

# ELECTRICAL RESEARCH AND DEVELOPMENT ASSOCIATION

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## TEST REPORT

Sheet No.: 1 of 6

<b>NAME &amp; ADDRESS OF CUSTOMER</b> M/s. Pluga Pumps and Motors Pvt. Ltd. 21, Alindra, Manjusar GIDC, Savli, Post: Lamdapura, Dist: Vadodara - 391 775, Gujarat, India.	<b>REPORT NO.:</b> RP-1718-043926	
	<b>DATE:</b> 05/12/2017	
	<b>CUSTOMER'S REF. NO.:</b> Not specified	
<b>SAMPLE DESCRIPTION:</b> Solar PV water pumping system. <b>Pump System:</b> Pumpset Sr. No.: FM-7360, Type: Submersible, Pump Model (From Name Plate): PS03-30-32, Motor Model (From Name Plate): 6PSM3, Rating: 3.0 HP, MNRE model: AC, Model: III, Manufacturer: Pluga Pumps and motors Pvt. Ltd. <b>PV Module:</b> Model no: TEL24P300, No. of cell in module: 72, Power: 300 Wp, Type of module: Multi crystalline, Module Efficiency: 15 %, Manufacturer: Topsun Energy. <b>Array:</b> No. of modules in series: 10 Array capacity: 3000 Wp. <b>Enclosure:</b> Model: PSC-3, Enclosure IP code: IP 54. <b>Controller (From Name Plate):</b> VFD pumpset controller Sr. no.: FM-7360, VFD pumpset controller manufacturer: Pluga Pumps and Motors Pvt. Ltd., VFD Sr. No.: M6YA679A0025AG, VFD Model: FRN0011C2S-4SL, VFD Manufacturer: Fuji Electric. <b>Submitted By (Manufacturer):</b> Pluga Pumps and Motors Pvt. Ltd.	<b>DATE:</b> 29/09/2017	<b>DATE OF TESTING:</b> 24/11/2017 to 05/12/2017
	<b>ERDA SAMPLE CODE NO.:</b> ERDA-00222815	
	<b>SAMPLE IDENTIFICATION:</b>  Pumpset Sr. No.: FM-7360	
<b>TEST DETAILS</b>	<b>TEST SPECIFICATION</b>	
Performance test of solar PV water pumping systems	As per JNNSM & MNRE (2015-2016) Specification.	
<b>Test results:</b> As per enclosure.		
<b>NOTE:</b> This pumping system conform the requirement of MNRE specification 2015-2016 for Model: III, Annexure-II.		
<b>Enclosure:</b> Sample photo as per Annexure 1.		
 <b>Prepared by</b>	 <b>Checked by</b>	 <b>R.P. Singh</b> <b>Approved By</b>
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## TEST REPORT

