



**Verified Carbon
Standard**

Bundled Wind Power Project in Madhya Pradesh, Gujarat and Kerala by D.J. Malpani



Document Prepared by EKI Energy Services Limited

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1 PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

The purpose of the project activity is to generate power using renewable energy source (wind energy) and sell the power generated to the state grid. The generated electricity is exported to the regional grid system which is under the purview of the INDIAN electricity grid of India. The wind power generated from the Project displaces the electricity generated from thermal power stations feeding into Indian grid (Indian Electricity Grid) and replaces the usage of diesel generators for meeting the power demand during shortage periods. Since, the wind power is Green House Gas (GHG) emissions free, the power generated prevents the anthropogenic GHG emissions generated by the fossil fuel based thermal power stations comprising coal, diesel, furnace oil and gas.

The project activity involves Wind Power Projects with total installed capacity of 60 MW; which involves operation of Wind Turbine Generators (WTGs) in multiple states of India. The details of the project is given below:

Sr. No.	Project Type	Project Capacity (in MW)	Owner of Project	Project Location	State
1	Wind	4.5 MW	D. J. Malpani	Dhar Site, Dhar	Madhya Pradesh
2	Wind	7.5 MW	D. J. Malpani	Ghatiya Site, Ujjain	Madhya Pradesh
3	Wind	6 MW	D. J. Malpani	Sadla Site, Surendranagar	Gujarat
4	Wind	26 MW	D. J. Malpani	Savarkundala Site, Amreli	Gujarat
5	Wind	16 MW	D. J. Malpani	Kinfra Site, Palakkad	Kerala

It is to be noted that, at the time of registration, the total capacity of the project activity was 66 MW. But now the capacity has been downsized to 60 MW. This is because, the earlier, 22 MW capacity wind project by D. J. Malpani at Kinfra site, Kerala has been downsized to capacity of 16 MW. The above deviation is approved during the 2nd monitoring period.

Total emission reductions achieved in this monitoring period:

During the Current Monitoring Period from 01-March-2020 to 31-December-2020 (First and last date included) the project activity has supplied 94,538 MWh of electricity, and thus contributing to the GHG reductions 91,255 tCO₂e.

1.2 Sectoral Scope and Project Type

The project activity falls under the following Sectoral scope and Project Type:

Sectoral Scope: 01 - Energy industries (renewable / non-renewable sources)

Project Type: I - Renewable Energy Projects

Methodology: ACM0002: Grid-connected electricity generation from renewable sources- Version 17.0¹

¹ <http://cdm.unfccc.int/methodologies/DB/8W400U6E7LFHHYH2C4JR1RJWWO4PVN>

The project is not a grouped project activity.

1.3 Project Proponent

Organization name	D. J. Malpani
Contact person	Mr. Prafulla Khinvasara
Title	CEO- Renewable Power Projects
Address	Malpani House, New Nagar Road, Tal- Sangamner, Dist – Ahmednagar, Maharashtra, India
Telephone	+91 976580098
Email	prafulla@malpani.com

1.4 Other Entities Involved in the Project

Organization name	EKI Energy Services Limited
Role in the Project	Project Consultancy
Contact person	Anjali
Title	Project manager
Address	Office No 201, Plot No 48, Scheme 78, Part 2, Vijay Nagar, Indore- 452010, Madhya Pradesh, India
Telephone	+91 9109120940
Email	anjali@enkingint.org / registry@enkingint.org

1.5 Project Start Date

Project Start Date: 28-March-2016.

The project start date is the date of earliest commissioning date of WTG i.e 28-March-2016.

1.6 Project Crediting Period

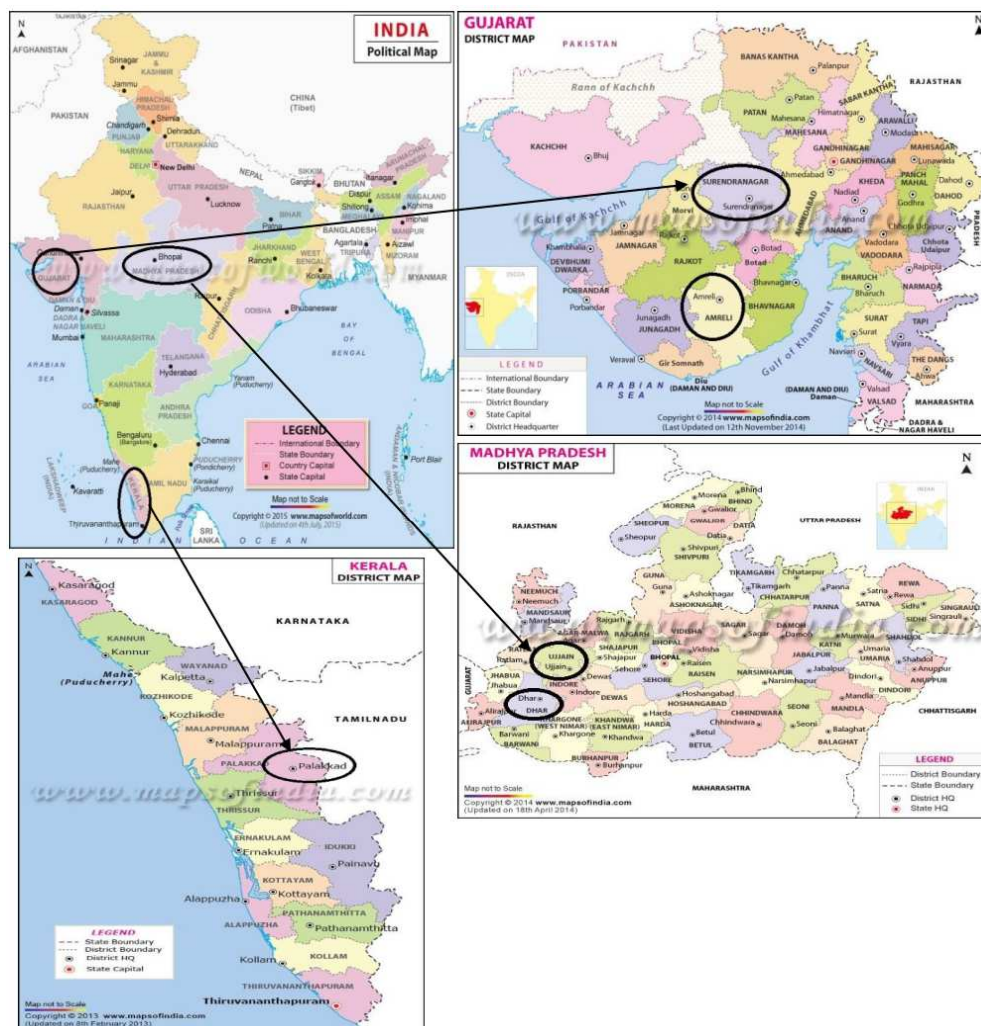
Crediting Period Start date: 28-March-2016

Crediting Period End date: 27-March-2026

The project activity adopts renewable crediting period of 10 years period which can be renewed for maximum 2 times.

