CLEAN DEVELOPMENT MECHANISM
SIMPLIFIED PROJECT DESIGN DOCUMENT
FOR SMALL-SCALE PROJECT ACTIVITIES (SSC-CDM-PDD)
Version 02

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>.

SECTION A. General description of the small-scale project activity

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

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Energy Efficiency Improvement in Thermosetting process at Indo Rama Synthetics (India) Limited, Butibori, Maharashtra, India.

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

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Indo Rama Synthetics (India) Limited (IRSL) is a multinational group having synthetic fibre complex at Butibori, Nagpur District, Maharashtra, India. The manufacturing facility comprises of units producing Polyester Chips, Partially Oriented Yarn (POY), Polyster Staple Fibre (PSF) & Draw Twisted Yarn (DTY).

IRSL is in the process of expanding the production capacity. In this process, IRSL is putting up new thermosetting section (CP4) in PSF unit. The technology used in the existing thermosetting sections (CP1/CP2/CP3) are conventional system (Toyobo make). IRSL can adopt the same technology for the new thermosetting section (CP4). However IRSL has decided to implement Zimmer tech steam cascading system as the specific steam consumption of proposed technology is much lesser than the conventional one.

In conventional system, the steam would be used as drying medium. Steam would be supplied at three levels, high pressure (HP), medium pressure (MP) and low pressure (LP) to three zones. The condensate from individual zone is collected in condensate tank and supplied to boiler section.

In the proposed project activity, the thermosetting consist of three zones having six rolls each. In the proposed project activity, the steam is supplied to third zone through pressure control valve. The condensate of third zone is flashed & flash steam is supplied for II zone, again the condensate of II zone is flashed & flash steam is supplied for I zone. The flash steam from the condensate of I zone is used for various low pressure steam purpose. Finally the condensate after flash tank of I zone where the pressure is around 3.0 bar sent back to the boiler. This cascading system ensures maximum utilization of steam heat energy.

The purpose of the project activity is to reduce the GHG emissions by improving energy efficiency of steam utilization system.

The contributions of project activity towards sustainable development are explained with indicators like socio-economic, environment and technology as follows:

1. Socio-economic well being:

During implementation phase of the project activity, Business opportunities for local stakeholders such as consultants, suppliers, manufacturers, contractors etc has been enhanced.

By reducing the steam demand, fossil fuel saved can be diverted for other needy sections of the economy.

2. *Environmental well being:*

The specific steam consumption of steam cascading system is comparatively lower than conventional thermosetting process. There would be savings in steam and hence fossil fuel due to the project activity. The savings in fossil fuel lead to reduction in GHG emissions.

3. *Technological well being:*

The technology used in the proposed project activity is steam cascading system in thermosetting unit at PSF unit. The steam cascading based thermosetting process have the following technological benefits compared to conventional thermosetting process.

- The maximum utilization of steam heat energy is done at steam cascading system as the flash steam is utilized in the subsequent zones.
- The energy required for thermosetting process is higher at third zone compared to first zone. The arrangement of steam distribution from third zone to first zone in the proposed steam cascading system would match the demand profile.

Because of the above benefits, the specific steam consumption of steam cascading process is 0.58 Ton of steam per ton of production whereas the conventional process has specific steam consumption of 0.95 Ton of steam per ton of production.

Hence the technology used for the project activity is efficient.

A.3. Project participants:

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Name of Party involved (*) ((host) indicates a host party)	Private and/or public entity(ies) Project participants(*) (as applicable)	Party involved wishes to be considered as project participant (Yes/No)
India (host)	Indo Rama Synthetics (India) Limited	No

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

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

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A.4.1.1. Host Party(ies):

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India

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

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Maharashtra

A.4.1.3. City/Town/Community etc:

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Butibori, Distt- Nagpur.

