

**ATSS**  
**Institute of Industrial and Computer Management and Research**  
**Nigdi, Pune- 44**

**Criterion VII- Institutional Values and Best Practices**

**7.1.3 Alternate Energy initiatives such as:  
Percentage of annual power requirement of the Institution met by the renewable energy sources**

Purchase Order(PO) :

33



Audyogik Tantra Shikshan Sanstha's

**INSTITUTE OF INDUSTRIAL & COMPUTER  
MANAGEMENT & RESEARCH**  
**[ I. I.C.M.R. ]**

Plot No. HS 2, Sector 27 - A, Near Sant Tukaram Garden, Pradhikaran, Nigdi, Pune 411 044.

PHONE 020-27657648

Societies Reg. Act 1960 Regn. No. MAH489P of 6-07-65

020-27650011

Mumbai Public Trust Regn. No. F-324 of 16-07-60

FAX 01 - 020 - 27655980

Website : www.iicmr.org

E-MAIL info@iicmr.org

Ref. IICMR/Work-Order/867/2017

Date: 5/10/2017

Work Order

To,  
M/S. SIKCO Engineering Services  
SIKCO Engineering Services  
SIKCO House, B-97, Sector-12, Kharghar,  
Navi Mumbai-410210,

Sub: Installation of Solar Power plant of 10KW

Dear Sir,

This refers to your quotation and the discussion with our directors on 28<sup>th</sup> of September 2017, regarding installation of 10KW Solar roof Top Power Plant in our college premises at the total cost excluding 5% GST of Rs. 6,10,000.00 (Six Lac Ten thousand rupees)

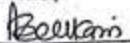
The payment terms shall be as follows:

1. 1 Lac (7%) advance along with work order
2. 40% against completion of foundation & structural work PV Modules, Inverter etc. received at site etc.
3. 43% against Installation & Commissioning of plant
4. 10% will be after receiving the subsidy from the MEDA.

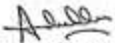
We are pleased to issue this work order for the same and request you to make necessary arrangements for the Installation at your earliest and oblige.

Thanking you

Sincerely

  
Dr. Abhay Kulkarni  
Director, IICMR



  
Dr. Ashwini Kulkarni  
Secretary, ATSS



Maharashtra Energy Development Agency (MEDA), Pune

### Joint Inspection Report

1.	Details of the Beneficiary	: The Secretary ATSS H.S.2 Sector 27/A Pradhikaran Nigali. 411044
2.	Name of the Channel Partners / Channel Partners (New Entrepreneurs) / Project Developers	: SIKCO Engineering Services, B-99 Sector 12 Near Shriyati Charkh Kharghate ↑
3.	MEDA Sanction No. & Date	: 5362 date 27-10-2017
4.	Stipulated Time limit for Commissioning (In Days)	: 60 days
5.	Commissioning Date	: 30-12-2017
6.	Category of Systems (Residential/Institutional/Social Sector)	: Institution.
7.	Capacity (in KW)	: 15 KW
8.	Capacity Sanction by MEDA	: 15 KW
9.	Total Sanction load (in KW)	: 15 KW

S.N.	Components	Std. Specification as per W.O.	Observation/ Remarks
1.	Solar modules PV	The Modules shall contain (Solar PV) Crystalline Silicon Solar Cell Modules and they must be IEC 61215 / IS 14286 standard.	Vikram solar modules as per IEC standard
		No. of Module (in Nos.)	49 nos
		SPV Module Capacity (in Wp)	322.5 Wp
		Project Capacity (in KW)	15 kW
		RFID Tag	Available
2.	Module Mounting structure	Purchase Order of SPV modules (checking indigenous SPV modules).	Provided
		Hot dip galvanized MS mounting structures may be used for mounting the modules / panels / arrays. Minimum thickness of galvanization should be at least 120 microns.	Yes, provided