1.7 Project Location

The project location has been highlighted in the geographical map shown below



The Geo Coordinates of the project location has been mentioned in the table below:

S. No.	Project Owner	Machine ID	District	State	Latitude (N)	Longitude (E)
1	D. J. Malpani	RGP2- 09	Ujjain	Madhya Pradesh	23° 21' 25"	75° 47' 38"
2		RGP2- 08			23° 22' 04"	75° 48' 13"
3		RGP2- 18			23° 20' 16"	75° 49' 10"
4		RGP2- 03			23° 20' 31"	75° 48' 57"
5		RGP2- 07			23° 22' 16"	75° 47' 48"
6	D. J. Malpani	IWISL/2000/ 16-17/3826	Surendranagar	Gujarat	22° 41' 51.9634"	71° 11' 45.4457"
7		IWISL/2000/ 16-17/3829			22° 42' 09.1591"	71° 12' 20.8237"
8		IWISL/2000/ 16-17/3830			22° 41' 59.8731"	71° 12' 31.8505"

9	D. J. Malpani	IWISL/2000/ 16-17/4060	Amreli	Gujarat	21° 18' 27.5358"	71° 25' 05.4767"
10		IWISL/2000/ 16-17/4061			21° 18' 21.8501"	71° 25' 30.1157"
11		IWISL/2000/ 16-17/4062			21° 18' 29.9265"	71° 26' 02.8202"
12		IWISL/2000/ 16-17/4063			21° 18' 18.5448"	71° 26' 03.1529"
13		IWISL/2000/ 16-17/4064			21° 18' 10.5525"	71° 26' 09.6116"
14		IWISL/2000/ 16-17/4065			21° 18' 21.4798"	71° 30' 27.9626"
15		IWISL/2000/ 16-17/4066			21° 19' 48.1147"	71° 27' 17.9010"
16		IWISL/2000/ 16-17/4067			21° 19' 59.6034"	71° 27' 03.5558"
17		IWISL/2000/ 16-17/40678			21° 20' 11.4744"	71° 27' 14.2307"
18		IWISL/2000/ 16-17/4350			21° 17' 09.9172"	71° 31' 36.7340"
19		IWISL/2000/ 16-17/4489			21° 18' 10.3896"	71° 26' 09.6792"
20		IWISL/2000/ 16-17/4490			21° 18' 18.4176"	71° 26' 03.2388"
21		IWISL/2000/ 16-17/4491			21° 18' 29.7756"	71° 26' 03.2064"
22	D. J. Malpani	DJM 01	Palakkad	Kerala	10° 47' 08.8350"	76° 47' 22.4161"
23		DJM 02			10° 47' 00.7304"	76° 47' 16.9701"
24		DJM 03			10° 46' 52.2401"	76° 47' 10.6991"
25		DJM 05			10° 46' 42.0601"	76° 47' 03.9574"
26		DJM 06			10° 46' 34.0199"	76° 46' 58.6108"
27		DJM 07			10° 46' 31.8877"	76° 47' 07.1889"
28		DJM 08			10° 46' 24.7089"	76° 47' 10.5038"

29		DJM 09			10° 46' 18.3974"	76° 47' 21.4268"
30	D. J. Malpani	ADD- 01	Dhar	Madhya Pradesh	22° 37' 50"	75° 16' 55"
31		ADD- 06			22° 37' 24"	75° 16' 29"
32		TIR- 11			22° 37' 11"	75° 16' 40"

1.8 Title and Reference of Methodology

Methodology: ACM0002: Grid-connected electricity generation from renewable sources - Version 17.0², Sectoral Scope: 01,

Type I: Energy industries (renewable / non-renewable sources)

Category: Approved Consolidated Methodology (ACM0002)

Tools referred with above methodology and applicable for project activity are:

- Tool to calculate the emission factor for an electricity system³ - Version 06.0 (EB 97, Annex 07)
- Methodological Tool- Tool for the demonstration and assessment of additionality⁴ - Version 07.0.0 (EB 70, Annex 08)

1.9 Participation under other GHG Programs

The project has neither been registered nor seeking registration under any other GHG programs. The project is seeking registration only in VCS program.

1.10 Other Forms of Credit

Emission Trading Programs and Other Binding Limits:

Net GHG emission reductions or removals generated by the Project will not be used for compliance with an emissions trading program or to meet binding limits on GHG emissions in any Emission Trading program or other binding limits.

Other Forms of Environmental Credit:

Not applicable, as the project is not registered in any other GHG mechanism other than VCS. Also, the project activity is not availing any REC benefits and the same can be confirmed from publicly available link of REC generators.

Web-link: https://www.recregistryindia.nic.in/index.php/general/publics/registered_regens

² <https://cdm.unfccc.int/methodologies/DB/8W400U6E7LFHHYH2C4JR1RJWWO4PVN>

³ <https://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-07-v6.pdf>

⁴ <http://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-01-v7.0.0.pdf>

1.11 Sustainable Development

Contribution to sustainable development:

Ministry of Environment and Forests, has stipulated economic, social, environment and technological well-being as the four indicators of sustainable development. The project contributes to sustainable development using the following ways.

Social well-being: The project helps in generating employment opportunities during the construction and operation phases. The project activity also leads to development in infrastructure in the region like development of roads and also may promote business with improved power generation.

Economic well-being: The project is a clean technology investment in the region, which would not have been taken place in the absence of the VCS benefits the project activity also helps to reduce the demand supply gap in the state.

Technological well-being: The successful operation of project activity is contributing in the promotion of wind based power generation and encouraged other entrepreneurs to participate in similar projects.

Environmental well-being: Wind being a renewable source of energy, it reduces the dependence on fossil fuels and conserves natural resources which are on the verge of depletion. Since the project activity is a wind power project, it also helps in avoiding significant amount of GHG emissions and specific pollutants like SO_x, NO_x, and SPM associated with the conventional thermal power generation facilities.

2 SAFEGUARDS

2.1 No Net Harm

The project activity has no significant impact on the environment. Wind power projects are not included in the Schedule I of the EIA notification S.O.1533 (E) dated 14th September 2006⁵ and thus an EIA is not required. Ministry of Environment & forests vide their OM J-11013/41/2006 - IA II (I) dated 13th May 2011, has re-affirmed this and exempted wind power plants from EIA and Environmental Consent requirement.

As per the Schedule 1 of the EIA notification dated 1/12/2009⁶ and latest notification dated 24/12/2013⁷, given by the Ministry of Environment and Forests under the Environment (Protection) Act 1986, the proposed Project activity does not fall under the list of activities requiring EIA as the environmental impacts for such project are not considered as significant by the host Party or PP.

⁵ <http://envfor.nic.in/legis/eia/so1533.pdf>

⁶ <http://moef.nic.in/downloads/rules-and-regulations/3067.pdf>

⁷ <http://envfor.nic.in/sites/default/files/ia-24122013.pdf>

2.2 Local Stakeholder Consultation

The local stakeholder meeting was carried out for the project activity and the details of the same can be referred from the registered VCS PD.

