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:

Title : Energy Efficient Acid Absorption Crystallizer Project, at Birla Cellulosic, Kharach
Version : 01
Date : 25/05/2008

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

Birla Cellulose is the Aditya Birla Group's umbrella brand for its range of cellulosic fibres. Fibre is one of the oldest businesses of the Aditya Birla Group that commenced in 1954. Birla Cellulose is a world leader in viscose staple fibre (VSF). Its production is spread across six countries, viz. Canada, Thailand, India, Indonesia, China and Laos. The Group independently fulfills India's entire VSF requirements.

The proposed project activity aims to reduce steam consumption in the Auxiliary Section at Birla Cellulosic for the crystallisation of glauber salt of sodium sulphate (Na_2SO_4) by the installation of Acid Absorption Crystallizer (AAC) technique, which uses less steam as compared to Horizontal Continuous Crystallizer (HCC). Consequently, corresponding consumption of coal shall be reduced leading to reduced Green House Gas (GHG) emissions.

The project activity involves the installation of two units of energy efficient Acid Absorption Crystallizers (AAC) in place of Horizontal Continuous Crystallizer (HCC). HCCs are steam booster based and require high pressure steam, whereas AACs eliminate the need of steam boosters, hence reduce HP steam consumption drastically. However, there is a minor increase in LP steam consumption in the evaporation section due to evaporation load of dilute acid. Therefore, the need for high pressure steam is reduced, which reduces the corresponding consumption of coal. The project has been designed to be implemented in two phases. Phase I had been completed in September 2005, which involves the installation of one unit of AAC and phase II is expected to be completed by 2008, which involves installation of the other unit of AAC.

The project activity contributes positively towards the sustainable development of the country in the following ways:

Social well-being:
The project activity shall provide for additional employment generation during the construction and commissioning of Acid absorption crystallizer. The reduced emissions at work place will allow a better environment for the operators and the workers at the plant. Also the operation and maintenance of the units shall involve benefits in terms of employment and improved level of income to the local community.

Economic well-being:
The project activity also enhances the national economy, although in a small way, by reducing the import of fossil fuels.

Environmental benefits:

The project activity has both local and global environmental benefits. It leads to reduction in GHG emissions by way of reduced usage of fossil fuels for steam generation. Although in a small way, the project activity helps in reduced dependency on fossil fuels usage, hence contributing towards natural resource conservation and thereby increasing their overall availability. Reduced emissions shall also help in the improvement of the air quality of the neighbouring area.

Technological benefits:
The project activity is a self-motivated technology developed in-house by the project promoter. This initiative taken up by the promoter shall allow the understanding and applicability of the technology for future applications in similar industries.

A.3. Project participants:

Name of the Party involved(*) ((host)indicates a host party)	Private and/or public entity(ies) project participants (*) (as applicable)	Kindly indicate if the Party involved wish to be considered as project Participant (Yes/No)
India	Birla Cellulosic	No

(*) In accordance with the CDM modalities and procedures, at the time of making the CDM-PDD public at the stage of validation, a Party involved may or may not have provided its approval. At the time of requesting registration, the approval by the Party(ies) involved is required.

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):