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

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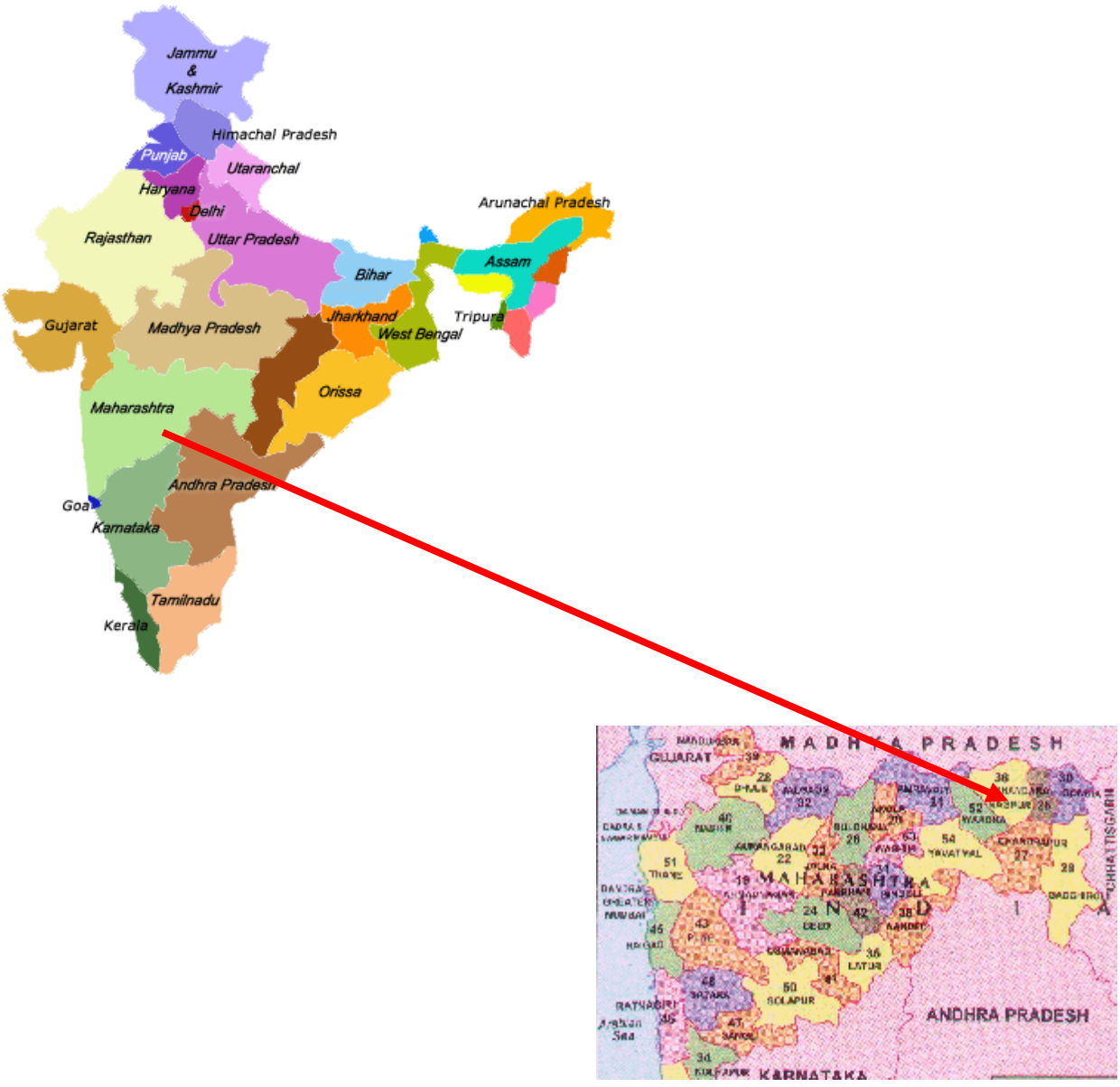
The location of the project activity is at Butibori, Distt- Nagpur, Maharashtra, India. (Latitude: 21.09 North, Longitude: 79.09 East), in the synthetic fibre complex of IRSL. The geographical location of the project activity is shown in the following map:



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

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As the project activity is energy efficiency improvement in steam utilisation system, it falls under the **Type II -** Energy Efficiency Improvement Projects of indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories. **Category D** - Energy efficiency and fuel switching measures for industrial facilities.