As a part of continuous feedback from stakeholders, feedback from the associated stakeholders is vital, therefore a dedicated Visitor register cum grievance register has been placed at the project site which is accessible to stakeholders to provide their feedback on the project. It is appropriate publicly accessible location at which local stakeholders can provide their feedback on the project. This location is also conducive to continuous and regular checks for stakeholder comments.

The stakeholders are also requested to share their experiences and grievances on continuous basis. Registers is used to records the grievances and feedback. Grievance register is placed at the main gate of site office and is accessible to everyone. During the current monitoring period, no any grievances have been received and thus, no any mitigation measures were required. In case of grievances, the nature of probable resolution is discussed with the plant head office and implemented by the site in-charge.

2.3 AFOLU-Specific Safeguards

Not Applicable, as this is not an AFOLU project.

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

The project activity involves Wind Power Projects in different location of India. The total installed capacity of the project is 60 MW; which involves operation of 1.5 MW and 2 MW capacity of WTGs for the wind projects located in Gujarat, Kerala and Madhya Pradesh state of India.

The project has already been commissioned and the commissioning details of the project activity has been mentioned in section 1.5 of this report.

Wind Power Project Technology Details –

The technology employed, converts wind energy to electrical energy. In wind power generation, energy of wind is converted into mechanical energy and subsequently into electrical energy. Wind power generation technology is environment friendly technology since there are no GHG emissions associated with the electricity generation. There is no transfer of technology involved in the project activity.

The project activity comprises WTG's of ReGen Power Tech make and of INOX make.

Technical details for VENSYS 87, 1500 KW Machine⁸.

⁸ <http://www.regenpowertech.com/104/technical-data>

Particulars	Details
Make	ReGen Powertech
Rated power	1500 kW
Cut-in wind speed	3 m/s
Cut-out wind speed	22 m/s
Survival wind speed	52.5 m/s
Generator	Variable Speed Multi Pole Synchronous
Rotor Diameter	87 m
Swept area	5942 m ²
Speed Range	9 to 17.3 rpm
Hub Height	85 m
Design	Tubular, Four Sections
Foundation Type	Floating
Control of Output	Pitch Regulation
Speed Control	Variable, micro controller based
Low Voltage Ride Through (LVRT)	3 seconds
Primary Brake system	Aerodynamic
Pitch System	Electromechanical
Remote Monitoring	VPN
Wind Turbine type class	GL III B
Design Lifetime	25 years

Technical details for WT 2000 DF/100- 2 MW WTG by Inox

Sr. No.	Particulars	Details
1.	Rated power	2 MW
2.	Cut-in wind speed	3 m/s
3.	Rated wind speed	11 m/s
4.	Cut-out wind speed	20 m/s
5.	Hub height	80m
6.	Diameter	100.3 m
7.	Swept area	7894 m ²
8.	Estimated design Life time	25 years

The individual project activity details along with commissioning dates are mentioned below:-

S. No.	Project Owner	Machine ID	DOC9	Village	Taluka	District	State
1	D. J. Malpani	RGP2- 09	28-March-2016	Tulaheda	Ghatiya	Ujjain	Madhya Pradesh
2		RGP2- 08	29- March	Tulaheda	Ghatiya		
3		RGP2- 18	-2016	Tulaheda	Ghatiya		

⁹ Date Of commissioning

4		RGP2- 03		Tajpur	Mahidpur		
5		RGP2- 07		Ranaheda	Ghatiya		
6	D. J. Malpani	IWISL/2000/ 16-17/3826	31- March -2017	Ranipat	Muli	Surendran agar	Gujarat
7		IWISL/2000/ 16-17/3829					
8		IWISL/2000/ 16-17/3830					
9	D. J. Malpani	IWISL/2000/ 16-17/4060	31- March -2017	Pithavadi	Savarkund la	Amreli	Gujarat
10		IWISL/2000/ 16-17/4061		Bhenkara			
11		IWISL/2000/ 16-17/4062		Bhenkara			
12		IWISL/2000/ 16-17/4063		Bhenkara			
13		IWISL/2000/ 16-17/4064		Bhenkara			
14		IWISL/2000/ 16-17/4065		Senjal			
15		IWISL/2000/ 16-17/4066		Piyava			
16		IWISL/2000/ 16-17/4067	31- March -2017	Piyava			
17		IWISL/2000/ 16- 17/40678	31- March -2017	Piyava			
18		IWISL/2000/ 16-17/4350	31- March -2017	Piyava			
19		IWISL/2000/ 16-17/4489		Piyava			
20		IWISL/2000/ 16-17/4490		Piyava			
21		IWISL/2000/ 16-17/4491		Piyava			
22	D. J. Malpani	DJM 01	28- March -2017	Kanjikode	Palakkad	Palakkad	Kerala
23		DJM 02					
24		DJM 03					
25		DJM 05					
26		DJM 06					

27		DJM 07					
28		DJM 08					
29		DJM 09					
30	D. J. Malpani	ADD- 01	31- March	Navagaon	Dhar	Dhar	Madhya Pradesh
31		ADD- 06	-	Navagaon			
32		TIR- 11	2016	Athar			

During the Current Monitoring Period, all the WTGs were operational and the project activity has supplied 94,538 MWh of electricity, and thus contributing to 91,255 tCO₂e GHG reductions.

3.2 Deviations

2.3.1 Methodology Deviations

Not Applicable, as there are no methodological deviations.

2.3.2 Project Description Deviations

Deviation 1

This deviation is related to total capacity of the project. At the time of registration, the total capacity of the project envisaged was 66 MW. Till 3rd verification the capacity of the project was downsized to 60 MW. This is because of following reasons-

1. The earlier, 22 MW capacity wind project by D. J. Malpani at Kinfara site, Kerala has been downsized to capacity of 16 MW

The above deviation which is permanent in nature.is already approved during the 2nd monitoring period.

Deviation 2

The registered PDD mentioned three parameters like net electricity supplied to grid, electricity export by project and electricity import by project and net electricity is difference of export and import. Since PP have only one parameter data available i.e. data of net electricity supplied to grid through share certificate issued by state electricity board. Hence only single parameter of net electricity supplied to grid is considered for Gujarat plant. This does not have any impact on emission reductions. The deviation has already been approved during the previous verification and have no impacts on the applicability of the methodology, additionality or the appropriateness of baseline scenario

The deviation is requested during the current monitoring period.

3.3 Grouped Projects

Not Applicable, as this is not a grouped project activity.

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

Data / Parameter	$EF_{grid,OM,y}$
Data unit	tCO ₂ /MWh
Description	Operating Margin CO ₂ emission factor in year y
Source of data	Calculated from CEA database, Version 12, May 2017 ¹⁰
Value applied	0.9843
Justification of choice of data or description of measurement methods and procedures applied	Calculated as per “Tool to calculate the emission factor for an electricity system, version 06.0.0” as 3-year generation weighted average using data for the years 2013-2014, 2014-2015 & 2015- 2016. The data are obtained from “CO ₂ Baseline Database for Indian Power Sector” version 12.0, published by the Central Electricity Authority, Ministry of Power, Government of India.
Purpose of Data	For the calculation of the baseline emission
Comments	This parameter is fixed ex-ante for the entire crediting period.

