

Template for the Project Idea Note (PIN)

A PROJECT IDENTIFICATION

Title of the project activity Iron&Steel Coke Dry Quenching and waste heat Utilization for electricity generation

Applicant **** Iron&Steel Group Co.,Ltd

Date of submission Nov 27th, 2007

B PROJECT PARTICIPANTS

B 1 Applicant	
Name	Iron&Steel Group Co., Ltd.
Type of organization	
Other functions of the applicant within the project	<input checked="" type="radio"/> Sponsor <input type="radio"/> Intermediary <input type="radio"/> Technical consultant <input type="radio"/> Other: _____
Main activities, knowledge and experience	Metallurgical Industry
Name of contact person	
Address	Iron&Steel Group Co., Ltd., Maba,Qujiang,Shaoguang City, Guangdong Province,China
Phone/fax	
E-mail	

B 2 Project developer	
Name	Guangzhou institute of Energy Conversion, Chinese Academy of Science
Type of organization	
Other functions of the project developer within the project	<input type="radio"/> Sponsor <input type="radio"/> Intermediary <input type="radio"/> Technical consultant <input checked="" type="radio"/> Other: <u>CDM Consultant</u>

<p>Main activities, knowledge and experience</p>	<p>Guangzhou Institute of Energy Conversion (GIEC), an institute of the Chinese Academy of Sciences, was established as the national base for new & renewable research & development and as a lead institute for energy efficiency R&D in 1978. GIEC also cooperates in compiling and disseminating information on technologies, projects and regulations, advising and guiding market actors and provincial governments on the application process for rational use of energy and energy efficiency, selecting and disseminating to target interested subjects, of EU calls of proposals concerning the European R&D, demonstration, and innovation programs. Moreover, GIEC has taken an active role in the realization of an infrastructure network in the frame of EC DGTREN programme, and keeps close contact with research institutions and market actors in EU.</p> <p>Since 2003 GIEC has implemented many CDM projects like “Improving awareness on Clean Development Mechanism (CDM) and identifying potential CDM Projects in South, West China and Vietnam“ funded by DEG, Germany. The project aims to find some potential CDM projects with the aid of experts from Germany. The staff have been received some training course from TUV, one DOE.</p> <p>Previous experience</p> <table border="1" data-bbox="577 1070 1396 1624"> <thead> <tr> <th data-bbox="577 1070 1189 1205">Project title</th> <th data-bbox="1189 1070 1300 1205">Status in the project</th> <th data-bbox="1300 1070 1396 1205">EU-number (if applicable)</th> </tr> </thead> <tbody> <tr> <td data-bbox="577 1205 1189 1261">EU-China partnership in CDM implementation;</td> <td data-bbox="1189 1205 1300 1261">Finalised</td> <td data-bbox="1300 1205 1396 1261">FP5: Synergy Programme</td> </tr> <tr> <td data-bbox="577 1261 1189 1350">Support Initiative for the Organisations for Promotion of Energy and Transport Technologies</td> <td data-bbox="1189 1261 1300 1350">Finalised</td> <td data-bbox="1300 1261 1396 1350">FP5: NNE5-48-2002</td> </tr> <tr> <td data-bbox="577 1350 1189 1440">Boosting Local Technology Uptake-An OPET Action to Support the Objectives of the Res-e Directive</td> <td data-bbox="1189 1350 1300 1440">Finalised</td> <td data-bbox="1300 1350 1396 1440">FP5: (NNE5/2002/37)</td> </tr> <tr> <td data-bbox="577 1440 1189 1574">Improving awareness on Clean Development Mechanism (CDM) and identifying potential CDM Projects in South, West China and Vietnam</td> <td data-bbox="1189 1440 1300 1574">Finalised</td> <td data-bbox="1300 1440 1396 1574">DEG, Germany</td> </tr> <tr> <td data-bbox="577 1574 1189 1624">Sustainable Energy Technology at Work (T@W)</td> <td data-bbox="1189 1574 1300 1624">Ongoing</td> <td data-bbox="1300 1574 1396 1624">TREN/05/FP&EN/S07.5579</td> </tr> </tbody> </table>	Project title	Status in the project	EU-number (if applicable)	EU-China partnership in CDM implementation;	Finalised	FP5: Synergy Programme	Support Initiative for the Organisations for Promotion of Energy and Transport Technologies	Finalised	FP5: NNE5-48-2002	Boosting Local Technology Uptake-An OPET Action to Support the Objectives of the Res-e Directive	Finalised	FP5: (NNE5/2002/37)	Improving awareness on Clean Development Mechanism (CDM) and identifying potential CDM Projects in South, West China and Vietnam	Finalised	DEG, Germany	Sustainable Energy Technology at Work (T@W)	Ongoing	TREN/05/FP&EN/S07.5579
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Name of contact person	Luo zhigang																		
Address	Guangzhou Wushan, Tianhe District																		
Phone/fax	+86 020-87057601																		
E-mail	luozg@ms.giec.ac.cn																		

