Test Report

Test Item: PV WATER PUMPING SYSTEM

Model No: IV

M/s. Solar Idea Pvt. Ltd.

Certificate No. T-1543

TÜVRheinland®

TÜV Rheinland (India) Pvt. Ltd.

Plot No.17B, Electronic City Phase II Industrial Area, Hosur Road,
Bangalore - 560 100, Karnataka, India.

2015-2016

TEST REPORT
ON
PV WATER PUMPING SYSTEM

Sample Number: **1803082268-1/IV-50**

Manufactured by

Submitted by: **M/s. Solar Idea Pvt. Ltd.**

PV Array : **M/s. Akshaya Solar Power(I) Pvt.Ltd.**

Pump System: **M/s Falcon Pumps Pvt. Ltd.**

NOTE

This is a report on measurements carried out on PV WATER PUMPING SYSTEM (sample number 1803082268-1/IV-50) submitted at TÜV Rheinland (India) Pvt. Ltd. as per specifications stipulated by the JNNSM, MNRE 2013-14. 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. TUV Rheinland does not accept any liability for any consequences including commercial or otherwise arising out of the utilization of the information contained in this report.

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Tested & Prepared by:
Manjunath.K / Sr. Engineer

Approved by:
Kamalaksha CS / Sr. Manager

Issued by:

TÜV Rheinland (India) Pvt. Ltd. Bangalore

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PV WATER PUMPING SYSTEM
M/s. Solar Idea Pvt. Ltd.
Plot No:126, H.No:8-2-277/A/7, Road No-2, Banjara Hills, Hyderabad 500034 Telangana, India

S.N.	Test Description	Requirements as per JNNSM, MNRE Specifications 2013-14.	Observations	Remarks
1.	**PV Module/ Array** i. Array Capacity at STC	Should be between 200 Wp and 5000 Wp under STC.	4851.37 Wp	Array capacity is as per page 4 of this report
	ii. Fabrication of PV Modules	Modules should be IEC 61215 & IEC 61730 Part I & Part-II, qualified, properly laminated and hermetically sealed.	Yes, properly laminated. IEC 61215& IEC 61730 qualified	
	iii. Type of modules	Crystalline Silicon solar cell module.	Multi /~~Mono~~Crystalline Silicon modules. Manufactured by M/s. Akshaya Solar Power(I) Pvt.Ltd.	
	iv. Peak power output of SPV module under STC.	Peak wattage of each Module should be more than 74 Wp	Nominal module wattage 242.56 Wp.	
	v. Efficiency	Should be more than 14%	Module Efficiency : 14.82%	Module Mismatch= 1.05%
	vi. Fill Factor	Should be more than 70 %	Fill Factor 75.21%	
2.	**Motor and Pump Details:** i. Make, model & Serial No.		M/s Falcon Pumps Pvt. Ltd. Motor: Model no: DRS-100/5 Serial no: BIS 15063088 Solar Pump Controller: M/s. Solar Idea Pvt. Ltd.. Model: VFD.5HP.D098A Sl. No: 061520101204	
	ii. Type of pump	Shallow well or Deep well pump	Deep well pump	
	iii. Operation	DC/AC	AC	
	iv. MODEL specifications	Shallow Well Pumping System: MODEL-I, MODEL –II or MODEL-III Deep Well Pumping System: MODEL-I, MODEL –II , MODEL-III or MODEL - IV	Deep Well Pumping System: Model-IV	

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S.N.	Test Description	Requirements as per JNNSM, MNRE Specs. 2013-14	Observations	Remarks
3.	**Testing of complete SPV pump**			
	i. Output of water per day/per watt at Irradiation of 7.15 Kwh/sq.m. at a total head of 50.0 meters.	Not less than 19 liters	22.10 ± 0.44 liters	
	ii. Average Output of water per day at Irradiation of 7.15 Kwh/sq.m. at a total head of 50.0 meters	Not less than 91,000 liters	1,07,250 liters	
	iii. Max. total dynamic head	70 meters	70 meters	
4.	**Tracking system:**	Continuous, Manual, Passive or Electronic tracking are permitted.	Manual	
5.	**Protections**			
	a. Against dry running	Required	Provided	
	b. Against wind speed	Should withstand speeds up to 150 Kms/hr.	Not tested	
	c. Against lightening, hail and storm.	Required	Not tested	
	d. Against open circuit short-circuit and reverse polarity.	Required	Provided	
6.	**Others**			
	a. Design of PV array	Should be modular for easy replacement.	Modular	
	b. DC/AC switch	Required	Provided	
	c. Connection cable	Required	Provided	
	d. Data Logger & Remote Monitoring Mechanism	Required	Provided	