Data / Parameter	$EF_{grid,BM,y}$
Data unit	tCO ₂ /MWh
Description	Build Margin CO ₂ emission factor in year y
Source of data	Calculated from CEA database, Version 12, May 2017 ¹¹
Value applied	0.9083
Justification of choice of data or description of measurement methods and procedures applied	Calculated as per “Tool to calculate the emission factor for an electricity system, version 05.0.0” BM is calculated ex-ante based on the most recent information available at the time of submission of PDD and is fixed for the entire crediting period. The data is obtained from “CO ₂ Baseline Database for Indian Power Sector” version 12.0, published by the Central Electricity Authority, Ministry of Power, Government of India.
Purpose of Data	For the calculation of the Baseline Emission
Comments	This parameter is fixed ex-ante for the entire crediting period.

Data / Parameter	$EF_{grid,CM,y}$
Data unit	tCO ₂ /MWh
Description	Combined Margin CO ₂ emission factor in year y
Source of data	Calculated from CEA database, Version 11, April 2016 ¹²
Value applied	0.9653

¹⁰ http://www.cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver12.pdf

¹¹ http://www.cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver12.pdf

¹² http://www.cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver12.pdf

Justification of choice of data or description of measurement methods and procedures applied	The combined margin emissions factor is calculated as follows: $EF_{grid,CM,y} = EF_{grid,OM,y} * W_{OM} + EF_{grid,BM,y} * W_{BM}$ Where: $EF_{grid,BM,y}$ = Build margin CO₂ emission factor in year y (tCO₂/MWh) $EF_{grid,OM,y}$ = Operating margin CO₂ emission factor in year y (tCO₂/MWh) W_{OM} = Weighting of operating margin emissions factor (%) = 75% W_{BM} = Weighting of build margin emissions factor (%) = 25%
Purpose of Data	For the calculation of the Baseline Emission
Comments	This parameter is fixed ex-ante for the entire crediting period

4.2 Data and Parameters Monitored

Data / Parameter	$EG_{PJ,y}$
Data unit	MWh
Description	Quantity of net electricity generation supplied by the project (Wind) plant/unit to the grid in year y
Source of data	Joint meter readings
Description of measurement methods and procedures to be applied	The value of net electricity generation supplied to the grid as per Joint Meter Reading Report forms the basis for calculation of the emission reductions; which can be cross checked from the invoice raised to DISCOM. Net electricity supplied to grid is calculated as the difference of the measured values of “export” and “import” of electricity through the dedicated SEB energy meter installed at the delivery point (i.e. the connected substation). Net electricity generated and supplied by the project (Wind) plant/unit to the grid = Electricity Export to the grid – Electricity Import from the grid Monthly meter readings are taken from the main and check meter installed at the substation and certified by the representatives of SEB Officials and the representatives of the project proponent.
Frequency of monitoring/recording	Continuous monitoring, hourly measurement and at least monthly recording
Value monitored	94,538 MWh
Monitoring equipment	Monitoring: Tri vector meter are used Data type: Measured Type of meter: Static type meter (Main & Check). Both are Bidirectional meters. Class of meter: 0.2s The Calibration details of the Energy Meter has been mentioned in Appendix-1 of the Monitoring Report.

QA/QC procedures to be applied	- The energy meter reading are taken on monthly basis - Energy meters will be calibrated once in a five year¹³ and faulty meters will be duly replaced immediately. - All the energy meters are under the control of state utility and calibration of energy meters is also under the jurisdiction of state utility. - The Net electricity exported to the grid can be cross checked against the invoice raised by the PP towards the DISCOM
Purpose of the data	Calculation of baseline emissions
Calculation method	-
Comments	The data would be archived electronically and maintained for the entire crediting period plus two years.

4.3 Monitoring Plan

Aim of monitoring

The monitoring methodology specified in the methodology requires that the project-monitoring plan to consist of monitoring of quantity of net electricity supplied to the grid in the year y. In order to monitor the mitigation of GHG due to the project activity, the total energy exported needs to be measured. The net energy supplied to grid by the project activity multiplied by emission factor for regional grid, would form the baseline for the project activity.

Since the baseline emission factor is based on an ex-ante determination, monitoring of this parameter is not required. The sole parameter for monitoring is the net electricity exported to the grid.

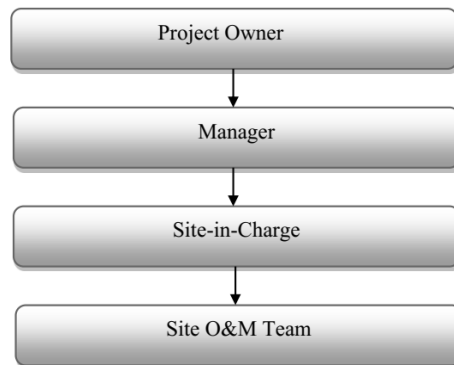
Monitoring roles and responsibilities

The operational and management structure implemented for data monitoring is as follows:

The monitoring plan is developed in accordance with the modalities and procedures for CDM/VCS project activities and is proposed for grid-connected wind power project being implemented in respective states in India. The monitoring plan, which is implemented by the project proponent describes about the monitoring organisation, parameters to be monitored, monitoring practices, quality assurance, quality control procedures, data storage and archiving.

The authority and responsibility for registration, monitoring, measurement, reporting and reviewing of the data rests with the project proponent. PP proposed the following structure for data monitoring, collection, data archiving and calibration of equipments for this project activity. The team comprises of the following members:

¹³ As per CEA regulation



PP has assigned the responsibility of operation and maintenance of WTGs to respective EPC contractor of wind turbines for each sites.

Responsibilities of Head: Overall functioning and maintenance of the project activity.

Responsibilities of Plant In-charge: Responsibility to maintain the data records, ensures completeness of data, and reliability of data (calibration of equipments).

Responsibilities of Shift In-charge: Responsibility for day to day data collection and maintains day to day log book for monitored data.

QA/QC procedures

The energy meters at the feeders are maintained and owned by Discom. Neither the project proponent nor the site personnel have any control over it. The records are cross-checked with the records of sold electricity to Discom/third party. The meters are calibrated by Discom at-least once in five years.

Data Archiving

Monthly data is archived electronically and in paper form and stored for the entire crediting period and two years thereafter.

Training and maintenance requirements

Training on the machine is an essential pre-requisite, to ensure necessary safety of man and machine. Further, in order to maximize the output from the WTGs, it is extremely essential, that the engineers and technicians understand the machines and keep them in good health. In order to ensure, that O&M team is deft at handling technical snags on top of the turbine, the necessity of ensuring that they are capable of climbing the tower with absolute ease and comfort has been established. Each and every site personnel is provided with proper training to meet the requirements of the Operations and maintenance. This ultimately leads to creativity in problem solving.

Apportioning Procedure

If any common metering is involved for project activity, then apportioning procedure will be involved which is under control of state electricity board. Based on the break-up sheets Project investor raises invoice to

DISCOM/ third party which forms the basis of cross-check for the net electricity generated. The Project investor has no role in the entire procedure of apportioning.