Sheet No.: 1 of 6

<b>NAME &amp; ADDRESS OF CUSTOMER</b> M/s. Plugra Pumps and Motors Pvt. Ltd. (A Franklin Electric Company) 21, Alindra, Manjusar GIDC, Savali, Post: Lamdapura, Dist: Vadodara - 391 775, Gujarat, India.	<b>REPORT NO.:</b> RP 1718-047140	
	<b>DATE:</b> 22/12/2017	
	<b>CUSTOMER'S REF. NO.:</b> Not specified	
	<b>DATE:</b> 29/09/2017	
	<b>DATE OF SAMPLE RECEIPT:</b>	<b>DATE OF TESTING:</b>
	29/09/2017	01/12/2017 to 22/12/2017
<b>SAMPLE DESCRIPTION:</b> Solar PV water pumping system. <b>Pump System:</b> Pumpset Sr. No.: FM-7361, Type: Submersible, Pump model no. (From Name Plate): PS03-70-13, Motor model no. (From Name Plate): 6PSM3, Rating: 3.0 HP, MNRE model: AC, Model: V, Manufacturer: Plugra Pumps and motors Pvt. Ltd. <b>PV Module:</b> Model no: TEL24P300, No. of cell in module: 72, Power: 300 Wp, Type of module: Multi crystalline, Module Efficiency: >15 %, Manufacturer: Topsun Energy. <b>Array:</b> No. of modules in series: 10 Array capacity: 3000 Wp. <b>Enclosure:</b> Model: PSC-3, Enclosure IP code: IP 54. <b>Controller (From Name Plate):</b> VFD pumpset controller Sr. no.: FM-7361, VFD pumpset controller manufacturer: Plugra Pumps and Motors Pvt. Ltd., VFD Sr. No.: M6YA241A0016AG, VFD Model: FRN0011C2S-4SL, VFD Manufacturer: Fuji Electric. <b>Submitted By (Manufacturer):</b> Plugra Pumps and Motors Pvt. Ltd.	<b>SAMPLE IDENTIFICATION:</b> Pumpset Sr. No.: FM-7361  <b>ERDA SAMPLE CODE NO.:</b> ERDA-00222814	
<b>TEST DETAILS</b>	<b>TEST SPECIFICATION</b>	
Performance test of solar PV water pumping systems	As per JNNISM & MNRE (2015-2016) Specification.	
<b>Test results:</b> As per enclosure.		
<b>NOTE:</b> This pumping system conform the requirement of MNRE specification 2015-2016 for Model: V, Annexure-II.		
<b>Enclosure:</b> Sample photo as per Annexure 1.		
 <b>Prepared by</b>	 <b>Checked by</b>	 <b>R.P. Singh Approved By</b>
<b>NOTE:</b> 1. This report relates only to the particular sample received for testing in good condition at ERDA, Vadodara. 2. This report cannot be reproduced in part under any circumstances. 3. Publication of this report requires prior permission in writing from director ERDA. 4. Only the tests asked for by the customer have been carried out. 5. In case of any dispute, Vadodara will be the exclusive jurisdiction & shall be construed as where the cause has arised. <b>Caution:</b> ERDA is not responsible for the authenticity of photocopied or reproduced test reports. ERDA provides support to customers for verification of the authenticity of test reports issued by ERDA.		

