Verification Report for

Project : TEIL Biomass Grid Supply Power Project, Milaknarayanpur, Uttar Pradesh

UCR Project ID : 298

Name of Verifier	SQAC Certification Pvt. Ltd.
Date of Issue	October 11, 2023
Project Proponent	Triveni Engineering and Industries Ltd. (TEIL)
UCR Project Aggregator	Carbon Equalizers, Katni
Work carried by	Mr. Santosh Nair
Work reviewed by	Mr. Praful Shinganapurkar

Summary:

SQAC Certification Pvt. Ltd. has performed verification of the "TEIL Biomass Grid Supply Power Project, Milaknarayanpur, Uttar Pradesh, India". The purpose of the project activity is to generate electricity using renewable biomass and thereby reduce GHG emissions by displacing fossil fuel dominated grid-based electricity with biomass based renewable electricity. The electricity produced by the project is directly contributing to climate change mitigation by reducing the anthropogenic emissions of greenhouse gases (GHGs) into the atmosphere by displacing an equivalent amount of fossil power at grid.

Verification for the period**: 01/01/2013 to 31/12/2021** (09 years 0 months).

The GHG emission reductions were calculated on the basis of UCR Standard for Baseline Grid Emission Factor, CDM UNFCCC Small-scale Methodology, AMS-ID: Grid connected renewable electricity generation, Ver 18. 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 TEIL Biomass Grid Supply Power Project, Milaknarayanpur, Uttar Pradesh, India, (UCR ID – 298) for the period **01/01/2013 to 31/12/2021** amounts to **79,050 tCO_2 (79,050 CoUs)**

Detailed Verification Report:

Purpose:

The project activity involves the commissioning of two biomass boilers (capacities 90 TPH and 40 TPH) with two associated back pressure turbines (capacities 10MW and 3MW). The first turbine (10MW) was commissioned on 19/02/2007, which is the start date of this UCR project activity.

As per the power purchase agreement (PPA) between the state electricity board (UPPCL) and project proponent, dated 25/06/2012, the project activity generates a total of 13 MW of power and supplies/exports approximately 5 MW of this bagasse based (renewable) power to the grid. The project activity is hence the construction and operation of a power plant/unit that uses renewable energy sources and supplies electricity to the grid. The implementation of the project does not result in an increase in the processing capacity of the raw input or any other changes in the sugar manufacturing process. The date of first grid synchronisation with the 33KV line is August/September 2012.

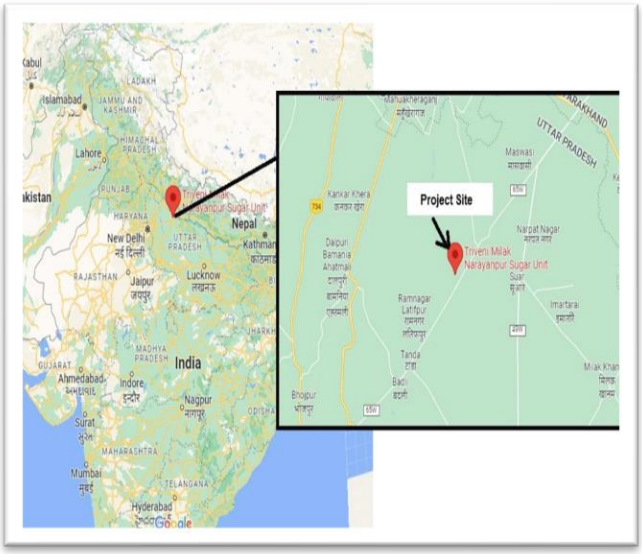




The power generation is 11 KV, stepped up to 33 KV, and synchronization is with the 132 KV substation of UPPCL (substation at Tanda, District: Rampur). All the biomass used at the site qualifies under the definition of biomass residues as outlined in the methodology, i.e., the biomass residue is a by-product of agricultural activities and no other types of biomass is used. In the case of the project activity, the biomass residue is bagasse, which is generated from the crushing of sugar cane.

Location of project activity:

Country : India
Post : Dadiyal,
Village : Milaknarayanpur,
Tehsil : Sawar,
District : Rampur,
State : Uttar Pradesh (UP)
Latitude : 29° 1' 57.972'' N
Longitude : 78° 59' 24.612'' E





Scope:

The scope covers verification of emission reductions from the project - TEIL Biomass Grid Supply Power Project, Milaknarayanpur, Uttar Pradesh, India, (UCR ID – 298).

Criteria:
Verification criteria is as per the requirements of UCR Standard.

Description of project:

The project TEIL Biomass Grid Supply Power Project, Milaknarayanpur, Uttar Pradesh is located at Post: Dadiyal, Village: Milaknarayanpur, Tehsil: Sawar, District: Rampur, State: Uttar Pradesh (UP), Country: India (Pin: 244925).

The UCR project activity is a grid-connected bagasse-based cogeneration power plant with a high-pressure steam-turbine configuration. The UCR project activity is the electricity generation capacity and the installation of facilities for allowing the export of electricity to the regional grid.