India

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

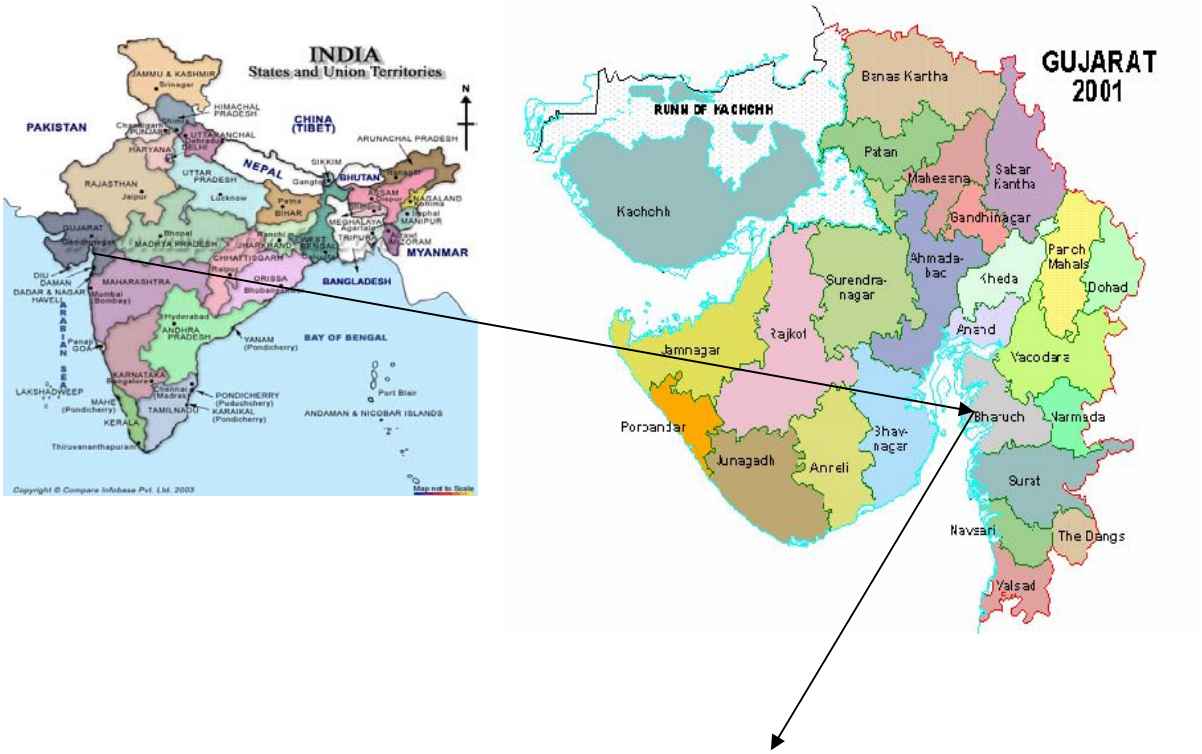
Gujarat

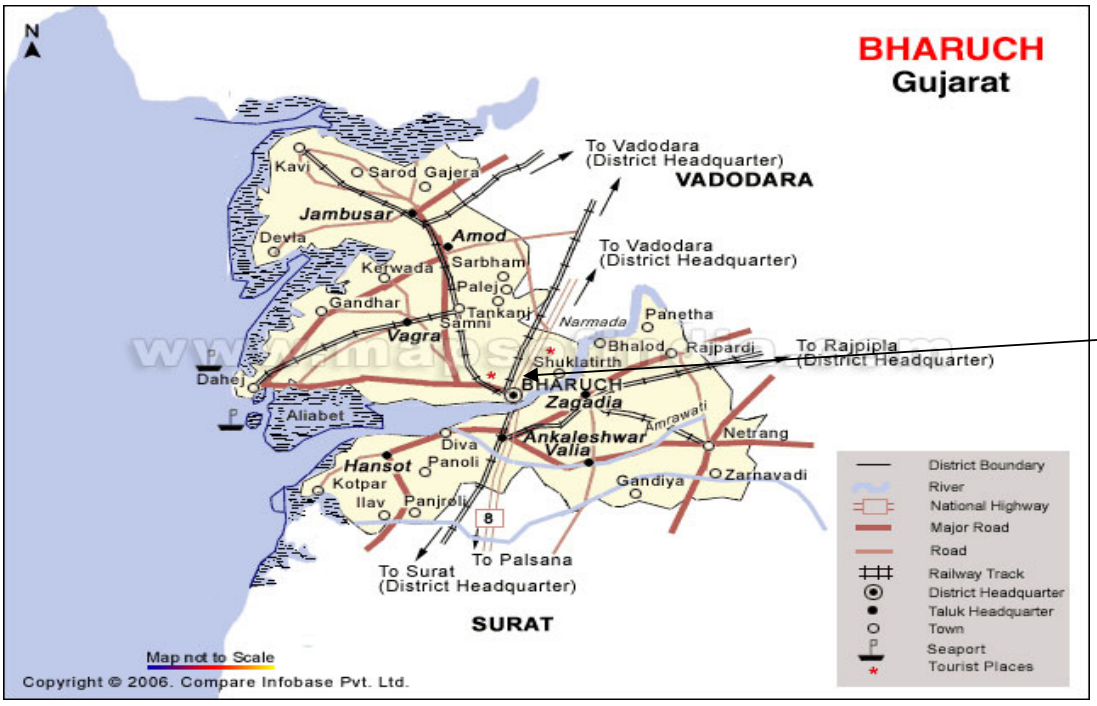
A.4.1.3. City/Town/Community etc:

Town : Kharach
Dist : Bharuch

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

The project activity is located at the premises of Birla Cellulosic, Kharach in Gujarat within Lattitude $21^0 26' 9''$ N and Longitude $72^0 54' 10''$ E.


INDIA
States and Union Territories
PAKISTAN
CHINA (TIBET)
NEPAL
BHUTAN
MYANMAR
BANGLADESH
BAY OF BENGAL
ANDAMAN & NICOBAR ISLANDS
GUJARAT
2001
RUNN OF KACHCHH
Kachchh
Banas Kartha
Patan
Mahesana
Sabar Kantha
Gandhinagar
Ahmada-bac
Kheda
Parch Mahals
Dohad
Surendra-nagar
Rajkot
Jamnagar
Anand
Vadodara
Porbandar
Junagadh
Amreli
Bhav-nagar
Bharuch
Narmada
Surat
Navsari
The Dangs
Valsad


BHARUCH
Gujarat
N
To Vadodara
(District Headquarter)
VADODARA
Kavi
Sarod
Gajera
Jambusar
Amod
Devia
Kanwada
Sarbham
Palej
Gandhar
Tankani
Samni
Vagra
Narmada
Panetha
Bhalod
Rajpardi
Shuklatirth
To Rajpipla
(District Headquarter)
Dahej
BHARUCH
Zagadia
Aliabet
Ankaleshwar
Amrawati
Netrang
Diva
Valia
Hansot
Panoli
Kotpar
Ilav
Panjroli
Gandiya
Zarnavadi
8
To Palsana
To Surat
(District Headquarter)
SURAT
Map not to Scale
Copyright © 2006. Compare Infobase Pvt. Ltd.
District Boundary
River
National Highway
Major Road
Road
Railway Track
District Headquarter
Taluk Headquarter
Town
Seaport
Tourist Places

Project

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

The project activity can be categorized as follows

Type	Sectoral scope	Sectoral number
II	Manufacturing Industries	4

The function of AAC is to crystallize sodium sulphate in the form of glauber salt from spin bath solution. Spin bath (46-48^{0}C) is first introduced in three stage Pre-Cooler (PC) where it gets cooled by flash evaporator to 28-30^{0}C. Flash vapours generated are absorbed in cold mother liquor in direct contact Bath Condenser (BC) thereby heating mother liquor. Pre cooled spin bath flows to 10-15^{0}C by adiabatic evaporating cooling.