The basic criterion for a small scale CDM project activity of Type II Category D is "*the aggregate energy savings of a single project may not exceed the equivalent of 15 GWh$_e$ per year". A total saving of 15 GWh$_e$ per year is equivalent to a maximal saving of 45 GWh$_{th}$ per year in fuel input.*

The maximum saving in fuel input from the project activity is estimated below:

Specific steam consumption ratio of proposed project activity	=	0.58 T/T
Specific steam consumption ratio of conventional thermosetting process	=	0.95 T/T
Production rate	=	18 TPH
Enthalpy of input steam to steam cascading process (26 kg/cm^2_g)	=	2799.9 kJ/kg/^{o}C
Enthalpy of condensate (100 ^{o}C)	=	418.87 kJ/kg/^{o}C
Efficiency of HP FBC (coal fired) boiler	=	80%

Maximum Savings in fuel input =

$$\frac{18 \times (0.95 - 0.58) \times (2799.9 - 418.87) \times 24 \times 330}{(0.8 \times 3600 \times 10^6)}$$

= 43.6 GWh$_{th}$ per year

Hence it is clear that the project activity meets the criteria since the maximum saving in fuel input is less than 45 GWh$_{th}$ per year.

Technology of project activity

The project activity implements steam cascading based thermosetting process in which steam would be supplied to third zone where the temperature requirement is high compared to first two zones. The condensate of third zone is flashed & flash steam is supplied for second zone, again the condensate of second zone is flashed and flash steam is supplied in the first zone. Finally the condensate after flash tank of first zone where the pressure is around 3.0 bar is sent back to the boiler. This technology ensures maximum utilization of steam heat energy.

A.4.3. Brief explanation of how the anthropogenic emissions of anthropogenic greenhouse gas (GHGs) by sources are to be reduced by the proposed small-scale project activity, including why the emission reductions would not occur in the absence of the proposed small-scale project activity, taking into account national and/or sectoral policies and circumstances:

>>

The specific steam consumption of proposed project activity (0.58 T/T) is lesser than the baseline (0.9675 T/T) and thereby reducing the steam demand. The steam is supplied by fossil fuel fired boilers. The project activity would result in reduction of fossil fuel consumption. The CO_2 emission due to the combustion of equivalent fuel quantity would be reduced. In the absence of the project activity, the conventional thermosetting process would be the option to implement and there would not be any reduction in fuel consumption. Therefore, the project activity results in reduction of anthropogenic greenhouse gas by sources which would not occur in the absence of the project activity.

There will be GHG emission reduction of around **33,320** tonnes of CO_2e over a 10 year crediting period due to the project activity.

A.4.3.1 Estimated amount of emission reductions over the chosen crediting period:

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Years	Annual Estimation of emission reduction in tonnes of CO_2e
2007-2008	3,332
2008-2009	3,332
2009-2010	3,332
2010-2011	3,332
2011-2012	3,332
2012-2013	3,332
2013-2014	3,332
2014-2015	3,332
2015-2016	3,332
2016-2017	3,332
Total estimated reductions (tonnes of CO_2e)	33,320
Total number of crediting years	**10 years**
Annual Average over the crediting period of estimated reduction (tonnes of CO_2e)	3,332

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

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No public funding as part of project financing from parties included in Annex I of the convention is involved in the project activity.

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

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The guideline for de-bundling mentioned in paragraph 2 of appendix C of the Simplified Modalities and Procedures for Small-Scale CDM project activities is given as follows:

A proposed small scale project activity shall be deemed to be a de-bundled 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*
- *Whose project boundary is within 1 km of the project boundary of the proposed small-scale activity at the closest point.*

The project proponent is commissioning another energy efficiency project in same project category at same location, but the technology of the other project is replacement of vapour absorption chiller with energy efficient one, which is altogether different technology/measure from the project activity. Hence, the proposed project is not a de-bundled component of a large project activity.

SECTION B. Application of a baseline methodology:

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

>>

The project activity satisfies the eligibility criteria to adopt simplified modalities and procedure for small-scale CDM project activities as explained in paragraph 6 (c) of decision 17/CP.7.

Details of methodology for baseline calculations for small scale CDM projects are referred from the "Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories". Reference has been taken from Main Category: **Type II –Energy Efficiency Improvement Project; Sub Category: D – Energy efficiency and fuel switching measures for industrial facilities version 07 - 28 November 2005**.