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## TEST REPORT

Sheet No.: 1 of 7

<b>NAME &amp; ADDRESS OF CUSTOMER</b> M/s. Pluga Pumps and Motors Pvt. Ltd. 21, Alindra, Manjusar GIDC, Savli, Post: Lamdapura, Dist: Vadodara - 391 775, Gujarat, India.	<b>REPORT NO.:</b> RP-1718-043924	
	<b>DATE:</b> 05/12/2017	
	<b>CUSTOMER'S REF. NO.:</b> Not specified	
	<b>DATE:</b> 29/09/2017	
	<b>DATE OF SAMPLE RECEIPT:</b>	<b>DATE OF TESTING:</b>
	29/09/2017	26/11/2017 to 05/12/2017
<b>SAMPLE DESCRIPTION:</b> Solar PV water pumping system. <b>Pump System:</b> Pumpset Sr. No.: FM-7362, Type: Submersible, Pump Model: PS05-50-19 (From Name Plate), Motor Model: 6PSM5 (From Name Plate), Rating: 5.0 HP, MNRE model: AC, Model: VI, Manufacturer: Pluga Pumps and motors Pvt. Ltd. <b>PV Module:</b> Model no: TEL24P300, No. of cell in module: 72, Power: 300 Wp, Type of module: Multi crystalline, Module Efficiency: 15 %, Manufacturer: Topsun Energy. <b>Array:</b> No. of modules in series: 16, Array capacity: 4800 Wp. <b>Enclosure:</b> Model: PSC-3, Enclosure IP code: IP 54. <b>Controller (From Name Plate):</b> VFD pumpset controller Sr. no.: FM-7362, VFD pumpset controller manufacturer: Pluga Pumps and Motors Pvt. Ltd., VFD Sr. No.: M6YA173A0009AG, VFD Model: FRN0011C2S-4SL, VFD Manufacturer: Fuji Electric. <b>Submitted By (Manufacturer):</b> Pluga Pumps and Motors Pvt. Ltd.	<b>SAMPLE IDENTIFICATION:</b>  Pumpset Sr. No.: FM-7362  <b>ERDA SAMPLE CODE NO.:</b> ERDA-00222813	
<b>TEST DETAILS</b>	<b>TEST SPECIFICATION</b>	
Performance test of solar PV water pumping systems	As per JNNSM & MNRE (2015-2016) Specification.	
<b>Test results:</b> As per enclosure.		
<b>NOTE:</b> This pumping system conform the requirement of MNRE specification 2015-2016 for Model: VI, Annexure-II.		
<b>Enclosure:</b> Sample photo as per Annexure 1.		
 <b>Prepared by</b>	 <b>Checked by</b>	 <b>R.P. Singh Approved By</b>
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<b>NAME &amp; ADDRESS OF CUSTOMER</b> M/s. Plugra Pumps and Motors Pvt. Ltd. (A Franklin Electric Company) 21, Alindra, Manjusar GIDC, Savali, Post: Lamdapura, Dist: Vadodara - 391 775, Gujarat, India.	<b>REPORT NO.:</b> RP-1718-047139	
	<b>DATE:</b> 22/12/2017	
	<b>CUSTOMER'S REF. NO.:</b> Not specified	
	<b>DATE:</b> 29/09/2017	
	<b>DATE OF SAMPLE RECEIPT:</b>	<b>DATE OF TESTING:</b>
	29/09/2017	24/11/2017 to 22/12/2017
<b>SAMPLE DESCRIPTION:</b> Solar PV water pumping system. <b>Pump System:</b> Pumpset Sr. No.: FM-7363, Type: Submersible, Pump Model( From Name Plate): PS05-70-13, Motor Model (From Name Plate): 6PSM5, Rating: 5.0 HP, MNRE model: AC, Model: VII, Manufacturer: Plugra Pumps and Motors Pvt. Ltd. <b>PV Module:</b> Model no: TEL24P300, No. of cell in module: 72, Power: 300 Wp, Type of module: Multi crystalline, Module Efficiency: >15 %, Manufacturer: Topsun Energy. <b>Array:</b> No. of modules in series: 16, Array capacity: 4800 Wp. <b>Enclosure:</b> Model: PSC-3, Enclosure IP code: IP 54. <b>Controller (From Name Plate):</b> VFD pumpset controller Sr. no.: FM-7363, VFD pumpset controller manufacturer: Plugra Pumps and Motors Pvt. Ltd., VFD Sr. No.: M6YA173A0048AG, VFD Model: FRN0011C2S-4SL, VFD Manufacturer: Fuji Electric. <b>Submitted By (Manufacturer):</b> Plugra Pumps and Motors Pvt. Ltd.	<b>SAMPLE IDENTIFICATION:</b>  Pumpset Sr. No.: FM-7363  <b>ERDA SAMPLE CODE NO.:</b> ERDA-00222812	
<b>TEST DETAILS</b>	<b>TEST SPECIFICATION</b>	
Performance test of solar PV water pumping systems	As per JNNSM & MNRE (2015-2016) Specification.	
<b>Test results:</b> As per enclosure.		
<b>NOTE:</b> This pumping system conform the requirement of MNRE specification 2015-2016 for Model: VII, Annexure-II.		
<b>Enclosure:</b> Sample photo as per Annexure 1.		
 <b>Prepared by</b>	 <b>Checked by</b>	 <b>R.P. Singh Approved By</b>
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Sheet No.: 1 of 7