Water vapours produced in the crystallizer are condensed in Sulphuric Acid absorber. Vacuum is created by Steam ejector-inter condensed assembly. In inter-condenser steam is condensed by cold water from cooling tower. Sulphuric acid, which gets heated in Absorber by absorption of vapours, is cooled in Graphite Block Heat Exchange using water as a cooling medium.

During absorption sulphuric acid gets diluted to about 70% (wt/wt). Dilute sulphuric acid is continuously purged in spin bath section which increase the evaporation load equivalent to vapour removed from crystallizer. Strong acid (98.5%) in equivalent amount is added to maintain the concentration to 70%. Elevation of Absorber is selected in such a way that barometric discharge of acid is facilitated.

After Crystallization glauber salt slurry, which is also called magma, is collected in magma tank and send to Rotary Vacuum Filter (RVF) for separation of glauber salt and mother liquor.

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

The project activity leads to an annual average estimated emission reduction of 24,914 tonnes of CO_2e which has been detailed below.

Years	**Estimation of annual emission reductions in tonnes of CO_2e**
2008	23,707
2009	23,707
2010	23,707
2011	23,707
2012	23,707
2013	23,707
2014	23,707
2015	23,707
2016	23,707
2017	23,707
Total estimated reduction (tonnes of CO_2e)	2,37,070

Total number of crediting years	10
Annual average of the estimated reductions over the crediting period (t CO_2e)	23,707

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

No public funding of any kind is applicable for the project activity.

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

As mentioned under the Appendix C of the simplified modalities and procedures for small scale CDM project activities, "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:

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

None of the above parameters is applicable to the proposed CDM project activity and hence this project activity is not a debundled component of large scale project activity.

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:

Project Type : II
Project Category : D - Energy efficiency and fuel switching measure for industrial facilities
Title : Energy efficiency and fuel switching measure for industrial facilities
Version : 11, EB35
Reference :
http://cdm.unfccc.int/UserManagement/FileStorage/CDMWF_AM_61544KRBY1HQWG0JGK85N4K640WSVP

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

The following table indicates the applicability of the methodology in the context of present project activity:

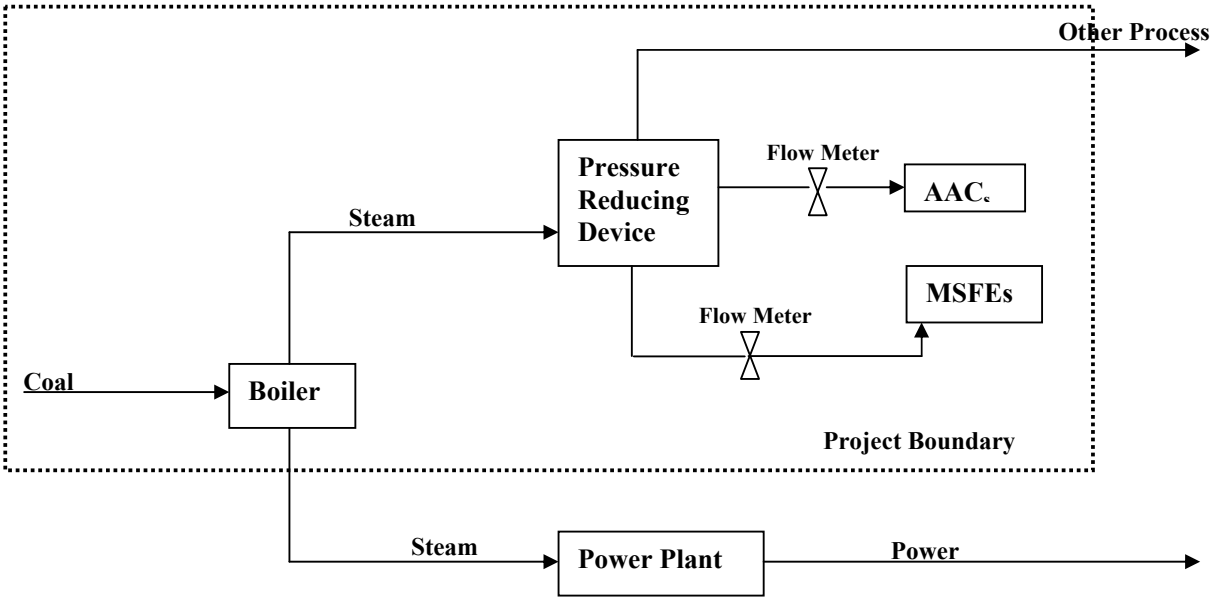
Applicability Criteria	Project Activity
This category comprises any energy efficiency and fuel switching measure implemented at a single industrial or mining and mineral production facility. This category covers project activities aimed primarily at energy efficiency; a project activity that involves primarily fuel switching falls into category III.B.1 Examples include energy efficiency measures (such as efficient motors), fuel switching measures (such as switching from steam or compressed air to electricity) and efficiency measures for specific industrial or mining and mineral production processes (such as steel furnaces, paper drying, tobacco curing, etc.).	The project activity involves energy efficiency measures by installing acid absorption crystallizer instead of horizontal continuous crystallizer within a single industrial viscose staple fibre manufacturing unit of the project promoter. The project activity aims at energy efficiency and no fuel switching is involved.
The measures may replace, modify or retrofit existing facilities or be installed in a new facility.	The project activity includes new installation of acid absorption crystallizers.
The aggregate energy savings of a single project may not exceed the equivalent of 60 GWhe per year. A total saving of 60 GWhe per year is equivalent to a maximal saving of 180 GWhth per year in fuel input.	The aggregate energy saving is equivalent to 34.62GWhe per year
This category is applicable to project activities where it is possible to directly measure and record the energy use within the project boundary (e.g. electricity and/or fossil fuel	The project activity involves the reduction of steam consumption being generated from coal. Both steam consumption and coal consumption can be directly measured.