The project activity comprises of the following:

BOILER DETAIL		
Capacity	40 TPH	90 TPH
Working Pressure	21 KG/SQCM	45 KG/SQCM
Temperature	340 DEG C	440 DEG C
Make	Texmaco	IJT
Type	DUMPING GRATE	DUMPING GRATE
Year of Installation	2007	2007

TG SET DETAIL		
TURBINE	3MW	10MW
STRAIGHT BACK PRESSURE		
Pressure	21 KG/SQCM	44 KG/SQCM
Temp	335 DEG C	440 DEG C
Ext Pressure	1.2 ATA	1.5 ATA
RPM	8250	8303
Make	TRIVENI	TRIVENI
Gen Voltage	0.4 KV	11 KV
Transformer	8 MVA, 11/33 KVA	

PERFORMANCE TEST REPORT [AS PER ASME -PTC 4.0]
M/s. TRIVENI ENGINEERING AND INDUSATRIES LTD, RAMPUR.

As per the contract with M/s TREVENI ENGINEERING & INDUSTRIES LTD. RAMPUR , M/s ISGEC JOHN THOMPSON (IJT) has designed, manufactured, supplied, erected and commissioned one numbers of 90 TPH, 45 Kg/cm²(g), 440 ± 5 °C bagasse fired boiler.

To prove the contractual guarantee parameters, performance tests were conducted by ISGEC JOHN THOMPSON witnessed by M/s TRIVENI ENGINEERING & INDUSTRIES LTD., representatives on 29.02.2008

VARIOUS ANNEXURES

Annexure - I	Efficiency calculation as per the ASME PTC 4.0, code (Heat loss method)
Annexure - II	Efficiency correction for ambient temperature calculation.
Annexure - III	Calculated thermal efficiency is corrected for the variations between contract values and P.G. Test values.
Annexure -I V	Lab reports of Fuel and ash samples which were collected during the test and analyzed by M/s Spectro Analytical labs (p) Ltd.,
Annexure - V	Log sheets (Various readings recorded during the test)

II. DESIGN PARAMETERS :-

PARAMETER	UNITS	
Steam flow at MCR	TPH	90
Steam pressure at super heater outlet	kg/cm2(g)	45
Steam temperature at superheater outlet	Deg.C	440 ± 5
Feed water temperature at economiser inlet	deg.C	105
Ambient temperature	deg.C	40
Relative humidity	%	60.00
Gross Efficiency on G.C.V 2272 Kcal/Kg with Bagasse	%	69.00

Code of performance test : ASME PTC - 4.0 (Heat loss method)

DESIGN FUEL ANALYSIS (ULTIMATE)

Fuel	% by weight	Bagasse
Carbon	%	23.50
Hydrogen	%	3.25
Oxygen	%	21.75
Sulpher	%	0.00
Nitrogen	%	0.00
Moisture	%	50.00
Ash	%	1.5

PERFORMANCE TEST REPORT [AS PER ASME -PTC 4.0]
M/s. TRIVENI ENGINEERING AND INDUSATRIES LTD, RAMPUR.

III. GUARANTEES :-

PARAMETER	UNITS	
Steam flow at MCR	TPH	90
Steam pressure at super heater outlet	kg/cm2(g)	45
Steam temperature at superheater outlet	Deg.C	440 ± 5
Superheater steam temperature control range	%	60 - 100
Efficiency at 100 % BMCR on GCV basis with Design fuel	%	69.00

IV. AVERAGE READINGS RECORDED DURING THE TEST :-

Sr. no.	PARAMETER	UNITS	Average readings
1	Main steam flow	TPH	76.16
2	Main steam pressure	kg/cm²g	45.98
3	Main steam temperature	°C	445.25
10	Drum pressure	kg/cm²g	50.38
11	Drum Level	%	45.76
12	Feed water flow	TPH	78.26
13	FW temp. at Eco. I/L	°C	99.75
14	FW temp. at Eco. O/L	°C	205.88
16	Furnace temp.	°C	722.13
18	FG temp at Bank O/L	°C	351.00
19	FG temp at economiser I/L	°C	218.13
20	FG temp. at APH O/L	°C	140.88
22	Oxygen	%	4.00
25	FD air pressure	mmwc	46.88
26	FD air pressure at APH O/L	mmwc	30.00
29	Secondary air pressure	mmwc	735.00
30	Secondary air temp. at APH O/L	°C	152.88
31	Furnace pressure	mmwc	-2.60
21	FG draft at Eco. O/L	mmwc	-79.38
22	FG draft at APH O/L	mmwc	-125.75
24	Deaerator Pressure	kg/cm²g	0.01
25	Deaerator level	%	76.91
32	Dry Bulb temp.	°C	30.60
33	Wet Bulb temp.	°C	22.39
34	Bagasse Moisture	%	50.00

Performance test fuel analysis (Ultimate) as per lab report :-

	Units	As per lab analysis	Corrected to Site moisture 50%
Carbon	%	26.82	24.53
Hydrogen	%	3.12	2.85
Oxygen	%	22.09	20.21
Sulpher	%	0.09	0.08

PERFORMANCE TEST REPORT [AS PER ASME -PTC 4.0]
M/s. TRIVENI ENGINEERING AND INDUSATRIES LTD, RAMPUR.

V RESULTS

PARAMETER	UNITS	Gauranteed data	Achieved data
Steam flow at MCR *	TPH	90	76.16
Steam pressure at super heater outlet	kg/cm2(g)	45	46.0
Steam temperature at superheater outlet	Deg.C	440 ± 5	445.25
Feed water temperature at economiser inlet	Deg.C	105	99.75
Ambient temperature	Deg.C	40.00	30.6
Efficiency at 100 % BMCR on GCV basis with Design fuel	%	69.00	71.0

* Steam flow is maintained as per the Process requirement, however the boiler is capable of generating the guranteed steam flow

VI. CONCLUSION

1. From the above results it may be noted that ISGEC JOHN THOMPSON has met all the guaranteed parameters and Thermal efficiency.

