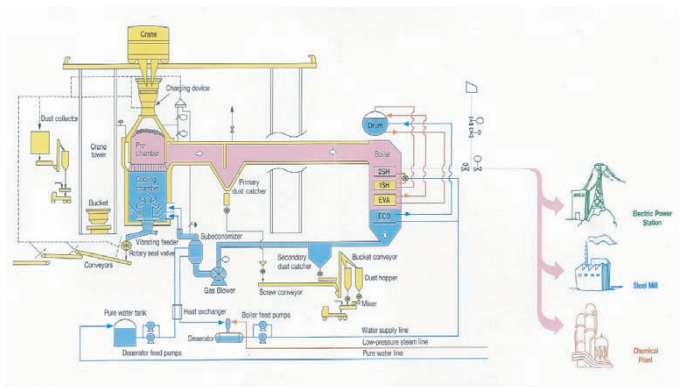


Coke Dry Quenching (CDQ)

Features

CDQ is a system to recover the sensible heat of red hot coke by means of inert gas. Then by the use of the recovered heat, produce high-temperature and high-pressure steam in a boiler. The steam produced without additional energy is used for the generation of electric power, production of steel, etc. Because of its dry quenching system without using water, as well as effective utilization of energy, CDQ has the following excellent features.

Basic Concept or Summary



Effects or Remarks

1. Saving energy

When generating electric power by utilizing the steam produced by CDQ, one CDQ unit which has a treating capacity of 100T/H, can generate about 18MW electric power. Enabling effective utilization of energy that was dispersed into the atmosphere in the conventional wet quenching method.

2. Environmental Improvement

In CDQ, there is no "puff of white smoke" including dust because all the processes are totally enclosed. As a result, the working environment around CDQ equipments is improved.

3. Protection of Global Environment

In generating electric power, CDQ does not produce the greenhouse gas (CO₂), which an oil-burning boiler produces. Reduction of CO₂ by CDQ is nearly equivalent to 18T/H CO₂ that an oil-burning boiler produces when it generates 18MW electric power (equivalent to that by 100T/H CDQ).

4. Improvement of Coke quality

Through CDQ, DI*¹ and CSR*² of product coke, are improved by about 2% respectively, because hot red coke is cooled gradually in chamber by the use of cooling gas. As a result, the coke is free from surface pore due to aquatic gasification reaction and internal crack that occur in wet quenching. In addition, brittle portions of coke are removed when it drops in the chamber.

*1 Drum Index *2 Coke strength after-CO₂ Reaction

5. Improvement of the productivity at Blast Furnace

- (1) Fuel coke rate in blast furnace operation can be reduced because CDQ coke has almost no moisture and requires no additional calorific heat.
- (2) Generation of electric power by utilizing the TRT*³, is increased because the furnace top temperature is higher.

*3 Top pressure gas Recovery Turbine

24 domestic installations and 102 overseas installations (as of March 2018)

Domestic Nippon Steel Corporation Kyushu Works, Nagoya Works, East Nippon Works, Kyushu Works, Kansai Works
Nippon Coke & Engineering Co., Ltd.
The Kansai Coke and Chemicals Co., Ltd. etc.

Overseas PRC Shanghai Baoshan Steel
POSCO Pohang Iron and Steel Co., Ltd. (Korea) Pohang, Kwangyang
PRC Shougang Corporation (No.2)
PRC Wuhan Iron & Steel (Group) Corporation
China Steel Corporation (Taiwan)
Qian'an Zhonghua Coal-chemical Industrial Co., LTD
Jinan Steel Co.,Ltd
TATA STEEL Limited (India)
Ningbo Iron & Steel (Group) Co., LTD Coking plant
Baotou Iron & Steel (Group) Co., LTD Coking plant
Zibo Hongda Coking Co., LTD
Xinyu Iron & Steel (Group) Co., LTD Coking plant
Chongqing Iron & Steel (Group) Co., LTD Coking plant
Shougang Jingtang Iron & Steel United Co., LTD
Panzhuhua Panmei Combined Coking Co., Ltd.
Jindezhen Kaimenzi Porcelain Chemistry Battalion Co., Ltd.
Nanchang Changli Iron & Steel Co., Ltd.
Xingtai Iron & Steel Co., LTD.
Tangshan Dafeng Coking Co., LTD.
Shaanxi Longmen Coal Chemical Industry Co., LTD.
Shuicheng Iron & Steel Co., LTD.
DRAGON STEEL Corporation
Wuhai Huan He Gongmao (Group) Co., LTD.
TAISHAN Coking Co., LTD.
LIHENG IRON & STEEL Co., LTD.
Bowe Xinyu Chemical Industry Co., LTD.
Guangxi Shenglong Metallurgy Co., LTD.
Shandong Haoyu Energy Sources Co., Ltd.
Shanxi Guangda Coking Air Source Co., Ltd. etc.

Contact: NIPPON STEEL ENGINEERING CO., LTD.,
Plant & Machinery Sector
Tel: +81-3-6665-2000 Fax: +81-3-6665-4847