



Verification Report for

Project : Amaravathi Textiles PVT LTD (Solar 10MW)

UCR Project ID : 144

Name of Verifier	SQAC Certification Pvt. Ltd.
Date of Issue	June 07, 2022
Project Proponent	M/s Amaravathi Textiles Private Limited
UCR Project Aggregator	Energy Advisory Services Pvt. Ltd.
Work carried by	Mr. Santosh Nair
Work reviewed by	Mr. Praful Shinganapurkar

Summary:

SQAC Certification Pvt. Ltd. has performed verification of the “10 MW Solar Grid Power Project Amaravathi Textiles, Nellore, Andhra Pradesh, India” for generating electricity from solar, on the basis of UCR criteria. This is a single project activity of capacity 10 MW, which is a ground mounted grid connected solar power generation project supplying renewable power to the Transmission Corporation of Andhra Pradesh Limited (APTRANSCO) in the District of Nellore, in the state of Andhra Pradesh, in India. The purpose of this plant installation and power generation is for grid supply.

Verification for the period : : **21/06/2015 to 31/12/2021**

The GHG emission reductions were calculated on the basis of UCR Protocols which draws reference from, UCR Protocol Standard Baseline, Type I (Renewable Energy Projects) UNFCCC Methodology Category AMS I.D.: “Grid connected renewable electricity generation” Ver 18. Owing to the Covid pandemic, the verification was done remotely by way of video calls / verification, phone calls and submission of documents for verification through emails.

SQAC is able to certify that the emission reductions from the 10 MW Solar Grid Power Project Amaravathi Textiles, Nellore, Andhra Pradesh, India (UCR ID – 144) for the period **21/06/2015 to 31/12/2021** amounts to **93,139 CoUs** (93,139 tCO₂eq)



Detailed Verification Report:

Purpose:

The purpose of the proposed project activity is to generate electricity using a clean and renewable source of energy i.e., solar radiation. The project activity of 10 MWh (i.e., 10000 kWh) is the installation and operation of a solar power plant in Nellore district in the state of Andhra Pradesh as per the details listed below:

Village : Nellore Palem
District : Nellore
Type : Ground mounted
Total installed capacity kW : 10000
Commissioning date : 31/03/2015

The project activity uses Poly Crystalline solar photovoltaic technology to generate clean energy.

Scope:

The scope covers verification of emission reductions from the project - 10 MW Solar Grid Power Project Amaravathi Textiles, Energy Project in Nellore, Andhra Pradesh (UCR ID – 144)


Criteria:

Verification criteria is as per the requirements of UCR Standard.

Description of project:

The project activity is using clean renewable solar energy to produce electricity. The applied technology is considered to be one of the most environment friendly technologies available as the operation of the Solar photovoltaic does not emit any GHGs or any other harmful gases unlike the operation of conventional power plants.

Parameter	Description	
Total number of Photovoltaic Modules	18750	22330
Rating of Photovoltaic Module	310 Wp	255 Wp
Technology	Poly Crystalline Silicon	
Meter make	Secure (P) 300	
Main meter number	APX00412	
Check Meter number	APX00413	



Jinko
Solar
Building Your Trust in Solar

Jinko Solar Co., Ltd
NO.1 Jinko Road Shangrao Economic Development Zone
Jiangxi Province 334100 China
www.jinkosolar.com

PHOTOVOLTAIC MODULE

Solar Module Type : JKM310PP-72

Maximum Power	(Pmax)	310W
Power Tolerance		0~+3%
Maximum Power Voltage	(Vmp)	37.0V
Maximum Power Current	(Imp)	8.38A
Open Circuit Voltage	(Voc)	45.9V
Short Circuit Current	(Isc)	8.96A
Nominal Operating Cell Temp	(NOCT)	45±2°C
Maximum System Voltage		1000VDC
Maximum Series Fuse Rating		15A
Operating Temperature		-40°C~+85°C
Application Class		A
Weight		26.5(kg)
Dimension		1956×992×40(mm)



STC: 1000W/m², AM1.5, 25°C


⚡ WARNING


ONLY qualified personnel should install or perform maintenance work on these modules