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	<b>DATE:</b> 22/12/2017	
	<b>CUSTOMER'S REF. NO.:</b> Not specified	
	<b>DATE:</b> 29/09/2017	
	<b>DATE OF SAMPLE RECEIPT:</b>	<b>DATE OF TESTING:</b>
	29/09/2017	12/12/2017 to 22/12/2017
<b>SAMPLE DESCRIPTION:</b> Solar PV water pumping system. <b>Pump System:</b> Pumpset Sr. No.: FM-7364, Type: Submersible, Pump Model No.(From Name Plate): PS7.5-50-22, Motor Model No.(From Name Plate): 6PSM7.5, Rating: 7.5 HP, MNRE model: AC, Model: IX, Manufacturer: Pluga Pumps and motors Pvt. Ltd. <b>PV Module:</b> Model no: TEL24P300, No. of cell in module: 72, Power: 300 Wp, Type of module: Multi crystalline, Module Efficiency: >15 %, Manufacturer: Topsun Energy. <b>Array:</b> No. of modules (series x parallel): 12 x 2 Array capacity: 7200 Wp. <b>Enclosure:</b> Model: PSC-3, Enclosure IP code: IP 54. <b>Controller (From Name Plate):</b> VFD pumpset controller Sr. no.: FM-7364, VFD pumpset controller manufacturer: Pluga Pumps and Motors Pvt. Ltd., VFD Sr. No.: M5ZA560A0013AA, VFD Model: FRN0018C2S-4SL, VFD Manufacturer: Fuji Electric. <b>Submitted By (Manufacturer):</b> Pluga Pumps and Motors Pvt. Ltd.	<b>SAMPLE IDENTIFICATION:</b>  Pumpset Sr. No.: FM-7364  <b>ERDA SAMPLE CODE NO.:</b> ERDA-00222811	
<b>TEST DETAILS</b>  Performance test of solar PV water pumping systems	<b>TEST SPECIFICATION</b>  As per JNNSM & MNRE (2015-2016) Specification.	
<b>Test results:</b> As per enclosure.		
<b>NOTE:</b> This pumping system conform the requirement of MNRE specification 2015-2016 for Model: IX, Annexure-II.		
<b>Enclosure:</b> Sample photo as per Annexure 1.		
 <b>Prepared by</b>	 <b>Checked by</b>	 <b>R.P. Singh Approved By</b>
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## TEST REPORT

Sheet No.: 1 of 7

<b>NAME &amp; ADDRESS OF CUSTOMER</b> M/s. Plugra Pumps and Motors Pvt. Ltd. 21, Alindra, Manjusar GIDC, Savli, Post: Lamdapura, Dist: Vadodara - 391 775, Gujarat, India.	<b>REPORT NO.:</b> RP-1819-000657	
	<b>DATE:</b> 09/04/2018	
	<b>CUSTOMER'S REF. NO.:</b> Not specified	
	<b>DATE:</b> 23/12/2017	
	<b>DATE OF SAMPLE RECEIPT:</b>	<b>DATE OF TESTING:</b>
	04/01/2018	30/01/2018 to 09/04/2018
<b>SAMPLE DESCRIPTION:</b> Solar PV water pumping system. <b>Pump System:</b> Pumpset Sr. No.: IM-10290, Type: Submersible, Pump Model: PS7.5-70-15, Motor Model: 6PSM75, Rating: 7.5 HP, MNRE model: AC, Model: X, Manufacturer: Plugra Pumps and motors Pvt. Ltd. <b>PV Module:</b> Model no: TEL24P300, No. of cell in module: 72, Power: 300 Wp, Type of module: Multi crystalline, Suitable for humid area, Module Efficiency: > 15 %, Manufacturer: Topsun Energy. <b>Array:</b> No. of modules (series x parallel): 12 x 2, Array capacity: 7200 Wp. <b>Enclosure:</b> Model: PSC-3, Enclosure IP code: IP 54. <b>Controller (From Name Plate):</b> VFD pumpset controller Sr. no.: IM-10290, VFD pumpset controller manufacturer: Plugra Pumps and Motors Pvt. Ltd., VFD Sr. No.: M5YA446A0021AA, VFD Model: FRN0018C2S-4SL, VFD Manufacturer: Fuji Electric. <b>Submitted By (Manufacturer):</b> Plugra Pumps and Motors Pvt. Ltd.	<b>SAMPLE IDENTIFICATION:</b>  Pumpset Sr. No.: IM-10290  <b>ERDA SAMPLE CODE NO.:</b> ERDA-00234773	
<b>TEST DETAILS</b>	<b>TEST SPECIFICATION</b>	
Performance test of solar PV water pumping systems	As per JNSM & MNRE (2015-2016) Specification.	
<b>Test results:</b> As per enclosure.		
<b>NOTE:</b> This pumping system conform the requirement of MNRE specification 2015-2016 for Model: X, Annexure-II.		
<b>Enclosure:</b> Sample photo as per Annexure 1.		
 <b>Prepared by</b>	 <b>Checked by</b>	 <b>Gautam Brahmhatt</b> <b>Approved By</b>
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Sheet No.: 1 of 7

