CLEAN DEVELOPMENT MECHANISM
PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD)
Version 03 - in effect as of: 22 December 2006

CONTENTS

Revision history of this document

Version Number	Date	Description and reason of revision
01	21 January 2003	Initial adoption
02	8 July 2005	• The Board agreed to revise the CDM SSC PDD to reflect guidance and clarifications provided by the Board since version 01 of this document. • As a consequence, the guidelines for completing CDM SSC PDD have been revised accordingly to version 2. The latest version can be found at <http://cdm.unfccc.int/Reference/Documents>.
03	22 December 2006	• The Board agreed to revise the CDM project design document for small-scale activities (CDM-SSC-PDD), taking into account CDM-PDD and CDM-NM.

SECTION A. General description of small-scale project activity

A.1 Title of the small-scale project activity:

SeAH Besteel fuel switching project
(Version 3.3, 05/11/2009)

A.2. Description of the small-scale project activity:

SeAH Besteel fuel switching project (the Project activity or the Project) involves the fuel switching from bunker fuel oil C (sulphur 0.3%, B-C oil) to natural gas in SeAH Besteel's Gunsan plant. SeAH Besteel mainly produces special steel and automotive parts in its Gunsan plant. Due to the demand increase of its products, the amount of its production has been steadily increased since 2000. To meet its increased demand, SeAH Besteel has decided to increase its production capacity in 2005. The capacity increase, started in March 2005, was completed in January 2007. In the facilities whose capacity has been increased, natural gas is used as a fuel source instead of B-C oil, which has been used as a fuel source before capacity increase.

As a result of the capacity increase and fuel switching, two Walking Beam Furnaces (WBF) (150 Ton/hr x 2) in the large size rolling mill and one Walking Beam Furnace (WBF) (180 Ton/hr x 1) in the small size rolling mill use natural gas as a fuel source. Before the capacity increase, one WBF (120 Ton/hr x 1) was installed in the large size rolling mill and one WBF (110 Ton/hr x 1) was installed in the small size rolling mill, both of which have used B-C oil as a fuel source.

The Project will contribute to the sustainable development of Korea in the following ways:

- Mitigation of GHGs
  Natural gas is less carbon intensive than B-C oil. Therefore switching fuel from B-C oil to natural gas will reduce GHGs emissions.

- Improvement of environmental condition
  In addition to GHGs emission reduction, the Project activity will reduce emissions of pollutants such as SO_x, NO_x and dust, etc. Reduction of pollutant emissions will improve the local air quality.

- Promotion of the natural gas use in the local area
  The proportion of the natural gas to be used by SeAH Besteel counts for approximately 60% of the natural gas provided in the local area. Before SeAH Besteel started the fuel switching project, the price of the natural gas in Gunsan area is one of the highest in Korea due to diseconomies of scale. After SeAH Besteel started to use natural gas as its fuel source, the natural gas provider could achieve the economies of scale and lower the natural gas price. At the same time, with improvement of profitability, the natural gas provider could provide the natural gas to remote areas where the establishment of infrastructure is required. Therefore, due to the Project activity,

local residents could have better accessibility of the natural gas, which is cleaner and safer fuel source.[1]

A.3. Project participants:

Name of Party involved(*) ((host) indicates a host Party)	Private and/ or Public entity(ies) Project participants(*) (as applicable)	Kindly indicate if the Party involved wishes to be considered as project participants (Yes/ No)
Korea (host)	SeAH Besteel Corporation Korea Energy Management Corporation	No
Japan	Mitsubishi UFJ Securities Co., Ltd	No

A.4. Technical description of the small-scale project activity:

A.4.1. Location of the small-scale project activity:

A.4.1.1. Host Party(ies):

Republic of Korea

A.4.1.2. Region/State/Province etc.:

Jeollabuk-do

A.4.1.3. City/Town/Community etc:

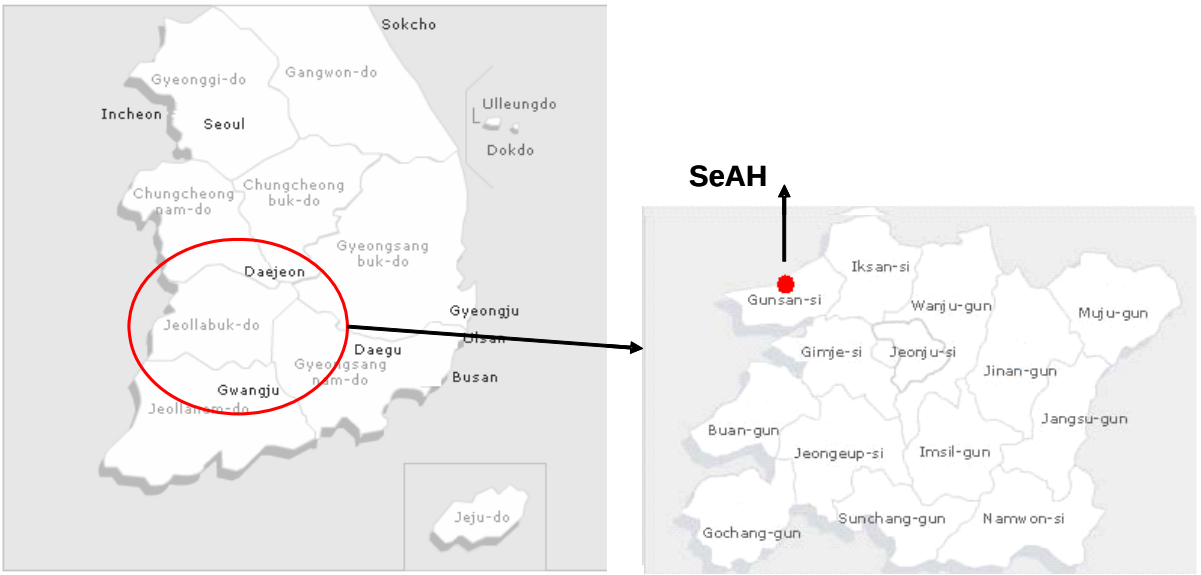
Gunsan City

A.4.1.4. Details of physical location, including information allowing the unique identification of this small-scale project activity :

The Project site is located at 1-6, Soryong-Dong, Gunsan City, Jeollabuk-do, Korea. Its geographical coordinates are 35°58′ 00.58″ N and 126°36′ 39.88″ E.

[1] The contents of this paragraph were confirmed in the interview with the local government officer who is in charge of the local economy and energy.

<Figure A-1 – Map of Republic of Korea, Project activity Location>



A.4.2. Type and category(ies) and technology/measure of the small-scale project activity:

In accordance with Appendix B of the simplified modalities and procedures for small-scale clean development mechanism project activities ("SSC M&P"), the Project activity falls under the following type and category:

Type III: Other project activities
Category B: Switching fossil fuels (Version 13)
Sectoral Scope 1 – Energy industries (renewable - / non-renewable sources)

The Project activity involves capacity increase. As per the "General guidance to Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories (version12)", project activities involving capacity increase may use a Type III SSC methodology provided that they can demonstrate the most plausible baseline scenario for the additional (incremental) capacity is the baseline provided in the respective type III small-scale methodology. The demonstration will be shown in the Section B.4., using the latest version of "Combined tool to identify the baseline scenario and demonstrate additionality (Version 02.2, EB 28)".