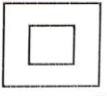
BE AWARE of dangerous high DC voltage when connecting modules

DO NOT damage or scratch the rear surface of the module









V7



ReneSola
ReneSola Jiangsu Ltd

<http://www.renesola.com/>
No.27, Qingyuan Road (East), Yixing
Economic Development Zone, Yixing City,
Jiangsu Province, 214200 P.R. China
Tel:+86 510 87128055 +86 21 64072288

Module Type:JC255M-24/Bb


Maximum Power (Pmax)	255W	Power Tolerance	0/+5W
Open Circuit Voltage(Voc)	37.5V	Short Circuit Current(Isc)	8.86A
Maximum Power Voltage(Vmp)	30.4V	Maximum Power Current(Imp)	8.39A
Maximum System Voltage	1000VDC	Maximum Series Fuse Rating	20A
Dimension(L*W*H)	1640*992*40mm	Weight	19Kg


All technical data at standard test condition
AM=1.5 E=1000W/m² Tc=25°C



⚡ WARNING! ELECTRICAL HAZARD


This unit produces electrical power when exposed to light. Cover glass before opening terminal junction box.

For field connections,
use minimum 4mm² copper wires insulated for a minimum 90°C







420406m4a255

Module Application: Class A

The total GHG emission reductions achieved in this monitoring period is as follows:

Summary of the Project Activity and ERs Generated for the Monitoring Period	
Start date of this Monitoring Period	21/06/2015
Carbon credits claimed up to	31/12/2021
Total ERs generated in this crediting period (tCO _{2eq})	93,139 tCO _{2eq}
Leakage	0
Project Emissions	0

The baseline scenario identified is:

- In the absence of the project activity, the equivalent amount of electricity would have been imported from the regional grid (which is connected to the unified Indian Grid system (Southern Grid), which is carbon intensive due to predominantly sourced from fossil fuel-based power plants.

Level of Assurance:

The verification report is based on the information collected through interviews conducted over video calls / phone calls, supporting documents provided during the verification, Project Concept Note (PCN) / Monitoring Report (MR), submitted to SQAC. The verification opinion is assured provided the credibility of all the above.

Verification Methodology:

Review of the following documentation was done by SQAC Verifier, Mr. Santosh Nair, who is experienced in such projects.

- Project Concept Note (PCN)
- Monitoring Report (MR)
- Commissioning Report
- Calibration report
- Data provided upon request of all the documents of the related projects

Sampling:

Not applicable

Persons interviewed:

1. Mr. Praveen : M/s. Amaravathi Textiles Private Limited
2. Mr. Sri Ram : M/s. Energy Advisory Services Pvt. Ltd.
3. Ms. Vasavi : M/s. Energy Advisory Services Pvt. Ltd.

Documentation Verified:

- Project Concept Note (PCN)
- Monitoring Report (MR)
- Calibration Reports
- Joint Meter Reading (JMR)
- Energy Meter
- M/s. Amaravathi Textiles Private Limited Invoices
- Breakdown Reports
- Commissioning Certificates

Applied methodologies and standardized baselines :

UCR Protocol Standard Baseline

AMS.I.D – Grid connected renewable electricity generation (Version 18.0)

PETE TRANSFORMERS **PETE - Hammond**
Power Solutions Pvt. Ltd.
HYDERABAD, INDIA.

TRANSFORMER TO IS : 2026 - 2011

RATED	k.V.A.	2175	TYPE OF COOLING	ONAN
RATED	H.V. V.	33000	OIL TEMP. RISE	50
RATED	L.V.1 V.	380	Wdg. TEMP. RISE	55
RATED	L.V.2 V.	380	IMPEDANCE VOLTS	% 6.70
RATED	L.V.3 V.	380	VOLUME OF OIL	Ltrs. 2540
RATED	H.V. A.	37.1	MASS OF OIL	kg. 2160
RATED	L.V.1 A.	1076.2	UNTANKING MASS	kg. 3280
RATED	L.V.2 A.	1076.2	TOTAL MASS	kg. 8130
RATED	L.V.3 A.	1076.2	CONN. SYMBOL	YNd11d11d11
PHASES		3	FREQUENCY	Hz. 50
YEAR OF MFG.		2015	MAKER'S SERIAL No.	10502
INSULATION LEVEL	LI 170 AC 70 / LI-AC3			
CUSTOMER NAME	M/s. Nature Born Projects Pvt. Ltd.			
CUSTOMER'S REF.	NBPL/SP09/01/2014-15. Date:08.01.2015			