B 3 Other project participants	
Name of the project participant	Buyer is to be confirmed
Type of organization	<input type="radio"/> Governmental body: _____ <input type="radio"/> Private enterprise <input type="radio"/> NGO <input type="radio"/> Other: _____
Function within the project	<input type="radio"/> Sponsor <input type="radio"/> Intermediary <input type="radio"/> Technical consultant <input type="radio"/> Other: _____
Name of contact person	
Address	
Phone/fax	
E-mail	

C HOST COUNTRY

C 1 Location of project activity	
Host country Party(ies)	China
Region/State/Province etc.	Guangdong Province
City/Town/Community etc.	Shaoguang city/Qujiang county/ Maba town
Brief description of the project location	Guangdong Iron&Steel Group Co.,Ltd (“”) , occupying an ares of 83,200m ² , is located in the southern suburb of Shaoguang city. It is one of the“ 500 largest industrial enterprises“ and the “512 national key enterprises“ in China. It is also awarded as the “first level audit enterprises“ by national auditing bureau and the “superfine credit enterprises“ by China Industry&Commerce Bank. is the best base for Guangdong’s steel industry development because of it’s advantages: entering into the different-level steel market with large potentials; lying in the traffic hinge of four provinces: Xiang province, Gui province, Yue province and Gong province,and neighboring the two big railways, “ Jing-Guang line“ and “Jing-Jiu line“, and closing to two metropolises, Hongkong and Guangzhou; having abundance materials, such as iron ore, limestone and so on, in the area 100km within its location; having a technical group of more than 4000 persons,which is the most powerful treasure for development.

Projects are permitted as JI or CDM projects only when the host country has ratified the Kyoto Protocol. The list of countries which have ratified the Kyoto Protocol is available on the Internet at <http://unfccc.int/resource/kpstats.pdf>.

Memoranda of Understanding (MoU) regulate basic aspects of carrying out JI and CDM projects between two countries. A list of countries with which Austria has already concluded a MoU is on the Internet at <http://www.ji-cdm-austria.at> or <http://www.klimaschutzprojekte.at>.

C 2 Status of the host country	
Host country	<input type="radio"/> Signed and ratified, accepted, approved or acceded to the Kyoto Protocol <input type="radio"/> Signed and has demonstrated a clear interest in becoming a party in due time <input type="radio"/> Has already started or is on the verge of starting the national accession process
Existing Memorandum of Understanding (MoU) with Austria	<input type="radio"/> Yes <input type="radio"/> No

D PROJECT INFORMATION

D 1 General Information	
Project name	<u>Iron&Steel CDQ and waste heat Utilization for electricity generation</u>
Project objective	<p>The project, which recovers waste heat from red-hot coke and then uses the heat for electricity generation, has significant environmental and social benefits. It will contribute to sustainable development as follows.</p> <ul style="list-style-type: none"> ● The project will reduce the waste of energy resources and promote energy conservation. ● Electricity generated by this project will displace coal-fired power generation in the North China Power Grid, reducing the environmental pollution generated from burning coal. ● The project will significantly reduce dust from the existing CWQ facility. ● The project will create employment opportunities for the local community during the construction and operation of the project.
Description of the project background	<p>Shangang Iron & Steel Group Co., Ltd(SISG)intends to build two sets of coke dry quenching (CDQ) systems on coke ovens numbers 4 and 5 to replace its existing coke wet quenching process (CWQ) systems. The CDQ systems will recover waste heat from red-hot coke and utilize the sensible heat for electricity generation. The electricity will be used to meet the company’s power demand, displacing the electricity mainly purchased by SISG from the South China Power Grid. The CWQ will be used as the backup system once the CDQ systems are commissioned. Since there is currently no relevant regulation obliging iron and steel companies in China to replace CWQ systems with CDQ, without the project, BISCO would continue using the original CWQ systems and the sensible heat could not be recovered and utilized to generate electricity.</p>

D 2 Category(ies) of project activity	
Project category	<ul style="list-style-type: none"> <input type="radio"/> Construction (retrofitting) of combined heat and coupling plant <input type="radio"/> Energy sources transfer in energy conversion installations and production plants to renewable energy sources or from energy sources with high carbon content to energy sources with lower carbon content, especially in existing district heating systems, <input type="radio"/> Construction (or retrofitting) of generating plants operated with renewable energy sources (especially wind power stations, biogas or biomass combined heat and power coupling as well as hydroelectric power plants),