2. Efficiency of the boiler is higher than the guaranteed value.

3. As per the contract boiler efficiency is guaranteed for Bagasse having 3.25 % Hydrogen, 50 % Moisture, 2272 kcal/kg of G.C.V and 40 °C ambient temperature.

4. But as per the performance test the bagasse has 2.85 % Hydrogen, 50 % Moisture, 2100.26 kcal/kg of G.C.V and 30.6 °C ambient temperature.

Hence the calculated thermal efficiency is corrected for these variations as per the calculation enclosed.

Office of Executive Engineer
Electricity Distribution division
PASCHIMANCHAL VIDYUT VITRAN NIGAM LIMITED
Rampur (Uttar Pradesh)

Certificate of Commissioning

This is certify that M/s Triveni Engineering & Industries ltd unit-Milak Narayanpur Distt. Rampur (U.P) is having valid power purchase agreement with PVVNL.the commissioning detail of their baggage based co-generation unit as per PPA & our record are as follow-

Unit no. Capacity and date of commissioning detail		
Unit No.	Capacity	Date of Commissioning
1	10 MW	19/02/2007
2	3 MW	25/02/2007

UPPCL Nodal Officer
Executive Engineer (Distribution)
PVVNL EDD-II, RAMPUR

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.

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

Documentation Verified:

- Project Concept Note (PCN)
- Monitoring Report (MR)
- JMR's
- Invoice
- Month wise Quantity of biomass residue combusted in the project plant.
- Commissioning Certificate
- Calibration Certificates
- Data provided upon request of all the documents of the related project.

Sampling:

Not applicable

Person interviewed:

1. Mr. Ashish Awasti : Triveni Engineering and Industries Ltd.
   Group General Manager - Technical & Coordination
2. Mr. Manish Saxena - Corporate Planning : Triveni Engineering and Industries Ltd.
3. Mr. Vipin Jindal - Addl. GM : Triveni Engineering and Industries Ltd.
4. Mr. Pradeep Chaudhary : Triveni Engineering and Industries Ltd.
5. Mr. Avadhesh Chauhan - DGM E : Triveni Engineering and Industries Ltd.
   (Addl G.M. Engineering) (Engineering Head)

Corrective Action Requests (CARs)

Corrective Action Requests (CARs) and their resolutions are listed below:

There are 2 CAR's:

CAR 1:

The Net quantity of electricity supplied to the grid as per JMR & Invoice is not matching with the ER statement.

Response from Project Participant

The correction has been made in the ER sheet and accordingly Monitoring Report (V02) has been released after incorporating the related corrections.

Conclusion by Verification Team

Verified Monitoring Report (V02) for correction and found to be matching as per requirement. Hence

Corrective Action Request CAR-1 is closed.

CAR 2:

The Net quantity of Bagasse consumed is not matching with the ER statement.

Response from Project Participant

The correction has been made in the ER sheet and accordingly Monitoring Report (V02) has been released after incorporating the related corrections.

Conclusion by Verification Team

Verified Monitoring Report (V02) for correction and found to be matching as per requirement. Hence

Corrective Action Request CAR-2 is closed.

MICRO CALIBRATION LAB

F.C.A. 2980, GALI NO. 2, S.G.M. NAGAR, N.I.T. FARIDABAD - 121 001 (HARYANA)
Mobile : 9212566694, E-mail : microcallab@gmail.com

CC-2661

Calibration Certificate

Certificate/ULR No.: ULR-CC266122000001264F — Page 1 of 4

1.	Customer Name and Address	:-	M/s. Triveni Engineering & Industries Ltd., Sugar Unit:- Milak Narayanpur, P.O. Dadiyal, Tehsil Sawar, Distt. Rampur- 244925 (U.P.)
2.	Reference		
	Service request no. & Date	:-	2022/158 & 1-Sep-2022
	Date of receipt of UUC	:-	1-Sep-2022
	Condition of UUC on receipt	:-	Satisfactory
3.	Location of Calibration	:-	Switchyard M/s. Triveni Engineering & Industries Ltd., Sugar Unit:- Milak Narayanpur, P.O. Dadiyal, Tehsil Sawar, Distt. Rampur- 244925 (U.P.)
4.	Calibration Details		
	Date of issue	:-	3-Sep-2022
	Date of Calibration	:-	1-Sep-2022
	Due Date of Calibration	:-	31-Aug-2023
5.	Description of Unit Under Calibration		
	Name	:-	Three Phase Energy Meter
	Make	:-	Secure Meters Limited
	Serial Number	:-	UPP35214
	Model	:-	Premier
	Type	:-	E3M021, 3Ph, 4Wire
	Voltage (p-n)	:-	3x63.5 V
	Current	:-	Ib: 1A Imax: 2A
	Voltage Ratio	:-	-/110V/V3
	Current Ratio	:-	-/1A
	Class	:-	0.2S For Active and Reactive
	Meter constant	:-	160 Pulses/Unit
	Unit	:-	Wh, VArh, VAh, W, VA
	Frequency	:-	50 Hz
6.	Environmental conditions		
	Temperature	:-	31.2-32.2°C
	Relative Humidity	:-	60-65%
	Weather	:-	Clear
7.	Witnessed by		
i)	Er. Indresh Kumar (AE) T&C, Rampur	:-	
ii)	Er. Rajeev Kumar (JE) T&C, Rampur	:-	
iii)	Er. Yashvir Singh (JE) Transmission, Rampur	:-	
iv)	Mr. A. K. Chauhan (DGM Electrical) Triveni Engineering & Industries Ltd., MNP.	:-	

