

Setting

Country	Italy (as the CER buyer)
Location	Peoples' Republic of China - Hubei Province, Wuhan City
Project start date	20 Apr 2009
Project end date	19 Apr 2019
Technology keywords	recycling available waste heat to generate electricity
Host sector	Wuhan Iron and Steel (Group) Co.

Technical summary of the project

Objective of the project	Improving energy efficiency of the iron and steel industry
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Project description

[source: UNFCCC - CDM Executive Board: *PROJECT DESIGN DOCUMENT FORM (CDM PDD)* - Version 03.1]

The specific project complies with the national industrial policy and promotes sustainable development of the energy industry. In particular, the project activity contributes significantly to the region's sustainable development in the following ways:

- Improving energy efficiency of the iron and steel industry in Hubei province in general and improving energy efficiency (i.e. utilization of available energy in the sensible heat of red coke) at Wugang in particular;
- Reducing the reliance on fossil fuels;
- Reducing the emission of local pollutants caused by the burning fossil fuels and the associated adverse health impacts;
- Reducing the greenhouse gas emissions caused by the burning of fossil fuels, to combat global climate change;
- Increasing employment opportunities, increasing incomes and improving the overall quality of life.

The "Coke Dry Quenching (CDQ) Waste Heat Recovery for Power Generation Project of Wugang No. 9 and 10 Coke Ovens" project is located in the main body of the iron and steel production facility operated by Wuhan Iron and Steel (Group) Co.

To increase the utilization rate of available energy in Wugang, the specific project will construct dry quenching equipment with 140t/h dealing capacity matching a power station.

The project will have a rated total installed capacity of 6MW, and an actual total installed capacity of 4.225MW.

The annual utilizing hour is 8,280h, thus the annual power generation is 34,980MWh.

After auxiliary consumption and losses, annual net electricity supply via a 10kV power line to the internal electricity system of Wugang is expected to be 21,687MWh.

Additional to electricity supply, the project will also generate and supply heat (not claimed emission reductions due to the supply of heat).

In the baseline, Wugang received 38.15% of its electricity requirement from an on-site 400MW power plant (i.e. two 200 MW generators) and the remaining 61.85% from the Central China Power Grid.

The specific project activity will therefore effectively replace electricity generated both in the power plant and on the Central China Power Grid (which is dominated by coal-fired thermal power plants) and reduce emissions with around 16,738tCO₂e annually.

The production process of the specific project activity is listed below (see figure 1).

1. Cool inert gas will be transported into the dry quenching oven to cool the red coke down
2. the inert gas, which absorbs the heat of the red coke, will then transfer the heat to the waste heat boiler to produce steam
3. the steam will be led into the steam turbine to drive a generator for power generation, transforming the energy contained in the heat to electricity
4. the cooled inert gas will be recycled after a dust removal treatment and used to restart the cooling red coke process

Electricity generated by the proposed CDM project activity will be supplied to 10kV substation via a 10kV power line, which is connected to the internal electricity system of Wugang.

As explained, the electricity supplied by the specific project will replace electricity supplied by a power plant and the Central China Power Grid in the baseline.