B.2 Project category applicable to the small-scale project activity:

>>

The project activity falls under **Type II –Energy Efficiency Improvement Project; Sub Category: D – Energy efficiency and fuel switching measures for industrial facilities**. This category comprises any energy efficiency and fuel switching measure implemented at single industrial facility. This category covers project activities aimed primarily at energy efficiency; 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 processes (such as steel furnaces, paper drying, tobacco curing, etc.). The measures may replace existing equipment or be installed in a new facility.

As the project activity installs the energy efficient steam cascading system for thermosetting process, the project activity is applicable to project category.

B.3. 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:

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The barriers associated with the project activity are discussed below:

Barriers due to prevailing practice

IRSL implements Zimmer technology steam cascading system for thermosetting process in PSF unit. Conventionally, thermosetting unit consists of three zones where the steam at different pressure would be supplied to each zone individually. The respective condensate would be collected in condensate tank. The specific steam consumption of conventional thermosetting process would be around 0.9675 T/T. In Zimmer

technology the steam is supplied to third zone. The condensate of third zone is flashed and flash steam is supplied to second zone, again the condensate of second zone is flashed and flash steam is supplied to first Zone. By this way, the steam is cascaded into different zones and the heat content is effectively utilized in the process. Hence the expected specific steam consumption of project activity is about 0.58 T/T. In India, there are only two major textile industries manufacturing polyester staple fibres. IRSL is the first textile industry which initiated to implement this technology in India.

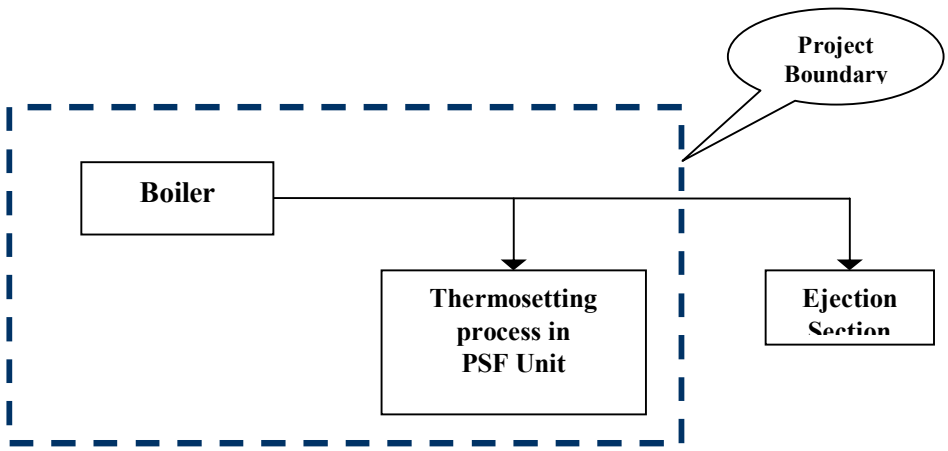
B.4. Description of how the definition of the project boundary related to the baseline methodology selected is applied to the small-scale project activity:

>>

As per the guidelines provided in the approved methodology, project boundary encompasses the physical and geographical site of the renewable generation source. The project boundary covers

- the steam utilisation section, where the proposed project activity is under implementation i.e CP 4 in PSF unit,
- Steam supply to project activity i.e fossil fuel fired boilers and
- Steam distribution line from boiler to project activity.

The schematic layout of project boundary is given below:



B.5. Details of the baseline and its development:

>>

The baseline for the proposed project activity has been estimated by using the methodology specified in the applicable project category for small-scale CDM project activities. The details are given in section E 1.2.4 and E 1.2.5.

Date of completion of the baseline: 12/07/2006

Name of person/entity determining the baseline: M/s Indo Rama Synthetics (India) Limited

The detail of the project participant is enclosed in Annex 1 of this document.

SECTION C. Duration of the project activity / Crediting period:

C.1. Duration of the small-scale project activity:

>>

C.1.1. Starting date of the small-scale project activity:

>>

September 05

C.1.2. Expected operational lifetime of the small-scale project activity:

>>

15 years - 0 month

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

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The project activity would use fixed ten years crediting period.