SWITCH POSITION H.V. VOLTS

1.	36300
2.	35475
3.	34650
4.	33825
5.	33000
6.	32175
7.	31350
8.	30525
9.	29700

SERVOMAX **SERVOMAX INDIA LIMITED**
HYDERABAD - 500 051. A.P., INDIA
WEBSITE : www.servomax.net

REFERENCE STANDARD IS : 2026-2011

RATED	k.V.A.	2750	TYPE OF COOLING	ONAN
RATED	H.V. V.	33000	YEAR OF MFG.	2015
RATED	L.V.1 V.	380	FREQUENCY Hz	50
RATED	L.V.2 V.	380	OIL TEMP. RISE	50
RATED	L.V.3 V.	380	Wdg. TEMP. RISE	55
RATED	H.V. A.	47	IMPEDANCE VOLTS	% 6.70
RATED	L.V.1 A.	1093	VOLUME OF OIL	Ltrs. 4050
RATED	L.V.2 A.	1093	WL OF OIL	Kg. 3440
RATED	L.V.3 A.	1093	UNTANKING WT.	Kg. 4980
PHASES		3	TOTAL WT.	Kg. 10930
CONN SYMBOL	YNd11d11d11			
MAKER'S SERIAL NO.	2175 - 05 - 2015 - 530			
CUSTOMER'S REF.	M/s. NATURE BORN PROJECTS PVT LTD.,			

PETE TRANSFORMERS **PETE - Hammond**
Power Solutions Pvt. Ltd.
HYDERABAD, INDIA.

TRANSFORMER TO IS : 2026 - 2011

RATED	k.V.A.	2750	TYPE OF COOLING	ONAN
RATED	H.V. V.	33000	OIL TEMP. RISE	50
RATED	L.V.1 V.	380	Wdg. TEMP. RISE	55
RATED	L.V.2 V.	380	IMPEDANCE VOLTS	% 6.70
RATED	L.V.3 V.	380	VOLUME OF OIL	Ltrs. 3400
RATED	H.V. A.	48.1	MASS OF OIL	kg. 2890
RATED	L.V.1 A.	1044.5	UNTANKING MASS	kg. 4550
RATED	L.V.2 A.	1044.5	TOTAL MASS	kg. 10670
RATED	L.V.3 A.	1044.5	CONN. SYMBOL	YNd11d11d11
PHASES		3	FREQUENCY	Hz. 50
YEAR OF MFG.		2015	MAKER'S SERIAL No.	10501
INSULATION LEVEL	LI 170 AC 70 / LI-AC3			
CUSTOMER NAME	M/s. Nature Born Projects Pvt. Ltd.			
CUSTOMER'S REF.	NBPL/SP09/01/2014-15. Date:08.01.2015			

SWITCH POSITION H.V. VOLTS

1.	36300
2.	35475
3.	34650
4.	33825
5.	33000
6.	32175
7.	31350
8.	30525
9.	29700

SERVOMAX **SERVOMAX INDIA LIMITED**
HYDERABAD - 500 051. A.P., INDIA
WEBSITE : www.servomax.net

REFERENCE STANDARD IS : 2026-2011

RATED	k.V.A.	2580	TYPE OF COOLING	ONAN
RATED	H.V. V.	33000	YEAR OF MFG.	2015
RATED	L.V.1 V.	380	FREQUENCY Hz	50
RATED	L.V.2 V.	380	OIL TEMP. RISE	50
RATED	L.V.3 V.	380	Wdg. TEMP. RISE	55
RATED	H.V. A.	45	IMPEDANCE VOLTS	% 6.57
RATED	L.V.1 A.	980	VOLUME OF OIL	Ltrs. 4030
RATED	L.V.2 A.	980	WL OF OIL	Kg. 3425
RATED	L.V.3 A.	980	UNTANKING WT.	Kg. 4900
PHASES		3	TOTAL WT.	Kg. 10750
CONN SYMBOL	Ynd11d11d11			
MAKER'S SERIAL NO.	2175 - 05 - 2015 - 530			
CUSTOMER'S REF.	M/s. NATURE BORN PROJECTS PVT LTD.			