consumption).	
This category is applicable to project activities where the impact of the measures implemented (improvements in energy efficiency) by the project activity can be clearly distinguished from changes in energy use due to other variables not influenced by the project activity (signal to noise ratio).	The project activity directly affect the specific steam consumption of the crystallizers also, there is no other variable directly affect by the project activity.

B.3. Description of the project boundary:

According to Appendix B of the simplified modalities and procedures of small scale project activity

"The project boundary is the physical, geographical site of the industrial facility, process or equipment that is affected by the project activity."



The project boundary of this project activity consists of the physical boundary of the AAC units installed in the industrial unit

B.4. Description of baseline and its development:

In the absence of the CDM project activity, Birla Cellulosic would have installed HCCs in place of the AACs. The AAC being an energy efficient technology will lead to reduced steam consumption thereby reducing coal consumption which would otherwise have been there.

As per AMS II D: "the energy baseline consists of the energy use of the existing equipment that is replaced in the case of retrofit measures and of the facility that would otherwise be built in the case of a new facility"

In the present project activity, two units of AACs have been installed instead of going to HCCs which is more energy efficient and this will lead to reduction in consumption steam thereby reduced consumption of coal. The amount of coal that would have been used for the excess steam generation in the HCCs will be the baseline of this project..

The baseline emission is estimated by multiplying the "equivalent energy use" with the emission factor of the energy source. The source of energy in this project activity is other bituminous coal. The emission factor of the respective coal type has been derived from input values of IPCC 2006, Volume II Guidelines for National Greenhouse Gas Inventories. Emission factor of various components of coal are multiplied by their global warming potential and then all the values are added. The emission factor has been calculated in tCO_2/tJ.
The data used to determine the baseline emission is mentioned in the table below:

Parameters	Units	Value	Source
Net Steam saving per annum	Tonnes/Annum	30,222	Calculated from data provided by Birla Cellulosic
Specific Coal consumption	tCoal/tSteam	0.165	Birla Cellulosic
Calorific value of other bituminous coal	TJ/kg	0.000025	Birla Cellulosic
Emission factor of other bituminous coal	tCO_2/TJ	95.086	IPCC 2006

The project activity has zero project emission, as electricity consumption in the Multi-Stage Flash Evaporator (MSFE) will reduce because of the installation of the AACs.

Therefore, the net emission reductions will be the difference of the baseline and project emissions.

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:

In the absence of the CDM project activity the project promoter would have gone for HCC which would have resulted high steam consumption and thereby high GHGs emissions. The project promoter sincerely considered CDM at the beginning of the project activity.

The additionality for the proposed CDM project activity is established on the basis of a detailed barrier analysis, relating to the project itself. The following discussion establishes that significant barriers existed that would have prevented the project from being undertaken, and that the CDM revenue would significantly act as an impetus for the project to overcome these barriers.

Investment Barrier:

The project promoter has utilised the concept of the Vapour Absorption Machine (VAM) technique in order to meet their requirements as per the present project activity. However, unlike VAM, in the present

case sulphuric acid is being used instead of lithium bromide as a heat absorber. The usage of sulphuric acid is a very innovative concept being brought in by the project promoter.

However, sulphuric acid is highly corrosive in nature and involves tremendous handling risk. Handling requires specially designed and constructed material, with high degree of control and automation for ensuring occupational health and safety of the operating personnel. The special requirement of non-corrosive / corrosion resistant material stands as a major factor towards the increased project cost. In spite of special care the risk still stands tall. Therefore, the project promoter has to make special operation, health and safety arrangements due to the harmful nature of the absorbent

Technological barrier:

The technology adopted for the present project activity is an entirely new initiative compared to the existing procedures and hence the investment made involves higher risk in comparison with the existing technology.

The project activity is not only capital intensive but also involves major associated risk of implementation. The technology employed is not a tried and tested practice and hence involves major uncertainty of success. It has been developed in-house which itself required specialised know-how of the technology.

Moreover, the corrosive nature of the sulphuric acid poses significant risks towards the successful running of the project through its entire lifespan. It is very uncertain whether the project might require huge overhauling costs within a short period of its operation due to rapid corrosion of the operating parts.

Other Barriers:

As this project activity is in-house built by project promoter. So no previous data or references were available. Though usage of VAM utilising Lithium Bromide (LiBr) is an established concept but using sulphuric acid as an absorber is a new concept adopted by project promoter. Therefore, the risks associated with the actual operation of the project are tremendous.

No previous references of design of AAC of the proposed capacity as well as in other similar industries were available. The project activity is a self-motivated in-house technology development initiative of the project proponent.