WBFs supply heat to the bloom and billet produced in steelmaking process up to 1,250℃. As a fuel source, natural gas, provided by Gunsan City Gas is used. For the capacity increase and new installation of WBFs, best available technologies such as Low NO_x regeneration burners which can achieve high energy efficiency by utilizing the waste heat from the combustion process are applied. The specifications of the WBFs newly installed (project scenario) and WBFs displaced by the Project activity (baseline scenario) are as shown in the table.

< Table A-1 Facilities Specification of the baseline scenario>

Item		Large size rolling mill	Small size rolling mill
		WBF	WBF
Type		Walking Beam	Walking Beam
Nominal Capacity* (Ton/hr)		120 Ton/hr	110 Ton/hr
Actual Capacity* (Ton/hr)		67.3 Ton/hr	102.7 Ton/hr
Size (length x width) (m)		32 * 5.4	18 * 11.5
Fuel		Bunker fuel oil C	Bunker fuel oil C
Burner	Type	High pressure atomizing air type	Steam Jet type
	Capacity (Mcal/hr)	25,993.8	42,489.81
	# of installation	48	37
Product to be heated		Bloom	Billet
Commissioning date		1993	1995
Manufacturer		Davy. USA	ITAM. USA

< Table A-1 Facilities Specification of the project scenario >

Item	Large size rolling mill		Small size rolling mill
	WBF # 1	WBF # 2	WBF
Type	Walking Beam	Walking Beam	Walking Beam
Nominal Capacity* (Ton/hr)	150 Ton/hr	150 Ton/hr	180 Ton/hr
Actual Capacity* (Ton/hr)	73.638 Ton/hr	73.638 Ton/hr	118.340 Ton/hr

Size (length x width) (m)		36.75 x 6.1	36.75 x 6.1	28.20 x 12.1
Fuel		Natural gas	Natural gas	Natural gas
Burner	Type	Low NO_x Regeneration Burner	Low NO_x Regeneration Burner	Low NO_x Regeneration Burner
	Capacity (Mcal/hr)	37,270	37,270	68,000
	# of installation	42	42	36
Product to be heated		Bloom	Bloom	Billet
Change of equipment		Capacity increase	Capacity increase	Capacity increase
Commissioning date		2006-03	2007-01	2006-11
Manufacturer		Bloom	Core	Bloom

* Nominal Capacity is the maximum theoretical production capacity under the hypothetical production conditions (100 % of preheated general steel, continuous operation, no operational loss, etc). Actual Capacity is estimated under the SeAH's operational conditions.

A.4.3 Estimated amount of emission reductions over the chosen crediting period:

< Table A-3 Estimated amount of emission reductions >

Years	Annual estimation of emission reductions in tonnes of CO_2e
Year 1	27,728
Year 2	27,728
Year 3	27,728
Year 4	27,728
Year 5	27,728
Year 6	27,728
Year 7	27,728
Year 8	27,728
Year 9	27,728
Year 10	27,728
Total estimated reductions (tonnes of CO_2e)	277,280
Total number of crediting years	10 years
Annual average over the crediting periods of estimated reductions (tonnes of CO2e)	27,728

A.4.4. Public funding of the small-scale project activity:

Project financing does not involve ODA or public funding from Annex I countries.

A.4.5. Confirmation that the small-scale project activity is not a debundled component of a large scale project activity:

According to "Compendium of guidance on the debundling for SSC project activities (Annex 27, EB36)", a proposed small-scale project activity shall be deemed to be a debundled component of a large project activity if there is a registered small-scale CDM project activity or an application to register another small-scale CDM project activity:

(a) With the same project participants;
(b) In the same project category and technology/measure; and
(c) Registered within the previous 2 years; and
(d) Whose project boundary is within 1 km of the project boundary of the proposed small-scale activity at the closest point.

There is no registered small-scale CDM project activity or an application to register another small-scale CDM project activity in the same project category and technology/measure within 1 km of the project boundary. Therefore, the Project is not deemed to be a debundled component of any other large project.

SECTION B. Application of a baseline and monitoring methodology

B.1. Title and reference of the approved baseline and monitoring methodology applied to the small-scale project activity:

AMS Type III. – "Other Project Activity"
Category B. Switching fossil fuels (version 13)

B.2 Justification of the choice of the project category:

Category B. Switching fossil fuels (version 13)

1. This methodology comprises fossil fuel switching in industrial, residential, commercial, institutional or electricity generation applications (e.g. fuel switching from fuel oil to natural gas in an existing captive electricity generation, or replacement of a fuel oil boiler by a natural gas boiler).

   → The Project activity is a fossil fuel switching project in industrial applications.

2. Retrofit or replacement of existing installations are eligible under this methodology.

   → The Project activity involves replacement of existing installation with capacity addition.

3. Fuel switching may also result in energy efficiency improvements. If the project activity primary aims at reducing emissions through fuel switching, it falls into this methodology. If fuel switching is part of a project activity focussed primarily on energy efficiency, the project activity falls under AMS II.D or II.E.

   → The Project activity primary aims at reducing emissions through fuel switching from B-C oil to natural gas.

4. New facilities (Greenfield projects) and project activities involving capacity additions compared to the baseline scenario are only eligible to apply this methodology if they comply with the requirements in the General Guidance for SSC methodologies concerning these topics. In addition the requirement for demonstration of the remaining lifetime of the equipment replaced as described in the general guidance shall be followed.

   → The Project activity involves capacity addition compared to the baseline scenario. The requirements in the General Guidance for SSC methodologies concerning these topics as well as the demonstration of the remaining lifetime of the equipment replaced will be treated in section B-4 below.

5. This methodology is not applicable to project activities that propose switch from fossil fuel used in the baseline to renewable biomass, biofuel or renewable energy in the project scenario. A relevant Type I methodology shall be used for such project activities that generate renewable energy displacing fossil fuel use. This methodology is also not applicable to project activities involving the use of waste gas; there project activities might be eligible under AMS III.Q.

   → The Project activity does not involve switching from fossil fuel to renewable biomass, biofuel or renewable energy. Also, the Project activity does not involve the use of waste gas.

6. In case of existing facilities historical information (detailed records) on the use of fossil fuels and the plant output (e.g. heat or electricity) in the baseline captive energy generation plant from at least 3 years prior to project implementation shall be used in the baseline calculations, e.g. information on coal use and heat output by a district heating plant, liquid fuel oil used and electricity generated by a generating unit (records of fuel used and output can be used in lieu of actual collecting baseline validation data). For facilities that are less than 3 years old, all historical data shall be available (a minimum of one year data would be required).

   → 3 years historical information prior to project implementation on the use of fossil fuels and plant output will be used in the baseline calculations.
   Especially the quantity of product will be used for the plant output. Of course it is possible to use heat as plant output. The heat can be measured according to following method.

   $H_{output} = \Sigma\{W_b \times C \times (T_{out} - T_{in})\}$

   H_{output}(MWh/yr) : Heat Output
   W_b(ton) : The weight of each Bloom or Billet which is put into furnace
   C(MWh/ton℃) : Specific Heat of Bloom or Billet, fixed value
   T_{out}(℃) : The temperature of bloom or billet at the exit of furnace
   T_{in}(℃) : The temperature of bloom or billet at the entrance of furnace

   The value of W_b, T_{out}, T_{in} are having been measured and recorded automatically.