Calibrated by
Calibration Engineer
Manveer Kasana

Approved by
Technical Manager
Shashi Kumar

MICRO CALIBRATION LAB

F.C.A. 2980, GALI NO. 2, S.G.M. NAGAR, N.I.T. FARIDABAD - 121 001 (HARYANA)
Mobile : 9212566694, E-mail : microcallab@gmail.com

CC-2661

Calibration Certificate

Certificate/ULR No.: ULR-CC266122000001262F — Page 1 of 4

1.	Customer Name and Address	:-	M/s. Triveni Engineering & Industries Ltd., Sugar Unit:- Milak Narayanpur, P.O. Dadiyal, Tehsil Sawar, Distt. Rampur- 244925 (U.P.)			
2.	Reference					
	Service request no. & Date	:-	2022/158 & 1-Sep-2022			
	Date of receipt of UUC	:-	1-Sep-2022			
	Condition of UUC on receipt	:-	Satisfactory			
3.	Location of Calibration	:-	132kV Sub-Station Tanda, District- Rampur			
4.	Calibration Details					
	Date of issue	:-	3-Sep-2022			
	Date of Calibration	:-	1-Sep-2022			
	Due Date of Calibration	:-	31-Aug-2023			
5.	Description of Unit Under Calibration					
	Name	:-	Three Phase Energy Meter			
	Make	:-	Secure Meters Limited			
	Serial Number	:-	UPP35523			
	Rack No.	:-	UPP35529			
	Model	:-	APEX			
	Type	:-	R3M021-436, 3Ph, 4Wire			
	Voltage (p-n)	:-	3x63.5 V			
	Current	:-	Ib: 1A Imax: 1.2A			
	Voltage Ratio	:-	-/110V/V3			
	Current Ratio	:-	-/1A			
	Class	:-	0.2S For Active and Reactive			
	Meter constant	:-	160 Pulses/Unit			
	Unit	:-	Wh, VArh			
	Frequency	:-	50 Hz			
	Meter Energy	:-	Before Calibration		After Calibration	
			Import	Export	Import	Export
		Wh	600911	169196	600968	169218
		VAh	611043	175374	611119	175409
6.	Environmental conditions					
	Temperature	:-	31.2-32.2°C			
	Relative Humidity	:-	60-65%			
	Weather	:-	Clear			
7.	Witnessed by					
i)	Er. Indresh Kumar (AE) T&C, Rampur	:-				
ii)	Er. Rajeev Kumar (JE) T&C, Rampur	:-				
iii)	Er. Yashvir Singh (JE) Transmission, Rampur	:-				
iv)	Mr. A. K. Chauhan (DGM Electrical) Triveni Engineering & Industries Ltd., MNP.	:-				

Calibrated by
Calibration Engineer
Manveer Kasana

Approved by
Technical Manager
Shashi Kumar

MICRO CALIBRATION LAB

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Calibration Certificate

Certificate/ULR No.: ULR-CC266122000001263F — Page 1 of 4

1.	Customer Name and Address	:-	M/s. Triveni Engineering & Industries Ltd., Sugar Unit:- Milak Narayanpur, P.O. Dadiyal, Tehsil Sawar, Distt. Rampur- 244925 (U.P.)			
2.	Reference					
	Service request no. & Date	:-	2022/158 & 1-Sep-2022			
	Date of receipt of UUC	:-	1-Sep-2022			
	Condition of UUC on receipt	:-	Satisfactory			
3.	Location of Calibration	:-	132kV Sub-Station Tanda, District- Rampur			
4.	Calibration Details					
	Date of issue	:-	3-Sep-2022			
	Date of Calibration	:-	1-Sep-2022			
	Due Date of Calibration	:-	31-Aug-2023			
5.	Description of Unit Under Calibration					
	Name	:-	Three Phase Energy Meter			
	Make	:-	Secure Meters Limited			
	Serial Number	:-	UPP35524			
	Rack No.	:-	UPP35531			
	Model	:-	APEX			
	Type	:-	R3M021-436, 3Ph, 4Wire			
	Voltage (p-n)	:-	3x63.5 V			
	Current	:-	Ib: 1A Imax: 1.2A			
	Voltage Ratio	:-	-/110V/V3			
	Current Ratio	:-	-/1A			
	Class	:-	0.2S For Active and Reactive			
	Meter constant	:-	160 Pulses/Unit			
	Unit	:-	Wh, VArh			
	Frequency	:-	50 Hz			
	Meter Energy	:-	Before Calibration		After Calibration	
			Import	Export	Import	Export
		Wh	711375	169202	711432	169224
		VAh	722675	175402	722750	175437
6.	Environmental conditions					
	Temperature	:-	31.2-32.2°C			
	Relative Humidity	:-	60-65%			
	Weather	:-	Clear			
7.	Witnessed by					
i)	Er. Indresh Kumar (AE) T&C, Rampur	:-				
ii)	Er. Rajeev Kumar (JE) T&C, Rampur	:-				
iii)	Er. Yashvir Singh (JE) Transmission, Rampur	:-				
iv)	Mr. A. K. Chauhan (DGM Electrical) Triveni Engineering & Industries Ltd., MNP.	:-				

Calibrated by
Calibration Engineer
Manveer Kasana

Approved by
Technical Manager
Shashi Kumar

J.M.R. - II

Check Meter Reading of Generating Mill

READING TO BE TAKEN ON THE 1ST WORKING DAY OF EVERY MONTH

For the Month of : April-18

Name of UPPTCL Sub Station : UPPCL,132 KV S/S Tanda DISST. Rampur (U.P)

Name Of Generating Mill : M/s Triveni Engneering And Industries Ltd, Milak Narayanpur, PO. Dadiyal, Rampur(U.P) PIN-244925

C.T. Ratio Available / Connected : 120/1 A

P.T. Ratio Available / Connected : 33 KV /110 V

SCALE FACTOR IF ANY :

Multiplying Factor : 36 FOR KWH

SEAL
OLD ND8435285
NEW ND6008493

Billing Meter Make Number : SECURE (APEX) UPP35523

Reading Date 01.05.2018 Time 13.44 Hrs.