SWITCH POSITION H.V. VOLTS

1.	36300
2.	35475
3.	34650
4.	33825
5.	33000
6.	32175
7.	31350
8.	30525
9.	29700



Application of methodologies and standardized baselines

References to methodologies and standardized baselines

SECTORAL SCOPE – 01 Energy industries (Renewable/Non-renewable sources)

TYPE I – Renewable Energy Projects

CATEGORY – AMS. I.D. – Grid connected renewable electricity generation (Version 18.0)

Applicability of methodologies and standardized baselines

This project activity involves generation of grid connected electricity from the construction and operation of a new solar power-based power project. The project activity has installed capacity of 10 MW which will qualify for a small-scale project activity under Type-I of the Small-Scale methodology. The project status is corresponding to the methodology AMS-I.D., version 18 and applicability of methodology is discussed below:

This project is included within the UCR Standard Positive List of technologies and are within the small-scale CDM thresholds (e.g., installed capacity up to 15 MW). The positive list comprises of: (a) The grid-connected renewable electricity generation technologies of installed capacity up to 15 MW, (b) Solar technologies (photovoltaic and solar thermal electricity generation);
Project activity involves installation of grid-connected solar photovoltaic power generation with capacity 10MW which is less than 15MW.
The project activity involves installation of Solar PV (SPV). Hence, the activity is not a Hydro power project.
The project activity was commissioned in two phases. In the first phase 5MW was installed and within the same year of Phase 1 commissioning another 5MW was added, hence the total capacity of the project activity is 10MW and below the 15 MW threshold
The project activity is a new installation, it does not involve any retrofit measures nor any replacement.
Landfill gas, waste gas, wastewater treatment and agro-industries projects are not relevant to the project activity. No biomass is involved, the project is only a solar power project.
The technology/measure allowed under the grid connected Solar PV based generation systems displace equivalent quantity of electricity from the regional grid in India. The testing/certifications; all the equipment of the solar project activity will be complying with applicable national/ international standards. The above details may be verified from one or more of the following documents: <ul style="list-style-type: none">• Technology Specification provided by the technology supplier• Purchase order copies• EPC contracts• Power purchase agreement• Project commissioning certificates
The project activity is a voluntary coordinated action
As per the Ministry of Environment and Forest (MoEF), Govt. of India Office Memorandum dated 13/05/2011, it had received specific clarification regarding the applicability of EIA Notification, 2006 in respect of Solar Photo Voltaic (PV) Power plants. It was further clarified in the above memorandum

that both Solar PV power projects are not covered under the ambit of EIA Notification, 2006 and no environment clearance is required for such projects under provisions thereof.
The project activity comprises of a renewable energy generation through installation of solar photovoltaic modules and will displace electricity from the regional grid by supplying to the grid itself. Hence this methodology is applicable and fulfilled.
The project activity involves installation of new power plants at listed sites where there was no renewable energy power plant operating prior to implementation of project.

Applicability of double counting emission reductions

The project is not registered with any other voluntary market (National or International). Agreement for Double Counting Avoidance from Proponent has been provided duly signed on 09.05.2022

Project boundary, sources and greenhouse gases (GHGs)

As per applicable methodology AMS.I.D. Version 18.0, "The spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system." Thus, the project boundary includes the Solar Photovoltaic Plant and the Indian grid system.

The project boundary includes the physical, geographical site(s) of:

	Source	GHG	Included?	Justification/Explanation
Baseline	Grid connected electricity	CO2	Included	Major source of emission
		CH4	Excluded	Excluded for simplification. This is conservative.
		N2O	Excluded	Excluded for simplification. This is conservative.
Project Activity	Greenfield Solar Power Project	CO2	Excluded	Excluded for simplification. This is conservative.
		CH4	Excluded	Excluded for simplification. This is conservative.
		N2O	Excluded	Excluded for simplification. This is conservative.