C.2.1. Renewable crediting period:

>>

Not applicable

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:

>>

15/11/06

C.2.2.2. Length:

>>

10 years

SECTION D. Application of a monitoring methodology and plan:

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D.1. Name and reference of approved monitoring methodology applied to the small-scale project activity:

>>

The approved monitoring methodology of the project activity is as follows:

Type II – **Energy Efficiency Improvement Project;**

Sub Category: D – Energy efficiency and fuel switching measures for industrial facilities

Reference: The monitoring methodology of the project activity is referred from 'Paragraph 6,7 and 8' of Type II –Energy Efficiency Improvement Project; Sub Category: D – Energy efficiency and fuel switching measures for industrial facilities version 07 - 28 November 2005.

D.2. Justification of the choice of the methodology and why it is applicable to the small-scale project activity:

>>

As per the paragraph 12 of Simplified Modalities and Procedures for Small Scale CDM Project activities, a proposed project activity shall,

(a) Meet the eligibility criteria for small-scale CDM project activities set out in paragraph 6 (c) of decision 17/CP.7;

(b) Conform to one of the project categories in appendix B to this annex;

(c) Not be a de-bundled component of a larger project activity, as determined through appendix C to this annex.

As explained earlier in A4.2, the project activity meets the eligibility criteria for small-scale CDM project activities set out in paragraph 6 (c) of decision 17/CP.7, falls under small-scale CDM project of Type II. Category D and is not a de-bundled component of a larger project activity.

The monitoring plan has been drawn as per the guidance provided in paragraph 6,7 and 8 of 'Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories Type II - Category D - version 07 - 28 November 2005'.

Description of monitoring plan

The monitoring plan is formulated to monitor the energy use of the industry facility, processes affected by the project activity. The metered parameters would be used to calculate energy savings and thereby emission reductions.

GHG Sources

Direct On-Site Emissions

The project activity involves installation of Zimmer tech steam cascading system for thermosetting process. Steam is used as heating medium. The emission due to combustion of fuel for generating steam required for thermosetting process where the project activity is under implementation is direct On-Site emissions. The list of data to be monitored is given in D.3.

Direct Off-Site Emissions

The emissions due to transportation of coal for the project activity are regarded as direct off-site project emissions. Similar quantum of emissions would have also occurred in the baseline due to the transportation of coal. Direct off- site emission would be lesser in project activity compared to baseline due to decrease in amount of coal transported. However, benefits are not claimed for these emission reductions.

Indirect On-Site Emissions

The energy consumption for the construction of the project would lead to indirect on site emissions. Considering the energy consumption during construction period of the project activity, emissions under this category would be negligible.

D.3 Data to be monitored:

>>

ID No.	Data Variable	Data Source	Data unit	Measured (m), calculated (c) or estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	For how long is archived data to be kept?	Comment
1	Quantity of Steam to Zimmer steam cascading system	PSF Log Book	MT	M	Daily	Total	Paper	Crediting Period (CP)+2 years	
2	Pressure of Steam to Zimmer steam cascading System	PSF Log Book	Kg/cm^2	M	Daily	Total	Paper	CP + 2 years	
3	Temperature of Steam to Zimmer steam cascading System	PSF Log Book	^oC	M	Daily	Total	Paper	CP+2 years	
4	Pressure of Condensate from steam cascading system	PSF Log Book	Kg/cm^2	M	Daily	Total	Paper	CP+2 years	
5	Temperature of condensate from steam cascading system	PSF Log Book	^oC	M	Daily	Total	Paper	CP+2 years	

6	Production of Zimmer thermosetting process	PSF Log Book	MT	M	Daily	Total	Paper	CP+2 years	
7	Project Specific steam Consumption	PSF Log Book	Ton/ton	C	Daily	Total	Paper	CP+2 years	
8	Steam Generation from boiler	Boiler Log Book	MT	M	Daily	Total	Paper	CP+2 years	
9	Fuel Consumption in boiler	Boiler Log Book	MT	E	Daily	Total	Paper	CP+2 years	
10	Efficiency of boiler	Boiler Log Book	%	C	Daily	Total	Paper	CP+2 years	
11	Calorific value of coal	Analysis report	kcal / kg	M	Batch wise	Actual sample testing	Paper	CP+2 years	
12	Calorific value of oil	Analysis report	kcal / lit	M	Batch wise	Actual sample testing	Paper	CP+2 years	

D.4. Qualitative explanation of how quality control (QC) and quality assurance (QA) procedures are undertaken:

