Monitoring report form

(Version05.1)

Complete this form in accordance with the Attachment "Instructions for filling out the monitoring report form" at the end of this form.

MONITORING REPORT		
Title of the project activity	Ajbapur Sugar Complex Cogeneration Project	
UNFCCC reference number of the project activity	0332	
Version number of the monitoring report	1.0	
Completion date of the monitoring report	18/02/2016	
Monitoring period number and duration of this monitoring period	8, (01/04/2014 to 30/09/2015) first & last days included	
Project participant(s)	1. M/s DCM Shriram Ltd.(India) 2.Agrinergy Ltd.(United Kingdom of Great Britain and Northern Ireland)	
Host Party	India	
Sectoral scope(s)	1: Energy industries (renewable -/ non-renewable sources)	
Selected methodology(ies)	AMS-I.D. version 7.0 – Renewable electricity generation for a grid	
Selected standardized baseline(s)	Not Applicable	
Estimated amount of GHG emission reductions or net GHG removals by sinks for this monitoring period in the registered PDD	60,588tonnes of CO_2e	
Total amount of GHG emission reductions or net GHG removals by sinks achieved in this monitoring period	GHG emission reductions or net GHG removals by sinks reported up to 31 December 2012	GHG emission reductions or net GHG removals by sinks reportedfrom 1 January 2013 onwards
	0	19,768

SECTION A. Description of project activity

A.1. Purpose and general description of project activity

1. The purpose of the project activity is an expansion of electricity generation capacity and the installation of facilities to export electricity to the grid using renewable biomass and thereby reducing GHG emissions by replacing the fossil fuel dominated grid based electricity with biomass based renewable electricity.
2. The project activity is the installation of 7.5MW condensing and extraction turbine generator and the boiler capacity will be increased from 50 tph to 65 tph. The project activity is powered by the combustion of bagasse, a co-product of the sugar production process and other biomass, which are a renewable biomass for generating electricity and steam for the plant.
3. The construction start date of the project activity is 14/05/2003 and the commissioning date is 12/04/2005.
4. The total emission reductions achieved in the current monitoring period are 19,768 tCO_2

A.2. Location of project activity

1. Host Party (ies): India
2. Region/ State/ Province, etc.: Uttar Pradesh
3. City/ Town/ Community, etc.: Ajbapur village, LakhimpurKheri District
4. Physical/ Geographical location: GPS coordinates 27º54' (27.9000) °N &79º57' (79.9500) °E

A.3. Parties and project participant(s)

Party involved ((host) indicates a host Party)	Private and/or public entity(ies) project participants (as applicable)	Indicate whetherthe Party involved wishes to be considered as project participant (yes/no)
India (host)	M/s DCM Shriram Ltd	No
United Kingdom of Great Britain and Northern Ireland	Agrinergy Ltd.	No

A.4. Reference of applied methodology and standardized baseline

Title and version: Renewable electricity generation for a grid, AMS-I.D, version 7
Reference:http://cdm.unfccc.int/methodologies/SSCmethodologies/approved.html

A.5. Crediting period of project activity

Crediting Period: 01/10/2005 – 30/09/2015 (fixed)
Length of crediting period: 10 years 0 months
Start date: 01/10/2005

A.6. Contact information of responsible persons/entities

Mr. Anoop Singh
5th floor, Kanchenjunga Bldg,18Barakhamba Road 110001
New Delhi, India
anoopsingh@dcmshriram.com

SECTION B. Implementation of project activity

B.1. Description of implemented registered project activity

>>The project activity is implemented as mentioned in the registered PDD. The project is a 7.5 MW extracting cum condensing type turbine generator, along with increasing the capacity of the existing boiler from 50 tph to 65 tph. The boiler is powered by combustion of bagasse to generate steam, which in turn powers the turbine to generate power. The emission reductions claimed are for electricity generation from renewable bagasse.

