

SOCIETY OF ST. FRANCIS XAVIER, PILAR'S FR. CONCEICAO RODRIGUES COLLEGE OF ENGINEERING (Approved by AICTE & Affiliated to University of Mumbai)

> Fr. Agnel Ashram, Bandstand, Bandra (W), Mumbai - 400 050. Phone : (022) 6711 4000, 6711 4101, 6711 4104 Website : www.frcrce.ac.in • Email : crce@fragnel.edu.in



# Metric No. 7.1.2

# ALTERNATE SOURCES OF ENERGY AND ENERGY CONSERVATION MEASURES

**Additional Information** 



Moulding Engineers Who Can Build the Nation



# 1. Alternative sources of energy and energy conservation measures

## a. Solar Energy

It is the need of the hour to reduce the burden on the planet earth for energy requirements generated from the conventional energy methods. The conventional energy generation methods are polluting the environment and depleting the natural resources, which are already scarce, at a faster rate than before. Now it is in the best interest of humanity to search and tap alternative energy resources that are green and efficient. Institute is very sensitive to energy issues and responded to it positively. Institute has installed Solar Panel as an alternate energy initiative in the academic year 2017-2018. The daily generation report is attached as proof. The total power consumption is calculated based on the attached monthly bill.





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DE	SIGN, CONSTRUCTIO	N, INSPECTION, TEST	TING, COMMISSIONING & HANDOVER REPO		
Site Location Site Contact Persons & details		Fr. Conceicao Rodrigues College of Engg., Fr. Agnel Ashram, Bullock Road, Bandstand, Bandra West, Mumbai 400 050, Maharashtra, India. Email : bhoir@fragnel.edu.in   Phone # 022-6711 4000 Dr. Deepak Bhoir (HoD), Mob. # 98694 33765 Prof. Mahesh Sharma (TPO), Mob. # 99698 13735			
					Cert
Sola	r PV details	Section Methods			
1.	PV Plant (Array) size		40KWp		
2.	PV module make & mod	del	VIKRAM SOLAR 320		
3.	PV module capacity		320Wp x 125nos.		
4.	PV module string size		08 nos.		
5.	Manufacturer Product v	warranty	12 years		
Solar	Inverter details				
7.	Solar Inverter make		SMA-ZEVER		
8.	Solar Inverter model		ZEVERLUTION PRO 33K String Inverter with ZeverCom Wi-Fi device		
9.	Solar Inverter Serial No.	/ Monitor Serial No.	ZP033K6011650042 / EAB971740536		
10.	Solar Inverter capacity		33KWp x 01 nos.		
11.	No. of DC inputs (MPPTs)		04 nos.		
12.	Manufacturer warranty		05 years		
Balar	nce of System (BoS) det	ails			
13.	Solar DCDB (Fuses/SPD/	Isolators etc)	Solstrom Energy		
14.	Solar ACDB (Fuses/SPD/	Isolators etc)	Solstrom Energy		
15.	Module Mounting Struct	ture (MMS)	Anodised Aluminium on Sloping Roof + Metal structure with Galvanic coating		
16.	Lightening Arrestor (L.A.	)	Pure Copper rod mounted on GI strip/wire		
17.	Solar DC Cabling		Unicab by Apar Industries		
18.	Solar DC Earthing	olar DC Earthing Local pit			
19.	Solar AC Cabling		Polycab Industries		
20.	Solar AC Earthing		Local pit		
21.	I. Distribution Company (DISCOM) / NetMetering Details		RELIANCE ENERGY - Consumer A/c. No. 151613244 Meter No. L987233		
ne ab fectiv	ove mentioned Solar PV ve <b>26-OCTOBER-2017</b> .	Plant has been Comm	nissioned & Delivered/Handed-over to us		
Name	: Dr. Deepat V.	Bhaz	Name: PRASAD KULKARN,		
Signat	ure		Signature: D. and		

(For BigSwitch India)

(For Fr. Conceicao Rodrigues College of Engg., Bandra)



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## olar energy

Fr. Conceicao Rodrigues College of Engineering has taken a Conscious decision to go ahead with this go green project to begin with for 40 KWp roof top Solar Power.