The project activity is located in Madhya Pradesh, Gujarat and Kerala states of India. In Indian scenario the monitoring, metering arrangement, apportioning procedure, calibration frequency and feeder arrangement is under control of respective state electricity board and PP do not have any control on it. Thus, there is possibility of changes in meters, feeders for the project activity. PP is getting the net electricity supplied to grid and based on this value invoice will be raised by PP. Hence feeder wise details of WTGs, metering arrangement, monitoring procedure etc are not mentioned in VCS PD.

Emergency Preparedness and Uncertainty Procedure:

In case Main meter or check meter is found to be outside the acceptable limits of accuracy or faulty or not functioning properly, it will be repaired, recalibrated or replaced as soon as possible. In the event that the Main meter is not in service as a result of maintenance, repairs or calibration, the check meter will be used. In case both the main and check meter are found to be outside the acceptable limits of accuracy or faulty or not functioning properly, both the meters shall be calibrated immediately and the error percentage found in the main meter during its calibration shall be applied to its metered energy data for the entire period since its last calibration to obtain the corrected value of net electricity exported to the grid.

In case the dates of a particular monitoring period do not match with the dates of the billing cycle, the net electricity exported to the grid would be calculated from:

- Apportioning the net electricity exported to grid, as recorded in the consolidated Share Certificate/JMR Report/Credit Notes certified by the respective state discom, based on the number of days in the monitoring period and the number of days for which Share Certificate/JMR Report/Credit Notes was prepared.

The calculated value after apportioning would be used for calculation of emission reductions during that period. During the current monitoring period, apportioning has not been done.

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

$$BE_y = EG_{PJ,y} * EF_{grid,CM,y}$$

Where:

BE_y: Baseline emissions in year y (tCO₂e/yr)

$EG_{PJ,y}$: Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the VCS project activity in year y (MWh/yr)

$EF_{grid,CM,y}$: Combined margin CO₂ emission factor for grid connected power generation in year y calculated using the latest version of the “Tool to calculate the emission factor for an electricity system” (tCO₂e/MWh)

Parameter	Unit	Value
$EG_{PJ,y}$	MWh	94,538
$EF_{grid,CM,y}$	tCO ₂ e	0.9653
BE_y	=	$94,538 * 0.9653$
	=	91,255 (Round down value)

5.2 Project Emissions

$PE_{FF,y} = 0$, As per para 37 of ACM0002 version 17, “For all renewable energy power generation project activities, emissions due to the use of fossil fuels for the backup generator can be neglected”. Hence, $PE_{FF,y} = 0$.

5.3 Leakage

As per para 60 of ACM0002 version 17, No leakage emissions need to be considered for the project activity. Hence, $LE_y = 0$.

5.4 Net GHG Emission Reductions and Removals

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
01-March-2020 to 31-December-2020	91,255	0	0	91,255
Total	91,255	0	0	91,255

It is to be noted here that as per the estimated emission reduction to be achieved from the project activity for the current monitoring period is 97,288 tCO₂e, whereas actual emission reductions achieved are 91,255 tCO₂e, which is approximately 6.20% lower than the estimated emission reductions. This is due to low PLF achieved during the current monitoring period as compared to the PLF in the registered project description

APPENDIX 1: CALIBRATION DETAILS

The Main and Check Meter details for Dhar Site, Madhya Pradesh are as follows:

Meter Details for WTG ID: TIR- 11			
Main Meter		Check Meter	
Make	Secure	Make	Secure
Meter Sl. No	XD500605	Meter Sl. No	XD500606
Accuracy Class	0.2 s	Accuracy Class	0.2 s
Calibration Date ¹⁴	19-March-2016	Calibration Date	21-March-2016
Due Date of Calibration	18-March-2021	Due Date of Calibration	20-March-2021

Meter Details for WTG ID: ADD- 01 & ADD- 06			
Main Meter		Check Meter	
Make	Secure	Make	Secure
Meter Sl. No	XD500602	Meter Sl. No	XD500603
Accuracy Class	0.2 s	Accuracy Class	0.2 s
Calibration Date ¹⁵	21-March-2016	Calibration Date	19-March-2016
Due Date of Calibration	20-March-2021	Due Date of Calibration	18-March-2021

The Main and Check Meter details for Ghatiya Site, Madhya Pradesh are as follows:

Meter Details for WTG ID: RGP2- 08 & RGP2- 09 at Feeder-1			
Main Meter		Check Meter	
Make	Secure	Make	Secure
Meter Sl. No	XD500608	Meter Sl. No	XD500609
Accuracy Class	0.2 s	Accuracy Class	0.2 s
Calibration Date ¹⁶	24-March-2016	Calibration Date	24-March-2016
Due Date of Calibration	23-March-2021	Due Date of Calibration	23-March-2021
Meter Details for WTG ID: RGP2- 18, RGP2- 03 & RGP2- 07 at Feeder-2			
Main Meter		Check Meter	
Make	Secure	Make	Secure
Meter Sl. No	Y0056943	Meter Sl. No	Y0056944
Accuracy Class	0.2 s	Accuracy Class	0.2 s

¹⁴ The frequency of calibrating the energy meter is once in 5 year. Hence, during the current Monitoring Period, the calibration certificates of the Main Meter & Check Meter are valid and therefore no error factor is applicable.

¹⁵ The frequency of calibrating the energy meter is once in 5 year. Hence, during the current Monitoring Period, the calibration certificates of the Main Meter & Check Meter are valid and therefore no error factor is applicable.

¹⁶ The frequency of calibrating the energy meter is once in 5 year. Hence, during the current Monitoring Period, the calibration certificates of the Main Meter & Check Meter are valid and therefore no error factor is applicable.

Calibration Date¹⁷	24-March-2016	Calibration Date	24-March-2016
Due Date of Calibration	23-March-2021	Due Date of Calibration	23-March-2021

The Main and Check Meter details for Gujarat sites are as follows:

Meter-1		Meter-2	
Main Meter		Check Meter	
Make	Secure	Make	Secure
Meter Sl. No	GJ 3710 A	Meter Sl. No	GJ 3711 A
Accuracy Class	0.2 s	Accuracy Class	0.2 s
Calibration Date¹⁸	30-January-17	Calibration Date	30-January-17
Due Date of Calibration	29-January-2022	Due Date of Calibration	29-January-2022

The Main and Check Meter details for Kinfara site, Kerala are as follows:

Meter Details for Feeder- 1			
Main Meter		Check Meter	
Make	L & T	Make	L & T
Meter Sl. No	16088079	Meter Sl. No	16088085
Accuracy Class	0.2 s	Accuracy Class	0.2 s
Calibration Date¹⁹	25-March-2017	Calibration Date	25-March-2017
Due Date of Calibration	24-March-2022	Due Date of Calibration	24-March-2022
Meter Details for Feeder- 2			
Main Meter		Check Meter	
Make	L & T	Make	L & T
Meter Sl. No	16088074	Meter Sl. No	16088092
Accuracy Class	0.2 s	Accuracy Class	0.2 s
Calibration Date²⁰	27-March-2017	Calibration Date	27-March-2017
Due Date of Calibration	26-March-2022	Due Date of Calibration	26-March-2022

¹⁷ The frequency of calibrating the energy meter is once in 5 year. Hence, during the current Monitoring Period, the calibration certificates of the Main Meter & Check Meter are valid and therefore no error factor is applicable.

