

EFFICIENT COMMISSIONING OF A 500 TPD ESP FOR SPONGE IRON DRI KILN

ACHIEVING 99.99% COLLECTION EFFICIENCY WITH ≤ 30 MG/NM³ EMISSIONS – SUNDARAM STEELS PVT. LTD., JHARKHAND



ABOUT VT CORP

VT Corp is a leading engineering company specializing in the design and manufacture of machinery for industries such as cement, sponge iron, power, and chemicals.

With over 59 years of experience, our Weighing Division has delivered advanced bagging and weighing solutions, including Automatic Bag Handling Systems, Belt Weigh Feeders, and Roto-Packers.

We are known for precision engineering, innovative design, and consistent product quality.

Our Offerings Include:

- ✓ **Electrostatic Precipitators (ESP)**
- ✓ **Packing & Bagging Solutions**
- ✓ **Bag Filters**
- ✓ **Forced Draft Coolers**
- ✓ **Rebuild & Retrofit Services**
- ✓ **Spare Parts & Upgrades**
- ✓ **Site Inspections & Technical Support**

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Client Overview

Company: Sundaram Steels Pvt. Ltd.
Location: Bokaro Steel City, Jharkhand
Industry: Sponge Iron (DRI KILN)

Sundaram Steels Pvt. Ltd., based in Bokaro, Jharkhand, is a trusted supplier of copper millberry and berry candy scrap, handling 50 MT monthly. The company serves both domestic and Asia-Pacific markets, with a strong focus on quality and reliability. To support cleaner and compliant operations, **they partnered with VT Corp for the installation of an ESP on their 1 x 500 TPD DRI Kiln.**

Project Objective

To design, supply, execute, and commission a robust and energy-efficient ESP system for a 500 TPD Sponge Iron Kiln, ensuring:

- » Emission control $\leq 30 \text{ mg/Nm}^3$
- » High dust collection efficiency ($\geq 99.99\%$)
- » **Optimized** power consumption
- » Flawless and **reliable operation**







**Our ESP at Sundaram Steels Pvt. Ltd.,
Jharkhand**

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A PRACTICAL LOOK AT VT CORP'S ESP SYSTEM EFFICIENCY

VT Corp's ESP system is designed to handle a kiln capacity of 500 TPD, effectively managing an inlet dust burden of $\leq 35 \text{ g/Nm}^3$ while maintaining outlet emission levels at $\leq 30 \text{ mg/Nm}^3$. With 99.99% dust collection efficiency, the system ensures compliance with stringent environmental standards.

Despite its high-performance capabilities, the ESP operates with remarkable energy .

GAS FLOW RATE	GAS TREATMENT TIME	ESP FIELDS	POWER SUPPLY
 86.63 NM ³ /SEC ($\approx 311,870 \text{ AM}^3/\text{HR}$)	 19.1 SECONDS	 4 MECHANICALS AND 4 ELECTRICAL	 3-PHASE C-TR SET 95 KV (P), 800 MA



PROJECT EXECUTION & PERFORMANCE

The ESP system was successfully installed and commissioned at Sundaram Steels in **December 2024**, setting a new benchmark for operational efficiency in sponge iron kilns. The ESP runs *flawlessly with zero visible emissions*, and maintains consistent outlet emission levels of $\leq 30 \text{ mg/Nm}^3$, in full compliance with **CPCB norms**.

DESIGN HIGHLIGHTS

- **High-volume gas treatment** : 311,870 Am³/hr
- **Energy-efficient power supply** : 95 kV, 800 mA 3-phase C-TR sets
- **Four-field ESP configuration** for enhanced dust capture

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POWER & COST SAVINGS VS. MIGI DESIGNS



Annual Energy Savings Volume:

The customer benefits from an annual power saving of **12,26,400 kWh**, calculated as:

$40 \text{ kWh (savings/hour)} \times 3.5 \text{ hours/day} \times 365 \text{ days/year}$.

Power Efficiency Achievement:

The ESP system operates at an actual consumption of 35 kWh, compared to the committed 75 kWh, consistently delivering 40 kWh in savings.



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ESP and Retrofitting Solutions | Bag Filter |
Forced Draft Cooler | Packing Machine |
Weigh Feeder | Truck loader