1. The project was commissioned on 12/04/2005.
2. The information regarding the actual operation of the project activity during this monitoring period is given below,

Period	No. of days of plant operation	No. of days of plant breakdown	No. of days of plant shutdown (including off-season)	Total No. of days in the monitoring period
01 April -2014 - 30September 2015	154	06	388	548

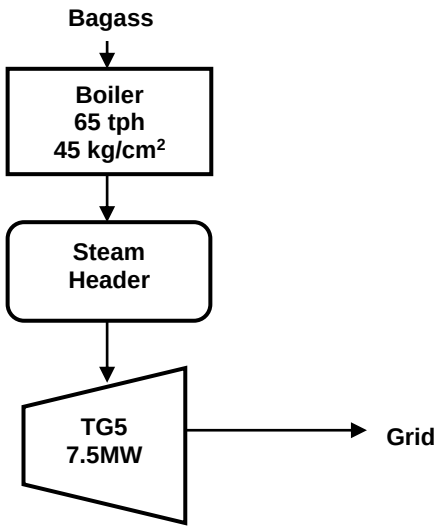
3. There are no events or situations that occurred during the monitoring period which may impact the applicability of the methodology.

The list of equipments is as follows:

Sr. No	Boiler Details	Make
1	Dumping grate Steam Generation – 65 tph Working Pressure – 45 kg/cm^2 Steam Temperature – 425 Degree C Sr. no.: UP 5741	Walchandnagar Industries Ltd

Sr. No	Turbine Details	Make
1.	Type: Extraction cum Condensing Power Generation – 7.5 MW Inlet Steam Pressure – 45 kg/ cm^2 Sr. no.: 1052	Kessels Engineering

Sr. No	Alternator	Make
1.	CACW Brushless Cylid Rotor 9375 kVA 11 KV ,0.8 PF Lag RPM 1500	Kessels Engineering



B.2. Post-registration changes

B.2.1. Temporary deviations from registered monitoring plan, applied methodology or applied standardized baseline

There are no any deviations from the registered monitoring plan or applied methodology.

B.2.2. Corrections

There are no corrections

B.2.3. Changes to start date of crediting period

There are no changes to start date of the crediting period.

B.2.4. Inclusion of a monitoring planto the registered PDD that was not included at registration

There is a revision in monitoring plan which was approved by EB on 17 November 2007. The details have been provided in B.2.5

B.2.5. Permanent changes from registered monitoring plan, applied methodology or applied standardized baseline

The revised monitoring plan for the project activity was approved on 17/11/2007 (http://cdm.unfccc.int/Projects/DB/TUEVSUED1142619739.4/MonitoringPlanRevisions/01/RevisedMonitoringPlan)

B.2.6. Changes to project design of registered project activity

There are no changes to project design of the registered project activity.

B.2.7. Types of changes specific to afforestation or reforestation project activity

This is not applicable

SECTION C. Description of monitoring system

The project activity is implemented as mentioned in the registered PDD. No new technology measure or retrofits have been added during this verification period.

The monitoring plan is in line with registered PDD and revised monitoring plan (accepted on 17 November 2007). No new technology measure or retrofits have been added during this verification period.

The plan, responsibility, authority, frequency and management for carrying out the monitoring systems are governed by the quality systems in place at the factory. The QA systems are well established for the boiler and TG operations. These include testing of fuel, ash, water, steam measurement, water measurement, power generation, in house consumption and export of power. The export meters are situated at the project end and import meter is at Mohamadi sub-station. The meter at the project site is calibrated by the manufacturer while the meter at Mohamadi is calibrated under supervision of UPPCL and is beyond the scope of M/s DCM Shriram Ltd.