हाऊर्जा विभागीय कार्यालय,  
पुणे

21 FEB 2018



S.N.	Components	Std. Specification as per W.O.	Observation/ Remarks
		It shall withstand the wind speed of respective wind zone (wind speed of 150 km/ hour). Mounting structure steel shall be as per latest IS 2062: 1992 and galvanization of the mounting structure shall be in compliance of latest IS 4759. (as per Eol specifications)	Visually structure withstand capacity looks better and stable
3.	Junction Boxes	<ul style="list-style-type: none"><li>The junction boxes shall be made of GRP / FRP / Powder Coated Aluminum / cast aluminum alloy with full dust, water and vermin proof.</li><li>The JB's shall be such that input &amp; output termination can be made through suitable cable glands. All wires / cables must be terminated through cable lugs.</li><li>Copper bus bars / terminal blocks housed in the junction box with suitable termination threads conforming to IP65 standard and IEC 62208 Hinged door with EPDM rubber gasket to prevent water entry. Provision of earthings.</li><li>Each Junction Box shall have High quality Suitable capacity Metal Oxide Varistors (MOVs) / SPDs, suitable Reverse Blocking Diodes.</li></ul>	Full dust, water and vermin proof. All wires/ cables terminated through cable lugs Yes Yes
		<ul style="list-style-type: none"><li>Make of JB:</li></ul>	TE connectivity
4.	DC DISTRIBUTION BOARD	<ul style="list-style-type: none"><li>It shall have sheet from enclosure of dust &amp; vermin proof conform to IP 65 protection</li></ul>	CONFIRMED
5.	Battery Bank (If Any).	<ul style="list-style-type: none"><li>The cells must be as per IEC Standard &amp; MNRE approved.</li><li>Make:</li></ul>	Capacity: Voltage ..... V Amp-.....Ah No. of Batteries:
6.	MNRE approved Charge Controller	<ul style="list-style-type: none"><li>Capacity: Voltage ..... V</li></ul>	Not Applicable



S.N.	Components	Std. Specification as per W.O.	Observation/ Remarks
	unit (If Any)	Amp -.....Ah	
7.	MNRE approved Grid Tie Inverter  Make: <u>Delta</u>	<ul style="list-style-type: none"><li>• <b>Nominal Capacity:</b> .....<u>15 kW</u></li><li>• <b>Input Voltage-</b> <u>415V</u> DC Nominal, The voltage variation shall be as per change in array output,</li><li>• <b>Output Voltage</b> - <u>440V</u>, 50 Hz, 1<math>\phi</math>, <b>Regulation:</b> From minimum to maximum voltage 1%, <b>Output Frequency:</b> 50 Hz, + 0.5 Hz, 200% for 30 Second, <b>Efficiency:</b> 80% at 50% of load and More than 90% at full load 0.8 PF.</li><li>• Protection against Islanding of grid as per IEEE 1547/UL 1741/ IEC 62116 or equivalent BIS standard.</li></ul>	Capacity- <u>15 kW</u>  <u>15</u>
8.	AC Distribution Panel Board	<ul style="list-style-type: none"><li>• All switches and the circuit breakers, connectors should conform to IEC 60947, part I, II and III/ IS 60947 part I, II and III.</li><li>• AC Distribution Panel Board should have necessary surge arrestors.</li><li>• Cables must properly align and insulated.</li></ul>	<u>Yes</u>  <u>Align &amp; Insulated</u>
9.	Danger Notice Plates for system having capacity 10KW or above.	<ul style="list-style-type: none"><li>• Danger boards should be provided as and where necessary as per IE Act. /IE rules as amended up to date.</li><li>• The inscriptions shall be in local language, Hindi and English.</li></ul>	<u>Provided</u>
10.	Earthing Systems.	<ul style="list-style-type: none"><li>• The Earthing system for array and distribution system &amp; SPV Power Plant</li><li>• Each array structure of the PV yard should be grounded/ earthed properly as per</li></ul>	<u>Earthing system is done properly</u>



Maharashtra Energy Development Agency (MEDA), Pune

S.N.	Components	Std. Specification as per W.O.	Observation/ Remarks
		IS:3043-1987	
11.	Tools kit (for system having capacity 10KW or above)	<ul style="list-style-type: none"> <li>Necessary tools kit is to be provided along with the each Power Plant for any routine maintenance or immediate repair</li> </ul>	Provided
12.	Training, Operation Manual & Display Board	<ul style="list-style-type: none"> <li>Training to the user for operation and maintenance of the system.</li> </ul>	Provided
		<ul style="list-style-type: none"> <li>Supply of manual for Operation and Maintenance in two languages i.e. in English and in Marathi to Beneficiary.</li> </ul>	Provided
		<ul style="list-style-type: none"> <li>Display Board of size 3 ft x 3 ft which gives detailed circuit diagram of the system with its description.</li> </ul>	Provided
13.	Net Meter	<ul style="list-style-type: none"> <li>Details of net meter and Date of commissioning. (Get the details of release order from utility with details of meter.)</li> </ul>	-
14.	Lightening arrester	Lightning protection should be provided as per IEC 62305 standards.	Provided
15.	Comprehensive Maintenance Contract (CMC)	Yes / No ✓	
16.	Exact Geographic coordinates of the site.	Longitude: Latitude:	73.7997° E 18.6298° N

The above system is installed, commissioned and found working satisfactory during the inspection and it is handed over to the beneficiary/user agency.

Sign of Beneficiary

Name: Ashwini Kulkarni

Date:

Sign of Manufacturer

Name: Yogesh Patil

Date:

Sign of MEDA Official

Name: Rutuja S. Umekar

Date:



**DIRECTOR**  
Institute of Industrial & Computer  
Management & Research (I.I.C.M.R.)  
Nigdi, Pune - 411 044



**DIRECTOR**  
Site visited by

Rutuja Umekar (PO)

General Manager  
Divisional Office, MEDA, Pune.