	<ul style="list-style-type: none"><input type="radio"/> Projects whose purpose is the avoidance or (energy) recovery of landfill gas,<input type="radio"/> Waste management measures which contribute to avoidance of greenhouse gas emissions especially through energy recovery of waste, if possible under consideration of waste heat utilisation,<input type="radio"/> Projects serving the reduction of end-user energy consumption in residential accommodation, public and private service office buildings as well as in industrial applications and processes (including waste heat potentials) (energy efficiency projects).<input type="radio"/> Other: _____
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D 3 Technical aspects	
<p>Technical description.</p> <p><i>The essential technical aspects should be briefly presented</i></p> <p><i>A detailed description (max. 3 A4 pages) is to be enclosed to the PIN including the following aspects:</i></p> <p><i>Project purpose</i></p> <p><i>Applicant's facilities to generate Emission Reductions</i></p> <p><i>Description of technology employed and associated risks</i></p> <p><i>Milestones, time schedule and current status of implementation</i></p> <p><i>Key permits and expected date of approval</i></p> <p><i>Key contracts and expected date of signing</i></p> <p><i>Risks during project implementation and operation</i></p>	<p>CDQ is a process by which red-hot coke is cooled with low temperature inert gas in a shaft-like cooling unit called a cooling chamber. The detailed process is described below. A coke-bucket transfer car loaded with red-hot coke will be pulled by locomotive to the bottom of a derrick. An elevator will then send the coke bucket to the top of the CDQ oven. The hot coke will be unloaded into the CDQ oven by the coke charging unit. After the heat exchange takes place between the hot coke and inert, cold gaseous nitrogen in the oven, the hot coke will be further cooled to below 200°C and the cooled coke will be discharged to a conveyer belt and sent to the coke screening system. The inert gas used to cool the hot coke is blown into the CDQ chamber by a circulating fan from the bottom of the unit that supplies the gas. After the heat exchange with the red-hot coke, the gaseous nitrogen reaches a temperature of 900°C. This gaseous nitrogen's temperature varies as the red-hot coke's temperature changes. Normally, it would stay around 980°C if the temperature of red-hot coke were steadily kept at 1050°C. After being cleaned by the first dust collector, the hot gaseous nitrogen enters the CDQ boiler to complete the heat exchange with water, whereupon its temperature will drop below 170°C. The inert gas will then be cleaned again by a second dust collector. As the circulating fan increases pressure on the inert gas through a feedwater preheater, the inert gas continues to cool to below 130°C. The cold gas is then recycled into the CDQ chamber to quench the next shift of hot coke.</p> <p>Main components of one set of CDQ system include:</p> <ul style="list-style-type: none"> Circulating water pump station CDQ dust collecting system CDQ central control unit CDQ coke transfer system CDQ locomotive car and coke-bucket check station Waste heat boiler with capacity of 70t/h Turbine power generator with capacity of 15MW Power, automation, communications system <p>The technology not prevailing in China and some key technology will be imported from foreign country.</p>

E PROJECT ORGANISATION

E 1 Project team	
<p>Project-specific qualifications and experiences</p> <p><i>The essential qualifications and experiences should be briefly presented, detailed project references are to be enclosed to the PIN (using the format of Appendices 4, 5)</i></p>	

E 2 Schedule	
Current project status	<input type="radio"/> Project idea <input type="radio"/> Planning <input checked="" type="radio"/> Implementation
Status of financing	
Status of negotiations with the host country	
Status of permission procedures of authorities	
Project preparation	From: ___ June, 2006__ to: __ June,2007__
Construction/assembly	From: __ Oct, 2007__ to: __ Dec, 2008_
Project lifetime	From: __ 1 st , Jan 2009__ to: __ Dec, 2030__
Generation of ERUs/CERs	From: _____ 1 st , Jan 2009_____ to: _____ 31th, Dec 2012_____
Other milestones	
Effect of PIN acceptance on the time schedule of the project	

E 3 Project financing	
Costs of project development	211.69 million RMB
Costs of project implementation	
Estimated annual operating costs	18.78 million RMB
Estimated annual revenues	540 thousand \$
Financing sources (equity/debt capital, financing institutions)	
Proposed ERU/CER price (EUR)	10 \$/tco _{2e}

F GREENHOUSE GAS REDUCTION

Only projects resulting in emissions reductions of the greenhouse gases listed in table F1 can be accepted as JI or CDM projects.