B.6. Emission reductions:

B.6.1. Explanation of methodological choices:

For the present project activity AMS II.D" Energy efficiency and fuel switching measure for industrial facilities" Version 11 Reference EB35 is applicable.

Energy efficient AAC would lead to mitigation of GHG emissions that would have been released into the atmosphere by less efficient HCC. The project activity involves adoption of two units of AACs. In order to monitor the reduction of GHGs due to project activity, the amount of steam saved needs to be monitored. Based on monitored data and the IPCC emission factor from 2006 IPCC guidelines for National Greenhouse Gas Inventories,, the baseline emissions are calculated.

Baseline Emission:
The baseline emission is calculated on the basis of amount of coal saved because of the installation of energy efficient Acid Absorption Crystallizer which would otherwise have been used to generate the equivalent amount of steam in horizontal Continuous Crystallizer.

The annual baseline emissions BE, in tCO_2, during each year of crediting period, are calculated as per methodology AMS II D, version 11 "Energy efficiency and fuel switching measure for industrial facilities"

$BE = EC * EF_{coal}$

Where,

BE = Baseline Emissions
EC_{coal} = Amount of Sub bituminous coal consumed for steam generation in TJ
EF_{coal} = Emission factor of the fuel, i.e. Sub bituminous coal. in tCO_2/TJ

Emission factor is calculated by

$EF_{coal} = EF\_coal\_CO_2 + EF\_coal\_CH_4 .GWP\_CH_4 + EF\_coal\_N_2O. GWP\_N_2O$

Where,

$EF\_Coal\_CO_2$ = CO_2 equivalent emission factor per unit of energy of Sub bituminous coal in [tCO2/TJ]. In the present context, fuel used in the baseline scenario is coal and the emission factor for the same will be considered constant over the crediting period. (Ref. 2006 IPCC Guidelines for Greenhouse Gas Inventories)

$EF\_Coal\_CH_4$= IPCC default CH_4 emission factor of Sub bituminous coal associated with fuel combustion, measured in [tCH_4/TJ]. (Ref. 2006 IPCC Guidelines for Greenhouse Gas Inventories)

$EF\_Coal\_N_2O$= IPCC default N_2O emission factor of Sub bituminous coal associated with fuel combustion, measured in [tN_2O/TJ]. (Ref. 2006 IPCC Guidelines for Greenhouse Gas Inventories)

GWP_CH_4 = Global warming potential of CH_4 set by the IPCC in the "Climate Change 1995: The Science of Climate Change, Table 4, p. 22, 1996" as $GWP\_CH_4 = 21\ tCO_2/tCH_4$.

GWP_N_2O = Global warming potential of N_2O set by the IPCC in the "Climate Change 1995: The Science of Climate Change, Table 4, p. 22, 1996" as $GWP\_N_2O = 310\ tCO2/tN_2O$.

Project Emission:
The project activity does not lead to project emissions.

$$PE = 0$$

Where,
PE = Project Emission

Leakage (L):
There is no technology transfer as this technology is in-house technology developed by project promoter. The replaced HCCs will be kept as either stand by or scraped. Therefore, leakage is zero.

Therefore, emission reduction is calculated as:

$$ER = BE - PE - L$$

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

(Copy this table for each data and parameter)

Data / Parameter:	Steam consumption
Data unit:	Tonnes per hour (TPH)
Description:	Amount of steam consumed by the existing one unit of conventional horizontal continuous crystallizer
Source of data used:	Steam consumption details as per the past records maintained by the project promoter
Value applied:	5.2
Justification of the choice of data or description of measurement methods and procedures actually applied :	The data available has been drawn from the maintained log-books of project promoter as per the past steam consumption details. The data had been measured with the help of a flow meter installed at site.
Any comment:	

Data / Parameter:	Quantity of coal used
Data unit:	Tonnes per annum
Description:	Amount of coal used for the conventional unit
Source of data used:	Coal consumption value has been calculated from the steam generation considering the specific coal consumption for the required steam generated.
Value applied:	7593.51
Justification of the choice of data or description of measurement methods and procedures actually applied :	Coal consumption value has been calculated from the steam consumption in HCC units considering the specific coal consumption for steam generation.
Any comment:	

Data / Parameter:	CO_2 Emission Factor for sub bituminous coal
Data unit:	tCO_2/TJ
Description:	CO_2 Emission Factor for sub bituminous coal
Source of data used:	2006 IPCC Guidelines for National Greenhouse Gas Inventory

Value applied:	95.086
Justification of the choice of data or description of measurement methods and procedures actually applied :	This value has been taken form 2006 IPCC Guidelines for National Greenhouse Gas Inventories. This data is publicly available for reference.
Any comment:	NA

B.6.3 Ex-ante calculation of emission reductions:

Project emissions

The project activity does not have any project emission. Therefore,

$$PE = 0$$

Leakage:

As per the approved small-scale methodology AMS IID, version 11, the calculation of leakage for the project activity is not required and hence the leakage associated with the project activity is zero. Therefore,

$$L = 0$$

Baseline Emissions:

The baseline emissions as discussed is calculated on the basis of amount of coal saved because of the installation of energy efficient Acid Absorption Crystallizer which would otherwise have been used to generate the equivalent amount of steam in Horizontal Continuous Crystallizer multiplied by emission factor of coal.

$$BE = EC_{coal} * EF_{coal}$$
$$= 249.33 \text{ TJ} * 95.086 \text{ } tCO_2/TJ$$
$$= 23707.94 \text{ } tCO_2$$

Emission Reductions

The emission reductions are calculated as the difference between the baseline emissions and the project emissions due to the project activity.