✓ Solar electricity is being clean (pollution free), silent, limitless and free.

✓ Generate electricity using photovoltaic solar cells.

✓ Approved by Maharashtra Energy Development Agency (MEDA) (Govt. of Maharashtra Institution)

 $\checkmark$  On-line monitoring procedure for the actual energy generation and the pattern.

a. Percentage of annual power requirement of the Institution met by the renewable energy sources

 $18.\,31~\%$ 

- b. Annual power requirement met by the renewable energy sources (in KWH) 19,863 units.
- c. Total annual power requirement (in KWH) 1,08,462 units.

(From Electricity Bill) Total units consumed in college from July 2020 to June 2021 = 1,08,462 units.

**3.** Wheeling to the Grid (KWH) 4794 units.





Mas demand (MD) (Recorded between 00:00 - 24:00 Hrs)

Reactive energy consumption (Lag)

Reactive energy consumption (Lead)

Gilling Gemand is kVA

Reading

MD (kVA)

Reading

REVAH

Reading

REVAH

Present

Previous

Present

Previous

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6

	CALCULATED				YOUR TARIFF	STRUCTU	RE (EFFEC	TIVE FROM	01 04 2023
HOW YOUR BILL WAS	CALCODATED	Rote	-	Amount ( ₹ )	LT (V (B)	F	Energy		102511
Heads	SN code 27160000)			0	SERVICE OTHER	Per menth	Par Unit	Chiarge Par Ling	AC Mate
Electrical Energy (15.				445.00	all prints	445 00		2.11	Cont
1 Demand/Fixed Charge	5			10206 28	06 00 to 09 00 H			0.00	where TOD meter inwalle
2. Wheeling Charges				0.00	12 00 to 10 00 H	:		0 00	5.111 March
3. Regulatory Asset Cha	rge			90208 805	18 00 to 22 00 Hr			100	
4. Energy charge	Contraction and Contract			1158 00	2.00				
5. TOD 9 Hrs to 12 Hrs e	everby charge			1591.00					
6. TOD 18 Hrs to 22 Hrs	energy charge			2317 5004					
7. TOD 22 Hrs to 06 Hrs	s energy charge			0.00				CT BANKIN	
B. Fuel Adj Chg ( FAC)		0.00		0.00	YOU CAN USE	VERY MO	NTH REFE	R FOLLOW	NG DETAILS
9 Penalty for exceeding	g contract demand			1714 970					and a state of the state of the
10 Pewer Factor (PF) pe	nalty/incentive			26611.23	Payes Account No	EPAEMLIO	7640881		
11 Government Electrici	ity Duty	21 00%		2551525	Payes Name ADA	NIELECTRICI	TY MUMBALL	JMITED #SI	C HOFCOOD4989
12 Mah Govt Tax on sale	e of electricity	34.04p/unit		4652 59	Account Type : Co	dia ent		6.00	A Name: HDFC Bank Lts
(A) Current month's bill	amount (5um of 1-12)			150442.48	Branch Hame Karl	lumera Branc	ch Mumbai		
a Others / 50 interest				0 00				-	
b Delayed Payment Cha	arge (DPC) levied			000	ADVANCE PA	YMENT	DETAILS	(4)	
c. Digital Payment Disco	ount			379 3507	Opening Salance	Adjur	tment	Interest	Clasing Balance
d interest on arrears				0 00					
e. Adjustments				0.00					
(I) Net other charges in	n current bill (Sum of a to	•)		379.35Cr	AD ILISTMEN	TSATCS	FTAILS (	20	0
Total current month cha	arges (A+B)			150063 13	ADJOSTMEN	13/103			
Previous month's bill am	nount			189503 14					
Payment received (09-0	06-2023)			187982 59					
Prompt payment discou	nt			1517 41					
(C) Net previous balance	• 1/1			3.14					a second as a line
Total Bill Amount (A+B+	-c)			150066 27		To view su	pply code 3 2021, Scar	sop, including the DR cod	e below or visit.
Amount deferred				0.00	2000	regulation		aninity com/r	
DPC payable after due d	late			1880 53		https://www	w.adanielec	Dicity Comm	Control y
Total bill amount with D	PC			151946 80					
					PAYING BY CHE	QUE, PLEA	SE REMEM	BEM	
					. For Cheque pa	ments Data	of realization	ef cheque er 3	days from submission of
Contract Demand	Demand for penalty	Load Factor	Average Power	Factor	(subject to rea	lization)			
210.00KVA	D DOLVA	*	96 60% 129		<ul> <li>Cheque should</li> </ul>	be Account	arver of local	claaring and no	t post-dated
					<ul> <li>Mention A/c N</li> <li>multiple bill pr</li> </ul>	a and respec	tive amount o ngle cheque	IN BREN OF THE C	neque, when making
Your security deposit (S	D) with us T			155194 33	. Make cheque p	payable to Ad	ani Electricity	Mombal Ltd. A	C No. 102690881
Your unpaid security de	posit (SD) T								
YOUR CURRENT CO	ONSUMPTION								6
	Meter No		9007757	L985576					
meter Details	Multiplying Factor		1	20					
Energy consumption	Reading	Present	269934.60	41000.10					-
	Consumption (kWh)	Previous	4232	9435					13
TOD energy	Reading	Present	85777.60	9570.38					
consumption		Previous	84470 00	9499 96					18
or our man is our Mis	Consumption (kWh)		1307	1408					
TOD energy	Reading	Present	12194 30	4236.41					
18 00 H/s - 22 00 H/s		Previous	11948 30	4169 17					
-	Consumption (kWh)	-	246	1344					
Consumption	Reading	Present	17792.50	7575 17					
22 00 Hrs - 06 00 Hrs	Consumption (kWh)		406	2683					3
Max demand (MD)	Reading		34 760	2.778					
(Recorded between 05.00 - 22.00 Mm)			54.00						
The second second	MD (KVA)		34.76	55.56					90