Exports of power from the project activity are metered at the nearby Mohammadi substation and at the factory. Meter readings are recorded at the end of each month in the presence of both a

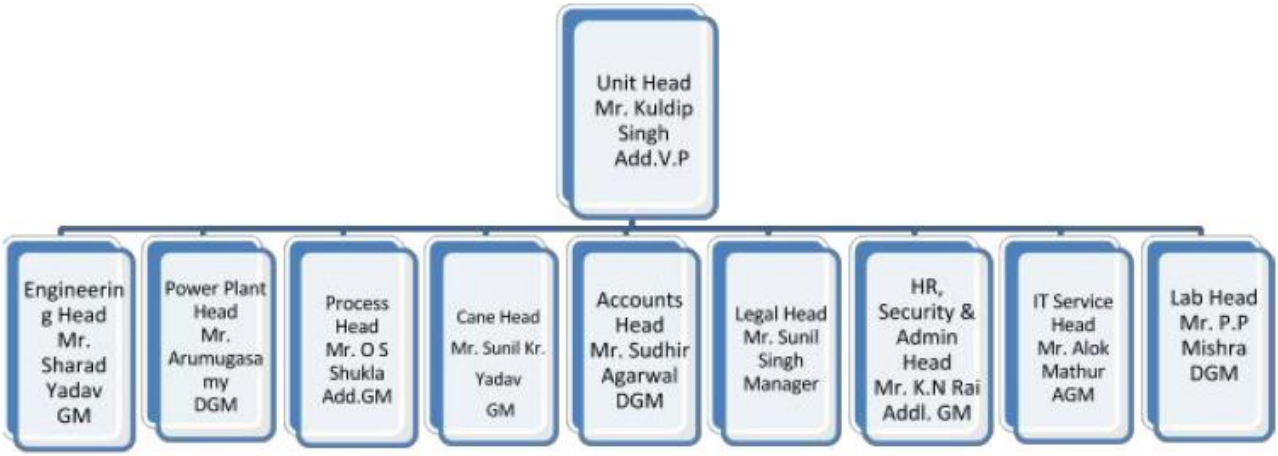
senior executive engineer of UPPCL and a representative of the Ajbapur Sugar Complex and form the basis for invoicing and payment for electricity sold. These invoices form the basis of the monitoring.

The total gross generation from project activity (7.5 MW) is 22431.10MWh. The net export to UPPCL substation is 63641.93 MWh which is more than the total gross generation from project activity.

Emergency procedures

The plant maintains the data in both hard and soft copy formats. Agrinergy also receives the monthly data from the plant and if any discrepancies are observed, questions are raised and corrections made accordingly. In general, the plant operates in line with the ISO 9001 procedures.
However, no emergencies occurred during the period under verification which could have given rise to emissions.