   But to use the quantity of product as output is easier than to use heat as output for calculating baseline and monitoring in this case because the product output is measured independently. And the two factors have almost same trend in relation to baseline calculations(Large scale #1WBF, 2008). So the quantity of product is chosen as output. The trend is showed in Annex 3 as baseline information. Moreover, W_b, T_{out}, T_{in} will be monitored for cross-check.

7. Multiple fossil fuel switching is not covered under this methodology.

   → The Project activity only involves fuel switching from B-C oil to natural gas.

8. Measures are limited to those that result in emission reductions of less than or equal to 60 kt CO_2 equivalent annually.

   → As showed in the sections below, the expected amount of emission reductions are less than 60kt CO_2 equivalent annually. Also, even at the full production capacity (large size mill: 1,161,120 tonnes of bloom per year, small size mill: 881,872 tonnes of billet per year), the expected emission reductions are less than 60 ktCO_2 equivalent annually.

B.3. Description of the project boundary:

As per the methodology applied (AMS III.B version 13), the project boundary is physical, geographical site where the fossil fuel switching takes places and all installations affected by the switching. Therefore, the project boundary encompasses the three WBFs in Gunsan plant that the fuel switching occurs.

B.4. Description of baseline and its development:

In the absence of the Project activity, SeAH Besteel would have installed the WBFs fuelled by B-C oil, which had been used before the capacity increase. The fact that SeAH Besteel would use B-C oil for the fuel source of WBF is shown below using the latest version of "Combined tool to identify the baseline scenario and demonstrate additionality". The emission baseline is expressed as emissions per unit of output.

STEP 1. Identification of alternative scenarios

Sub-step 1a. Define alternative scenarios to the proposed CDM project activity:

As alternative scenarios to the proposed CDM project activity, following scenarios are considered.

Scenario A: The proposed project activity undertaken without being registered as a CDM project activity (Installation of new WBFs which use natural gas as a fuel source)

Scenario B: Installation of new WBFs which use B-C oil as a fuel source.

It is also technologically possible to use other fossil fuels, such as diesel, gasoline or LPG as fuel sources. However, due to its high price, such fuels are seldom used as fuel source in these types of equipment. Therefore, using such fuels is excluded in the baseline scenario consideration since it is not realistic.

Due to its practice and technological problem, it is not also possible to use non-fossil fuel sources, such as biomass or renewable energy.

Sub-step 1b. Consistency with mandatory applicable laws and regulations:

Both of the scenarios described above are in compliance all mandatory applicable legal and regulatory requirements. In Gunsan area, B-C oil can be used as an industrial fuel source. There are also no laws or regulations that mandates the use of natural gas.

STEP 2. Barrier analysis

There are no barriers that would prevent the implementation of the aforementioned scenarios. Therefore, according to the guideline in the "Combined tool to identify the baseline scenario and demonstrate additionality", step 3 – Investment analysis – is conducted.

STEP 3. Investment analysis

This step serves to determine which of the alternative scenarios is the most economically or financially attractive. For this purpose, an investment comparison analysis is conducted for Scenario A and Scenario B. For investment comparison analysis, only costs are considered for each scenario since revenue, which is from the sale of the product, will be identical from both scenarios. Following tables show the parameters used for NPV calculation of the costs and its results.

< Table B-1 NPV calculation - Scenario A >

Item		Large size WBF #1	Large size WBF #2	Small size WBF
Equipment cost[1] (KRW)		14,460,000,000	14,720,000,000	22,450,000,000
Fuel consumption[2] (Nm^3/yr)	Up to 2008	12,552,617	12,552,617	30,286,167
	2009	13,217,850	13,217,850	32,098,693
	From 2010	13,986,968	13,986,968	34,285,405
Fuel price[3] (KRW/Nm^3)		489.22		
Fuel cost (KRW/yr)	Up to 2008	6,140,991,289	6,140,991,289	14,816,598,620
	2009	6,466,436,577	6,466,436,577	15,703,332,589
	From 2010	6,842,704,485	6,842,704,485	16,773,105,834
Additional O&M cost compared to the use of natural gas[4] (KRW/yr)		0	0	0
Lifetime (year)		30	30	30
Commissioning date		2006-03	2007-01	2006-11
Discount rate[5]		6.6 %		
NPV of the total cost		416,289,846,754 KRW (USD 407,053,796)		

< Table B-2 NPV calculation - Scenario B >

Item	Large size WBF #1	Large size WBF #2	Small size WBF

Equipment cost[1] (KRW)		16,460,000,000	16,720,000,000	24,450,000,000
Fuel consumption[2] (l/yr)	Up to 2008	12,841,552	12,841,552	30,983,291
	2009	13,522,097	13,522,097	32,837,538
	From 2010	14,308,919	14,308,919	35,074,583
Fuel price[3] (KRW/l)		306.54		
Fuel cost (KRW/yr)	Up to 2008	3,936,449,325	3,936,449,325	9,497,618,038
	2009	4,145,063,672	4,145,063,672	10,066,018,775
	From 2010	4,386,255,929	4,386,255,929	10,751,762,710
Additional O&M cost compared to the use of natural gas[4] (KRW/yr)	Up to 2008	100,577,273	100,577,273	496,379,135
	2009	105,886,362	105,886,362	526,085,773
	From 2010	112,047,764	112,047,764	561,925,181
Lifetime (year)		30	30	30
Discount rate[5]		6.6 %		
NPV of the total cost		299,728,115,752 KRW (USD 293,078,172)		

1) The difference in equipment costs between Scenario A and Scenario B reflects the price difference of burner, pre-treatment facilities, after-treatment facilities, etc. According to the technology providers, the additional cost for each WBF in case of Scenario B is around 1,000,000,000 ~ 2,000,000,000 KRW. As a conservative approach, additional equipment cost of 2,000,000,000 KRW is applied for each WBF.
2) Fuel consumption is estimated based on the information provided by the technology providers (required energy per ton of production) considering the expected production increase in each year and NCV of each fuel. (Natural gas: 40.0 MJ/Nm^3, B-C oil: 39.1 MJ/l)
3) Fuel price and exchange rate (1022.69 KRW/USD) at the time of decision making of the Project activity are applied in the calculation. (February, 2005). The source of the exchange rate is "The Bank of Korea"
4) Only additional O&M cost compared to the use of natural gas is considered. Under Scenario A, which assumes the use of natural gas, there is no additional O&M cost. Under Scenario B, it is expected that additional O&M cost would be incurred due to steam use for spraying, electricity use for pumping B-C oil.
5) Average bank loan rate for equipment investment in 2004 is used for the discount rate. The source of the average bank loan rate for equipment investment is "The Bank of Korea (www.ecos.bok.or.kr)".