DESCRIPTION	Date	EXPORT METER READING	IMPORT METER READING
Current Reading 13.44 Hrs	01.05.2018	82991	319608
Previous Reading 15.53 Hrs	01.04.2018	82871	272541
Difference		120	47067
Multiplying Factor		36	36
Total KWH=Difference X Multiplying Factor	KWH	4320	1694412

Executive Engineer
EDC[illegible]
[illegible]

Executive Engineer
[illegible]
Rampur (U.P.)

Authorised Signatory
Triveni Engg & Ind. Ltd.
Milak Narayanpur

1. UPPTCL shall maintain a daily log book record hourly reading of the bill meter and check meter.
2. Mill shall maintain a daily log book to record hourly co-generation and supply in KWH along with the schedule given by dispatcher.
3. If the meter is changed, the reason date, time of meter change and new meter make and number must be recorded by both parties.

J.M.R. - I

Main Meter Reading of Generating Mill

READING TO BE TAKEN ON THE 1ST WORKING DAY OF EVERY MONTH

For the Month of	:	April-18
PLACE OF THE METER READING	:	UPPCL,132 KV S/S Tanda DISST.- Rampur (U.P)
NAME OF THE GENERATING PLANT	:	M/s Triveni Engneering and Industries Ltd, Milak Narayanpur, PO. Dadiyal, Rampur(U.P) PIN - 244925
C.T. Ratio Available / Connected	:	120/1 A
P.T. Ratio Available / Connected	:	33 KV /110 V
SCALE FACTOR IF ANY	:	
Multiplying Factor	:	36 FOR KWH
Billing Meter Make Number	:	SECURE (APEX) UPP35524

SEAL
OLD ND8435282
NEW ND6008490

Reading Date 01.05.2018 Time 13:44 Hrs.

DESCRIPTION		Date	EXPORT METER READING	IMPORT METER READING
Current Reading	13:44 Hrs	01.05.2018	82987	430160
Previous Reading	15:53 Hrs	01.04.2018	82868	383093
Difference			119	47067
Multiplying Factor			36	36
Total KWH=Difference X Multiplying Factor		KWH	4284	1694412

Executive Engineer
Executive Engineer
Electricity Test Division
Rampur (U.P.)
Authorised Signatory
For Triveni Engg & Ind. Ltd.
(Milak Narayanpur)

फोन 0595-2351608

1. UPPCL shall maintain a daily log book record hourly reading of the bill meter and check meter.
2. Mill shall maintain a daily log book to record hourly co-generation and supply in KWH along with the schedule given by dispatcher.
3. If the meter is changed, the reason date, time of meter change and new meter make and number must be recorded by both parties.

Triveni ENGINEERING & INDUSTRIES LTD.

Sugar Unit : **Milak Narayanpur**

Village - **Milak Narayanpur,** P.O. Dadiyal - 244925
Tehsil - Tanda Badli, Distt. Rampur (Utter Pradesh.)
Tel. : +91-9758400190-191, Fax : (0595) 2565002

INVOICE

Details of Bills for Import of Energy from M/S Triveni Engineering & Industries Ltd., MILAK NARAYANPUR, P.O. - Dadiyal, RAMPUR - 244925

For the month of April-18
Monthly Purchase Bill No.- 28 /2018/MNP/TEIL Date- 08.05.2018
Name of Buyer Shakti Bhawan, 14. Ashok Marg, Lucknow, U.P
Name of Generating Plant. Triveni Engineering & Industries Ltd., Milak Narayanpur, PO-Dadiyal, RAMPUR - 244925

Meter No. UP-35524 as per JMR report date : 01-05-2018 at 13:44 Hrs

S.No.	DESCRIPTION	UNIT	VALUE
1	Energy Supplied as per JMR	KWH	1694412
	MF for Compensation of Transmission Losses	MF	1.000695483
A	Energy Supplied after compensation of Transmission Losses including Line Losses	KWH	1695590
B	Energy For Banking	KWH	0
C	Net Energy (A-B)	KWH	1695590
D	Rate of Energy	Rs./KWH	5.0
E	Total Amount (C X D)	Rs.	8477950
F	Encashment (Financial Settlement) of Unutilized Banked Energy of F-Y : 2016-17 (152487(1 - 0.125) i.e. 174271 KWH) @ Rs. 4.59 per KWH	RS.	799904
G	Total Amount for Payment (E+F)	Rs.	9277854