Organizational structure



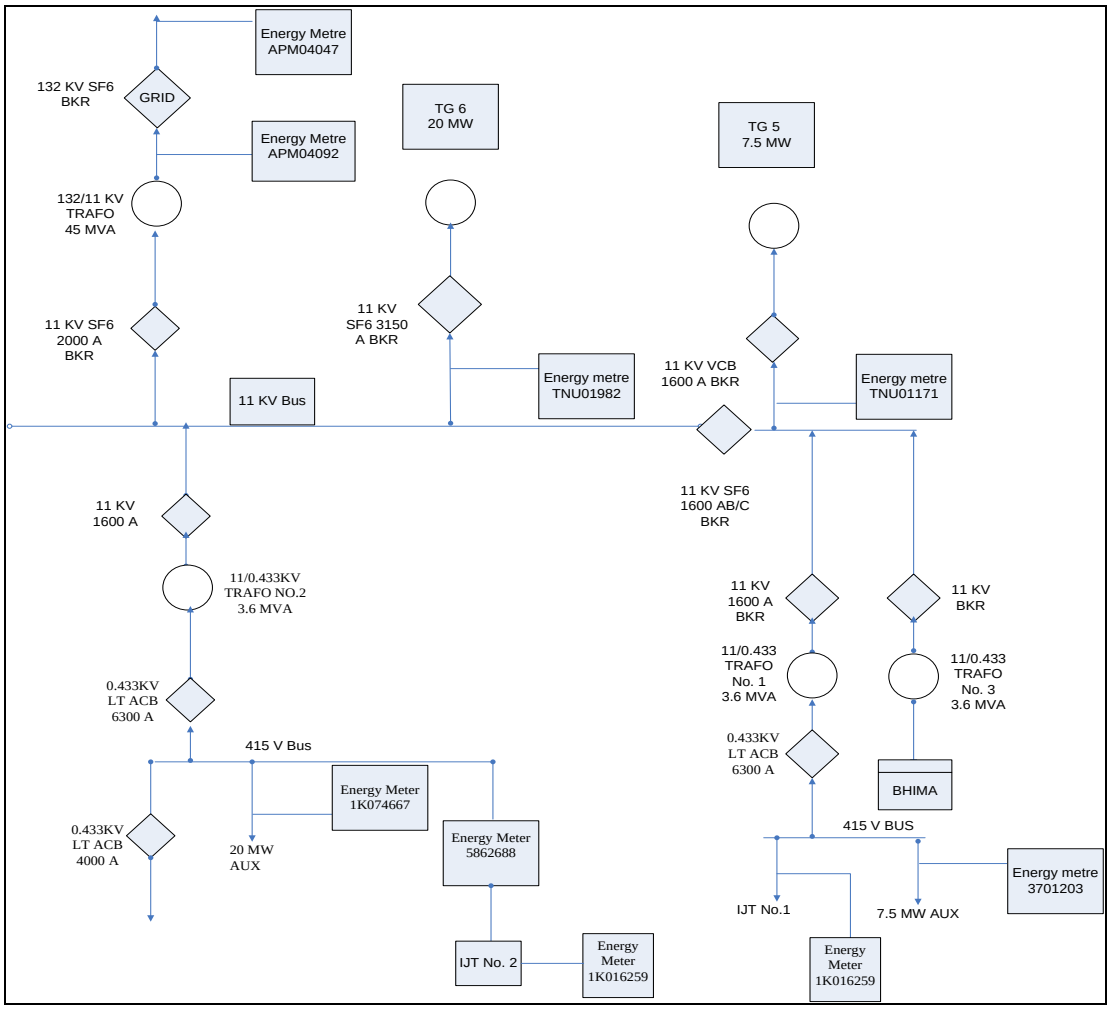
Roles and Responsibility

Unit Head	**Overall responsibility of CDM Project**
Power Plant Head	Co-ordination of day to day CDM preparation of monthly reports , Boiler Operation
Vice President Commercial (at corporate office)	All commercial matters
Vice President Finance& Accounts (at corporate office)	Monitoring and submission of data to UNFCCC
Joint Vice President Technical (at corporate office)	All technical matters and instrumentation
Sr. Manager Boiler	Data checking & verification
AGM Instrumentation	Supervision of all the instrument
Switch Board Attendant	Data recording
DM Human Resource	Training & Development for CDM
Manager Safety	All the safety aspects related to CDM
Manager Safety	All the environmental aspects related to CDM

QA/QC procedures

All monitored data will be kept for a minimum of two years after the end of the crediting period.
The single line diagram showing all relevant electricity monitoring points is given below

SLD of Power House



SECTION D. Data and parameters

D.1. Data and parameters fixed ex ante or at renewal of crediting period

(Copy this table for each piece of data and parameter)

Data/parameter:	**C**
Unit	tCO_2/MWh
Description	Constant representing the CO_2 emission factor of displaced power
Source of data	Section B.5 of the registered PDD
Value(s) applied)	0.918
Choice of data or measurement methods and procedures	Specified *ex-ante in the registered PDD*
Purpose of data	Baseline emissions calculations.
Additional comments	-

D.2. Data and parameters monitored

(Copy this table for each piece of data and parameter)

Data/parameter:	**G_e**
Unit	MWh
Description	Gross electricity generation from TG5 (7.5 MW TG)
Measured/calculated/default	Measured
Source of data	Plant records
Value(s) of monitored parameter	22431.10
Monitoring equipment	Type: Energy meter, Calibration frequency: Annually Meter make: Secure Model no: E3M021 Serial Number: TNB01177 Accuracy class: ±0.2%
Measuring/reading/recording frequency:	Measured on a hourly basis and reported on a monthly basis
Calculation method (if applicable):	-
QA/QC procedures:	The meter has been calibrated by Belz Calibration Lab as follows

