



National Institute of Solar Energy

(An Autonomous Institution of MNRE, GOI)
19 K.m Stone, Gurgaon-Faridabad Road, Gwal Phari, Gurgaon (Haryana)-122003

File No: 335/2016-17 /CSC/NISE

Dated:

To,
M/S. KISAN SOLAR
A/2 ATULYA BHAVAN, NEAR C.E.R.C. S.G. HIGHWAY
THALTEJ AHMEDABAD - 380054

Subject: Issue of Test Report by National Institute of Solar Energy ('NISE')

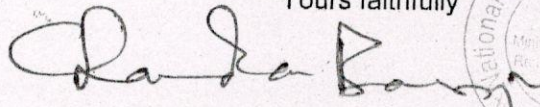
Dear Sir,

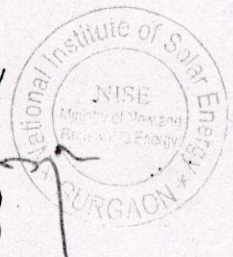
Please refer to your letter No./Order Form No. 05 Dated 25/01/17. In this connection, I am directed to enclose herewith the Test Report No : 161/2016/WP/NISE Dated 15/02/2017. In respect of your submitted samples in original, for ready reference and record.

2. Discrepancies, if any observed, in respect of any of the entries contained in the above report should be brought to the notice of this office within 30 days from the date of issue of this letter, failing which it will be presumed that the entries therein are in order and no further correspondence will be entertained thereafter on this particular report.
3. We would like to solicit your views and therefore enclosing a Feedback Form with a request to be filled up by you and then send as soon as possible. Your suggestions are valuable for us to make our further improvements and take corrective action in improving our quality of service.
4. Further, You are also requested to collect your samples at your cost within 30 days, from the date of issue of this letter falling which NISE will dispose of the sample in best possible manner and NISE will not be responsible in any manner for this sample.

Kindly acknowledge the receipt of this letter along with original test report and original Invoice.

Yours faithfully


(In-charge, Customer Service Cell)
(National Institute of Solar Energy)

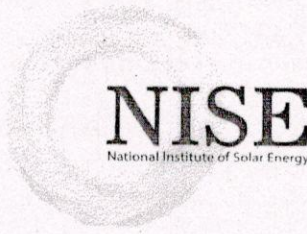


Encl:

1. Test Report-Total Page 04
2. Feedback Form

Copy forwarded for Information to:

1. PA to Director General-NISE
2. Guard File
3. Office Copy



National Institute of Solar Energy

(Formerly known as Solar Energy Centre)

(An autonomous Institute of Ministry of New & Renewable Energy)

Gurgaon-Faridabad Road, Gwalpahari, Gurgon-122003

✉ csc.nise.mnre@gmail.com ☎ 0124-2579052; FAX: 0124-2853056

2016-2017 TEST REPORT ON PV WATER PUMPING SYSTEM (Testing Model: AC DEEP WELL Model VII)

Sample Number: 161/2016/WP
 Manufactured by:
 Pump System: M/s KSB Pumps Ltd.
 PV Array : M/s Kosol Hiramrut Energies Pvt. Ltd.
 Controller: M/s Kisan Solar
 Submitted by: M/s Kisan Solar
 A/2, Atulya Bhavan, Near C.E.R.C., S.G. Highway,
 Thaltej, Ahmedabad-380054

NOTE

This is a report on measurements carried out on SPV WATER PUMPING SYSTEM (sample number 161/2016/WP/NISE) submitted to National Institute of Solar Energy as per specifications stipulated by the JNNSM, MNRE 2015-16. The data reported in this TEST REPORT are valid at the time of and under the stipulated conditions of measurement and the test results are applicable to those items of product which have been tested and do not apply to other products even though declared to be identical. The data contents in this report do not constitute a qualification certificate under any set of specifications. NISE does not accept any liability for any consequences including commercial or otherwise arising out of the utilization of the information contained in this report.