Comments: ***The water pumping System was tested at TUV Rheinland lab with total head of 50 meters and the radiation data (Dawn to Dusk), Array output was simulated through Solar Array Simulator up to 7.15 KWh/m2. Water pumping system sample meets the requirements of JNNSM, MNRE specifications for 2013-2014.***

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Peak Wattages of Individual PV Modules tested at TÜV Rheinland (India) Pvt. Ltd., Bangalore.

Module-ID	Pmax[W]	Vmp[V]	Imp[A]	Voc[V]	Isc[A]	FF[/100]%	M.Eff[/100]%	C.Eff[/100]%
15141-165120240-0520	243.48	30.34	8.025	37.61	8.58	0.7546	0.1488	0.1667
15156-165120240-0520	243.25	30.26	8.039	37.6	8.617	0.7507	0.1486	0.1666
15173-165120240-0520	243.32	30.23	8.05	37.58	8.626	0.7506	0.1487	0.1666
15180-165120240-0520	242.34	29.87	8.114	37.58	8.586	0.7511	0.1481	0.1659
15169-165120240-0520	241.65	30.37	7.956	37.51	8.588	0.7502	0.1476	0.1655
15157-165120240-0520	243.18	30.21	8.05	37.58	8.61	0.7515	0.1486	0.1665
15179-165120240-0520	241.77	30.24	7.995	37.49	8.539	0.7551	0.1477	0.1656
15168-165120240-0520	243.35	30.25	8.044	37.63	8.588	0.753	0.1487	0.1666
15147-165120240-0520	243.43	30.2	8.061	37.62	8.603	0.7521	0.1487	0.1667
15183-165120240-0520	241.47	30.15	8.01	37.45	8.566	0.7528	0.1475	0.1653
15191-165120240-0520	243.09	30.19	8.051	37.55	8.587	0.7539	0.1485	0.1665
15153-165120240-0520	241.73	30.21	8.001	37.53	8.596	0.7492	0.1477	0.1655
15184-165120240-0520	242.25	30.37	7.976	37.5	8.556	0.7549	0.148	0.1659
15158-165120240-0520	244.11	30.23	8.074	37.62	8.599	0.7546	0.1491	0.1672
15189-165120240-0520	240.07	29.88	8.035	37.37	8.565	0.7501	0.1467	0.1644
15187-165120240-0520	241.76	29.89	8.087	37.47	8.574	0.7525	0.1477	0.1655
15167-165120240-0520	242.49	30.39	7.98	37.56	8.594	0.7514	0.1481	0.166
15163-165120240-0520	242.34	30.19	8.028	37.58	8.586	0.7511	0.1481	0.1659
15174-165120240-0520	243.42	30.41	8.004	37.64	8.596	0.7525	0.1487	0.1667
15155-165120240-0520	242.87	30.17	8.05	37.56	8.602	0.7517	0.1484	0.1663

Qty. of Modules = 20 Nos.