**POWER GENERATION REPORT**

We have guaranteed 22896 KWh/ annum for the first year, and the guarantee for each subsequent year GENERATION REPORT is as follows:

SIKCO®		Average KWh production /KWp for 10 years (Monthwise)										Solar days	320
MONTH	Irradiation Level kWh/m <sup>2</sup> /d	1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Year		
		KWh/KWp											
January	5.32	3.82	3.78	3.74	3.70	3.67	3.63	3.59	3.56	3.52	3.49		
February	6.25	4.49	4.44	4.40	4.35	4.31	4.27	4.22	4.18	4.14	4.10		
March	7.05	5.06	5.01	4.96	4.91	4.86	4.81	4.76	4.72	4.67	4.62		
April	7.38	5.30	5.24	5.19	5.14	5.09	5.04	4.99	4.94	4.89	4.84		
May	7.33	5.26	5.21	5.16	5.10	5.05	5.00	4.95	4.90	4.85	4.81		
June	5.64	4.05	4.01	3.97	3.93	3.89	3.85	3.81	3.77	3.73	3.70		
July	5.00	3.59	3.55	3.52	3.48	3.45	3.41	3.38	3.34	3.31	3.28		
August	5.12	3.67	3.64	3.60	3.57	3.53	3.49	3.46	3.42	3.39	3.36		
September	5.65	4.05	4.01	3.97	3.93	3.89	3.86	3.82	3.78	3.74	3.70		
October	5.72	4.10	4.06	4.02	3.98	3.94	3.90	3.86	3.83	3.79	3.75		
November	5.38	3.86	3.82	3.78	3.75	3.71	3.67	3.63	3.60	3.56	3.53		
December	5.00	3.59	3.55	3.52	3.48	3.45	3.41	3.38	3.34	3.31	3.28		
Average (KWh/Day/KWp)	5.80	4.24	4.19	4.15	4.11	4.07	4.03	3.99	3.95	3.91	3.87		

Note: Degradation of efficiency @ 1% per year considered  
 SIKCO Copyright © 2011 reserved for this document. Reproduction is strictly prohibited.

Therefore, the aforesaid is pro-rated upto 25 years, with a yearly degradation of 0.67%.

We will upload the Joint Inspection Report along with required document, kindly process & disburse the CFA at the earliest.

Sincerely



**SIKCO ENGINEERING SERVICES**



*[Signature]*  
**DIRECTOR**  
 Institute of Industrial & Computer  
 Management & Research [I.I.C.M.R.]  
 Nigdi, Pune - 411 044.

Date: 24-01-2018

To,  
MEDA,  
Office NO. 13A Snehal Classique Apartment,  
Infront of Zenith Complex, 411005, Narveer Tanaji Wadi,  
Shivajinagar, Pune, Maharashtra 411005

Sub: - Earthing Report

Dear Sir,

As per above referred subject, we provide earthing in "Audyogik Tantra Shikshan Sanstha, C/2, MIDC, Opp. Chinchwad East post office, Mumbai- Pune Road, Chinchwad-411019" for 15 KW Solar power system.

The Earthing report of above mentioned college is as below:

1. Mounting Structure earthing - 1Pit- "25x3"mm GI strip
2. Lighting Arrester earthing - 1Pit- "25x3"mm GI strip
3. Grid Tie Inverter & ACDB (Common Earthing) - 1Pit- "25x3"mm GI strip

Warm Regards



For SIKCO Engineering Services.



SIKCO Engineering Services  
B-97, Sector-12, Kharghar, Navi Mumbai  
www.sikco.in / info@sikco.in



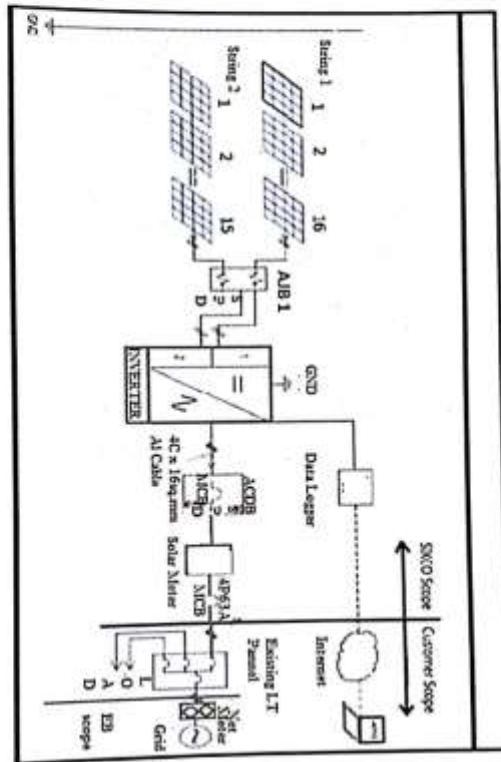
**DIRECTOR**  
Institute of Industrial & Computer  
Management & Research [I.I.C.M.R.]  
Nigdi, Pune - 411 044



