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NIPPON STEEL ENGINEERING CO., LTD.

## Dry-process Dust Collector for Blast Furnaces

### Features

A dry-process dust collector for blast furnace is equipment for cleansing blast furnace gas. The energy in blast furnace gas (in the forms of pressure and temperature) is recovered by a TRT generator after passing through the dust collector.

The energy in the furnace gas has been lost in the conventional wet-process dust collector as the temperature and pressure of the gas decreases significantly when the gas passes through the dust collector.

The dry-process dust collectors available from Nippon Steel Engineering in two types, the bag-filter collectors and electrostatic precipitators, have the following advantages.

The temperature of furnace gas decreases little in the collectors.

The pressure of furnace gas decreases little in the collectors.

The dry electrostatic precipitators have additional advantages mentioned below.

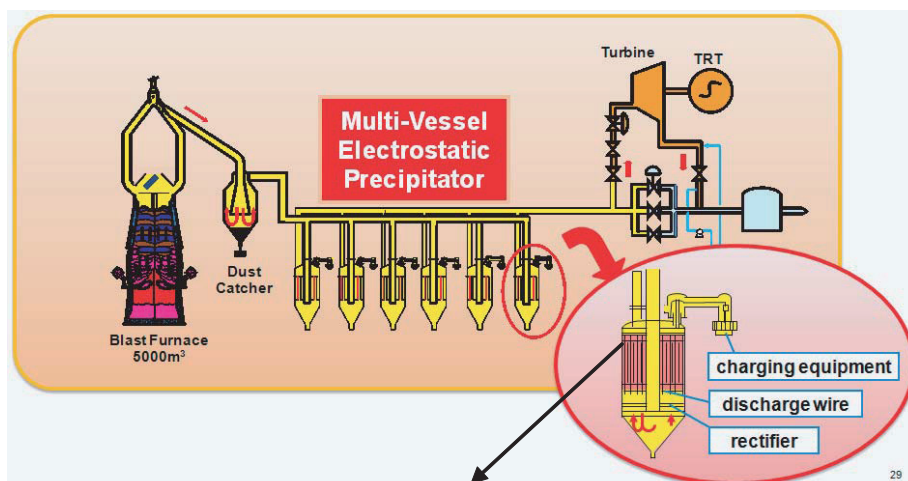
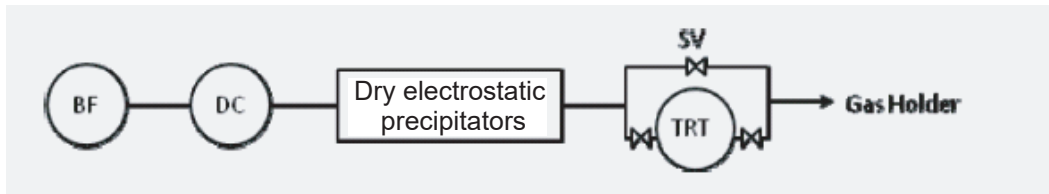
They can collect dust from furnace gas at high temperature because the upper limit of the temperature for their operation is high.

The maintenance cost is low (because they do not require replacement parts, such as bag filters in bag-filter collectors).

### Basic Concept or Summary

#### Dry electrostatic dust collection method

The dry-process bag filtering system, created by technologies that nurtured the wet-process electrostatic precipitators (ESCS) and the multi-tower dry-process bag filter, is the latest system to offer a superb low pressure loss of performance and does not require the supplementary installation of a wet-process dust collector.



As the dust collection part is made of metal, electrostatic precipitators are tolerant to furnace top gas at high temperature (up to 350 °C). Therefore, they can collect dust from furnace gas of varying temperature.

BF: Blast Furnace	PCVS: Blast furnace top gas pressure controlled venture scrubber
DC: Dust Catcher	TRT: Top pressure Recovery Turbine
VS: Venturi Scrubber	SV: Septum Valve

**Effects or Remarks**

1. The amount of electricity recovered with TRT increased (by 20 to 35% in comparison with wet-process dust collectors).
2. Water spraying for dust removal, required with wet-process dust collectors, is not necessary with dry-process dust collectors.
3. Since blast furnace gas is used to expel captured dust with the transportation of air flow, discharging units have been simplified and facility costs have been lowered.
4. With dry electrostatic precipitators there is no danger of damage to facilities, such as filter fabric, even when abnormal operations are performed, such as a gas blow out inside the blast furnace, furthermore, there is no need to install a supplementary wet-process dust collector.

**Installation in Practice or Schedule****Double venturi scrubber and dry-process bag filtering system**

**Domestic** Oita Works (2 units) and Nagoya Works of Nippon Steel Corporation

**Overseas** Taiyuan Iron and Steel Group

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