>>

Quality control (QC) and quality assurance (QA) procedures are being undertaken for data monitored. The details are as follows:

Data	Uncertainty level of data (High/Medium/Low)	Are QA/QC procedures planned for these data?
D.3.1	Low	Yes, it is planned under ISO 9000
D.3.2	Low	Yes, it is planned under ISO 9000
D.3.3	Low	Yes, it is planned under ISO 9000
D.3.4	Low	Yes, it is planned under ISO 9000
D.3.5	Low	Yes, it is planned under ISO 9000
D.3.6	Low	Yes, it is planned under ISO 9000
D.3.8	Low	Yes, it is planned under ISO 9000
D.3.9	Low	Yes, it is planned under ISO 9000
D.3.11	Low	Yes, it is planned under ISO 9000
D.3.12	Low	Yes, it is planned under ISO 9000

Project Parameters affecting Emission Reduction

Quantity of Steam to Zimmer Steam Cascading System

Steam Quantity supplied to Zimmer steam cascading system would be measured by orifice meter. The regular calibration of orifice meter would be done to ensure the accuracy of the measurement.

Pressure and Temperature of steam to Zimmer Steam cascading system

The supply steam pressure and temperature of project activity would be measured by pressure gauge and temperature indicator and logged on daily basis. The pressure gauge and temperature indicator would be calibrated on monthly basis by instrument department of IRSL.

Pressure and Temperature of Condensate from Zimmer Steam cascading system

The condensate pressure and temperature from the project activity would be measured by pressure gauge and temperature indicator and logged on daily basis. Instrument department of IRSL would calibrate the pressure gauge and temperature indicator on monthly basis to ensure its accuracy.

Production rate of Project activity

Production rate of project activity would be measured by electronic weighing machine and captured in DCS. The calibration of the weighing machine would be done on yearly basis by the accredited external agency.

Steam Generation from boiler

Steam generation from boiler would be measured by orifice meter. The regular calibration of orifice meter would be done to ensure the accuracy of the measurement.

Calorific Value of fuel

The ultimate analysis of fuel would be carried out for every batch received by sending the sample to external lab.

D.5. Please describe briefly the operational and management structure that the project participant(s) will implement in order to monitor emission reductions and any leakage effects generated by the project activity:

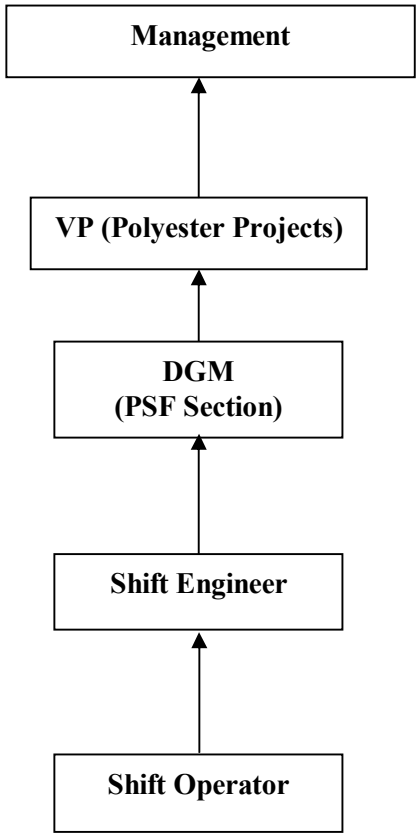
>>

The operational and management structure of IRSL to monitor emission reductions is discussed below:

- The Shift Operators would be responsible for data recording of the parameters mentioned in the monitoring plan. They are qualified technicians with 5-10 years experience.
- The Shift Engineer would compile the daily report and submit to Deputy Manager - Utility.
- DGM- PSF Section will verify the data and will take immediate action if required. He will compile the monthly report and submit to VP (Polyester Projects).

- VP (Polyester Projects) will be responsible for reporting the status and the progress of the project to management.

The schematic layout of operational and management structure is given below:



D.6. Name of person/entity determining the monitoring methodology:

>>

M/s Indo Rama Synthetics (India) Limited

The project participant details are given in Annex 1 of this document.