¹⁸ The frequency of calibrating the energy meter is once in 5 year. Hence, during the current Monitoring Period, the calibration certificates of the Main Meter & Check Meter are valid and therefore no error factor is applicable.

¹⁹ The frequency of calibrating the energy meter is once in 5 year. Hence, during the current Monitoring Period, the calibration certificates of the Main Meter & Check Meter are valid and therefore no error factor is applicable.

²⁰ The frequency of calibrating the energy meter is once in 5 year. Hence, during the current Monitoring Period, the calibration certificates of the Main Meter & Check Meter are valid and therefore no error factor is applicable.

APPENDIX II: BREAKDOWN DETAILS

For Ghatiya M.P.Site

Breakdown Month	Site	Location No	Reason	Duration
Mar-20	Ghatiya, Ujjain, M.P.	-	-	0 hrs
Apr-20	Ghatiya, Ujjain, M.P.	DJMGT-05	error_safety_system_safety_system_ok_from_pitch	263 hrs 55 min
May-20	Ghatiya, Ujjain, M.P.	DJMGT-05, DJMGT-04	Force Majeure	36 hrs 1 min
Jun-20	Ghatiya, Ujjain, M.P.	DJMGT-01, DJMGT-02, DJMGT-03, DJMGT-04, DJMGT-05	error_safety_system_safety_system_ok_from_pitch; EL Tripped at Substation	211 hrs 56 min
Jul-20	Ghatiya, Ujjain, M.P.	DJMGT-05	Force Majeure, Force Majeure(Material Theft)	81 hrs 24 min
Aug-20	Ghatiya, Ujjain, M.P.	DJMGT-02	error_generator_speed_comparing	15 hrs 19 min
Sep-20	Ghatiya, Ujjain, M.P.	-	-	0 hrs
Oct-20	Ghatiya, Ujjain, M.P.	-	-	0 hrs
Nov-20	Ghatiya, Ujjain, M.P.	-	-	0 hrs
Dec-20	Ghatiya, Ujjain, M.P.	-	-	0 hrs

For Sadla Gujarat, Site

Breakdown Month	Site	Location No	Reason	Duration
Mar-20	Sadla, Surendranagar, Gujarat	SDLT-02, SDLT-05, SDLT-06	Maintenance; Stator breaker failed in closing when demanded to close; Hydraulic brake pressure reduced is out of range; CC101 fuse for cooling fans power supply is switched off or tripped; SLC: Tower vibration	626 hrs 59 min

			switch tripped; Governmenmt Stoppage	
Apr-20	Sadla, Surendranagar, Gujarat	SDLT-02, SDLT-05, SDLT-06	SLC: Tower vibration switch tripped; Generator water inlet temperature above limit; Generator water inlet temperature above limit; The value of the brake accumulator sensor signals is above error limit; tower vibration (acceleration peak-to-peak value) in non-drive-train direction delayed is above limit; Brake healthcheck timeout; Emergency Button TB100 pressed	384 hrs 47 min
May-20	Sadla, Surendranagar, Gujarat	SDLT-02, SDLT-05, SDLT-06	Hydraulic unit supply accumulator pressure below error limit; Earth Fault; The value of the brake accumulator sensor signals is above error limit; Vibration Sensor is defective; Hydraulic brake pressure reduced is out of range.	83 hrs 19 min
Jun-20	Sadla, Surendranagar, Gujarat	SDLT-02, SDLT-05, SDLT-06	Earth Fault; Rotor brake accumulator pressure below error limit; Speed measurement deviation delayed between generator and rotor speed; All tower-vibration sensors in drivetrain direction defective; Pitch is started but the Capacitor State is not hysteresis Charge; Gearbox oil offline filter feedback does not match demand.	48 hrs 59 min

Jul-20	Sadla, Surendranagar, Gujarat	SDLT-02, SDLT-05, SDLT-06	Yaw teeth lubrication is in maintenance state; Alarm that stator breaker control sequence state machine detected an error; Stator breaker failed in closing when demanded to close; Yaw converter is in state Error overload 2; Pitch is started but the Capacitor State is not hysteresis Charge; Blade 3: Diagnosis voltage is out of range.	96 hrs 09 min
Aug-20	Sadla, Surendranagar, Gujarat	SDLT-02, SDLT-05, SDLT-06	CC101 fuse for cooling fans power supply is switched off or tripped; Gearbox oil offline filter feedback does not match demand; Blade 2: IPS was active in wrong area; Generator side synchronization timeout; Pitch is started but the Capacitor State is not hysteresis Charge; Grid frequency from Sineax below operation range.	128 hrs 36 min
Sep-20	Sadla, Surendranagar, Gujarat	SDLT-02, SDLT-05, SDLT-06	Gearbox oil offline filter feedback does not match demand; Anemometer 1 communication error; Fuse for Sineax voltage measurement is open/broken; Earth Fault; tower vibration (acceleration peak-to-peak value) in non-drive-train direction delayed is above limit; Generator side synchronization timeout.	55 hrs 52 min

Oct-20	Sadla, Surendranagar, Gujarat	SDLT-02, SDLT-05, SDLT-06	CC101 fuse for cooling fans power supply is switched off or tripped; Vibration Sensor is defective; Anemometer 1 measurement error; Internal Shut Down; Gearbox oil offline filter feedback does not match demand; Generator side synchronization timeout.	65 hrs 02 min
Nov-20	Sadla, Surendranagar, Gujarat	SDLT-02, SDLT-05, SDLT-06	DC bus hardware over-voltage Fault; Hydraulic pump was running for too long time; Crowbar test failed 2 times in HealthCheck; Yaw teeth lubrication is in maintenance state; Anemometer 2 measurement error; SLC: Tower vibration switch tripped.	17 hrs 50 min
Dec-20	Sadla, Surendranagar, Gujarat	SDLT-02, SDLT-05, SDLT-06	Twisting protection switch has been opened; Blade bearing lubrication is in maintenance state; Yaw teeth lubrication is in maintenance state; SLC: Tower vibration switch tripped; Emergency Button TB100 pressed; Gearbox oil input temperature above error limit.	35 hrs 16 min

