

ESP Electrostatic Precipitator for domestic woodstoves and fireplaces.

This new ESP is a very simple and efficient method to eliminate the particulate matter in the chimney of domestic woodstoves and fireplaces.

Construction

A long thin metallic wire, charged to DC high-voltage is hanging in the chimney. This wire is fixed at the end of a heat resistant HV-cable which itself ends in an insulator. The insulator is held centrally in vertical position in the chimney by spring elements, like spider legs. So, no other fixing parts are necessary. The metallic chimney tube is grounded through these spring legs, which are connected to the grounded cable shield.

Further the insulator is protected by an electrostatic shield to prevent the deposit of particulate matter on the insulator surface. Another special part is the cleaning system of the wire electrode. Several bimetal spring elements are fixed on the wire. At each firing cycle these spring elements give a mechanical impulse to the wire and clean them from dust deposit.

Working

The advantage of this ESP is that the deposits of the dust particles on the wall of the chimney will happen before the particles reach the level of the insulator and contribute in that way to keep the insulator clean. Further, due to this very long charging zone, a very high absorption of almost all dust particles in the smoke is resulting.

Tests

This ESP has been tested under different test conditions in the laboratory of the „Oekozentrum Langenbruck, Switzerland“. The measuring system was carried out according to the SMPS method and the result in particle counting showed an absorption rate of 95 % during different measuring cycles. These tests carried out in the above laboratory have been supported financially by the BAFU Switzerland.

The system operates automatically, temperature controlled. The very low energy consumption of less than 20 Watt when operating makes this ESP economically.

We are looking for an international partner for the final development and the production of this ESP.
International Patents pending.

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Extract of Measurement Report

Particle Concentration			Calculated Mass		
ESP off	ESP on	Reduction	ESP off	ESP on	Reduction
[/cm ³]	[/cm ³]	[%]	[µg/m ³]	[µg/m ³]	[%]
18'968'800	503'180	97.3	43'078	1'991	95.4
16'652'000	1'715'880	89.7	19'150	167	99.1
21'177'000	517'660	97.6	11'801	344	97.1
53'938'000	1'936'700	96.4	183'896	8'181	95.6
24'109'200	1'169'260	95.2	74'934	3'946	94.7
26'353'600	1'104'100	95.8	40'544	1'441	96.4
28'561'800	1'169'260	95.9	16'724	1'339	92