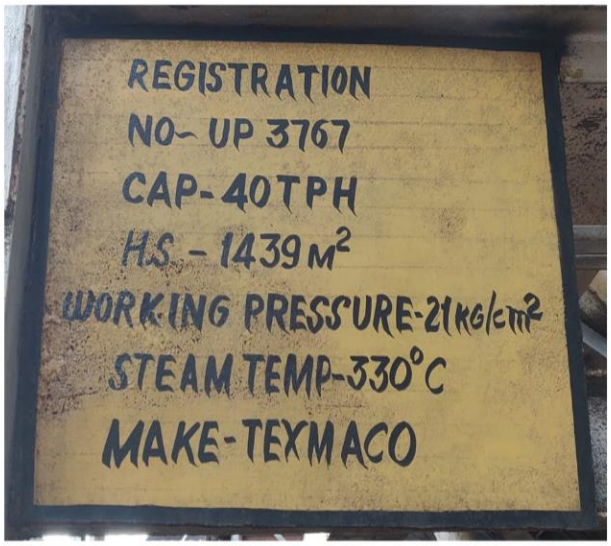
	BANKING ACCOUNT :-	UNIT	VALUE
a	Opening Balance B/F	KWH	655612
b	Less : Banked energy being encased in bill	KWH	152487
c	Energy Banked during the month April 2018	KWH	0
d	Less 12.5% Banking Charges (0*0.125)	KWH	0
e	Balance (a-b+c-d)	KWH	503125
f	Less Energy, Consumed during the month April 2018	KWH	3881
g	Balance Energy C/F (e - f)	KWH	499244

Rupees Ninety Two Lacs Seventy Seven Thousand Eight Hundred Fifty Four only

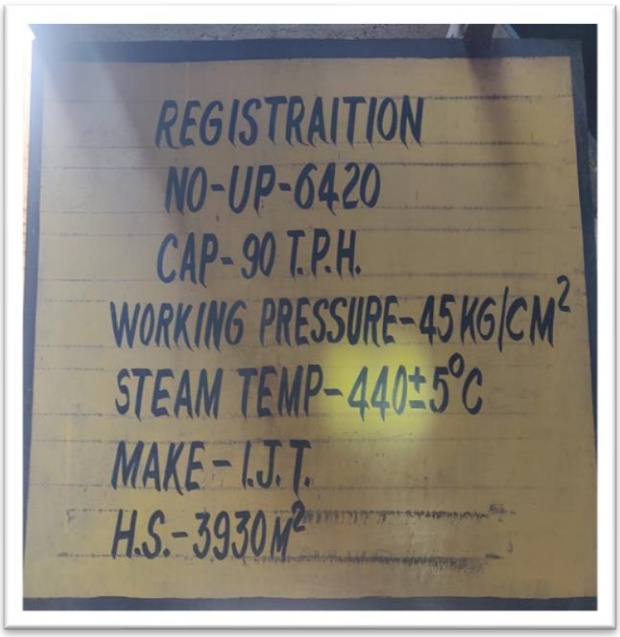
For Triveni Engg & Industries Ltd.
(Sugar Unit-Milak Narayanpur)
Authorised Signatory
(Co-Generation Unit)
Triveni Engineering & Industries Limited
Unit - Milaknarayanpur, Rampur

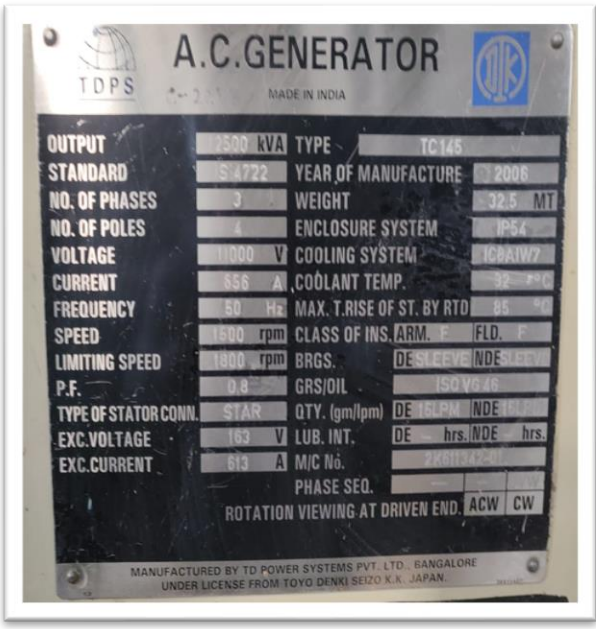
Verified by
Electricity Distribution Division-II
फोन 0595-2351608

REGD. OFFICE : DEOBAND - 247554 DISTT. SAHARANPUR, UTTARA PRADESH






REGISTRAITION
NO-UP-6420
CAP-90 T.P.H.
WORKING PRESSURE-45 KG/CM²
STEAM TEMP-440±5°C
MAKE-I.J.T.
H.S.-3930 M²


TDPS
A.C.GENERATOR
MADE IN INDIA
OUTPUT 2500 kVA
STANDARD IS 4722
NO. OF PHASES 3
NO. OF POLES 4
VOLTAGE 11000 V
CURRENT 656 A
FREQUENCY 50 Hz
SPEED 1500 rpm
LIMITING SPEED 1800 rpm
P.F. 0.8
TYPE OF STATOR CONN. STAR
EXC.VOLTAGE 163 V
EXC.CURRENT 613 A
TYPE TC145
YEAR OF MANUFACTURE 2006
WEIGHT 32.5 MT
ENCLOSURE SYSTEM IP54
COOLING SYSTEM IC8A1W7
COOLANT TEMP. 32 °C
MAX. T.RISE OF ST. BY RTD 85 °C
CLASS OF INS. ARM. F FLD. F
BRGS. DE SLEEVE NDE SLEEVE
GRS/OIL ISO VG 46
QTY. (gm/lpm) DE 15LPM NDE 15LPM
LUB. INT. DE hrs. NDE hrs.
M/C No. 2K61134-2
PHASE SEQ.
ROTATION VIEWING AT DRIVEN END. ACW CW
MANUFACTURED BY TD POWER SYSTEMS PVT. LTD., BANGALORE
UNDER LICENSE FROM TOYO DENKI SEIZO K.K. JAPAN.