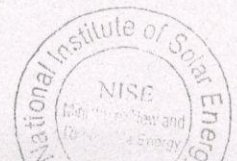
The Test Report, if reproduced for any purpose, commercial or otherwise, should be reproduced in full. The contents of the report can be published only after a written approval from the Director General, NISE. This report consists of 4 pages & annexure (of 16 pages).

abgard

Kenu

Pooja Kumar
21/02/2017

Test Report No.	Date of Issue	Total No. of pages	Page No.
161/2016/WP/NISE	15/02/2017	4	1



National Institute of Solar Energy

PV WATER PUMPING SYSTEM

(Testing Model: AC DEEP WELL Model VII)

SPV Pump System Submitted By: M/S. Kisan Solar

A/2, Atulya Bhavan, Near C.E.R.C., S.G. Highway,
Thaltej, Ahmedabad-380054

S.No.	Test Description	Requirements as per JNNISM, MNRE Specifications 2015-16	Observations	Remarks
1	PV Module/ Array			
1.1	Array Capacity at STC	Should be 4800 Wp under STC as per AC deep well Model VII	4824 Wp	Detail on page no. 4
1.2	Certification of PV Modules	Modules should have qualification test certificate as per IEC 61215 & IEC 61730 Part I & Part-II, qualified	Provided	Tested by UL India Pvt. Ltd. vide certificate no. ULI-NABL(ELT)-MNRE-0057/2013
1.3	Type of modules	Mono/ Multi- Crystalline Silicon solar cell module.	Multi Crystalline Silicon modules. Manufactured by M/s Kosol Hiramrut Energies Pvt. Ltd.	Model No. is not mentioned.
1.4	Peak power output of SPV module under STC.	Peak wattage of each Module should be more than 74 Wp. Module mismatch should be $< \pm 3\%$	Nominal module wattage 300 Wp.	Mismatch in modules wattage= 0.82 %
1.5	Module Efficiency	Should be more than 14%	Comply	
1.6	Fill Factor	Should be more than 70 %	Comply	
2.	Motor & Pump Details			
2.1	Make, model & Serial No.		M/s KSB Pump Pvt. Ltd. , Model: UQD 152/11, Pump Sr. no. 1372953005, Motor Model: UQD 152/11 + UMA/150-3/22, Sr. No. 1372953005, Controller: M/s Kisan Solar, Model: IACQUA-400-6, Sr. No. 0616-4050-000478, 5 HP	
2.2	Type of pump	Shallow well or Deep well pump	Deep well pump	
2.3	Operation	DC/AC	AC	
3.	Electronics and Protections			
3.1	IP 54 Protection	Required	Provided	Tested By: ERTL, Mumbai Test Report No: ERTL(W) 2015 ENV 191
3.2	Remote Monitoring Facility	The following parameters need to be provided: 1. Daily water output 2. Power generated by the PV array 3. Up time of the pump during the year 4. No. of days the pump was unused or under breakdown/ repairs	Provided	Adequate

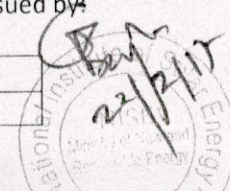
Tested by: *alagand*

Prepared by: *Kenn*

Approved by: *Rajendra Kumar*

Issued by: *21/02/2017*

Test Report No.	Date of Issue	Total No. of pages	Page No.
161/2016/WP/NISE	15/02/2017	4	2



National Institute of Solar Energy

PV WATER PUMPING SYSTEM

(Testing Model: AC DEEP WELL Model VII)