<b>NAME &amp; ADDRESS OF CUSTOMER</b> M/s. Plugra Pumps and Motors Pvt. Ltd. 21, Alindra, Manjusar GIDC, Savli, Post: Lamdapura, Dist: Vadodara – 391 775, Gujarat, India.	<b>REPORT NO.:</b> RP-1819-000658 <b>DATE:</b> 09/04/2018	
	<b>CUSTOMER'S REF. NO.:</b> Not specified <b>DATE:</b> 23/12/2017	
<b>SAMPLE DESCRIPTION:</b> Solar PV water pumping system. <b>Pump System:</b> Pumpset Sr. No.: IM-10291, Type: Submersible, Pump Model: PS7.5-100-9, Motor Model: 6PSM75, Rating: 7.5 HP, MNRE model: AC, Model: XI, Manufacturer: Plugra Pumps and motors Pvt. Ltd. <b>PV Module:</b> Model no: TEL24P300, No. of cell in module: 72, Power: 300 Wp, Type of module: Multi crystalline, Suitable for humid area, Module Efficiency: > 15 %, Manufacturer: Topsun Energy. <b>Array:</b> No. of modules (series x parallel): 12 x 2, Array capacity: 7200 Wp. <b>Enclosure:</b> Model: PSC-3, Enclosure IP code: IP 54. <b>Controller (From Name Plate):</b> VFD pumpset controller Sr. no.: IM-10291, VFD pumpset controller manufacturer: Plugra Pumps and Motors Pvt. Ltd., VFD Sr. No.: M5ZA560A0011AA, VFD Model: FRN0018C2S-4SL, VFD Manufacturer: Fuji Electric. <b>Submitted By (Manufacturer):</b> Plugra Pumps and Motors Pvt. Ltd.	<b>DATE OF SAMPLE RECEIPT:</b> 04/01/2018	<b>DATE OF TESTING:</b> 29/01/2018 to 09/04/2018
	<b>SAMPLE IDENTIFICATION:</b>  Pumpset Sr. No.: IM-10291  <b>ERDA SAMPLE CODE NO.:</b> ERDA-00234775	
<b>TEST DETAILS</b>	<b>TEST SPECIFICATION</b>	
Performance test of solar PV water pumping systems	As per JNNSM & MNRE (2015-2016) Specification.	
<b>Test results:</b> As per enclosure.		
<b>NOTE:</b> This pumping system conform the requirement of MNRE specification 2015-2016 for Model: XI, Annexure-II.		
<b>Enclosure:</b> Sample photo as per Annexure 1.		
 <b>Prepared by</b>	 <b>Checked by</b>	 <b>Gautam Brahmhatt Approved By</b>
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## TEST REPORT

