



# HARI MACHINES LIMITED

Regd. Office & Works:- Rajgangpur - 770017, Orissa, India, Phone: +91-6624-220 141 / 161, Fax: +91-6624-220 151  
Email: hml@harimachines.in, Website: http://www.harimachines.com

Kolkata Office:- 12C Stephen House, 4 B.B.D.Bag, Kolkata-700 001, India, Phone: +91-33-2248 7612 / 4451  
Fax: +91-33-2248 7155, Email: hmtkol@harimachines.in

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To,  
**Bureau Veritas Certification (India) Private Limited.**  
**Marwah Centre, Andheri (East)**  
**Mumbai-72**

## Sub: Impact of Kiln conditions on WHRB Power Plant

Dear Sir,

As per telephonic discussion had with your expert, we wish to submit the confirmation of the following fact regarding the impact of Sponge Iron kiln on WHRB:

1. WHRB boiler tubes are normally designed to take care of temperature up to 900°C, at best 1000°C. The following disturbances in the kiln can cause higher temperature of flue gases which is almost very difficult to be controlled:

- Higher magnetite in the Iron Ore and Higher VM in the coal.
- Negative draft created in the kiln due to any reasons.
- Poor shattering and poor tumbler index of the ore.
- Lower reducibility in the ore and Ring formation in the kiln.
- High voltage or higher frequency caused in the electrical system can also induce more air than the designed Air flow.

Due to sudden increase of temperature of flue gas, Boiler tube may fail.

2. The boiler tubes of WHRB proximity with Sponge Iron plant can also deteriorate faster due to following reasons:-

- Higher SO<sub>x</sub> impact & Higher Fe content in the Ash.
- Thermal shocks caused by frequent fluctuation of temperature:
- Nitrous stress;

3. Due to any change in the quality, Quantity, operating parameters, environment, it is very-very difficult to control the temperature fluctuation, Gas volume, Gas dust composition & flue gas composition. In side the kiln the flue gas temperature & volume will get influenced due to this there will be sudden fluctuation in the power generation. It is not at all possible to design a Kiln which can take care of any such fluctuation. Unless WHRB power is operated & maintained properly, it can adversely influence the quality & quantity of Sponge Iron production also.

4. In view of these unless highly experienced manpower is deployed, with backup power support & very good quality control of raw material, until then it is not possible to have smooth generation of power from WHRB along with Sponge Iron manufacturing.

It is our personal opinion that any Company must take very-very critical care in operation of the WHRB plant otherwise it may prove to be a loss making proposition than generating any profit.

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- Boiler for Power & Process Plants



allmineral (Germany & USA)  
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- Feeder Breaker

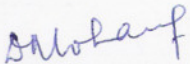
It is due to such reasons a large number of small capacity plant are reluctant to set up any WHRB power plant with their Sponge Iron Kilns.

The waste heat generated from Coke Oven or Blast furnaces have different set of conditions thus the variation & fluctuations of operations are not as much as in case of a Sponge Iron plant.

We hope this clarifies your queries related to the project of Sponge Iron plant with WHRB power generation.

Thanking You

For Hari Machines Limited



**(Debiprasad Mohanty)**  
Executive Engineer – Boiler Div