SPV Pump System Submitted By: M/S. Kisan Solar

A/2, Atulya Bhavan, Near C.E.R.C., S.G. Highway,
Thaltej, Ahmedabad-380054

S.No.	Test Description	Requirements as per JNNSM, MNRE Specifications 2015-16	Observations	Remarks
4	Testing of complete SPV pump			
4.1	Output of water per day/per watt at Irradiation of 7.15 Kwh/sq.m. at a total head of 70 meters.	Not less than 13 liters	14 ± 1 liters	
4.2	Average Output of water per day at Irradiation of 7.15 Kwh/sq.m. at a total head of 70 meters in summer season	Not less than 62,400 liters	64,530 liters	
4.3	Average Output of water per day at Irradiation of 7.15 Kwh/sq.m. at a total head of 70 meters in winter season	Not less than 62,400 liters	77,234 liters	
4.3	Max. total dynamic head	100 meters	100 meters	
5	Tracking system	Continuous, Manual, Passive or Electronic tracking are permitted.	Manual 3 times a day	
6	Protections (Controller)			
6.1	Against dry running	Required	Provided	
6.2	Against open circuit and short-circuit	Required	Provided	
6.3	Against reverse polarity	Required	Provided	
7	Others			
7.1	Design of PV array	Should be modular for easy replacement.	Modular	
7.2	DC/AC switch	Required	Provided	
7.3	Connection cable	Required	Provided	

Comments: The Water pumping System sample was tested at NISE with total head of 70 meters, the radiation data was measured on the array surface from dawn to dusk, and was extrapolated for 7.15 KWh/sq.m. **SPV Water pumping system meets the requirements as per MNRE specifications for 2015-16. Model No. of PV module is not mentioned.**

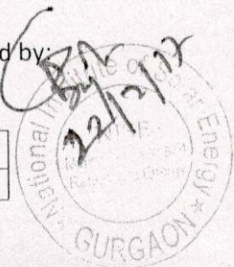
Tested by: *Alagon*

Prepared by: *Renu*

Approved by: *P. J. K. K. K. K.*

Issued by: *22/2/17*

Test Report No.	Date of Issue	Total No. of pages	Page No.
161/2016/WP/NISE	15/02/2017	4	3



National Institute of Solar Energy

PV WATER PUMPING SYSTEM

(Testing Model: AC DEEP WELL Model VII)

SPV Pump System Submitted By: M/S. Kisan Solar

A/2, Atulya Bhavan, Near C.E.R.C., S.G. Highway,
Thaltej, Ahmedabad-380054

Peak Wattages of Individual PV Modules tested at National Institute of Solar Energy, Gurgaon vide report no. 184/292/NISE/2016-17 dated 04/01/2017.

Model: UNKNOWN

S.NO.	Voc(V)	Isc(A)	V _{max} (V)	I _{max} (A)	P _{max} (W)	F.F	M. EFF. (%)
KE3151841601986	45.58	8.94	36.17	8.33	301	0.740	15.6
KE3151841601949	45.36	8.82	36.18	8.28	300	0.749	15.5
KE3151841601942	45.54	8.86	36.24	8.29	300	0.744	15.5
KE3151841601950	45.58	8.88	36.22	8.29	300	0.742	15.5
KE3151841601937	45.43	8.92	36.09	8.31	300	0.740	15.5
KE3151841601951	45.62	9.01	36.41	8.36	305	0.741	15.7
KE3151841601895	45.65	9.08	36.36	8.35	304	0.732	15.7
KE3151841601893	45.47	8.93	36.17	8.32	301	0.741	15.5
KE3151841601956	45.64	8.93	36.27	8.27	300	0.736	15.5
KE3151841601923	45.83	8.97	36.46	8.34	304	0.740	15.7
KE3151841601920	45.39	8.94	36.11	8.30	300	0.738	15.5
KE3151841601941	45.52	8.96	36.23	8.31	301	0.738	15.5
KE3151841601906	45.54	8.96	36.35	8.33	303	0.743	15.6
KE3151841601947	45.61	8.98	36.44	8.35	304	0.743	15.7
KE3151841601925	45.40	8.98	36.09	8.35	301	0.739	15.5
KE3151841601915	45.41	8.86	36.26	8.28	300	0.746	15.5

Total P_{max} = 4824 Wp

Tested by:

alagani

Prepared by:

Renu

Approved by:

Rajesh Kumar
21/02/2017

Issued by:

Bm
21/2/17

Test Report No.	Date of Issue	Total No. of pages	Page No.
161/2016/WP/NISE	15/02/2017	4	4