For Savarkundala, Gujarat Site

Breakdown Month	Site	Location No	Reason	Duration
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Mar-20	Savarkundala, Amreli, Gujarat	SVRT33, SVRT34, SVRT35, SVRT36, SVRT37, SVRT67, SVRT69, SVRT73, SVRT123, SVRT136, SVRT137, SVRT138, SVRT139	SLC: Tower vibration switch tripped; Crowbar test failed 2 times in HealthCheck; Generator side synchronization timeout; Yaw teeth lubrication is in maintenance state; More than 3 tower-vibration (acceleration peak-peak) warnings within specified time; Converter system initialization alarm; In rotor lock mode the rotor brake was triggered at too high rotor speed	619 hrs 35 min
Apr-20	Savarkundala, Amreli, Gujarat	SVRT33, SVRT34, SVRT35, SVRT36, SVRT37, SVRT67, SVRT69, SVRT73, SVRT123, SVRT136, SVRT137, SVRT138, SVRT139	SLC: Tower vibration switch tripped; Crowbar test failed 2 times in HealthCheck; The detected grid state from converter is faulted or not OK; Converter system communication handshake fault; Blade 1: IPS was active in wrong area; Wind direction difference error;	458 hrs 40 min
May-20	Savarkundala, Amreli, Gujarat	SVRT33, SVRT34, SVRT35, SVRT36, SVRT37, SVRT67, SVRT69, SVRT73, SVRT123, SVRT136, SVRT137, SVRT138, SVRT139	Yaw converter error has occurred, for error code see variable Glo.Yaw.ConErrNum; Hub Initialization error; The detected grid state from converter is faulted or not OK; twisting protection switch has been opened; Hydraulic pump was running for too long time; Crowbar test failed 2 times in HealthCheck.	724 hrs 50 min
Jun-20	Savarkundala, Amreli, Gujarat	SVRT33, SVRT34, SVRT35, SVRT36, SVRT37, SVRT67, SVRT69, SVRT73, SVRT123, SVRT136, SVRT137, SVRT138, SVRT139	TBC UPS module alarm; Hydraulic unit supply pressure - accumulator pressure difference; More than 3 tower-vibration (acceleration peak-peak) warnings within specified time; rotor brake pad 1 worn out over 75 %; The detected grid state from converter is faulted or not OK; Vibration Sensor is defective; gear oil pump pressure above limit	703 hrs 27 min

Jul-20	Savarkundala, Amreli, Gujarat	SVRT33, SVRT34, SVRT35, SVRT36, SVRT37, SVRT67, SVRT69, SVRT73, SVRT123, SVRT136, SVRT137, SVRT138, SVRT139	Stator breaker opened by undervoltage release because buffer not ready; Crowbar healthcheck timeout; Positive 15V power supply under-voltage Fault; Svi SLC communication error; Wind direction difference error; Line side hardware detected over-current Fault phase C; Hub grid fuse has opened.	693 hrs 11 min
Aug-20	Savarkundala, Amreli, Gujarat	SVRT33, SVRT34, SVRT35, SVRT36, SVRT37, SVRT67, SVRT69, SVRT73, SVRT123, SVRT136, SVRT137, SVRT138, SVRT139	Yaw converter error has occurred, for error code see variable Glo.Yaw.ConErrNum; Positive 15V LS gate drive power supply under-voltage Fault; SLC: Tower vibration switch tripped; The detected grid state from converter is faulted or not OK; DC bus software under-voltage Fault; rotor brake pad 1 worn out over 75 %	671 hrs 07 min
Sep-20	Savarkundala, Amreli, Gujarat	SVRT33, SVRT34, SVRT35, SVRT36, SVRT37, SVRT67, SVRT69, SVRT73, SVRT123, SVRT136, SVRT137, SVRT138, SVRT139	Crowbar test failed 2 times in HealthCheck; Pitch is started but the Capacitor State is not hysteresis Charge; Hydraulic unit supply accumulator pressure below error limit; The detected grid state from converter is faulted or not OK; Positive 15V LS gate drive power supply under-voltage Fault; Yaw teeth lubrication is in maintenance state.	537 hrs 37 min
Oct-20	Savarkundala, Amreli, Gujarat	SVRT33, SVRT34, SVRT35, SVRT36, SVRT37, SVRT67, SVRT69, SVRT73, SVRT123, SVRT136, SVRT137, SVRT138, SVRT139	Hydraulic pump was switched on too many times during time period; Stator breaker opened by undervoltage release because buffer not ready; Speed measurement generator over-speed fast stop; Crowbar test failed 2 times in HealthCheck; twisting protection switch has been opened; motor-protective switch for hydraulic pump is open	532 hrs 44 min

Nov-20	Savarkundala, Amreli, Gujarat	SVRT33, SVRT34, SVRT35, SVRT36, SVRT37, SVRT67, SVRT69, SVRT73, SVRT123, SVRT136, SVRT137, SVRT138, SVRT139	Crowbar test failed 2 times in HealthCheck; The detected grid state from converter is faulted or not OK; Blade 1: Pitch converter error; Vibration Sensor is defective; Stator breaker opened by undervoltage release because buffer not ready; Error at reading of converter parameter files	350 hrs 44 min
Dec-20	Savarkundala, Amreli, Gujarat	SVRT33, SVRT34, SVRT35, SVRT36, SVRT37, SVRT67, SVRT69, SVRT73, SVRT123, SVRT136, SVRT137, SVRT138, SVRT139	Blade Teeth lubrication unit fault; Hydraulic unit supply pressure - accumulator pressure difference; Hub healthcheck alarm; Vibration Sensor is defective; SLC triggered pitch safety run; Converter system fault is active.	182 hrs 47 min

For Kinfara, Palakkad, Kerela Site

Breakdown Month	Site	Location No	Reason	Duration
Mar-20	Kinfra, Palakkad, Kerela	DJM01, DJM02, DJM03, DJM05, DJM06, DJM07, DJM08, DJM09	Anemometer 2 measurement error; TBC UPS module alarm; SS-3: Safety chain converter or Sineax Cam; Nacelle Inspection; The detected grid state from converter is faulted or not OK; Stator breaker failed in closing when demanded to close.	436 hrs 07 min
Apr-20	Kinfra, Palakkad, Kerela	DJM01, DJM02, DJM03, DJM05, DJM06, DJM07, DJM08, DJM09	Anemometer 1 measurement error; Tower-vibration (acceleration peak-to-peak value) for non-drivetrain direction above alarm limit; Grid Loss; Anemometer 2 measurement error; The detected grid state from converter is faulted or not OK; Yaw bearing lubrication unit fault	770 hrs 19 min

May-20	Kinfra, Palakkad, Kerela	DJM01, DJM02, DJM03, DJM05, DJM06, DJM07, DJM08, DJM09	Blade bearing lubrication is in maintenance state; Tower-vibration (acceleration peak-to-peak value) for non-drivetrain direction above alarm limit; Hub healthcheck alarm; SS-13: Storage relay not reset; Converter system detected line voltage error; Crowbar healthcheck alarm.	492 hrs 20 min
Jun-20	Kinfra, Palakkad, Kerela	DJM01, DJM02, DJM03, DJM05, DJM06, DJM07, DJM08, DJM09	Converter line side synchronization error; Converter LSA: Hardware detected DC bus over voltage fault; tower vibration (acceleration peak-to-peak value) in non-drive-train direction delayed is above limit; Yaw converter is in state Error overload 2; An error occurred during the rotor brake health check; Converter GSA: Stator voltage feedback fault.	617 hrs 54 min
Jul-20	Kinfra, Palakkad, Kerela	DJM01, DJM02, DJM03, DJM05, DJM06, DJM07, DJM08, DJM09	Converter LSA: Power supply fault 24V; SS-3: Safety chain converter or Sineax Cam; SS-12: Hub drives; Converter line side synchronization error; Converter system detected line voltage error; Converter GSA: Encoder error persistence fault; Earth Fault.	179 hrs 14 min