Serial No	**Accuracy class**	**Calibration date**	**Valid till**
TNB01177	±0.2%	26/08/2013 02/06/2014 31/05/2015	25/08/2014 01/06/2015 30/05/2016

Purpose of data:	Baseline emission calculations
Additional comments:	-

Data / Parameter:	**A_e**
Unit:	MWh
Description:	Auxiliary consumption for TG5 (7.5 MW TG)
Measured/ Calculated / Default:	Measured
Source of data:	Plant records
Value(s) of monitored parameter:	683.56
Monitoring equipment:	Type: Energy meter, Calibration frequency: Annually Calibration agency: Belz calibration Lab Meter make: L & T Model no: EM301 Serial Number: 3701203 Accuracy Class: ±0.2%
Measuring/ Reading/ Recording frequency:	Measured on hourly basis and reported on a monthly basis
Calculation method (if applicable):	-

QA/QC procedures:	The meter has been calibrated by Belz Calibration Lab as follows **Serial No** | **Accuracy class** | **Calibration date** | **Valid till** 3701203 | ±0.2% | 03/06/2013 02/06/2014 31/05/2015 | 02/06/2014 01/06/2015 30/05/2016
Purpose of data:	Baseline emissions calculations
Additional comment:	-

Data / Parameter:	**$E_{e,gross}$**
Unit:	MWh
Description:	Gross Export to UPPCL substation (Mohammadi) at plant premises
Measured/ Calculated / Default:	Measured and reported on a monthly basis
Source of data:	Plant records
Value(s) of monitored parameter:	63641.93
Monitoring equipment:	Type: Energy meter, Calibration frequency: Annually Calibration agency: Belz calibration Lab Meter make: Secure Model no: R3M201 Serial Number: APM 4092 Accuracy Class: ±0.2%
Measuring/ Reading/ Recording frequency:	Monthly
Calculation method (if applicable):	-
QA/QC procedures:	The meter has been calibrated by Belz Calibration Lab as follows **Serial No** | **Accuracy class** | **Calibration date** | **Valid till** APM 4092 | ±0.2% | 09/11/2013 21/02/2014 01/06/2015 | 08/11/2014 20/02/2015 31/05/2016 Correction factor is applied as per EB 52, Annex 60 for the delay in calibration.
Purpose of data:	Baseline emission calculations
Additional comment:	There has been a delay in calibration of the meter by 100 days for which correction factor has been appropriately applied. For the month of February, it has been applied over the complete month.

Data / Parameter:	**$E_{e,net}$**
Unit:	MWh
Description:	Net Export to UPPCL substation (Mohammadi)
Measured/ Calculated / Default:	Measured
Source of data:	Joint Meter Reading (JMR) report
Value(s) of monitored parameter:	63018.00

<table>
<tr><td>Monitoring equipment:</td><td>Meter owned by UPPCL
Sr. no: in APM 04047
Meter make: Secure
Model no: R3M201
Accuracy class of meter: ±0.2%</td></tr>
<tr><td>Measuring/
Reading/
Recording frequency:</td><td>Monthly</td></tr>
<tr><td>Calculation method
(if applicable):</td><td>-</td></tr>
<tr><td>QA/QC procedures:</td><td>
<table>
<tr><th>Serial No</th><th>Accuracy class</th><th>Calibration date</th><th>Valid till</th></tr>
<tr><td>APM 04047</td><td>±0.2%</td><td>08/10/2010</td><td>07/10/2015</td></tr>
</table>

This meter is owned by UPPCL and calibrated as per Indian National Standards. The calibration of this meter is beyond the scope of DCM Shriram Ltd.</td></tr>
<tr><td>Purpose of data:</td><td>-</td></tr>
<tr><td>Additional comment:</td><td>-</td></tr>
</table>