Emission Reductions (ER) = Baseline Emissions (BE) – (Project Emissions + Leakage)
$$= 23707.94 - 0$$
$$= 23707.94 \text{ } tCO_2$$

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

Year	Estimation of Project activity emissions (tCO_2e)	Estimation of baseline emissions (t CO_2e)	Estimation of leakage (tCO_2e)	Estimation of overall emission reductions (tCO_2e)
2008	0	23,707	0	23,707
2009	0	23,707	0	23,707

2010	0	23,707	0	23,707
2011	0	23,707	0	23,707
2012	0	23,707	0	23,707
2013	0	23,707	0	23,707
2014	0	23,707	0	23,707
2015	0	23,707	0	23,707
2016	0	23,707	0	23,707
2017	0	23,707	0	23,707
Total (tonnes of Co_2e)	0	2,37,070	0	2,37,070

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

B.7.1 Data and parameters monitored:

(Copy this table for each data and parameter)

Data / Parameter:	**Steam Consumption**
Data unit:	TPH
Description:	Amount of steam consumed by the Acid Absorption Crystallizer unit
Source of data to be used:	The amount of steam consumed will be measured by the flow meters installed at each end of project boundary
Value of data	1.7
Description of measurement methods and procedures to be applied:	The steam consumption in each AAC will be measured with the help of flow meters installed for the units. The measured data will be recorded in log-books which will be available for verification
QA/QC procedures to be applied:	The parameter is measured by online flow meter and the same is recorded in log book shift wise. Based on the logged data a monthly consumption record is prepared by the CDM coordinator. The Grasim Industries Ltd is ISO 9001:2000 certified company and all the QA/QC procedures are in accordance to this standard. Grasim, do periodical calibration of all equipments as per ISO standard. Calibration equipments certified by traceable agencies of NPL
Any comment:	

Data / Parameter:	**Coal Consumption**
Data unit:	TPA
Description:	Amount of coal consumed by the Acid Absorption Crystallizer unit
Source of data to be used:	Coal consumption can be measured by selling and buying receipts.
Value of data	3,066.61
Description of measurement methods and procedures to be applied:	The amount of coal consumed will be monitored as per the sale and purchase receipts of coal. Records of the same will also be maintained in log-books which will be available for verification.
QA/QC procedures to be applied:	Birla Cellulosic is ISO certified company and all the QA/QC procedures are in accordance to this standard. Grasim, do periodical calibration of all equipments

	as per ISO standard.
Any comment:	

B.7.2 Description of the monitoring plan:

As per the methodology AMS II D, Version 11, in case of replacement, modification and retrofit measures the monitoring shall consist of:

1. Documenting the specifications of the equipment replaced;

2. Metering the energy use of the industrial or mining and mineral production facility, processes or the equipment affected by the project activity;

3. Calculating the energy savings using the metered energy obtained from subparagraph (b).

The present project activity involves reduction in steam consumption due to replacement of less energy efficient HCC by energy efficient AAC, thereby reducing steam consumption. The monitoring will include:

- Steam consumption in Acid Absorption Crystallizer
- Salt Production through AACs
- Coal consumption due to steam consumption in AACs

Uncertainties & Reliability

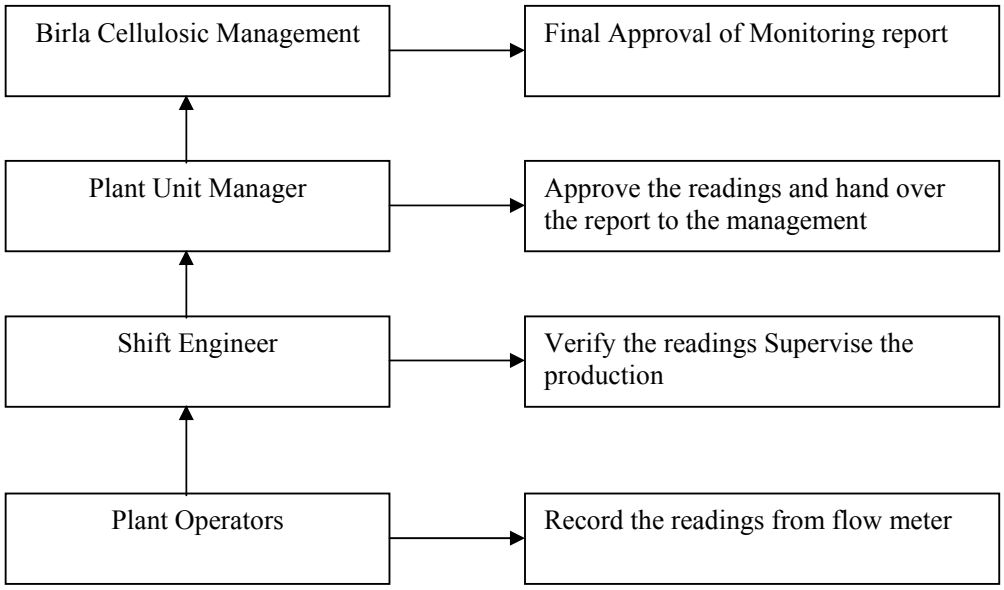
The amount of emission reduction units is proportional to the net energy reduction due to the proposed CDM project. Measurement devices having good accuracy and procured from reputed manufacturers have been installed at site for the purpose of monitoring the various parameters of the project. Since the reliability of the monitoring system is governed by the accuracy of the measurement system and the quality of the equipment for reproducibility, all instruments must be calibrated as per the planned frequency for ensuring reliability of the system.

