ELECTROSTATIC PRECIPITATORS

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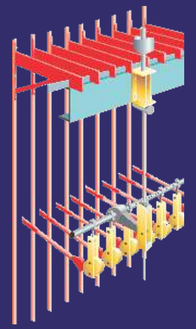
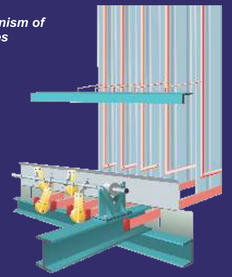
The Rapping Mechanism of Discharge Electrodes



GENERAL TECHNICAL DATA

Dedusted gas flow	: 3,000÷4,000,000 m^3/h
Inlet gas concentration	: 100 g/m^3
Outlet gas concentration	: 0.050÷0.150 g/m^3
Maximum temperature of filtering gases	: 400° C
Efficiency of separation	: 99.90÷99.95 %
Voltage / frequency	: 380 V (+12 -10%) / 50-60 Hz (±2,5%)
Installed power	: in accordance with the number of Fields of the electrostatic precipitators

The Rapping Mechanism of Collecting Electrodes



Description

The electrostatic precipitators are consisting of:

1. The electrofilter;
2. The electrical and automation installation;
3. The access system to the electrofilter;
4. The sealing and the dust exhausting system;
5. The thermal insulation;
6. The safety system for the access to high voltage.

1. THE ELECTROFILTER

- is the core of the electrostatic precipitators and consists of:

a) The casing of the electrofilter: welded construction, which
closes an air proof sealed space against the outside, where the internal installation is placed. The roof is rainwater proof.
The input and output gases flow is made axially, through couplings with uniformization plates.
The hoppers are of pyramidal type, with the minimum slope of 60°, which enables a perfect flow of collected dust, avoiding the risk of formation of dust vaults or conglomerations.

b) The internal installation - is the system under high voltage, in which the dust from the gas flow is separated and retained. It consists of independent fields aligned along the electrofilter, the equipment of each field comprising ionization system and dust particles collecting system.

The ionization system:
- discharge electrodes - ISODYN B5 type;
  - Fe - Stern type;
  - VARIODYN type;
  - MASTERDYN type;

- rapping mechanism of discharge electrodes of cam type with gear-motor and hammers.

The collecting system:
- collecting electrodes: CSV, CSH, S types.
- rapping mechanism of collecting electrodes - "ROTOHIT" type with gear-motor and hammers.
The discharge and collecting electrodes alternate parallel to the gas flow. Rapping the electrodes keeps them clean.
Self greasing or dry greasing bearings sustain the hammers shafts.
The motor gear-motor are dust proof.

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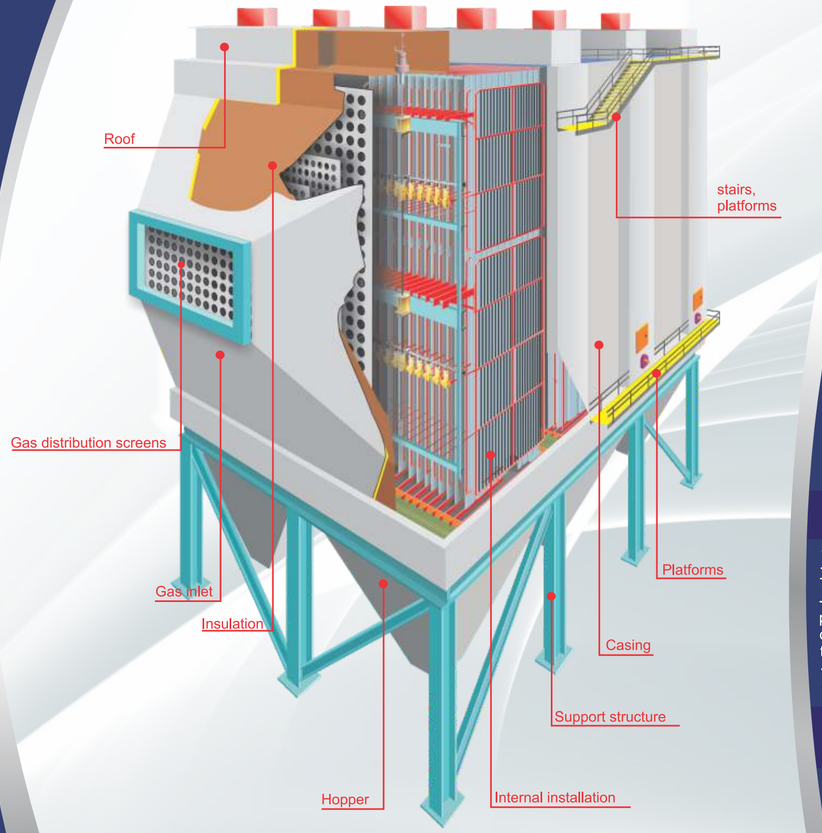