Establishment and description of baseline scenario (UCR Protocol)

As per para 19 of the approved consolidated methodology AMS-I.D. Version 18.0, if the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the following:

“The baseline scenario is that the electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid”.

The project activity involves setting up of a new Solar Photovoltaic Plant to harness the green power from Solar energy and sell it to the grid. In the absence of the project activity, the equivalent amount of power would have been generated by the operation of grid-connected fossil fuel-based power plants and by the addition of new fossil fuel-based generation sources into the grid. The power produced at grid from the other conventional sources which are predominantly fossil fuel based. Hence, the baseline for the project activity is the equivalent amount of power produced at the Indian grid.

A "grid emission factor" refers to a CO₂ emission factor (tCO₂/MWh) which will be associated with each unit of electricity provided by an electricity system. The UCR recommends an emission factor of 0.9 tCO₂/MWh for the 2015-2020 years as a fairly conservative estimate for Indian projects not previously verified under any GHG program. Also, for the vintage 2021, the combined margin emission factor calculated from CEA database in India results into same emission factors as that of the default value. Hence, the same emission factor has been considered to calculate the emission reduction.

Net GHG Emission Reductions and Removals

Thus, $ER_y = BE_y - PE_y - LE_y$

Where:

ER_y = Emission reductions in year y (tCO₂/y)

BE_y = Baseline Emissions in year y (t CO₂/y)

PE_y = Project emissions in year y (tCO₂/y)

LE_y = Leakage emissions in year y (tCO₂/y)

a) Baseline Emissions

Baseline emissions include only CO₂ emissions from electricity generation in power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants.

The baseline emissions are to be calculated as follows: $BE_y = EG_{PJ,y} \times EF_{grid,y}$

Where:

BE_y = Baseline emissions in year y (t CO₂)

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

$EF_{grid,y}$ = UCR recommended emission factor of 0.9 tCO₂/MWh has been considered, this is conservative as compared to the combined margin grid emission factor which can be derived from Database of Central Electricity Authority (CEA), India. (Reference: General Project Eligibility Criteria and Guidance, UCR Standard, page 4)

Issuance Period: 06 years, 06 months – 21/06/2015 to 31/12/2021

$(BE_y) = 103488 \text{ MWh} * 0.9 \text{ tCO}_2/\text{MWh} = 93139 \text{ tCO}_2\text{e}$ (i.e. 93,139 CoUs)

Total baseline emission reductions $(BE_y) = 93,139 \text{ CoUs}$ (93,139 tCO₂eq)

Annual baseline emission reductions (BE_y)

Year	Emission Reductions (tCO ₂ eq)
2015	4,346
2016	16,094
2017	14,915
2018	15,534
2019	14,946
2020	13,483
2021	13,821
Total	93,139

b) Project Emissions

As per AMS.I.D. Version 18.0, only emission associated with the fossil fuel combustion, emission from operation of geo-thermal power plants due to release of non-condensable gases, emission from water reservoir of Hydro should be accounted for the project emission. Since the project activity is a solar power project, project emission for renewable energy plant is nil. Thus, **PE_y = 0**.

c) Leakage

As per AMS.I.D, Version 18.0, 'If the energy generating equipment is transferred from another activity, leakage is to be considered.' In the project activity, there is no transfer of energy generating equipment and therefore the leakage from the project activity is considered as zero. Hence, **LE_y = 0**

$$\begin{aligned}ER_y &= BE_y - PE_y - LE_y \\&= 93,139 - 0 - 0 \\&= 93,139\end{aligned}$$

Total Emission Reductions (ER_y) = 93,139 CoUs (93,139 tCO₂eq)

Conclusions:

Based on the audit conducted on the basis of UCR Protocol, which draws reference from UCR Protocol Standard Baseline, AMS.I.D – Grid connected renewable electricity generation (Version 18.0), the documents submitted during the verification including the Data, Project Concept Note (PCN) / Monitoring Report (MR), SQAC is able to certify that the emission reductions from the project - 10 MW Solar Grid Power Project Amaravathi Textiles, Nellore, Andhra Pradesh (UCR ID – 144) for the period **21/06/2015 to 31/12/2021** amounts to **93,139 CoUs (93,139 tCO₂eq)**