In the event that a particular instrument malfunctions or breaks down, all efforts will be made to repair or replace that instrument within one month's time of such eventuality. The data used in calculating the emission reduction for that particular parameter will be average value of the parameter for the three months immediately preceding the period of fault

This will ensure that the uncertainties in the parameters used for calculating the emission reductions from the project are minimal and the calculations are consistent, verifiable and reliable.

The project promoter has designed a monitoring and reporting structure in order to monitor the GHG emission reductions from the project activity. The roles and responsibilities of the personnel have been clearly identified in order to achieve the same. The plant operator will record the reading of the production of the steam from the flow meter installed at the site. And will hand over the report to Shift engineer, who will verify the readings and supervise the production. The report prepared will be handed over to the Plant unit manager, who will approve the readings and hand over the report to the management.

The operational structure for the monitoring plan is as follows:



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

Date: 20/04/2008

Name & Contact Details:

Organization:	Asia Carbon Emission Management India Pvt. Ltd.
Street/P.O.Box:	# 167, Kodmbakkam High Road, Nungambakkam
City:	Chennai
State/Region:	Tamil Nadu
Postfix/ZIP:	600 034
Country:	India
Telephone:	+91 44 3918 0501
FAX:	+91 44 3918 0501
URL:	http://www.asiacarbon.com
Represented by:	
Title:	Manager, CDM Origination & Execution
Salutation:	Mr.
Last Name:	Kashyap
First Name:	Santonu
Mobile:	+91 9382147748
Direct tel:	+91 44 3918 0503
Personal E-Mail:	skashyap@asiacarbon.com

CDM – Executive Board

The above entity is not a project participant.

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:

01/09/2005

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

20 Years

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:

C.2.1.2. Length of the first crediting period:

C.2.2. Fixed crediting period:

C.2.2.1. Starting date:

The start date of the crediting period is 01/10/2008 or a date not earlier than the date of registration of the small scale project activity

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:

The Ministry of Environment and Forests (MoEF), Government of India notification, dated September 14, 2006[1], regarding the requirement of Environment Impact Assessment (EIA) studies states that any project developer in India needs to file an application to the Ministry of Environment and Forests (including a public hearing and an EIA) in case the proposed industry or project is listed in a predefined list. Thirty-eight categories of activity with a certain investment criteria are required to undertake an Environment Impact Assessment (EIA). However, the proposed project doesn't fall under the list of activities requiring EIA.

Thus, no EIA study was required for this project

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:

N/A

[1] http://envfor.nic.in/legis/eia/so1533.pdf

SECTION E. Stakeholders' comments

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

The project activity is an in house energy efficiency initiative in Birla Cellulosic, Kharach in Gujarat. A local stakeholder consultation meeting had been conducted in order to identify the concerns of the people regarding the implementation of the project activity.

The stakeholders identified for the project were:

- Local Representative (Panchayat President)
- Principal, Higher Secondary School
- NGO representatives
- Plant representatives
- Local people

Formal invitation letter was sent to the stakeholders prior to the meeting date and asked to attend the meeting. The stakeholders' meeting was conducted at Birla Cellulosic on 18/10/2007 in Kharach, Gujarat. A separate questionnaire had been circulated to the stakeholders and their comments were received in writing. Birla Cellulosic representatives explained about the project activity and the benefits of its implementation. The local people have been informed about Acid Absorption Crystallizer and its role in reduction of Green House Gas emissions. The stakeholders did not identify any negative impact due to the project activity

E.2. Summary of the comments received:

A brief introduction about the project activity was given to the stakeholders and their doubts and concerns were clarified by the Birla Cellulosic representatives. The comments can be summarized as positive.

The Panchayat president and local people expressed satisfaction due to the project activity since the project activity has created employment opportunities, led to cleaner environment which have positively helped in improving standard of life as well as socio-economic conditions of the area.

The stakeholder's comments are summarized & separately attached as Appendix. The summary clearly indicates that all the stakeholders agree that the project activity has helped to improve the socio-economic environment of the local area.

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

The local public had raised questions about similar activities which can help in green house gas reduction & climate change, employment opportunities, etc.

The representatives of Birla Cellulosic explained about the project and replied to the questions raised by the stakeholders. Considering the comments made by the stakeholders, no negative impacts due to the project activity had been identified.