**Single Line Diagram:**

**10 KWp Grid connected Solar Plant**

322.5 Wp x 32 no's, 16 No's x 1-String, 15 No's x 1-String



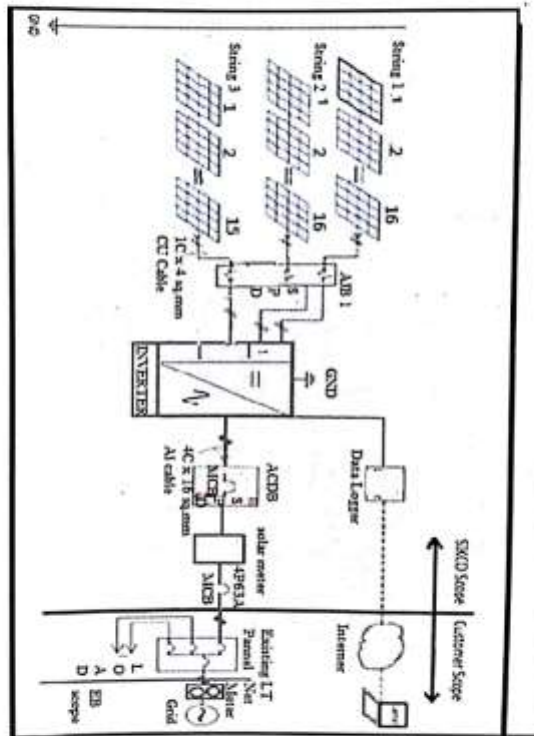
*Beekani*  
**DIRECTOR**  
Institute of Industrial & Computer  
Management & Research [I.I.C.M.R.]  
Nigdi, Pune - 411 044



# Single Line Diagram:

15 KWp Grid connected Solar Plant

322.5 Wp x 47no's, 16 No's x 2-String, 15 No's x 1-String



*[Signature]*  
DIRECTOR

Institute of Industrial & Computer  
Management & Research [I.I.C.M.R.]

IICMR.

**Energy Consumption Report for the year 2017-18**

Month	IICMR	
	2017 (in Units)	2018 (in Units)
January	2039	1608
February	2435	2120
March	2812	3409
April	3221	99
May	2257	100
June	2521	100
July	3077	8847
August	2860	2581
September	2919	100
October	2931	5977
November	1946	681
December	2805	1978
<b>Total</b>	<b>31823</b>	<b>27600</b>

Total Consumption in the year 2017-18	31823 units
Total Consumption in the year 2018-19	27600 units
Total Saving (A-B)	4223 Units
Average Monthly Consumption Saving	$4223 / 12 = 352$ units

  
V.V. Deogaonkar

Secretary Infra. Committee

  
Sanjay Mathpati

  
Dr. Abhay Kulkarni

Chairman Infra. Committee

Prepared By

Checked By

Approved By

### Tax Invoice

<b>Tax Invoice No:</b> 40 SIKCO/ Solar / 25	<b>Date of Invoice:</b> 10/11/2018	<b>Ref :</b> WO Date: 09/10/2017
Institute Of Industrial & Computer Management & Reserch [IICMR] Plot no. HS 2, sect - 27-A, Near Sant Tukaram Garden, pradhikaran, nigdi Pune - 411 044	<b>SIKCO GST No. :</b> 27BACPS8691E1Z9	IICMR /work order /867/2017
<b>Subject:</b> Supply, Installation of solar power plant of 10 KWp .		

SN	Description	Amount
1	Total order value for supply, installation, commissioning and testing of 15 KWp grid connected Solar Plant	Rs.6,10,000/-
2	GST 5% (Excluding)	-----
3	Total Amount (Excluding GST 5%)	Rs.6,10,000/-
4	Total Paid Amount	Rs.4,53,600/-
*	Balance Amount (To be payable)	Rs.1,56,400/-

Best Regards,

FOR SIKCO ENGINEERING SERVICES



**SIKCO Engineering Services**

B-97, Sector-12, Kharghar, Navi Mumbai -40210, Tel: +91 22 6517 4600  
www.sikco.in / info@sikco.in



Geo tagged photos of energy sources :- Solar Panel



Generator



*Beekam*  
DIRECTOR  
Institute of Industrial & Computer  
Management & Research [I.I.C.M.R.]  
Nigdi, Pune - 411 044.