Aug-20	Kinfra, Palakkad, Kerela	DJM01, DJM02, DJM03, DJM05, DJM06, DJM07, DJM08, DJM09	Internal Shutdown; Earth Fault; Converter line side synchronization error; Pitch is started but the Capacitor State is not hysteresis Charge; Speed measurement plausibility: Speed measurement is most likely not working; Rotor brake pad 1 on/off input missing; SS-3: Safety chain converter or Sineax Cam	626 hrs 15 min
Sep-20	Kinfra, Palakkad, Kerela	DJM01, DJM02, DJM03, DJM05, DJM06, DJM07, DJM08, DJM09	-	-
Oct-20	Kinfra, Palakkad, Kerela	DJM01, DJM02, DJM03, DJM05, DJM06, DJM07, DJM08, DJM09	Wind direction difference error; Anemometer 2 measurement error; Converter system fault is active; Blade 3: IPS was not active in feathering position; Converter line side synchronization error; Converter system detected line voltage error; SS-3: Safety chain converter or Sineax Cam	210 hrs 07 min
Nov-20	Kinfra, Palakkad, Kerela	DJM01, DJM02, DJM03, DJM05, DJM06, DJM07, DJM08, DJM09	The detected grid state from converter is faulted or not OK; TBC UPS module alarm; Speed measurement plausibility: Speed measurement is most likely not working; SS-3: Safety chain converter or Sineax Cam; Converter system fault is active; Wind	511 hrs 20 min

			direction difference error.	
Dec-20	Kinfra, Palakkad, Kerela	DJM01, DJM02, DJM03, DJM05, DJM06, DJM07, DJM08, DJM09	Grid Breakdown; SS-3: Safety chain converter or Sineax Cam; Hub healthcheck alarm; Wind direction difference error; Health check error; Converter healthcheck timeout; Blade teeth lubrication is in maintenance state.	190 hrs 49 min

For Dhar M.P. Site

Breakdown Month	Site	Location No	Reason	Duration
Mar-20	Dhar, M.P.	Feeder-1, Feeder-2, GREDR-01, GREDR-03, GREDR-04, GREDR-05, GREDR-06, GREDR-07, GREDR-08, GREDR-09, GREDR-10, GREDR-12, GREDR-13,	error_converter_generator_contactor; error_acceleration_nacelle_limit; error_generator_temperature_limit; error_profi_node_43_diag; EL Tripped at Substation; error_converter_not_ready	104 hrs 35 min

Apr-20	Dhar, M.P.	Feeder-1, Feeder-2, GREDR-01, GREDR-03, GREDR-04, GREDR-05, GREDR-06, GREDR-07, GREDR-08, GREDR-09, GREDR-10, GREDR-12, GREDR-13,	error_converter_signal_DC_link_min; error_hydraulic_oil_level; error_generator_speed_comparing; error_generator_speed_critical_speed; error_profi_node_20_diag; error_acceleration_nacelle_limit; error_generator_speed_mode_standstill	215 hrs 32 min
May-20	Dhar, M.P.	Feeder-1, Feeder-2, GREDR-01, GREDR-03, GREDR-04, GREDR-05, GREDR-06, GREDR-07, GREDR-08, GREDR-09, GREDR-10, GREDR-12, GREDR-13,	error_generator_temperature_limit; Mechanical Yearly Maintenance; error_safety_system_safety_system_ok_from_pitch; error_acceleration_nacelle_limit; error_safety_system_prog_ts_gr1_out_error; error_converter_step_up_IGBT; Mechanical Yearly Maintenance	305 hrs 40 min
Jun-20	Dhar, M.P.	Feeder-1, Feeder-2, GREDR-01, GREDR-03, GREDR-04, GREDR-05, GREDR-06, GREDR-07, GREDR-08, GREDR-09, GREDR-10, GREDR-12, GREDR-13,	EL Tripped at Substation; error_converter_signal_DC_current_overcurrent; error_profi_node_41_diag; error_converter_signal_IGBT_overcurrent_peak; Quarterly Visual Maintenance; Preventive Action : Others (CCV checking work)	238 hrs 36 min
Jul-20	Dhar, M.P.	Feeder-1, Feeder-2, GREDR-01, GREDR-03, GREDR-04, GREDR-05, GREDR-06, GREDR-07, GREDR-08, GREDR-09, GREDR-10, GREDR-12, GREDR-13,	error_generator_temperature_limit; Feeder Breakdown; error_profi_node_20_diag; error_tower_cooling_fan_feedback; error_pitch_power_supply_2; error_yaw_right_feedback; Individual VCB tripped	152 hrs 42 min
Aug-20	Dhar, M.P.	Feeder-1, Feeder-2, GREDR-01, GREDR-03, GREDR-04, GREDR-05, GREDR-06, GREDR-07, GREDR-08, GREDR-09, GREDR-10, GREDR-12, GREDR-13,	EL Tripped at Substation; error_converter_generator_contactor; error_safety_system_safety_system_ok_from_pitch; Preventive Action : Failure Rectification; error_generator_speed_critical_speed; error_converter_not_ready; error_pitch_capacitor_voltage_hi_2	213 hrs 51 min

Sep-20	Dhar, M.P.	Feeder-1, Feeder-2, GREDR-01, GREDR-03, GREDR-04, GREDR-05, GREDR-06, GREDR-07, GREDR-08, GREDR-09, GREDR-10, GREDR-12, GREDR-13,	Half Yearly Maintenance; error_generator_speed_critical_speed; error_converter_generator_contactor; error_profi_node_41_diag; error_converter_not_ready; Preventive Action : Failure Rectification; error_converter_signal_DC_link_min	76 hrs 08 min
Oct-20	Dhar, M.P.	Feeder-1, Feeder-2, GREDR-01, GREDR-03, GREDR-04, GREDR-05, GREDR-06, GREDR-07, GREDR-08, GREDR-09, GREDR-10, GREDR-12, GREDR-13,	error_converter_not_ready; error_converter_signal_DC_current_overcurrent; EL Tripped at Substation; error_profi_node_20_diag; Preventive Action :Other's; error_converter_step_up_IGBT; error_generator_speed_critical_speed	294 hrs 34 min
Nov-20	Dhar, M.P.	Feeder-1, Feeder-2, GREDR-01, GREDR-03, GREDR-04, GREDR-05, GREDR-06, GREDR-07, GREDR-08, GREDR-09, GREDR-10, GREDR-12, GREDR-13,	Preventive Action : Visual Inspection; error_safety_system_safety_system_ok_from_pitch; error_converter_signal_DC_link_min; error_converter_generator_contactor; error_profi_node_20_diag; Preventive Action : Others	79 hrs 01 min
Dec-20	Dhar, M.P.	Feeder-1, Feeder-2, GREDR-01, GREDR-03, GREDR-04, GREDR-05, GREDR-06, GREDR-07, GREDR-08, GREDR-09, GREDR-10, GREDR-12, GREDR-13,	Preventive Action : Failure Rectification; error_hydraulic_oil_level; Electrical Yearly Maintenance; error_profi_node_42_diag; error_grid_current_limit; error_converter_signal_DC_link_min; EL Tripped at Substation	231 hrs 01 min