To confirm whether the conclusion regarding the financial attractiveness is robust to reasonable variations in the critical assumptions, sensitivity analysis is conducted. As for the natural gas price and the discount rate, the range of the variation is chosen based on the historical variation. As a result 20% is chosen for the natural gas price and 10% is chosen for equipment cost and additional O&M cost. As for discount rate, 3% is chosen for lower range, which is lower than the risk free rate while 10% is chosen for the upper

range which is higher than the historical highest in the past 5 years (9.34% in 2000). The results are as follows:

1) Sensitivity analysis 1: Natural gas price is 20 % lower than expected.
2) Sensitivity analysis 2: Equipment cost for Scenario A is 10 % lower than expected.
3) Sensitivity analysis 3: Additional O&M cost for Scenario B is 10% higher than expected.
4) Sensitivity analysis 4: Discount rate varies 3 ~ 10 %.

< Table B-3 Sensitivity analysis >

Item	NPV of Scenario A (Natural gas)	NPV of Scenario B (B-C oil)
Sensitivity analysis 1	342,897,610,987KRW	299,728,115,752KRW
Sensitivity analysis 2	411,356,979,962KRW	299,728,115,752KRW
Sensitivity analysis 3	416,289,846,754KRW	300,670,172,800KRW
Sensitivity analysis 4-1 (Discount rate: 3%)	625,523,504,296KRW	439,800,767,443KRW
Sensitivity analysis 4-2 (Discount rate: 10%)	307,958,395,118KRW	227,012,122,811KRW

As shown in the tables and results of sensitivity analysis, NPV of total cost under Scenario B is always lower than that under Scenario A, which means Scenario B is economically more attractive than Scenario A.

Common practice analysis

In Gunsan area, there are no regulations that mandate use of natural gas. However, in some area of Korea, such as Seoul Metropolitan area, Incheon Metropolitan area, due to the regulation on the total amount emissions of pollutants, including NO_x, most companies use natural gas as a fuel source. According to the "Energy consumption statistics" from Ministry of Commerce, Industry and Energy of Korea, even including the consumption of natural gas in such regions, more than 80% of the energy source in steel industry was fossil fuels other than natural gas in 2006. Also, in Jeollabuk-do where the project plant is located, more than 80% of the energy source was fossil fuels other than natural gas in 2006. Therefore, it is difficult to conclude that the use of natural gas is widely spread and a common practice in steel industry in Korea.

Lifetime of existing equipments

According to the government statistics – Analysis on the mass energy consumer's report 2007 , there are 1,734 furnaces installed and operated currently in Korea and among them, 599 furnaces are installed before 1993. Also Combustech, the biggest WBF manufacturer in Korea (www.combustech.kr) confirms that the lifetime of WBF used in Korea is about 30 years. The walking beam furnaces displaced by the Project activity are installed in 1993 and 1995, respectively. Though the WBFs displaced by the Project activity had remaining lifetime for more than 15 years, SeAH Besteel decided to displace them due to the capacity increase and fuel switching. Therefore, during the next 10 years of crediting period, it can be concluded that the existing equipment could have been used in the absence of the Project activity.

Above demonstration shows that in the absence of the Project activity, B-C oil would be used as a fuel source for the newly installed WBFs and Scenario B is the baseline scenario to the Project activity.

B.5. Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered small-scale CDM project activity:

As shown in the section B.4, the Project activity is economically unattractive comparing to the baseline scenario and is not a common practice. Therefore, it is considered that the Project activity is additional.

As described, SeAH Besteel had planned stepwise fuel switching with the capacity expansion for its rolling mills. Actually, the original plan also included fuel switching from B-C oil to natural gas in its boilers which was planned in 2007 after the completion of the fuel switching in rolling mills.
When SeAH Besteel decided to conduct fuel switching project in its rolling mills and boilers, SeAH Besteel consider the proper timing for CDM registration and choice of the crediting period considering the stepwise implementation of the Project activity. As a result of internal discussion and external advice, SeAH Besteel has decided to choose the crediting period to maximize the amount of emission reductions during the crediting period, i.e., to start the crediting period when all of the fuel switching activities are completed. Also, SeAH Besteel had decided to proceed into the CDM registration when all of the actual implementation plans, including fuel switching for the boilers, are finalized because it is not possible to acquire the required information for the PDD production at that time when only the plan for WBF#1 is finalized.
After this decision, SeAH Besteel has conducted capacity expansion and fuel switching in its large size rolling mill and small size rolling mill. However, due to the increase of the expected fuel cost in case the fuel switching is conducted for all of the planned facilities, SeAH Besteel has decided to postpone the fuel switching in the boilers in April, 2007 and proceed with the CDM registration procedure only for its rolling mills. The fact that SeAH Besteel seriously considered the CDM incentive before the implementation of the Project activity is clearly stated in the documents used for decision making by its board of directors, which is dated on 23th, February, 2005. Additionally, following tables shows the actions taken for the project implementation as well as the CDM registration.

Timeline for the project implementation

Date	Action taken	Remark
23/02/2005	Determination of a plan for a stepwise fuel switching project and final decision for large size rolling mill WBF #1	A plan for series of fuel switching project activities are prepared with CDM registration and investment decision for large size rolling mill WBF #1 is finalized. Before the final determination of the Project activity, plan for CDM registration was also considered.
31/03/2005	Agreement for construction for large size rolling mill WBF #1	Construction started with the conclusion of agreement with Combustech.
22/12/2005	Final decision for small size rolling mill WBF	Investment decision for small size rolling mill WBF is finalized.
23/12/2005	Agreement for construction for small size rolling mill WBF	Construction started with the conclusion of agreement with Combustech.
22/02/2006	Agreement for construction	Construction started with the conclusion of

	for large size rolling mill WBF #2	agreement with Hanwha machinery.
23/03/2006	Final decision for large size rolling mill WBF #2	Investment decision for small size rolling mill WBF is finalized.
14/04/2006	Completion of large size rolling mill WBF #1	Test run started from March, 2006.
08/11/2006	Completion of small size rolling mill WBF	Test run started from September, 2006.
27/04/2007	Decision on fuel switching for boilers	Decided to postpone the fuel switching for the boilers due to high natural gas price.
20/11/2007	Completion of large size rolling mill WBF #2	Test run started from January, 2007.

Timeline for CDM registration

Date	Action taken	Remark
25/09/2003	Attendance KEMCO ESP 4th meeting	Acquiring information on CDM from Korea Energy Management Corporation (KEMCO). Especially fuel switching could be a CDM project.
24/11/2004	Participation on counterplan team of national steel industry association for climatic change convention	Discussion on CDM business possibility according to the prospect of Kyoto Protocol effectuation
28/06/2005	Meeting with RCC(consulting company)	Discussion with RCC if it could consult for Seahbesteel fuel switching project after every construction ended.
18/10/2005	Attendance KEMCO conference about climate change	Acquiring information of detail process for CDM registration from KEMCO.
13/06/2006	Attendance KEMCO ESP 12th meeting	Discussion with KEMCO if it could help in this project.
09/05/2007	Submission of CDM proposal by KEMCO	With the decision to postpone the fuel switching for the boilers, SeAH Besteel decides to proceed the CDM registration as planned. KEMCO submitted a CDM consulting proposal to SeAH Besteel.
10/09/2007	Finalization of CDM consulting agreement between SeAH Besteel and KEMCO	After the negotiation, a CDM consulting agreement between SeAH Besteel and KEMCO has been finalized.
23/10/2007	Finalization of CDM consulting agreement between SeAH Besteel and MUS	A CDM consulting agreement between SeAH Besteel and Mitsubishi UFJ Securities (MUS) has been finalized.
11/12/2007	Finalization of validation agreement	A validation agreement between SeAH Besteel and Korean Foundation for Quality (KFQ) has been finalized.
01/02/2008 ~ 01/03/2008	Publication of PDD on the UNFCCC CDM website	PDD is published on the UNFCCC CDM website for global stakeholder consultation.