Jyoti Ltd.
Vadodara-India
NS-157
JYOTI LTD.
VADODARA-INDIA
BRUSHLESS ALTERNATOR SR.NO. 5758
TYPE OF ENCLOSURE CACW ASSLY. NO. DW 359-393-2
FRAME THGB 120-4-05 STYLE NO. 3MDH8[illegible]-046
KVA 3750 COS Ø 0·8 SPEED 1500 R.P.M.
VOLTS 420 AMPS 5155 PH 3 FREQ 50 HZ
CONN STAR CLASS F IS: 4722 AMBIENTTEMP 45 °C
EXCITATION (A.C EXCITER) 42 VOLTS (D.C) 6 AMPS.
ROTATION FACING DRIVE END. CLOCKWISE
RATING CONTINUOUS SALE NOTE NO. 370092

Applied methodologies and standardized baselines:

UCR Protocol Standard Baseline

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

TYPE I - Renewable Energy Projects (Small Scale)
UCR Positive List Environmental Additionality

CATEGORY - ***AMS I.D. Small Scale Consolidated Methodology***
"Grid connected renewable electricity generation", version 18.
This methodology is applicable to project activities that comprises renewable energy generation units, such as renewable biomass involving:

(a) Supplying electricity to a national or a regional grid;

UCR CoU Standard is used to determine the baseline grid emission factor for the 2013-2021 period.

Application of methodologies and standardized baselines

- The project activity is a power generation project using a biomass (bagasse) and displaces CO_2 emissions from electricity generation in power plants that are displaced due to the project activity. Since the project activity utilises biomass (bagasse) for the generation of power and supplies it to the local grid, it displaces fossil fuel (coal), and hence it meets the primary applicability criteria of the methodology.

- The project activity is included in the Positive List of UCR Approved Scope under the UCR CoU Standard.

- The total installed capacity of project activity is 13MW, of which 5 MW is supplied to the grid, which is acceptable as per the applied small-scale methodology, since the eligibility limit of 15 MW has been applied under this methodology.

- The installation of a new biomass residue fired power generation unit, which replaces or is operated next to existing power generation capacity fired with either fossil fuels or the same type of biomass residue as in the project plant (power capacity expansion projects) is also included in this methodology.

- The project activity is not a hydro power project. The project activity does not recover methane from landfill gas, waste gas, wastewater treatment and agro-industries.

- For the purposes of this methodology, heat does not include waste heat, i.e., heat that is transferred to the environment without utilization, for example, heat in flue gas, heat transferred to cooling towers or any other heat losses.

- The biomass used by the project plant is not stored for more than one year. The biomass used by the project plant is not processed chemically or biologically (e.g., through esterification, fermentation, hydrolysis, pyrolysis, bio- or chemical degradation, etc.) prior to combustion.

- The Project Activity uses biomass residues from a production process (e.g., production of sugar), and the implementation of the project does not result in an increase of the processing capacity of (the industrial facility generating the residues) raw input (e.g., sugar) or in other substantial changes (e.g., product change) in this process.

- The project activity unit does not co-fire fossil fuel and/or does not exceed the limit of 25% co-firing fossil fuel criteria as per the UCR Protocol for such projects.

- Biomass generated power is used for direct grid supply and for meeting the captive needs at the facility. The project activity involves the grid-connected bagasse-based electricity generation capacity involving the installation of facilities for allowing the export of electricity to the regional grid.

- Biomass is not sourced from dedicated plantations. The existing installed boilers are fired by bagasse, a byproduct of the sugarcane processing and a biomass residue.

- Bagasse is burnt in boilers as generated form the sugar mill and does not require any specific technology for its preparation before combustion. No fuel preparation equipment has been installed at site for preparation of bagasse. Hence no significant energy quantities are required to prepare the biomass residues for fuel combustion.

- The project activity also does not include any GHG emissions related to the decomposition or burning of biomass. The baseline heat emissions for the project

activity are not included in the project boundary nor does it claim for emission reductions from heat.

Applicability of double counting emission reductions

The biomass boiler and condensing turbo-generator units have unique IDs and energy meters, which are visible on the unit. The calibration of Meters & Metering for electricity exported to the grid is implemented according to national standards and rules (details provided in Section B.10.). All the records are documented and maintained by the project proponent. The details of the same are provided to the UCR verifier during the verification process.

The biomass boilers and turbines are constructed by the project proponent within the project boundary. The biomass boilers, turbines and meters have unique IDs, which is visible on the units.

The UCR project activity has never been issued voluntary carbon credits for the current 2013 - 2021 vintage years and there is no double counting of the credits envisioned. Additionally, the same has been stated in the undertaking provided in the Double Counting Avoidance Assurance Document (DAA) by TEIL dated 25.09.2023.

Project boundary, sources and greenhouse gases (GHGs)

The project boundary includes the physical, geographical site(s) of the project power plant and all power plants connected physically to the electricity system that the project activity is connected to.

Thus, the project boundary includes the biomass-based steam generator, steam turbine generators and the Indian grid system.