<table>
<tr><td>Data / Parameter:</td><td>Confirmation that no fossil fuels have been combusted</td></tr>
<tr><td>Unit:</td><td>-</td></tr>
<tr><td>Description:</td><td>-</td></tr>
<tr><td>Measured/
Calculated /
Default:</td><td>Measured</td></tr>
<tr><td>Source of data:</td><td>Plant records</td></tr>
<tr><td>Value(s) of monitored parameter:</td><td>0</td></tr>
<tr><td>Monitoring equipment:</td><td>-Type: Weighbridge, Calibration frequency: Annually.
Make: Ashbee
Capacity: 60 tonnes (Total 3 Units)
<table>
<tr><th>Serial No</th><th>Accuracy class</th><th>Calibration date</th><th>Valid till</th></tr>
<tr><td>060902,
060825,
05030508</td><td>III</td><td>25/11/2013
24/11/2014
10/11/2015</td><td>24/11/2014
25/11/2015
10/11/2016</td></tr>
</table>
Since no fossil fuel combusted at the project activity site for the monitoring period the correction factor as per EB 52, Annex 60 is not applicable for the delay in calibration.</td></tr>
<tr><td>Measuring/
Reading/
Recording frequency:</td><td>Annually</td></tr>
<tr><td>Calculation method
(if applicable):</td><td>-</td></tr>
<tr><td>QA/QC procedures:</td><td>-</td></tr>
<tr><td>Purpose of data:</td><td>Project emissions calculations</td></tr>
<tr><td>Additional comment:</td><td>There is no combustion of fossil fuel has taken place during the monitoring period. The same weighbridges will be used if there any inventory of fossil fuel in the future. The gap in calibration has no impact on the emission reductions.</td></tr>
</table>

D.3. Implementation of sampling plan

This is not applicable

SECTION E. Calculation of emission reductions or GHG removals by sinks

E.1. Calculation of baseline emissions or baseline net GHG removals by sinks

>>The formulae used to calculate the baseline emissions are:

$$P_e = G_e - A_e - T_e$$

22431.10– 683.56 –213.21

= 21534.33MWh

Where,

G_e Gross electricity generation by TG5, MWh

A_e Auxiliary consumption for TG5, MWh

T_e Transmission Losses

$$T_e = \left[\left(E_{e,gross} - E_{e,net}\right) / E_{e,gross}\right] * \left(G_e - A_e\right)$$

=((63641.93 – 63018.00) /63641.93)* (22431.10 – 683.56)

= 213.21 MWh

Where,

$E_{e,gross}$ Gross Export to UPPCL substation, MWh (At the Plant)

$E_{e,net}$ Net Export to UPPCL substation, MWh (Mohammadi)

$$CERs = P_e.C$$

= 21534.33 * 0.918

= 19768.52 tCO_2e

Month	G_eMWh	A_e MWh	$E_{e,gross*}$ MWh	$E_{e,net*}$ MWh	T_eMWh	P_eMWh	CERs tCO_2
Apr-14	2861.00	105.72	10666.08	10624.80			
May-14	0.00	0.44	187.56	0.00			
Jun-14	0.00	0.08	0.00	0.00			
Jul-14	0.00	1.88	0.00	0.00			
Aug-14	0.00	1.76	0.00	0.00			
Sep-14	0.00	2.04	0.00	0.00			
Oct-14	0.00	2.16	0.00	0.00			
Nov-14	85.40	12.28	76.68	0.00			
Dec-14	5200.50	116.32	11968.38	11954.40			
Jan-15	5034.80	113.16	12940.38	12909.60			
Feb-15	3964.40	102.48	10785.17	10723.20			
Mar-15	3899.50	118.20	11136.33	11082.24			
Apr-15	1385.50	102.32	5881.36	5723.76			
May-15	0.00	0.04	0.00	0.00			
Jun-15	0.00	0.32	0.00	0.00			
Jul-15	0.00	1.44	0.00	0.00			
Aug-15	0.00	1.32	0.00	0.00			
Sep-15	0.00	1.60	0.00	0.00			
Total	**22431.10**	**683.56**	**63641.93**	**63018.00**	**213.21**	**21534.33**	**19768.52**

The total export to the grid is more than the net generation from the project activity as mentioned in the revised monitoring plan.

E.2. Calculation of project emissions or actual net GHG removals by sinks

There are no project emissions for this project activity.