34.760

34.76

B16

13

1160.70

1147.10

106748 80

105932 70

2 778

55.56

10035.29

9903.38

2638





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11/29/23, 1:03 PM	ant 🛡 Service	Overview - Solplanet	bhoir@fragneleduin 🏹
🕅 All plants 1			>
Normal 1 >	Offline 0 >	Error O >	A Warning O > 1.15MWh
E-today 32.39kWh E-total			161.45MWh
Percentage of power ①	25.85%	Installed capacity 40 kWp Power 10.33 kW	
Equivalent Hour Ranking ①		No data	
Energy conservation			
Tree planting 11 Trees		© CO2 saved 129.16 T	Standard coal 64.58 T
Power generation Income Same per Day Month Total	iod comparison	COLUMN AND AND AND AND AND AND AND AND AND AN	< 2023 · · · · · · · · · · · · · · · · · · ·
https://internation-cloud.solplanet.net/overvi	ew/overviewplant	OTHER PARTY	







Fr.CRCE 40KWp On-Grid Solar PV, BandStand, Bandra West, Mumbai 400050, INDIA overview

Update Time: 2022-11-22 15:36:15



N/A





11/11/21, 3:19 PM

ZeverCloud :Overview

Fr.CRCE 40KWp On-Grid Solar PV, BandStand, Bandra West, Mumbai 400050, INDIA
Overview
Update Time: 2021-11-11 15:13:19



Solar Power generation report for the year 2021-2022



### b. Use of LED bulbs/ power efficient equipment

Sr.No.	Number of LEDs	Wattage
1	210	15 W
2	10	08 W
3	03	18 W
Total	223	41 W

### Operating hours considered as 10 Hrs/Day

### **Use of LED bulbs**

- Annual lighting power requirement (in KWH)
   93,043 units.
- Annual lighting power requirement met through LED bulbs (in KWH)
   9523 units.
- Percentage of annual lighting power requirements met through LED bulbs 10.24 %.

**Use of Tube lights** 

**Operating hours considered as 10 Hrs/Day** 

Sr.No.	Number of LEDs	Wattage
1	800	36 W

1) Annual lighting power requirement (in KWH)

93,043 units.

- Annual lighting power requirement met through Tube lights (in KWH) 83,520 units.
- Percentage of annual lighting power requirements met through Tube Lights
   89.76 %.



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