Leakage Emissions (LE_y)

Leakage emissions is not applicable as the project activity does not use technology or equipment transferred from another activity.

Hence $\mathbf{LE_y} = 0$

Source		Gas	Included?	Justification/Explanation
Baseline	Grid connected fossil fuel-based electricity Generation	**CO_2**	**Yes**	**Major emission source.**
		CH_4	No	Minor emission source.
		N_2O	No	Minor emission source.
		Other	No	No other GHG emissions were emitted from the project.
Project	Greenfield Biomass Power Project Activity	CO_2	No	No CO_2 emissions are emitted from the project.
		CH_4	No	Project activity does not emit CH_4
		N_2O	No	Project activity does not emit N_2O
		Other	No	No other emissions are emitted from the project.

Project Emissions (PE_y)

The project activity has not considered and never used any fossil fuel (as can be verified from the given data during verification) and to meet any requirement in the project activity; hence there is no emissions due to usage of fossil fuel.

Based on the biomass availability, there is sufficient biomass available in the region in less than 50 km surrounding the site of the project activity. It confirms that there is no such leakage anticipated. There is no other relevant source of leakage emission applicable to the project activity. Accordingly, the project activity does not result in any leakage emission.

Establishment and description of baseline scenario (UCR Protocol)

The baseline scenario identified is:

> *Renewable energy technologies that displace technologies using fossil fuels, wherein the simplified baseline is the fuel consumption of the technologies that would have been used in the absence of the project activity, times an emission factor for the fossil fuel displaced.*

The baseline emissions due to displacement of electricity are determined by net quantity of electricity generation as a result of the project activity (incremental to baseline generation) during the year y in MWh times the CO_2 emission factor for the electricity displaced due to the project activity during the year y in tons CO_2/MWh

Given that steam and electric power generation for internal consumption is part of the present project activity, emission reductions are only claimed from on-site incremental power generation that is injected to the grid. Therefore, the baseline scenario is the emission of GHG from the present electricity generation mix of the UPPCL grid in the northern region.

Emission Reductions (ERy) is the emission reduction due to the project activity is calculated as the difference between the baseline emissions and the sum of the project emissions and the leakage:

$$\mathbf{ER_y = BE_y - (PE_y + LE_y)}$$

$\mathbf{BE_y}$= Baseline emissions in year y (t CO_{2e})

Baseline emissions are calculated as follows:

$$\mathbf{BE_y = EG_{pj,y} * EF_{grid,y}}$$

Where:

$\mathbf{EG_{grid,y}}$ = Quantity of net electricity generation that is fed into the local grid as a result of the

implementation of the project activity in year y (MWh)

$\mathbf{EF_{grid,y}}$ = The CO_2 emission factor for grid connected power generation in year y calculated using UCR Standard emission factor (0.9 tCO_2/MWh).

$\mathbf{PE_y}$ = Project activity emissions/yr = 0.0142 x Biomass Consumption (MT)/year

However, as per paragraph 31 under Section 5.2 of the given methodology, the PP must “For microscale and small-scale project activities, apply a default emission factor of 0.0142 tCO_2/tonne of biomass” for conservativeness.

$\mathbf{LE_y}$ = Leakage emissions = 0

For this methodology, it is assumed that transmission and distribution losses in the electricity grid are not influenced significantly by the project activity and are therefore not accounted for since the UCR emission factor is itself conservative.

Particulars	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
Steam Consumption in MT	226590.30	171009.90	193042.96	177487.21	229117.24	365268.63	329818.16	360430.78	332083.27	**2384848.44**
Power Generation in MWh	20993.46	20977.97	22878.12	22359.258	27154.188	39577.1	36579.98	36938.8	34553.85	**262012.72**
Power Exported to UPPCL in MWH	6301.33	8154.97	7903.84	9583.38	10655.24	12835.01	12906.43	13062.92	11077.02	**92480.15**
Baggase Consumption in MT	20048.89	25947.64	25148.57	30492.57	33903.05	40838.66	41065.92	41563.85	35245.06	**294254.21**

Emission Reductions:

Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	**Total**
Power Exported to UPPCL in MWH	6301.33	8154.97	7903.84	9583.38	10655.24	12835.01	12906.43	13062.92	11077.02	**92480.15**
Baseline Emission Reductions BEy(tCO_2)	5671.199	7339.475	7113.452	8625.042	9589.7196	11551.507	11615.789	11756.632	9969.318	**83232.1332**
Project Emissions PEy(tCO_2)	284.6943	368.4565	357.1097	432.99453	481.4233	579.909	583.13606	590.20666	500.479904	**4178.40985**
Emission Reductions ERy (tCO_2) (BEy – PEy)	5386	6971	6756	8192	9108	10971	11032	11166	9468	**79050**

Total emission reductions (ER_y) = **79,050** tCO_2 (**79,050** CoUs)

Conclusions:

Based on the audit conducted on the basis of UCR Protocol, which draws reference from UCR Standard for Baseline Grid Emission Factor, CDM UNFCCC Methodology Small-scale Methodology AMS-ID: Grid connected renewable electricity generation, Ver 18, 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 - TEIL Biomass Grid Supply Power Project, Milaknarayanpur, Uttar Pradesh, India (UCR ID – 298) for the period **01/01/2013 to 31/12/2021** amounts to **79,050 tCO_2 (79,050 CoUs)**

SQAC Certification Pvt. Ltd. Mapusa-Goa

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Santosh Nair	Praful Shinganapurkar
Lead Verifier (Signature)	Senior Internal Reviewer (Signature)

Date: 11/10/2023