14/02/2008 ~ 15/02/2008	Site visit by KFQ	KFQ conducted a site visit
07/05/2008	Submission of request for clarification by MUS	A request for clarification submitted to SSC WG to clarify the applicability of the methodology. (SSC_ 183)
02/07/2008	Clarification by SSC WG	A response is provided at SSC WG 16 with the recommendation of revision of the methodology
02/08/2008	Decision by EB	AMS-III.B is revised at EB 41.

B.6. Emission reductions:

B.6.1. Explanation of methodological choices:

Project emissions

Project emissions consist of those emissions related with the use of natural gas. Project emissions are calculated as follows:

$$PE_y = \sum_i FF_{project,i,y} \cdot NCV_{NG,y} \cdot EF_{NG,CO2}$$

where,

PE_y	Project emissions during the year y (tCO_2e)
$FF_{project,i,y}$	Quantity of natural gas combusted in WBF i during the year y (Nm^3)
$NCV_{NG,y}$	Net calorific value of the natural gas combusted (TJ/Nm^3)
$EF_{NG,CO2}$	CO_2 emission factor of the natural gas combusted (tCO_2/TJ)

Baseline emissions

Baseline emissions are the current emissions of the facility expressed as emissions per unit of output. Baseline emissions are calculated as follows:

$$BE_y = \sum_i EF_{i,BSL} \times Q_{i,y}$$

Where:

BE_y	Baseline emissions in the project activity in year y (tCO_2e)
$EF_{i,BSL}$	Emission factor of WBF i for the baseline situation (tCO_2/ton of bloom or billet)
$Q_{i,y}$	Output of WBF i in the project activity in year y (ton of bloom or billet)

$$EF_{i,BSL} = (FC_{i,BSL} \times EF_{CO2} \times NCV) / Q_{i,BSL}$$

$FC_{i,BSL}$	Total amount of fossil fuel consumed in the baseline situation (mass or volume unit)
EF_{CO2}	CO_2 emission factor for the baseline fossil fuel (tCO_2/TJ)
NCV	Net calorific value for the baseline fossil fuel (TJ/mass or volume unit)
$Q_{i,BSL}$	Output of WBF i in the baseline situation during the corresponding period of time for which the total fuel consumption was taken (ton of bloom or billet)

Since the baseline scenario for added capacity is same as the existing capacity, quantity of WBF i in the project activity is not limited to the installed capacity in the baseline situation. 3 years historical information prior to project implementation is used in the baseline calculation. For large scale rolling mill WBF #1 and WBF #2, same baseline data is used to calculate emission factor since there is only one rolling mill in the baseline situation.

Leakage

As described in AMS III.B, no leakage calculation is required.

Emission reductions

$$ER_y = BE_y - PE_y$$

where,

ER_y	Emissions reductions of the project activity during the year y (tCO_2e)
BE_y	Baseline emissions during the year y (tCO_2e)
PE_y	Project emissions during the year y (tCO_2e)

B.6.2. Data and parameters that are available at validation:

Data / Parameter:	**NCV_{NG}**
Data unit:	TJ/Nm^3
Description:	Net calorific value of natural gas
Source of data used:	Standard Manual for Calorific Value (the most recent version revised in September, 2006)
Value applied:	$0.00004 TJ/Nm^3$
Justification of the choice of data or description of measurement methods and procedures actually applied :	Since the project specific data is not available, the accurate and reliable national data is used. The value is from the "Standard Manual for Calorific Value" approved by Ministry of Commerce, Industry and Energy/ Korea Energy Management Corporation.
Any comment:	

Data / Parameter:	**$EF_{NG,CO2}$**
Data unit:	tCO_2/TJ
Description:	CO_2 emission factor of the natural gas combusted

Source of data used:	IPCC default value
Value applied:	56.1 tCO_2/TJ
Justification of the choice of data or description of measurement methods and procedures actually applied :	Since the project specific data and accurate and reliable national data is not available, default value from 2006 IPCC Guidelines for National Greenhouse Gas Inventories is used. (Table 1.4)
Any comment:	

Data / Parameter:	**EF_{CO2}**
Data unit:	tCO_2/TJ
Description:	CO_2 emission factor of B-C oil that would be combusted in the absence of the project activity
Source of data used:	IPCC default value
Value applied:	77.4 tCO_2/TJ
Justification of the choice of data or description of measurement methods and procedures actually applied :	Since the project specific data and accurate and reliable national data is not available, default value from 2006 IPCC Guidelines for National Greenhouse Gas Inventories is used. (Table 1.4)
Any comment:	

Data / Parameter:	**NCV**
Data unit:	TJ/Nm^3
Description:	Net calorific value of B-C oil that would be combusted in the absence of the project activity
Source of data used:	Standard Manual for Calorific Value (the most recent version revised in September, 2006)
Value applied:	0.000039TJ/liter
Justification of the choice of data or description of measurement methods and procedures actually applied :	Since the project specific data is not available, the accurate and reliable national data is used. The value is from the "Standard Manual for Calorific Value" approved by Ministry of Commerce, Industry and Energy/ Korea Energy Management Corporation.
Any comment:	

Data / Parameter:	**$FC_{i,BSL}$**
Data unit:	liter
Description:	Total amount of fossil fuel consumed in the baseline situation
Source of data used:	SeAH Besteel (on-site measurement)
Value applied:	Large size rolling mill: 38,972,085 Small size rolling mill: 53,379,878
Justification of the choice of data or description of	3 year historical data prior to the project implementation measured by SeAH Besteel is used.

measurement methods and procedures actually applied :	
Any comment:	

Data / Parameter:	**$Q_{i,BSL}$**
Data unit:	Ton of bloom or billet
Description:	Output of WBF i in the baseline situation during the corresponding period of time for which the total fuel consumption was taken
Source of data used:	SeAH Besteel (on-site measurement)
Value applied:	Large size rolling mill: 1,603,849.258 Small size rolling mill: 1,577,927.621
Justification of the choice of data or description of measurement methods and procedures actually applied :	3 year historical data prior to the project implementation measured by SeAH Besteel is used.
Any comment:	

B.6.3 Ex-ante calculation of emission reductions:

Project emissions

$$PE_y = \sum_i FF_{project,i,y} \cdot NCV_{NG,y} \cdot EF_{NG,CO2}$$

Item	Large size WBF #1	Large size WBF #2	Small size WBF
$FF_{project,i,y}$ (Nm^3/yr)	13,986,968	13,986,968	34,285,405
$NCV_{NG,y}$ (TJ/Nm^3)	0.00004	0.00004	0.00004
$EF_{NG, CO2}$ (tCO_2/TJ)	56.1	56.1	56.1
Project emissions (tCO_2e/yr)	**139,710**		