Annex 1

CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY

Organization:	Birla Cellulosic
Street/P.O.Box:	Birladham, Kharach
Building:	
City:	Kosamba
State/Region:	Gujarat
Postfix/ZIP:	394120
Country:	India
Telephone:	(02646) 270001-005
FAX:	(02646) 270010
E-Mail:	
URL:	
Represented by:	
Title:	Sr. Executive President
Salutation:	Mr.
Last Name:	Kulkarni
Middle Name:	V
First Name:	Sudhir
Department:	
Mobile:	
Direct FAX:	(02646) 270010
Direct tel:	(02646) 270001-005
Personal E-Mail:	Sudhir.kulkarni@adityabirla.com

Annex 2

INFORMATION REGARDING PUBLIC FUNDING

NO PUBLIC FUNDING

Annex 3

BASELINE INFORMATION

Please refer section B.4

Annex 4

MONITORING INFORMATION

Please refer section B.7.2

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Appendix A
SUMMARY OF STAKEHOLDER COMMENTS

Sl. No.	Participants name	Category	Employment opportunities increased?	Whether land values are increased?	Infrastructure facilities are developed?	Whether you have learnt or exposed to new technology?	Whether you are facing any type of pollution (Air / Water / Sound) problems due to the project?	Whether the electricity facilities are improved?	Whether your local area is improved?
1.	Mrs. Kiran. S. Patel	School Vice Principal	YBVV	Y	YV	Y	N	Y	YMMVN
2.	C.K.Panchal	Dy. Manager(HR), Birla Cellulosic	YBVV	Y	YV	Y	N	Y	YVMVV
3.	Nizamuddin Shaikh	Primary School Principal	YBMM	Y	YM	Y	N	Y	YMNVN
4.	Jaymalbhai M. Snehi	School Principal	YBMM	Y	YV	Y	Y	E	YMMVV
5.	Jalaram	Technician (BC)	YBVV	Y	YM	Y	N	Y	YMMVM
6.	Mrs. Aniya Patel	Rotary Club Member	YBVV	Y	YMV	Y	N	Y	YVVV
7.	Mrs. Arti Jain	Rotary Club Member	YBVV	Y	YMVV	Y	N	Y	YVVV
8.	Hirem R. Shah	Engineer (BC)	YBVM	Y	YVV	Y	N	Y	YVNVV
9.	Hitendra Singh Parmar	Ast. Manager (BC)	YBVM	Y	YV	Y	N	Y	YVVMV
10.	N.D. Solonki	Director,	YBMM	Y	YM	Y	Y	N	YMNVM

11.	R.M. Kothudia	Ast. Teacher	YBMM	Y	YMMV	N	Y	Y	YMMNV
12.	D.B. Patel	School Principal	YBVM	Y	YMMM	Y	N	E	EMMMV
13.	Dilip Bhtiya	Public	YBVV	Y	YV	N	N	Y	YVVVV
14.	Nilesh Kumar		YBVV	Y	YVVV	Y	N	E	YVVVV
15.	Bipin Kumar Mishra	Public	YSV	Y	YVMM	N	Y	Y	YMMVN
16.	Chandresh B. Shah	Rotary Club member	YBVV	Y	YVVV	N	N	Y	YVVVM
17.	Sharesh Sheh	Rotary Club Member	YBVV	Y	YVVV	Y	N	Y	YVVVM
18.	Manhar S. Barad	Technician	YSVV	Y	YVV	Y	Y	Y	YVVVV
19.	Jayesh N. Patel	N.G.O member	YUMN	Y	YMN	Y	Y	E	YMMM
20.	Pradeep Thukar	N.G.O. member	YSMM	Y	YVM	Y	N	Y	YVVV
21.	Deepak B. Darik	Employee (BC)	YBVV	Y	YVV	Y	N	Y	YVVV
22.	Mukesh Kr. Singh	Supervisor(Unilift Cargo system)	YSMM	Y	YMM	Y	N	Y	YVVVV
23.	Paras Jain	Employee(BC)	YBVV	Y	YVVV	Y	N	Y	YVVVV
24.	Jitendra Nigam	Employee(BC)	YBVV	Y	YVVV	Y	N	Y	YYVVV
25.	Biswadeep Maity	Employee (BC)	YBVV	Y	YVVV	Y	N	Y	YVVVV
26.	Mr. Tushar S. Wankhede	Engineer (BC)	YBVV	Y	YVVV	Y	N	Y	YVMMM

27.	Deepak Jain	Employee (BC)	YBVV	Y	YVVV	Y	N	Y	YVVVV
28.	Bharat Kr. Patel	Employee (BC)	YBVV	Y	YVVV	Y	N	Y	YVVVV
29.	Sanjeev Singh	Employee (BC)	YBVV	Y	YVVV	Y	N	Y	YVVVV
30.	Bharath Kumar	Technician	YBVV	N	YVVV	Y	N	Y	YVVVV
31.	K.C. Jain	Employee (BC)	YBVV	Y	YVVV	Y	N	Y	YVVVV
32.	A.K. Ganeriklal	Engineer (BC)	YBVV	Y	YVVV	Y	N	Y	YVVVV
33.	Harish M. Joshi	Media Press (Correspondent, Times of India)	YBVV	Y	YMVV	Y	N	E	YVMVV
34.	Sanjay Virmani	Employee (BC)	YBVV	Y	YVVV	Y	N	Y	YVMMM
35.	Chandrashekhar Londhe	Employee (BC)	YB	Y	YMVV	Y	N	Y	YV
36.	Sandip Parikh	Ast. Manager	YBV	Y	YVVV	Y	N	Y	YVVVV
37.	Dr. Manju	Rotary Club Member	YBVV	Y	YVVV	Y	N	Y	YVVVV
38.	Arvind Jain	Rotary Club Member	YBVV	Y	YVVV	Y	N	Y	YVVMV

Y = Yes, N = No, B = Both Skilled & Unskilled Labours, V = Visible, M = Marginal, S = Slightly increased, E = Expected