SECTION E.: Estimation of GHG emissions by sources:

E.1. Formulae used:

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E.1.1 Selected formulae as provided in appendix B:

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The formula for estimation of GHG emission reduction is not mentioned in 'Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories Type II - Category D - version 07 - 28 November 2005'.

E.1.2 Description of formulae when not provided in appendix B:

>>

The project activity installs Zimmer tech steam Cascading system for thermosetting process in PSF unit. The specific steam consumption of project activity is less compared to baseline scenario. Eventually there will be reduction in boiler fuel consumption. It is essential to estimate the savings in steam and thereby fuel to calculate the GHG emissions due to the project activity. The formula for estimation is explained in the following sections.

E.1.2.1 Describe the formulae used to estimate anthropogenic emissions by sources of GHGs due to the project activity within the project boundary:

>>

The formula for estimation of anthropogenic emissions by sources of GHGs due to the project activity is given below:

Step 1: Estimation of Specific Steam Consumption of project activity

$$SSC_P = \left(\frac{SC_P}{P_P} \right)$$

Where

SSC_P = Project Specific Steam Consumption, Ton/ton

SC_P = Steam Consumption of Project activity, Ton / day

P_P = Production per day of Project activity, Ton / day

Step 2: Estimation of Energy Consumption

$$EC_P = \frac{\{(ES - EC) \times SSC_P \times P \times OP\}}{10^6}$$

Where

EC_P = Energy Consumption in Project scenario, TJ/yr

ES = Enthalpy of Steam supplied to project activity, kJ/kg

EC = Enthalpy of Condensate, kJ/kg

P = Production rate of project activity, Ton/day

Op = Operating days per year,

E.1.2.2 Describe the formulae used to estimate leakage due to the project activity, where required, for the applicable project category in appendix B of the simplified modalities and procedures for small-scale CDM project activities

>>

As per paragraph 5 of Indicative simplified baseline and monitoring methodology for selected small-scale CDM project activity -Type II - Category D - version 07 - 28 November 2005. It has been specified that "*If the energy generating equipment is transferred from another activity or if the existing equipment is transferred to another activity, leakage is to be considered*".

The project activity is Greenfield and the equipments are newly procured and are not transferred from another activity. Hence the leakage due to project activity is need not to be considered.

E.1.2.3 The sum of E.1.2.1 and E.1.2.2 represents the small-scale project activity emissions:

>>

The project activity emissions would be only due to the combustion of coal.

E.1.2.4 Describe the formulae used to estimate the anthropogenic emissions by sources of GHGs in the baseline using the baseline methodology for the applicable project category in appendix B of the simplified modalities and procedures for small-scale CDM project activities:

>>

The formula for estimation of anthropogenic emissions by sources of GHGs due to the project activity is given below:

Step 1: Estimation of Specific Steam Consumption of Baseline

$$SSC_B = \left(\frac{SC_B}{P_B} \right)$$

Where

SSC_B = Baseline Specific Steam Consumption, Ton/ton

SC_B = Steam Consumption in baseline scenario based on the one year average of baseline, Ton / yr

P_B = Production rate at baseline based on the one year average of baseline, Ton / yr

Step 2: Estimation of Energy Consumption

$$EC_B = \frac{\{(ES - EC) \times SSC_B \times P\}}{10^6}$$

Where

EC_B = Energy Consumption in Baseline scenario, TJ/yr

ES_{LP} = Enthalpy of LP Steam at STP, STT, kJ/kg

STP = Steam Pressure of LP steam is 5 kg/cm^2 based on the one year average of baseline

STT = Steam Temperature is 152 ^oC based on the one year average of baseline

EC = Enthalpy of Condensate at CP, kJ/kg

CP = Condensate pressure is 7.5 kg/cm^2, based on the one year average of baseline

SSC_B = Baseline Specific Steam Consumption, Ton/ton

P = Production rate of project activity, Ton/day

E.1.2.5 Difference between E.1.2.4 and E.1.2.3 represents the emission reductions due to the project activity during a given period:

>>

The emission reduction due to the project activity would be estimated by the following formula

$$BE = (EC_P - EC_B) \times EF \,/\, \eta$$

Where

BE = Baseline emissions.

EF = Emission Factor of fuel, T CO_2 / TJ, Referred from Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories.