Baseline emissions

$$BE_y = \sum_i EF_{i,BSL} \times Q_{i,y}$$

Item	Large size WBF #1	Large size WBF #2	Small size WBF

$Q_{i,y}$ (ton/yr)	537,816	537,816	867,063
$EF_{i,BSL}$ (tCO_2/ton)	0.0733492	0.0733492	0.10211165
Baseline emissions (tCO_2e/yr)	**167,438**		

$$EF_{i,BSL} = (FC_{i,BSL} \times EF_{CO2} \times NCV) / Q_{i,BSL}$$

Item	Large size WBF #1	Large size WBF #2	Small size WBF
$FC_{i,BSL}$(litre)	38,972,085	38,972,085	53,379,878
EF_{CO2} (tCO_2/TJ)	77.4	77.4	77.4
NCV(TJ/litre)	0.000039	0.000039	0.000039
$Q_{i,BSL}$ (ton)	1,603,849.258	1,603,849.258	1,577,927.621
$EF_{i,BSL}$ (tCO_2/ton)	0.0733492	0.0733492	0.10211165

Emission reductions

Emission reductions: 27,728(tCO_2e/yr)

B.6.4 Summary of the ex-ante estimation of emission reductions:

Year	Estimation of project activity emissions (tonnes of CO_2e)	Estimation of baseline emissions (tonnes of CO_2e)	Estimation of leakage (tonnes of CO_2e)	Estimation of overall emission reductions (tonnes of CO_2e)
Year 1	139,710	167,438	0	27,728
Year 2	139,710	167,438	0	27,728
Year 3	139,710	167,438	0	27,728
Year 4	139,710	167,438	0	27,728
Year 5	139,710	167,438	0	27,728
Year 6	139,710	167,438	0	27,728
Year 7	139,710	167,438	0	27,728
Year 8	139,710	167,438	0	27,728
Year 9	139,710	167,438	0	27,728
Year 10	139,710	167,438	0	27,728
Total	1,397,100	1,674,380	0	277,280

*Emission reductions are estimated based on the production plan. The actual amount of emission reduction can vary depending on the actual production as well as the timing of the CDM registration.

B.7 Application of a monitoring methodology and description of the monitoring plan:

B.7.1 Data and parameters monitored:

Data / Parameter:	NCV_{NG}

Data unit:	TJ/Nm^3
Description:	Net calorific value of natural gas in year y
Source of data to be used:	Standard Manual for Calorific Value (the most recent version revised in September, 2006)
Value of data	$0.00004TJ/Nm^3$
Description of measurement methods and procedures to be applied:	The accurate and reliable national data will be used. The value is from the "Standard Manual for Calorific Value" approved by Ministry of Commerce, Industry and Energy/ Korea Energy Management Corporation. Any further revision of the "Standard Manual for Calorific Value" will be taken into account.
QA/QC procedures to be applied:	
Any comment:	

Data / Parameter:	$\mathbf{FF_{project,i,y}}$
Data unit:	Nm^3
Description:	Quantity of natural gas combusted in WBF i during the year y
Source of data to be used:	On-site measurement
Value of data	Large size WBF #1: 13,986,968 Large size WBF #2: 13,986,968 Small size WBF: 34,285,405
Description of measurement methods and procedures to be applied:	Quantity of natural gas used is continuously monitored using meters. Data is to be aggregated monthly and yearly.
QA/QC procedures to be applied:	The meters will be calibrated every 3 year by independent laboratory/entity. Certificates will be issued after the periodic calibrations are conducted. Once the erroneous measurement or malfunction is detected, corrective actions will be taken by the project developer (SeAH Besteel).
Any comment:	According to the enforcement for gas flow meter (No. 19669, revised on 4th, September, 2006), natural gas flow meters should be calibrated at least every eight years. To assure accuracy of the meters, more frequent calibration is conducted than the requirement by the enforcement.

Data / Parameter:	$\mathbf{Q_{i,y}}$
Data unit:	ton
Description:	Quantity of bloom or billet to be heated by WBF i during the year y
Source of data to be used:	On-site measurement
Value of data	Large size WBF #1: 537,816 Large size WBF #2: 537,816 Small size WBF: 867,063
Description of measurement methods and procedures to be	Large size WBF: The quantity of bloom heated is continuously measured by measuring roll which has the EN CORDER. ERP system calculates the quantity of bloom produced using the measured length of bloom from concast process.

applied:	Data is to be aggregated monthly and yearly. Small size WBF: The quantity of billet produced is continuously measured using weighing machines. Data is to be aggregated monthly and yearly.
QA/QC procedures to be applied:	Large size WBF: To assure the measurement accuracy, measuring rolls are replaced periodically – usually every one to three months. Besides the periodical replacement, in case more than a tolerance error is detected, measuring roll will be replaced. Data is to be aggregated monthly and yearly. Small size WBF: The weighing machines are calibrated biennially by an independent laboratory/entity. Data is to be aggregated monthly and yearly. (zero adjustment is conducted every month by the project developer(SeAH Besteel))
Any comment:	

Data / Parameter:	**W_b**
Data unit:	ton
Description:	Weight of each bloom or billet
Source of data to be used:	On-site measurement
Description of measurement methods and procedures to be applied:	Large size WBF: The quantity of bloom heated is continuously measured by measuring roll which has the EN CORDER. ERP system calculates the quantity of bloom produced using the measured length of bloom from concast process. Data is to be aggregated monthly and yearly. Small size WBF: The quantity of billet produced is continuously measured using weighing machines. Data is to be aggregated monthly and yearly.
QA/QC procedures to be applied:	Large size WBF: To assure the measurement accuracy, measuring rolls are replaced periodically – usually every one to three months. Besides the periodical replacement, in case more than a tolerance error is detected, measuring roll will be replaced. Data is to be aggregated monthly and yearly. Small size WBF: The weighing machines are calibrated biennially by an independent laboratory/entity. Data is to be aggregated monthly and yearly. (zero adjustment is conducted every month by the project developer(SeAH Besteel))
Any comment:	monitored for cross-check

Data / Parameter:	**T_{in} / T_{out}**
Data unit:	℃
Description:	Temperature of each bloom or billte at the entrance of WBFi
Source of data to be used:	On-site measurement
Description of measurement methods and procedures to be applied:	The temperature of each bloom or billet is continuously measured by infrared rays thermometer. It is recorded in ERP system in order to be used as important process data.
QA/QC procedures to be applied:	To assure the measurement accuracy, the thermometer is checked periodically and calibrated every year.
Any comment:	monitored for cross-check

B.7.2 Description of the monitoring plan:

SeAH Besteel will organize an Operating and Monitoring Team, which composes of a manager and operators. The manager will be responsible for monitoring and archiving all data associated with items depicted in the monitoring plan. Operators working under the manager will be assigned to the task of monitoring parameters on a timely basis as well as recording and archiving data in an orderly manner. The procedures for the monitoring of the Project activity will follow ISO 9001. All data collected as part of monitoring plan will be archived electronically and be kept at least 2 years after the end of the crediting period. Monitoring reports will be reviewed by the manager on a monthly basis in order to ensure that the Project activity meets all requirements as outlines above.