$\mathbf{PE_y}$ = 0tCO_2e

E.3. Calculation of leakage

There are no leakage emissions for this project activity.

$\mathbf{LE_y}$ = 0 tCO_2e

E.4. Summary of calculation of emission reductions or net GHG removals by sinks

Item	Baseline emissionsor baseline net GHG removals by sinks (t CO_2e)	Project emissions or actual net GHG removals by sinks (t CO_2e)	Leakage (t CO_2e)	GHG emission reductions or net GHG removals by sinks (t CO_2e) achieved in the monitoring period		
				Up to 31/12/2012	From 01/01/2013	Total amount
Total	19768.52	0	0		19768.52	19768 (round down to nearest integer)

E.5. Comparison of actual emission reductions or net GHG removals by sinks with estimates in registered PDD

Item	Values estimated in exante calculation of registered PDD	Actual values achieved during this monitoring period
Emission reductions or GHG removals by sinks (t CO_2e)	**60,588**	**19,768**

E.6. Remarks on difference from estimated value in registered PDD

There is no increase in the emission reductions during the current monitoring period relative to the estimation in the registered CDM-PDD. The emission reductions achieved during the monitoring period are less than the estimated in the registered PDD as the turbine operated for less number of days in the season as well as off-season than the days expected in the PDD.

Appendix 1. Contact information of project participants and responsible persons/entities

Project participant and/or responsible person/ entity	☒ Project participant ☐ Person/entity responsible for completing the CDM-MR-FORM
Organization name	M/s DCM Shriram Ltd.
Street/P.O. Box	18 Barakhamba Road
Building	5th floor, Kanchenjunga Bldg,
City	New Delhi
State/region	Delhi
Postcode	
Country	India
Telephone	
Fax	
E-mail	
Website	
Contact person	
Title	
Salutation	Mr
Last name	Singh
Middle name	
First name	Anoop
Department	
Mobile	
Direct fax	
Direct tel.	
Personal e-mail	anoopsingh@dcmshriram.com

Project participant and/or responsible person/ entity	☒ Project participant ☐ Person/entity responsible for completing the CDM-MR-FORM
Organization name	Agrinergy Ltd.
Street/P.O. Box	Eagle Tower
Building	Montpellier Drive
City	GL50 1TA Cheltenham
State/region	
Postcode	
Country	United Kingdom of Great Britain and Northern Ireland
Telephone	
Fax	
E-mail	
Website	
Contact person	
Title	Director
Salutation	Mr

Last name	Atkinson
Middle name	
First name	Ben
Department	
Mobile	
Direct fax	
Direct tel.	
Personal e-mail	ben.atkinson@agrinergy.com

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Document information

Version	*Date*	*Description*
05.1	4 May 2015	Editorial revision to correct version numbering.
05.0	1 April 2015	Revisions to: • Include provisions related to delayed submission of a monitoring plan; • Provisions related to the Host Party; • Remove reference to programme of activities; • Overall editorial improvement.
04.0	25 June 2014	Revisions to: • Include the Attachment: Instructions for filling out the monitoring report form (these instructions supersede the "Guideline: Completing the monitoring report form" (Version 04.0)); • Include provisions related to standardized baselines; • Add contact information on a responsible person(s)/ entity(ies) for completing the CDM-MR-FORM in A.6 and Appendix 1; • Change the reference number from *F-CDM-MR* to *CDM-MR-FORM*; • Editorial improvement.
03.2	5 November 2013	Editorial revision to correct table in page 1.
03.1	2 January 2013	Editorial revision to correct table in section E.5.
03.0	3 December 2012	Revision required to introduce a provision on reporting actual emission reductions or net GHG removals by sinks for the period up to 31 December 2012 and the period from 1 January 2013 onwards (EB70, Annex 11).
02.0	13 March 2012	Revision required to ensure consistency with the "Guidelines for completing the monitoring report form" (EB 66, Annex 20).
01	28 May 2010	EB 54, Annex 34. Initial adoption.

Decision Class: Regulatory
Document Type: Form
Business Function: Issuance
Keywords: monitoring report