Total P_{max} = 4851.37 Wp

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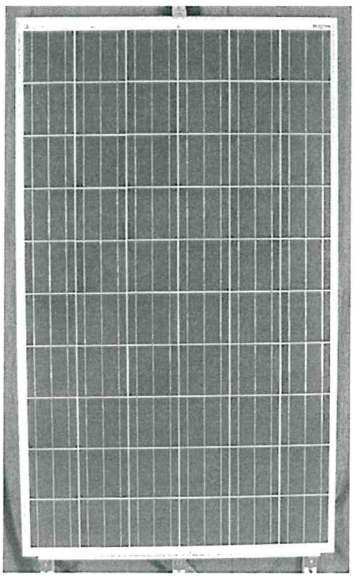
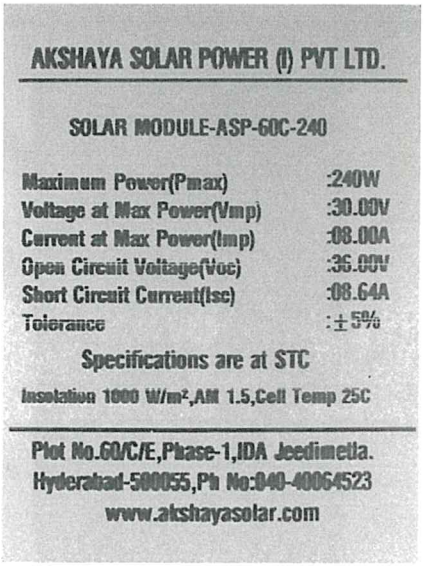
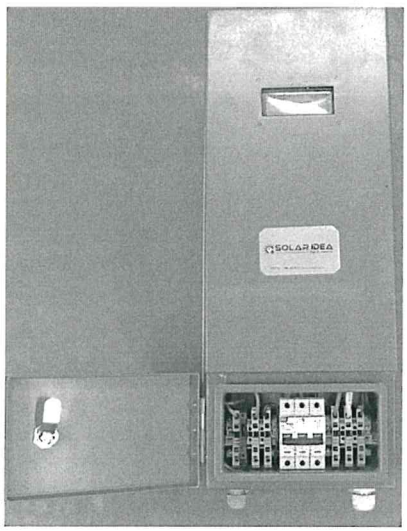
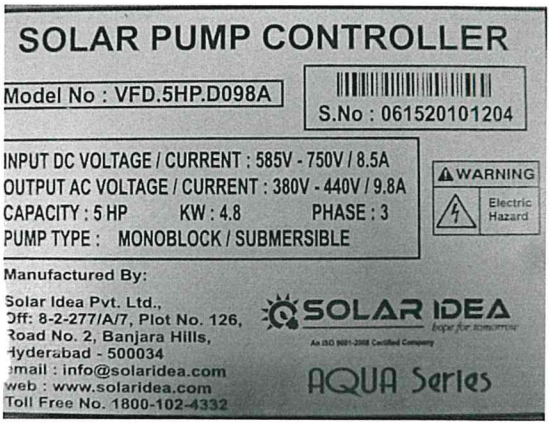
Photo document





SPV Module





Solar Pump Controller / Inverter

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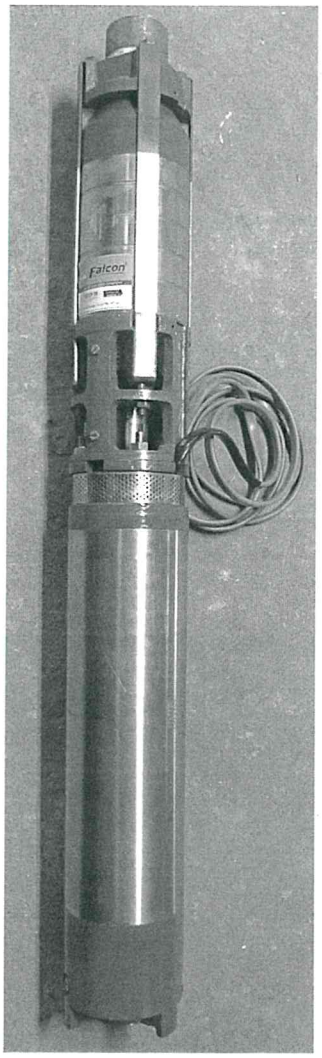

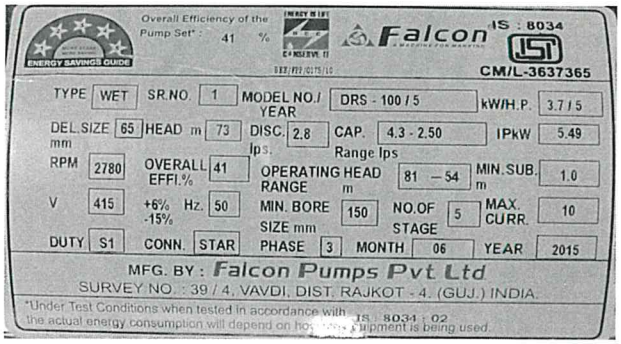

Pump set

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