B.8 Date of completion of the application of the baseline and monitoring methodology and the name of the responsible person(s)/entity(ies)

The baseline study was completed in 19/12/2007 by the Clean Energy Finance Committee and Korea Energy Management Corporation. The contact details of Mitsubishi UFJ Securities Co., Ltd. appear below:

Clean Energy Finance Committee
Mitsubishi UFJ Securities Co., Ltd.
Tokyo, Japan
Tel: +81-3-6213-6860
E-mail: watanabe-hajime@sc.mufg.jp

Korea Energy Management Corporation
Korea, Gyeonggi-do
Tel: +82-31-260-4485
E-mail: kcg@kemco.or.kr (chang-goo, Kim)

The Clean Energy Finance Committee, Mitsubishi UFJ Securities Co., Ltd. and Korea Energy Management Corporation are the CDM Advisers to the Project.

SECTION C. Duration of the project activity / crediting period

C.1 Duration of the project activity:

C.1.1. Starting date of the project activity:

31/03/2005 (date of contract for large size rolling mill WBF #1)

C.1.2. Expected operational lifetime of the project activity:

30 years 00 month

C.2 Choice of the crediting period and related information:

C.2.1. Renewable crediting period

C.2.1.1. Starting date of the first crediting period:

Not applicable

C.2.1.2. Length of the first crediting period:

Not applicable

C.2.2. Fixed crediting period:

C.2.2.1. Starting date:

01/09/2009 or the date of registration with the CDM EB whichever is later.

C.2.2.2. Length:

10 years

SECTION D. Environmental impacts

D.1. If required by the host Party, documentation on the analysis of the environmental impacts of the project activity:

"Enforcement Decree of the Act on Assessment of Impacts of Works on Environment, Traffic, Disasters, etc." describes projects for which an Environment Impact Assessment (EIA) is required. Under the Act, the proposed Project activity does not require the completion of an EIA.
In actual fact, the Project activity will help to improve local air quality as well as mitigate climate change. Since the natural gas does not contain sulphur unlike B-C oil that would be otherwise used in the absence of the Project activity, it is expected that emissions of SO_x will be significantly reduced by the Project activity. Besides, it is also expected that emissions of NO_x or dust will be reduced by the Project activity.

D.2. If environmental impacts are considered significant by the project participants or the host Party, please provide conclusions and all references to support documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party:

It is expected that there will be no negative environmental impacts associated with the Project activity.

SECTION E. Stakeholders' comments

E.1. Brief description how comments by local stakeholders have been invited and compiled:

To invite local stakeholders' comments, an announcement is published in the local newspapers (Saejeonbuk Newspaper) on 21st, December, 2007. At the same time, internet-based public consultation has been conducted on SeAH Besteel's website from 19th, December, 2007 to 18th, January, 2008. (http://www.seahbesteel.co.kr/index.asp)

< Figure E-1 announcement on SeAH Besteel's website >

< Figure E-2 announcement on Saejeonbuk Newspaper >

E.2. Summary of the comments received:

As a result of the invitation of local stakeholders' comments, following comments are sent from various stakeholders including local electric suppliers, gas suppliers, environment purifier corporations, students and housekeepers in Gunsan area

E-mail address	Comments/inquiries received	Reference
tjdsoek@nate.com	To encourage the implementation of project activity that reduces CO_2 emission and emphasize the safe management of the Project activity	Local gas supplier
6359353@hanmail.net	Inquiries about the environmental impact of the Project activity	Resident
ycm20@hanmail.net	Inquiries about CO_2 emission reduction technology	Resident
gwelf98@hanmail.net	Inquiries about the additional fuel switching projects or CO_2 emission reduction projects	Resident
dw5582@hanmail.net	To encourage the Project activity considering the positive effects of the Project activity	Resident
dawoon3646@naver.com	To emphasize that the Project activity is necessary for the improvement of the national and local environment	Environment purifier corporation
ymy9884@nate.com	To encourage the Project activity considering the growing concern about global warming	Housekeeper
pizzahopang@kepco.co.kr	To provide the comments that the Project activity will improve the local environment	Local electricity supplier
bong8096@hanmail.net	To provide the comments that the Project activity will improve the competitive power of the company, local society and the	Environment purifier corporation

	country	
ljykscg@yahoo.co.kr	To provide the comments that the natural gas supply price will decrease by the Project activity and the benefit of the local residents will improve	Local gas supplier
ekwy018@empal.com	Inquiries about the CDM project	Student
gogojy@hanmail.net	To encourage the Project activity and inquiries about the Project activity in general	Resident
bosslhs@hanmail.net	To encourage the Project activity and inquiries about the additional project plan	Resident
stk9810@kepco.co.kr	To encourage the Project activity that the Project activity will improve the understanding of the global warming	Local electric supplier

As described above, all of them think that the Project activity will improve the local environment and help sustainable development of the country. Also they expect that unit cost of LNG supplied to residents will decline due to a large natural gas demand of SeAH Besteel. Additionally, there was a request for the safe management and prevention of fire with a result from using LNG equipment.

E.3. Report on how due account was taken of any comments received:

Stakeholders have appraised the Project activity as an environmentally friendly project and have expressed their satisfaction on the fact that it reduces emissions and contributes to well-being of society. There are no negative comments received that require the project proponent to take any corrective action. For the safe management and prevention of fire, SeAH Besteel has already established such measure, reconfirmed it and will follow the prepared measure during the Project's lifetime.

Annex 1

CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY

Organization:	SeAH Besteel Corporation
Street/P.O.Box:	1-6, Soryong-dong
Building:	
City:	Gunsan
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E-Mail:	gdjeung@seahbesteel.co.kr
URL:	http://www.seahbesteel.co.kr/
Represented by:	
Title:	General manager
Salutation:	Mr.
Last Name:	Jung
Middle Name:	
First Name:	Geum-Dong
Department:	Facility Maintenance Dept.
Mobile:	
Direct FAX:	
Direct tel:	
Personal E-Mail:	

Organization:	Korea Energy Management Corporation
Street/P.O.Box:	1157, Pungdeokcheon-2dong
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City:	Yongin
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E-Mail:	hsson@kemco.or.kr
URL:	http://kemco.or.kr
Represented by:	
Title:	Director
Salutation:	Mr.
Last Name:	Son
Middle Name:	
First Name:	Hag-sig
Department:	Energy audit Dept.
Mobile:	

Direct FAX:	
Direct tel:	
Personal E-Mail:	

Organization:	Mitsubishi UFJ Securities Co., Ltd.
Street/P.O.Box:	5-4-9 Toyosu, Koto-ku
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FAX:	+81-3-6213-6175
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URL:	http://www.sc.mufg.jp/english/e_cefc/
Represented by:	
Title:	Chairman
Salutation:	Mr.
Last Name:	Watanabe
Middle Name:	
First Name:	Hajime
Department:	Clean Energy Finance Committee
Mobile:	
Direct FAX:	
Direct tel:	
Personal E-Mail:	

