Alstom’s wide range of Electrostatic Precipitators (ESP) designs offer the best fit for all applications, optimising emission compliance and saving power.

Meeting the most stringent regulation with the lowest cost

Electrostatic Precipitators (ESP) are widely accepted across the world as an effective system for particulate emissions control. Alstom Electrostatic Precipitators, offer a reliable solution to the demands of increasingly strict regulations for particulate matter emissions worldwide, at the lowest lifecycle cost.

ESPs work by creating a high voltage electrical field (corona) around the discharge electrodes, which causes the gases and the dust particles being carried by the gases, to get ionised. The dust particles, once charged, migrate to and deposit themselves on the neutral collecting plates, from which they are dislodged by periodic rapping and guided to dust hoppers for removal.

Alstom offers a wide range of ESP designs, with a choice of discharge electrodes and rapping systems, to provide the most cost effective, technically reliable solution for every application.

Customer benefits

HIGH PARTICULATE REMOVAL EFFICIENCY
Emission levels less than 10 mg/Nm³.

CUSTOMISATION
Choice of discharge electrodes customised to specific demands of various applications.

INCREASED AVAILABILITY
Robust design and construction ensures reliability.

REDUCED COMPLIANCE COSTS
Integrated control system optimises power savings while maximising performance.

LOWER INVESTMENT
Easy to install due to flexible layout and modular design.

PROVEN DESIGN
Proven technology fine tuned with global experience and a large installed base.

APPLICATIONS
• Power and industrial boilers firing coal, lignite, oil, orimulsion, biomass and other fuels
• Various processes in iron and steel and non-ferrous metallurgical industries, cement industry, incineration plants, glass smelting and pulp & paper plants, etc.
3 STEPS TO MAXIMISE PERFORMANCE
1 Optimum charging of the dust is fundamental to effective ESP performance and this is achieved by perfectly matching the choice of the discharge electrode design to the demands of the application.
   • The Alstom spiral discharge electrodes ensure uniform corona current distribution and is universally recognised as the most effective solution for medium and high resistivity dust.
   • The Alstom multi-peak discharge electrodes are best suited for applications involving low resistivity dusts or dusts having large amounts of fine particles.

2 Effective Cleaning System design helps prevent dust building up on the collecting plates, minimising the “back corona” effect, which otherwise diminishes the efficiency of the ESP, especially if the dust resistivity is high.
   • Alstom uses a robust tumbling hammer design which is most effective in dislodging even the most resistant dust from the electrodes, to ensure consistently high efficiency of the ESP.
   • Alstom also offers, Electric Impact Rapping (EIR) for applications involving low resistivity dust, where relatively mild rapping is sufficient. The design of the EIR is simple and easy to maintain as all the moving parts are accessible from outside the flue gas path.

3 High quality Integrated ESP Control systems ensure optimised performance of the ESP
   • Alstom’s Electrostatic Precipitator Intelligent Controller (EPIC III) is a 3rd generation state-of-the-art ESP control system that delivers
     – optimum performance and power savings thanks to a range of operating modes
     – rapping sequence optimisation and power controlled rapping as well as self-optimisation algorithms (EPOQ)
   • Alstom also offers the Switch Integrated Rectifier (SIR) high frequency output power supplies, which ensures maximum power injection without sparking and is highly effective for low and medium resistivity dusts.

TYPICAL ESP LAYOUT AND KEY COMPONENTS

STATE-OF-THE-ART LABORATORY AND TESTING FACILITIES
Highly-skilled engineers and technicians from Alstom’s R&D Execution Centre in Växjö, Sweden support our customers and the further development of our ESP technology solutions.