2. THE ELECTRIC AND AUTOMATION INSTALLATION

The tasks of the electrical and automation installation of the electrostatic precipitators are:
- the transformation of the AC power into DC high voltage at the quantity required by the gas - dust mix ionization process, at the dedusting performance level required by the theme.
- supplying of high voltage impulses;
- microprocessor based driving and optimization of the above named tasks; optimizations are made in order to increase the efficiency of the dedusting process as well as to reduce the power consumption;
- to secure the supplying with DC high voltage of the discharge electrodes systems within the electrofilters.
- assure the necessary utilities to act all the components of the electrostatic precipitator.

3. THE ACCESS SYSTEM TO THE ELECTROFILTER

- consists of stairs and platforms, which enable the checking of every external equipments as well as the access doors for servicing the interior installation and the roof.

4. THE SEALING AND DUST EXHAUSTING SYSTEM -enables:

- continuous or intermittent exhausting of the dust from the hoppers;
- convenient sealing against false air absorption.
The sealing and dust exhausting system consists of:
- rotary valves, double conical locks;
- screw conveyers, scraper conveyers or pneumatically conveying system.

5. THE THERMAL INSULATION - is made of:

-mineral wool;
-metal cover (galvanized sheet or aluminium sheet).
The thermal insulation ensures :
- gas temperature maintenance in limits above the acid dew point of gas. In this way, the appearance of the acid condensate as well as the corrosion can be avoided, increasing the life of the entire equipment.
-rainproof and protection of wind-laid strains against the exterior metal cover of the mineral wool.

6. THE SAFETY SYSTEM FOR THE ACCESS TO HIGH VOLTAGE:

Bars the access inside the electrofilter while high voltage is connected. Disconnecting and grounding of the electrofilter must precede any visit in the high voltage zones.

FUNCTIONAL DESCRIPTION

After entering the inlet nozzle, the gas to be dedusted is uniformly distributed on the cross section of the electrofilter and flows through the internal equipment of the electrofilter. The dust particles get electrically loaded and separate from the gas flow, being attracted by the collecting electrodes that are grounded. The ionization of the dust particles is due to the Corona discharges at the emission electrodes charged with DC high voltage.

Since 1995, the command control installation of the electrofilter is being supervised by a microprocessor. This enables the implementation of special optimization algorithms with respect to functionality and efficiency of the electrostatic precipitators.The digital control equipment evaluates in real time any changes of the process parameters: temperature, humidity and electrical resistance of the dusted gas.
Each field is controlled by a microprocessor block, which runs dedicated program for optimizing the dedusting process.

The digital control offers several advantages:
- higher dedusting efficiency;
- power saving, up to 70 % as compared to the classical system;
- remote monitorization and control of electrical and dedusting parameters;
- avoidance of undesirable phenomena: electric arch, welding of electrodes.

Vibrations produced by the internal installation shake both the emission and collecting electrodes. Rotary valves or locks perform dust exhausting from the hoppers. The exhausting process is started when the maximum dust level is reached and it is stopped upon sensing the minimum dust level.

COMELF S.A. is offering to its potential customers the following:
- manufacturing of electrostatic precipitators according to customer's design theme or documentation;
- erection on site, technical assistance, commissioning and service works;
- spare parts for delivered equipment or according to customer's design;
- capital repairs, modernizations or replacement of parts from installations;
- turn - key delivery (engineering, manufacturing, delivery, erection, commissioning, performance tests, etc.)

The manufacturing process within our company is accomplished under a Quality Management System according to the DIN, EN, ISO 9001 standards.