Sheet No.: 1 of 8

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	<b>DATE:</b> 10/04/2018	
	<b>CUSTOMER'S REF. NO.:</b> Not specified	
	<b>DATE:</b> 23/12/2017	
<b>SAMPLE DESCRIPTION:</b> Solar PV water pumping system. <b>Pump System:</b> Pumpset Sr. No.: IM-10292, Type: Submersible, Pump Model: PS10-50-19, Motor Model: 6PSM10, Rating: 10 HP, MNRE model: AC, Model: XII, Manufacturer: Plugra Pumps and motors Pvt. Ltd. <b>PV Module:</b> Model no: TEL24P300, No. of cell in module: 72, Power: 300 Wp, Type of module: Multi crystalline, Suitable for humid area, Module Efficiency: > 15 %, Manufacturer: Topsun Energy. <b>Array:</b> No. of modules (series x parallel): 15 x 2, Array capacity: 9000 Wp. <b>Enclosure:</b> Model: PSC-3, Enclosure IP code: IP 54. <b>Controller (From Name Plate):</b> VFD pumpset controller Sr. no.: IM-10292, VFD pumpset controller manufacturer: Plugra Pumps and Motors Pvt. Ltd., VFD Sr. No.: M72A113A0015AA, VFD Model: FRN0018C2S-4SL, VFD Manufacturer: Fuji Electric. <b>Submitted By (Manufacturer):</b> Plugra Pumps and Motors Pvt. Ltd.	<b>DATE OF SAMPLE RECEIPT:</b> 04/01/2018	<b>DATE OF TESTING:</b> 27/01/2018 to 10/04/2018
	<b>SAMPLE IDENTIFICATION:</b>  Pumpset Sr. No.: IM-10292	
	<b>ERDA SAMPLE CODE NO.:</b> ERDA-00234778	
<b>TEST DETAILS</b>	<b>TEST SPECIFICATION</b>	
Performance test of solar PV water pumping systems	As per JNNSM & MNRE (2015-2016) Specification	
<b>Test results:</b> As per enclosure.		
<b>NOTE:</b> This pumping system conform the requirement of MNRE specification 2015-2016 for Model: XII, Annexure-II.		
<b>Enclosure:</b> Sample photo as per Annexure 1.		
 <b>Prepared by</b>	 <b>Checked by</b>	 <b>Gautam Brahmhatt Approved By</b>
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## TEST REPORT

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<b>NAME &amp; ADDRESS OF CUSTOMER</b> M/s. Pluga Pumps and Motors Pvt. Ltd. 21, Alindra, Manjusar GIDC, Savli, Post: Lamdapura, Dist: Vadodara - 391 775, Gujarat, India.	<b>REPORT NO.:</b> RP-1819-001543	
	<b>DATE:</b> 17/04/2018	
	<b>CUSTOMER'S REF. NO.:</b> Not specified	
	<b>DATE:</b> 23/12/2017	
<b>SAMPLE DESCRIPTION:</b> Solar PV water pumping system. <b>Pump System:</b> Pumpset Sr. No.: IM-10293, Type: Submersible, Pump Model (From Name Plate): PS10-70-15, Motor Model: 6PSM10, MNRE model: AC, Model: XIII, Rating: 10 HP, Manufacturer: Pluga Pumps and Motors Pvt. Ltd. <b>PV Module:</b> Model no: TEL24P300, No. of cell in module: 72, Power: 300 Wp, Type of module: Multi crystalline, Suitable for humid area, Module Efficiency: > 15 %, Manufacturer: Topsun Energy. <b>Array:</b> No. of modules (series x parallel): 15 x 2, Array capacity: 9000 Wp. <b>Enclosure:</b> Model: PSC-3, Enclosure IP code: IP 54. <b>Controller (From Name Plate):</b> VFD pumpset controller Sr. no.: IM-10293, VFD pumpset controller manufacturer: Pluga Pumps and Motors Pvt. Ltd., VFD Sr. No.: M63A110A0012AG, VFD Model: FRN0011C2S-4SL, VFD Manufacturer: Fuji Electric. <b>Submitted By (Manufacturer):</b> Pluga Pumps and Motors Pvt. Ltd.	<b>DATE OF SAMPLE RECEIPT:</b> 04/01/2018	<b>DATE OF TESTING:</b> 23/01/2018 to 17/04/2018
	<b>SAMPLE IDENTIFICATION:</b>  Pumpset Sr. No.: IM-10293  <b>ERDA SAMPLE CODE NO.:</b> ERDA-00234779	
<b>TEST DETAILS</b>	<b>TEST SPECIFICATION</b>	
Performance test of solar PV water pumping systems	As per JNNISM & MNRE (2015-2016) Specification	
<b>Test results:</b> As per enclosure.		
<b>NOTE:</b> This pumping system conform the requirement of MNRE specification 2015-2016 for Model: XIII, Annexure-II.		
<b>Enclosure:</b> Sample photo as per Annexure 1.		
 <b>Prepared by</b>	 <b>Checked by</b>	 <b>R. P. Singh</b> <b>Approved By</b>
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