η = Efficiency of boiler, whichever is maximum.

$$= \frac{Steam\ Generation \times Enthalpy\ of\ Steam}{Fuel\ Consumption \times Calorific\ Value}$$

E.2 Table providing values obtained when applying formulae above:

>>

Emission Réductions:

Year	Annual Emission Reductions tCO_2e
2006-2007	3,332
2007-2008	3,332
2008-2009	3,332
2009-2010	3,332
2010-2011	3,332
2011-2012	3,332
2012-2013	3,332
2013-2014	3,332
2014-2015	3,332
2015-2016	3,332
Total estimated reductions for 10 years (tonnes of CO_2 e)	**33,320**

SECTION F.: Environmental impacts:

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

>>

The project does not fall under the purview of the Environmental Impact Assessment (EIA) notification[1] S.O. 60 (E) of the Ministry of Environment and Forest, Government of India,.

There would not be any significant negative impact over the environment due to the project activity.

[1] Reference : http://envfor.nic.in/legis/eia/so-60(e).html

SECTION G. Stakeholders' comments:

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

>>

The stakeholders are identified on the basis of their involvement at various stages of project activity. They are as follows:

- Employees of IRSL
- Equipment supplier

The meeting was conducted at IRSL to inform about the project activity and to collect the comments / concerns of employees. During the meeting, the project activity and its associated benefits were discussed.

G.2. Summary of the comments received:

>>

Employees: The employees appreciated the efforts taken by IRSL and there is no concern/ comments raised from them.

Equipment supplier: The equipments would be supplied by the equipment supplier as per the specifications finalized for the project and erection & commissioning of the equipments at the site would be done by suppliers.

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

>>

There are no comments or concerns raised during the consultation with stakeholders. Further, as required by the CDM cycle, the PDD would be published at the DOE`s web site for public comments

Annex 1

CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY

Organization:	Indo Rama synthetics (India) Limited
Street/P.O.Box:	28, Barakhamba Road,
Building:	Dr. Gopal Das Bhawan, 4th floor,
City:	New Delhi 110001
State/Region:	New Delhi
Postcode/ZIP:	110001
Country:	India
Telephone:	--
FAX:	--
E-Mail:	abhinandan.chatterjee@indorama-ind.com
URL:	www.indoramaindia.com
Represented by:	
Title:	President and CFO
Salutation:	Mr.
Last Name:	Chatterjee
Middle Name:	
First Name:	Abhinandan
Department:	--
Mobile:	--
Direct FAX:	--
Direct tel:	--
Personal E-Mail:	--

Annex 2

INFORMATION REGARDING PUBLIC FUNDING

No public funding as part of project financing from parties included in Annex I of the convention is involved in the project activity.

Enclosure 1 : Emission Reduction Calculations

Baseline Emission		
Step 1 : Estimation of specific steam Consumption of Baseline		
Baseline specific steam consumtion	Ton/Ton	0.9675
Step 2 : Estimation of energy Consumption		
Enthalpy of LP steam (5 ksc)	kJ/kg	2746.4
Enthalpy of Condensate (8 ksc)	kJ/kg	720.64
Production of project activity	Ton/day	350
Operating days per year	days / yr	330
Energy consumption in Baseline scenario	TJ/yr	**226**
Step 3 : Estimation of Baseline Emissions		
Emission Factor of oil	T C / TJ	21.1
Baseline emissions	Ton of CO_2/yr	**17514**
Project Emisssions		
Step 1 : Estimation of specific steam Consumption of Baseline		
Project specific steam consumtion	Ton/Ton	0.58
Step 2 : Estimation of energy Consumption		
Enthalpy of Steam supplied to project activity (24 ksc)	kJ/kg	2799
Enthalpy of Condensate (3 ksc)	kJ/kg	561.26
Production of project activity	Ton/day	350
Operating days per year	days / yr	330
Energy consumption in Baseline scenario	TJ/yr	**150**
Step 3 : Estimation of Project Emissions		
Emission Factor of Coal	T C / TJ	25.8
Project emissions	Ton of CO_2/yr	**14181**
Leakage		
Leakage due to transferring of energy generating equipment	Ton CO_2/yr	0
Emission Reduction		
Emission reduction due to project activity	Ton CO_2/yr	**3332**
Total CER for **ten years** crediting period	Ton CO_2	33320