

TEST REPORT

SABS

Powerz-on Solar Systems
Attention: Mr. J. Bisogno
P.O. Box 7073
PETIT GP
1512

Your ref : Acc. No: 361518
Our ref : 13S007 b
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Tel no : (012) 428-6193
Page : 1 of 7
Date : 2013-04-26

TESTING TO SANS 6211-1:2012

SUMMARY

A full specification test was performed on the (See sample description below) submitted. The system submitted passed. Refer clause 9 for a summary of the results of submitted system.

1 DESCRIPTION OF SAMPLE

The following (See sample description below) was submitted by Mr. J. Bisogno on behalf of the company Powerz-on Solar Systems.

<u>Sample No.</u>	<u>Quantity</u>	<u>Sample Description</u>
13S007	1	Direct non-freeze resistant Powerzon Solar with 200 litre Kwikot storage tank and (2.35m ²) blue selective coated flat plate collector with 220V Zhejiang Wigo circulating pump and geyserwise with electronic controller system.



2 REPORT CONDITIONS

The contents of this test report refers to the sample/s detailed above and does not infer that the above samples (or any other similar samples) are SABS approved for quality and/or performance.

In the instance where this report is used to verify compliance with the JASWIC Acceptance Scheme or Eskom Rebate Scheme, the validity of the test reports shall not exceed a period of one (1) year.

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The test work relating to this report was performed by SABS Commercial (Pty) Ltd. This report and its test results relate only to the specific sample(s) identified herein. They do not imply SABS approval of the quality and/or performance of the item(s) in question and the test results do not apply to any similar item that has not been tested. (Refer also to the conditions of test printed on the back of this page.) This report may not be reproduced except in full. The authenticity of this report and its contents can be confirmed by contacting the person who signed it.



sanas
Testing Laboratory

Lab accreditation No. T0196

3 ACCREDITATION DISCLAIMER

Test results marked with "Accredited" in this report are included in the SANAS accreditation schedule of this laboratory.

4 SAMPLE SUBMITTED

The (See clause 1 on page1 for sample description), was received in good condition and suitable for testing.

Date sample received : 2013-04-05
Test start date : 2013-04-08
Test completion date : 2013-04-22

5 TEST REQUESTED

To test the (See clause 1 on page1 for sample description), submitted for testing with the full requirements of SANS 6211-1:2012.

6 METHODS OF TESTING

Methods used according to SANS 6211-1:2012.

7 CONDITIONING AND TEST ENVIRONMENT

No conditioning required as per test method, sample tested as received at prevailing environmental condition.

8 LABORATORIES

All tests were performed by SABS laboratories.

5.3 OUTDOOR THERMAL PERFORMANCE TEST. (Accredited).

5.3.1 DAILY RESULTS.

When the advanced 6 day thermal performance of the sample was tested as described in the standard, the following data was collected for the various test days.

Measured					Calculated
Q	H	T _a	T _c	Delta T	Q
27.8	20.4	24.5	14.3	10.2	27.4
18.6	11.4	25.4	14.5	10.9	19.0
22.9	23	24.3	30	-5.7	23.6
20.7	19	23.4	29.1	-5.7	19.8
13.5	13.9	21.3	29	-7.7	14.0
12.1	10.2	16.5	21.1	-4.6	11.7

5.4 Energy output of the system. (Accredited).

The test data collected was used to perform a regression in order to determine the following formula that can be used to determine the amount of energy that the system will collect depending on the atmospheric conditions of the day:

$$Q = \alpha_1 H + \alpha_2 (T_a - T_c) + \alpha_3$$

	Values	Units	Description
α_3	3.7	unit less	Intercept Value
α_1	1.0	unit less	Irradiance Coefficient
α_2	0.4	unit less	Temperature Coefficient

Energy input and output. Graphs

The following graphs provide a visual representation of the performance that can be expected from the sample. These graphs were compiled by using the formula printed above for a range of general ambient conditions.

