with a thorough eye, we have endured heat, dust and sweat to find and fix problems.

During these inspections Preciptech will visually inspect the following components, where accessible:

- Collector plates
- Discharge electrodes
- Anti-sway bracing
- Rapping systems
- Anti-sneak and gas distribution devices
- Casing and hopper internal surfaces
- Insulators
- DC bus system
- Insulator purge and penthouse ventilation systems



### Detailed Reporting

Our detailed inspection reports provide a clear snapshot of your ESP and serves as a maintenance planning tool.





# Upgrades, Maintenance and Rebuilds



## Safe, Efficient and High Quality Service

Preciptech's innovative technology and depth of experience can help ensure your equipment is operating efficiently, reliably, and cost effectively.

With over 70 years of combined experience between our technicians and site staff, we have the experience, project management skills and the technologies to help your ESP reach its performance targets.

Our management systems comply with AS/NZS 4801-2001 (Occupational Health and Safety) and ISO9001:2015 (Quality Assurance).

Precipitator Technologies offers a full range of ESP service projects, including:

- Full Turn-key projects
- Maintenance Supervision and labour
- Emergency breakdown services
- Project and Construction management
- Maintenance Planning
- Rebuilds
- Upgrades
- Engineering studies
- Precipitator Technologies also offers conversion services for existing ESPs to Fabric filters.

We have successfully completed major projects at the largest industrial sites within Australasia including BHP, Glencore, Nyrstar, South32, Liberty Onesteel, Bluescope, and many more. Call us today to see why we come so highly recommended by our customers.

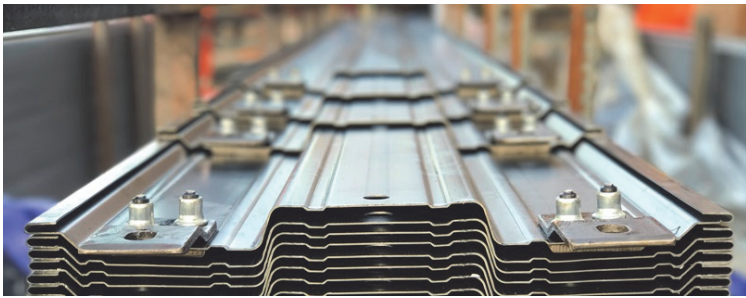
# Mechanical Parts

## All Mechanical Parts

Electrostatic precipitators require very precise and high quality components to ensure they continue to operate at peak performance. At PrecipTech we have manufactured, supplied and installed both replacement and upgraded parts for all operating styles of precipitator in Australasia.

### Collecting Plates

Collecting plates are one of the most critical items in an ESP and require specialised machinery to manufacture to the high levels of accuracy demanded. We manufacture collecting plates for all makes of ESP to the highest tolerances.



### Rapping Components

Whether you have a tumbling hammer design system or an American-style top-rapping system, we can supply the components that you need. From hammers and bearings to shafts and drive mechanisms we supply all mechanical rapper components.



## All Original Equipment Manufacturers

We supply replacement parts for **all original equipment manufacturers** (OEMs) including Alstom, Flakt, SF, Joy, Lurgi, Outotec, Noell, Elex, FLS, Lodge Cottrell, Research Cottrell and many more.

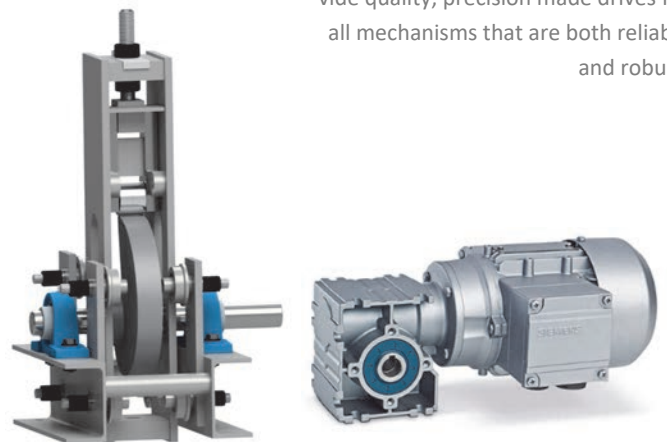
### Discharge Electrodes

Discharge electrodes are a key component in producing the electrical conditions for particulate collection within an electrostatic precipitator. Innovative design and exacting manufacture ensure longevity and maximum collection efficiencies.



### Drive Systems

Drive mechanisms for the various rapper and dust handling systems are an often overlooked item within an electrostatic precipitator. We provide quality, precision made drives for all mechanisms that are both reliable and robust.



If you don't see the style of part you are after here please call one of our helpful technical staff for help in identifying the component you need.



# Electrical Components

## All Electrical Components

There are various components that make up the electrical system within an electrostatic precipitator. We pride ourselves on being able to design and provide electrical solutions that range from complete systems to individual components.

## Power Supplies

The power supply circuit for an electrostatic precipitator field has various key components including thyristors (SCR), current limiting reactors (CLRs), voltage dividers and circuit breakers. The key component is the transformer rectifier (TR) which provides the high voltage DC supply. We supply, install and maintain all electrical components including all sizes and styles of TR sets from simple single phase units to three-phase, micropulse and high frequency units.



## World's Best Solutions

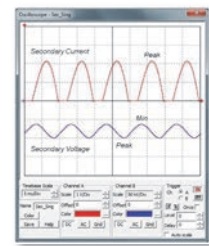
Preciptech has relationships with the leading manufacturers of specialised electrostatic precipitator power supplies and control components world wide. We always strive to provide the right engineering solution for you without bias.

## Control Systems

The automatic voltage controller is the “brains” behind the operation of the electrostatic precipitator. It regulates the voltage and current based on fast algorithms that can detect sparks within milliseconds. Modern controllers can also operate the rapping systems in intelligent ways to improve overall performance.



Upgrading your control system is normally the cheapest and most effective route to improved performance.



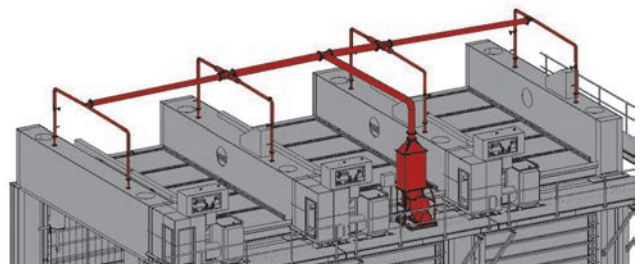
## Insulators

High quality and reliable insulators are a key component in a well performing precipitator. The right ceramic as well as the correct design of insulator are imperative within each Electrostatic Precipitator. We supply insulators for all makes of precipitator and can manufacture in standard porcelain and high performance alumina.



## Heating Systems

Heating systems are used through an electrostatic precipitator to prevent moisture formation and to protect insulators from cracking. Support Insulator failure is typically caused by thermal shock due to the insulator being much colder than the process gases. By heating the insulator to somewhere near the temperature of the process gases you can protect the insulator from damage. We provide heating systems from small heater elements to entire blower-heater circuits.





### Testimonials

*"The most professional and well organised crew that I have come across"*

- Electrical Engineer, Nyrstar

*"We have set a new Safety benchmark for this size outage ... .Sincere appreciation to all of you from myself personally, and also on the behalf of the management and staff"*

- Outages Superintendent, BHP

*"Thanks to everyone at Preciptech for a professional and high-quality project. The fact that we completed the job without any safety incidents and a day ahead of the program is a great credit to all of you."*

- Project Manager, Liberty Onesteel



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