Annex 2

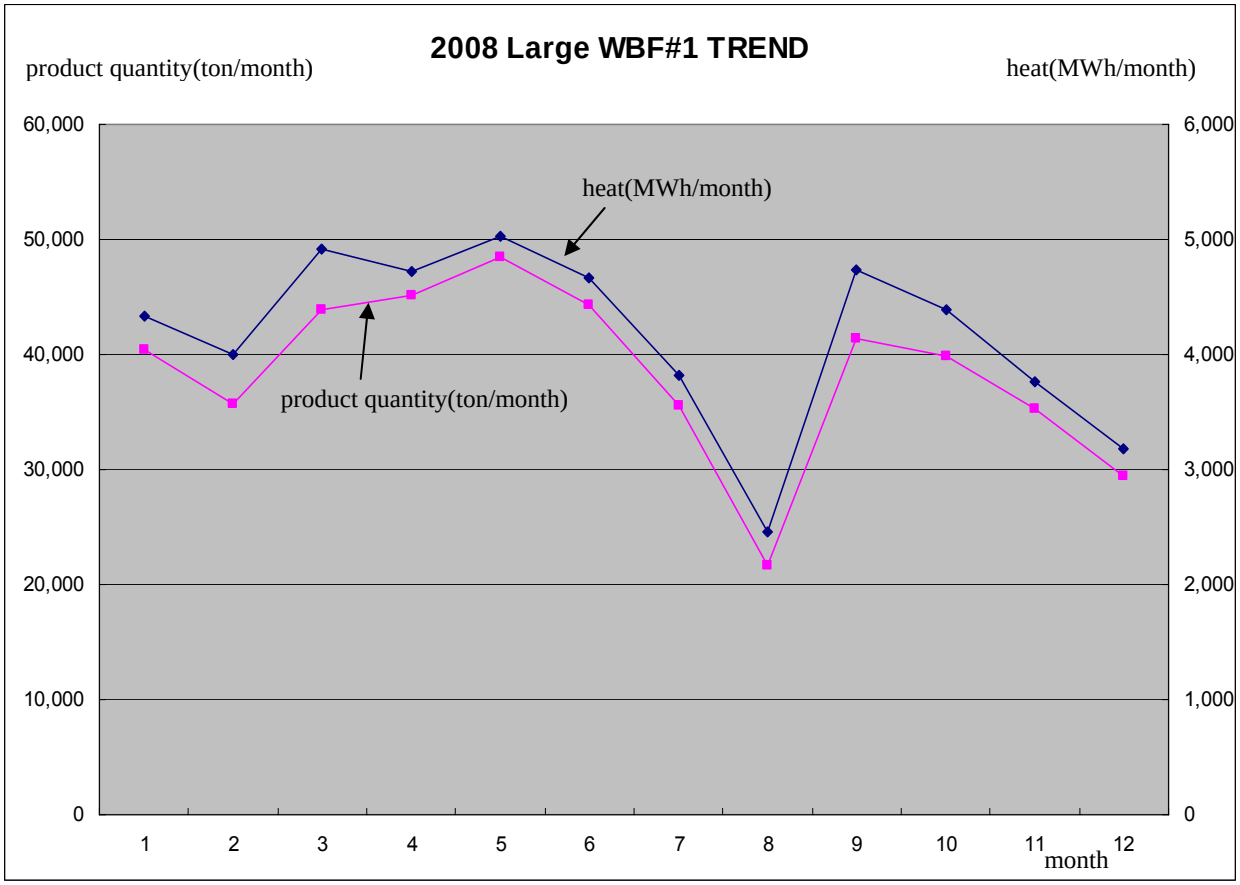
INFORMATION REGARDING PUBLIC FUNDING

Project financing will not involve ODA or public funding from any Annex I countries

Annex 3

BASELINE INFORMATION

1. THE TREND BETWEEN PRODUCT QUANTITY AND HEAT



※ EACH TREND IS VERY SIMILAR.

2. THE DOCUMENTS IMPROVING PRIOR CONSIDERATION (TRANSLATED IN ENGLISH)

The Minutes of Board of Directors

Paper Number	Business Planning Team-2005-00132	**Manager**	**Team manager**	**Senior Deputy General Manager**	**President**
Drafted Date	2005-02-27	Mr. Bae Drafting 02-28	Mr. Jo Approval 02-28	Mr. Lee Approval 03-02	Mr. Lee Final approval 03-02
Draft team	Business Planning Team				
Approval Regulation		**Cooperation**			
Implement date					
Paper grade	3				
Expiration period	1 year				

Title	Investment Deliberation Minutes(Committee)			
Meeting Time	2005.2.23(Tue) PM4:00	**Place**	Director's meeting room	
Attendees	President	Factory manager		
	Senior Deputy General Manager	Production manager		
	Director 1	Optimization manager		
	Director 2	Steel Production manager		
	Continuous Team manager			
Absentees				

IV. Installing the new large roll mill

1. Deliberation

1) Investment details

O We have decided to install new roll mill (150 ton/hr) to prepare the demand increase of its products in future

2) Discussion details

O Fuel switching of new roll mill from B-C oil to LNG

→ Once we use LNG, we will be able to reduce emissions of pollutants and improve the environment condition although fuel cost would be increased about 1,600 billion KRW per year.

→ We can register our project as CDM project and obtain CER, After that, we will be able to respond to climate change agreement and alleviate duty and expense of GHG reduction as a big energy consumer in the near future

O Inducing the regenerative burner instead of classical burner

→ same fuel but high efficient to recovery heat

O Preparation for demand increase

→ Production capacity will be about 170 ton/h when fully operating the new burner at 100% (set by 80~85% in present)

O New furnace(large size roll mill) will have enough to produce in step with maximum production of continuous(110 ton/hr: 13EA/hr)

~ The rest is omitted ~

The Minutes of Conference to Decide Registration Time

SeAH The Minutes of Meeting				Approval	
Title	CDM project meeting			**Host Dep.**	Energy management team
				Prepared by	Jon-su, Na
Time	2005.01.17			**Place**	Meeting room
Subject					
Attendants	**Belongings**	**Duties**		**Name**	**Signature**
		Senior Vice President		Dong-sik, Oh	
	Energy management team	Team manager		Geum-dong,Jung	
	Energy management team	Assistant manager		Jon-su,Na	

※ We acknowledge and agree in the contents of this conference record.

1. We will promote the fuel switching project as CDM project for the large roll mill #1,2 and small roll mill, and boiler
   - We will obtain CERs and we can cope with climate change agreement through the CDM project

2. We will register our project to UNFCCC as the CDM project when total fuel switching project is finished due to below reasons.

1) Capacity of new facilities is not confirmed and once PDD is registered, it is unable to change it.
- Generally, until the furnace is perfectly installed it is impossible to get a confirmed specification of facility from furnace manufacturer

2) In order to get maximum CER, we promote to register CDM project after new facilities get to normal operating condition.
- If we register the facility installed in 2006 as the CDM project, we can't get CERs from furnace that will be installed in 2007, so it is better to register after installation of all furnaces

3) If we register CDM project in advance before all intallations are finished and after that, if fuel prices are changed to exceed the limit of our forecast, this can arouse very serious problem in our project.

4) If we register CDM project in advance before all intallations are finished, and after that, if market environments are changed seriously, so if we should change facility capacity, this registration can be a problem in our business strategy.

3. We decide to register the project as CDM project after the end of installation of all furnaces and boiler.

Distribute to:

SeAH 세아베스틸

Annex 4

MONITORING INFORMATION