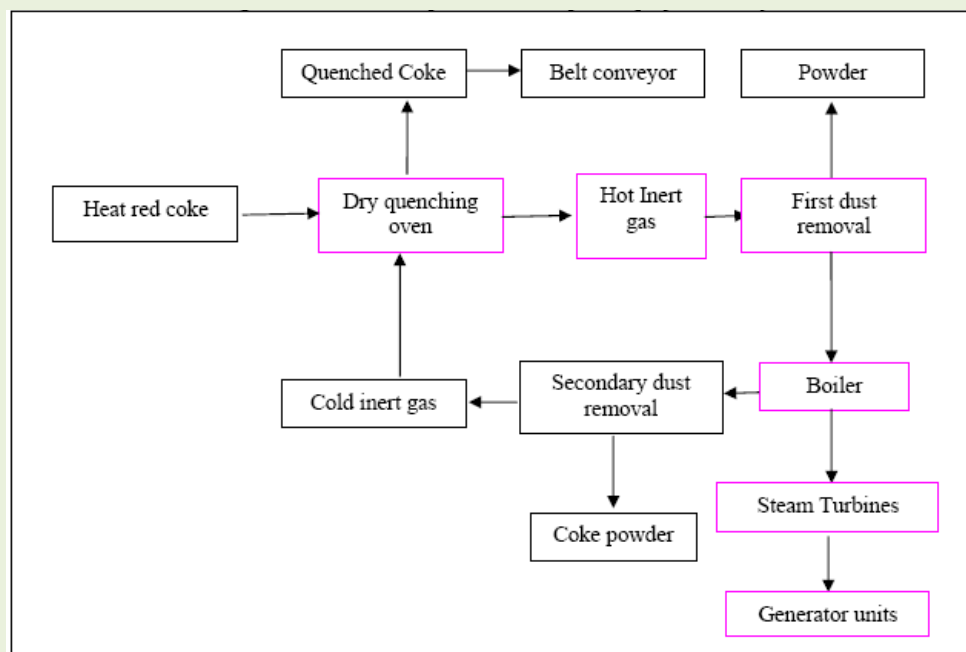


Figure 1: Production process of the specific project activity

[Source: UNFCCC - CDM Executive Board: PROJECT DESIGN DOCUMENT FORM (CDM PDD) - Version 03.1]

Environmental and social benefits

(Estimate of) Greenhouse Gases abated (in metric tons of CO ₂ -equivalent)	Annual: Up to a period of 10 years: 167,380 tCO ₂ -equivalent (16,738 tCO ₂ -equivalent per annum)
Number of reduction units (EAU, CER, ERU, AAU)	Without the revenues from the sale of CERs, the specific project activity is commercially unattractive (Equity IRR without CDM Revenue: 9.89%). On the contrary, when considering the revenues from the sale of CERs, calculated on the basis of an expected CER price of €8.00/tCO ₂ e (1€=10Yuan RMB), the Equity IRR is raised to 11.53%, which is above the sectoral benchmark making the specific project commercially attractive.

Socio-economic aspects: What social and economic effects can be attributed to the project and which would not have occurred in a comparable situation without that project?

The implementation of the specific project will bring significant benefits. It will provide power to mitigate the gap between power supply and demand, reclaim and utilize the sensible heat contained in the red coke and thereby improve the available energy utilization ratio and reduce energy loss and in general protect the local environment. Additionally, the project will generate power from available waste heat, replacing the relevant power generated on the Central China Power Grid (consisting mostly of coal-fired thermal power plant) and power generated in the captive power plant, thereby reducing the environment pollution caused by thermal power plants burning fossil fuels and contributing to the reduction of emissions of Greenhouse gasses and protect the global environment.

All stakeholders support the development of the project and its application for CDM support, and the proposed CDM project would actually facilitate the development of the local economy and increase local standards of living.

Methodology used (if applicable: approved baseline methodology or study done - refer to this; and monitoring organisation)	Approved consolidated baseline methodology ACM0004 (Version 02): " <i>Consolidated baseline methodology for waste gas and/or heat and/or pressure for power generation</i> " and approved consolidated baseline methodology ACM0002 (Version 06): " <i>Consolidated baseline and monitoring methodology for grid-connected electricity generation from renewable sources</i> ".
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Economic data

Capital costs	Total Static Investment 84,120,000 Yuan RMB
Financing scheme	
Financing organisation (if third party)	There is no public funding from Annex I countries used in the project activity.

Project developer

Name of the project developer	ENEL Trade SpA Viale Regina Margherita, 125 - 00198 - Rome ITALY
E-mail and/or web address	eliano.russo@enel.it
Contact person	Mr. Eliano Russo

Host organisation

Name of Host organisation	Wuhan Iron and Steel (Group) Co. The first rest house of Wuhan Iron and Steel (Group) Co. Qingshan District, Wuhan City Hubei Province, 430083, People's Republic of China Telephone: +86-27-86893691
E-mail and/or web address	zhouxl@wisco.com.cn
Contact person	Mr. Zhou Xulin

Technology provider

Name of Technology provider	Supplier of the steam turbine and generator: Hangzhou Steam Turbine Factory Supplier of the waste heat boiler: Zhangjiagang Hailu Boiler Factory,
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Additional Information

Printed or electronic reports or other literature available:

Title: UNFCCC - CDM Executive Board: PROJECT DESIGN DOCUMENT FORM (CDM PDD) - Version 03.1

<http://cdm.unfccc.int/UserManagement/FileStorage/TD2Q8FEBKYS46R05ZM1VXGWH7I9PU3>

Project Web site: UNFCCC web site: <http://cdm.unfccc.int/Projects/DB/TUEV-SUED1204718363.0/view>