The crediting period corresponds to the period during which 'creditable' emissions reduction units can be generated. For details on the crediting period see e.g. the baseline study available at <http://www.ji-cdm-austria.at> or at <http://www.klimaschutzprojekte.at>.

All emissions must be stated in tonnes of CO₂ equivalent. A conversion table is available on the Internet at <http://www.ipcc.ch/pub/wg1TARtechsum.pdf>.

F 1 Greenhouse gases	
Greenhouse gases targeted for emissions reductions by the project	<input checked="" type="radio"/> CO ₂ <input type="radio"/> CH ₄ <input checked="" type="radio"/> N ₂ O <input type="radio"/> HFCs <input type="radio"/> PFCs <input type="radio"/> SF ₆
Estimation of the project-specific greenhouse gas emissions in tonnes of CO ₂ equivalent	1500t/a
Crediting period	Jan, 2008 ~ Oct, 2012 (the first crediting period)
Estimated abatement of greenhouse gas emissions in tonnes of CO ₂ equivalent in comparison to the baseline scenario	55,571t/a

To determine the emissions abatement the JI or CDM project must be compared with a baseline scenario. The baseline describes how the system in question would develop if the intended project did not take place.

F 2 Baseline	
<p>Framework of the considered baseline scenario</p>	<p>Approved consolidated baseline methodology ACM0012(Consolidated baseline methodology for waste gas and /or heat and /or pressure for power generation, version 02) and ACM0002 (Consolidated baseline methodology for grid connected electricity generation from renewable sources, version 06) are applied to this project activity.</p> <p>This project meets all of the above application criteria:</p> <ul style="list-style-type: none"> ● This project recovers waste heat from red-hot coke quenching process for electricity generation ● The electricity generated by the project will displace the power from the North China Power Grid and from a captive power plant. The installed capacity of coal-fired power plants accounts for over 95 percent of the total installed capacity of the North China Power Grid, and coal is the dominant fuel used in the captive power plant. ● The implementation of the project activity will not lead to fuel switch. <p>The baseline scenario will be a mix of options (a) and (b), in which case the mix of grid and captive power should be specified.</p> <p>options (a): Import of electricity from the grid; options (b): The proposed project activity not undertaken as a CDM project activity; Existing or new captive power generation on-site, using other energy sources than waste heat and/or gas, such as coal, diesel, natural gas, hydro, wind, etc;</p>

The project boundary defines which emissions sources and mechanisms of action are to be considered in the emissions calculation. The project boundary is to be briefly described and presented with an illustration.

F 3 Project boundary	
<p>Project boundary</p>	<p>The project boundary is the proposed activity, and the spatial extent of the baseline boundary comprises the waste heat sources, CDQ waste heat recovery for electricity generation plant, the equipments used to provide auxiliary heat to the waste heat recovery process, and the power plants connected physically to the electricity grid that the proposed project activity will affect.</p>

Leakage describes the indirect emissions taking place outside the defined project boundary. For details on leakage see e.g. the baseline study which is available at <http://www.ji-cdm-austria.at> or at <http://www.klimaschutzprojekte.at>.

F 4 Leakage	
Leakage	No leakage will be considered

G EXPECTED ECOLOGICAL AND SOCIO-ECONOMIC EFFECTS

G 1 Expected environmental effects	
Expected global/local positive and negative environmental effects of the project ¹	As an environmental improvement project with the goal of pollution reduction, it has little impact on residents outside of the plant area. To determine public attitude towards the proposed project,

H ADDITIONALITY

H 1 Additionality	
Presentation of the additionality of the project to a development without utilising the JI/CDM mechanism considering national and/or sectoral outline conditions or policies	<p><i>“Tool for the demonstration and assessment of additionality.”</i> will be used to assess the additionality. According to the consolidated baseline methodology ACM0004, the project must demonstrate additionality in the following aspects:</p> <ul style="list-style-type: none"> ● Investment Analysis shows that the project IRR would be lower than benchmark 13.2% ● Sensitivity analysis shows that the IRR is most sensitive to the net electricity supply, while it is least affected by O&M cost. The equity IRR is maintained to be less than the benchmark of 13% while the three parameters fluctuate in the range of -10% to +10%. , Since the project is not economically attractive without CER revenue, the project owner will not invest in the CDQ systems unless the project is developed under the CDM ● Technology Risk: CDQ technology has not been widely taken up in China ● Increased equipment failure risk ● Lack of CDQ expertise and operational experience ● Instability of electricity generation
Presentation of the project's contribution to the sustainable development of the host country	Global GHG ER

¹ Abstraction of ground water or surface water may in no event be larger as the natural water influx.