

Weiss ApS® ELECTROSTATIC FILTER (ESP)

An electrostatic filter with an integrated cleaning system that optimizes the purification of flue gases from biomass boilers.



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From January 1, 2025, existing medium-sized biomass plants commissioned before December 20, 2018, with a nominal input thermal capacity of more than 5 MW must comply with the emission limit values for SO₂, NO_x, dust, and CO in accordance with Executive Order No. 1535 of 09/12/2019 (Regulation on environmental requirements for medium-sized combustion plants).

The new requirements will, among other things, mandate the installation of a filtration system in the form of an electrostatic precipitator (ESP) on all biomass plants.

Weiss can assist in understanding the directive and the tightened emission limits as a positive opportunity to improve the environmental image of biomass combustion. Weiss offers an electrostatic filter with a built-in cleaning system for purifying flue gases from biomass boilers.

Weiss ApS® offers an electrostatic filter, also known as an ESP, which removes particles from the flue gas using an electric voltage difference.



Facts

- The filter is delivered as a single assembled unit, with all wiring, insulation, and cladding completed at the factory.
- Side doors are mounted on the filter for inspection and maintenance access.
- The service area is equipped with handrails and a staircase leading to ground level.
- All external surfaces are insulated with mineral wool.
- The cladding is made of aluminum sheets in a color of the customer's choice.
- Easy to connect to existing plants using wood pellets or wood chips. Dust from straw cannot be magnetized.

The energy consumption of the electrostatic filter is modest, and it requires only minimal maintenance – as we say at Weiss: **Think of the working environment – avoid fly ash in the boiler room.**



The Technology Behind an Electrostatic Filter (ESP)

The dust-laden flue gas is directed through a chamber in the electrostatic filter, which is divided into channels by vertical steel plates, also known as collecting plates. Vertical wires are stretched in the spaces between the plates, running parallel to them..

A significant electric voltage difference is applied between the wires and the plates—typically 30–100 kV depending on the distance between them—creating a weak electrical discharge.

This discharge ionizes part of the gas molecules, causing ions to attach to the dust particles and give them an electric charge. These charged particles are then attracted to the plates, where they are retained.

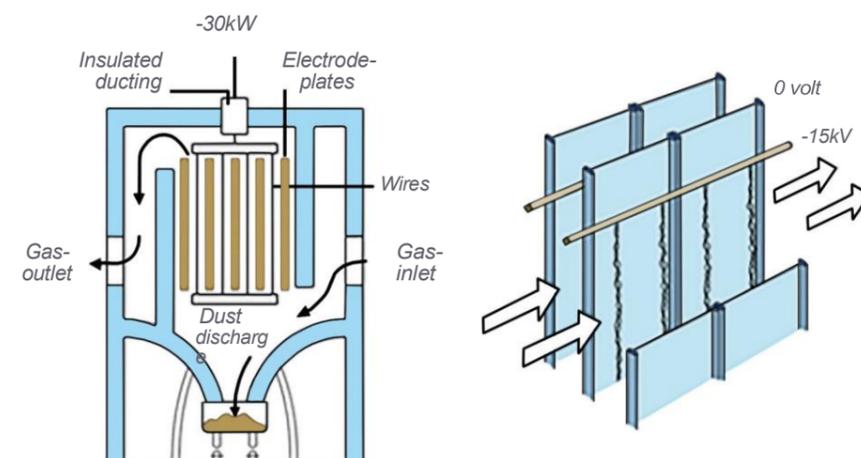
The plates are periodically vibrated, causing the dust to fall into the bottom hopper of the filter. From there, dust and ash particles are discharged via a rotary valve into the ash handling system.

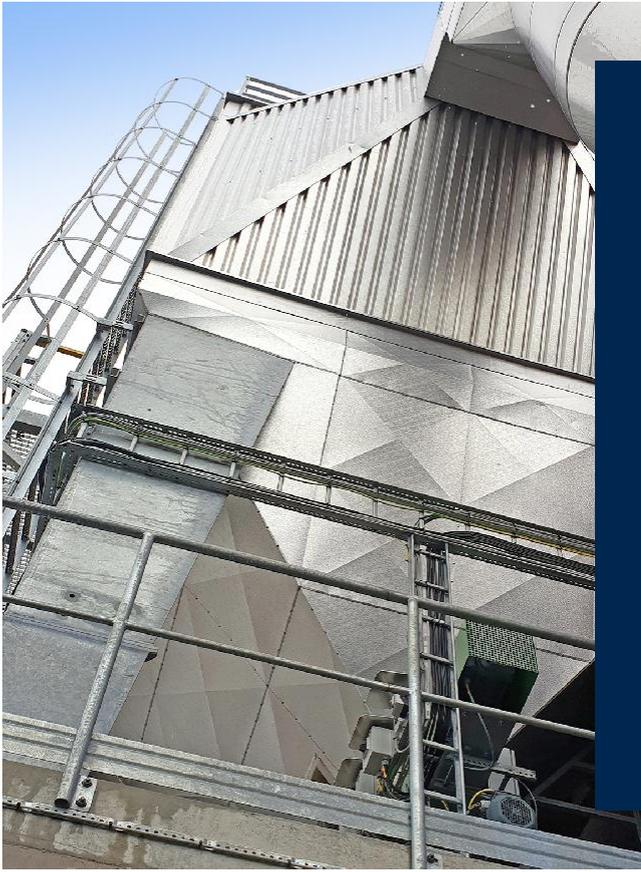
The electrostatic filter is one of the most effective methods for removing very fine dust. Increasing requirements for flue gas cleaning have led to growing demand and use in various applications, including the district heating sector.



The electrostatic filter has low energy consumption and minimal maintenance requirements. It is insulated with 100 mm of insulation material and clad with aluminum sheets in a standard color. Once the flue gas has passed through the filter, dust emissions are reduced to an absolute minimum.

Noise emissions from the filter's "hammers" are below 70 dB(A) and will be further soundproofed. After the filter, the flue gas is directed through a frequency-controlled fan to ensure optimal discharge through the chimney.





Advantages

Weiss ApS® recommends an electrostatic filter for wood chip and pellet-fired biomass plants because it offers:

- Automatic cleaning controlled by a valve control system.
- Low operating cost.
- Minimal supervision required.
- A long-term investment that pays off over time.
- Easy integration with an existing plant.



Weiss ApS is dedicated to supporting the green transition in both industrial enterprises and agriculture..



Weiss ApS supports the green transition of industry to promote sustainable industrialization on a global scale.



Weiss ApS assists the energy sector, industry, and agriculture in utilizing local resources so that together we can create more sustainable cities and communities.

Would you like to know more about your options?

Our sales department is ready to advise you on your possibilities, and we are happy to provide a non-binding offer for an electrostatic filter (ESP), tailored to your specific needs.

contact us at +45 9652 0444