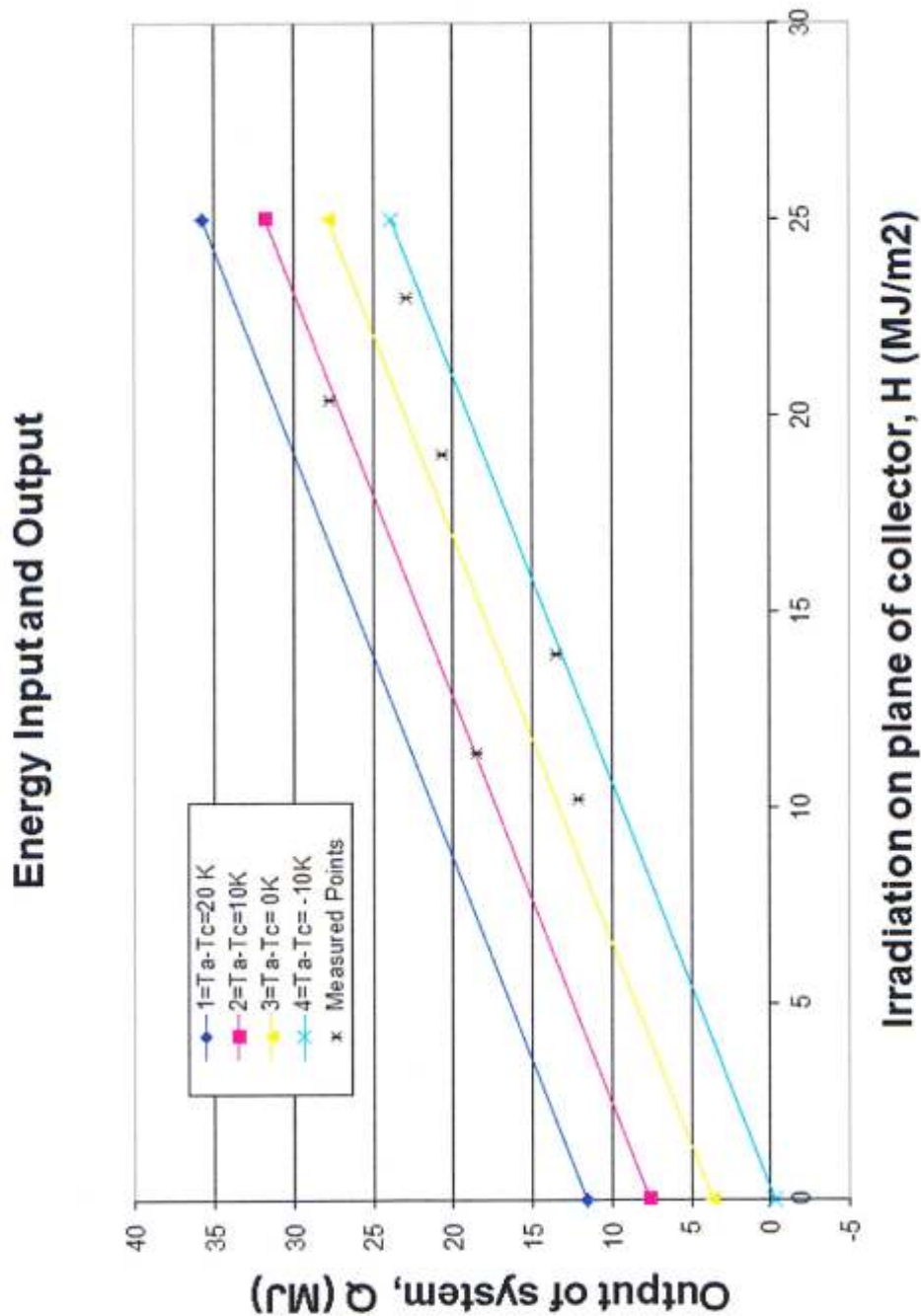


figure 3: energy input/output graph

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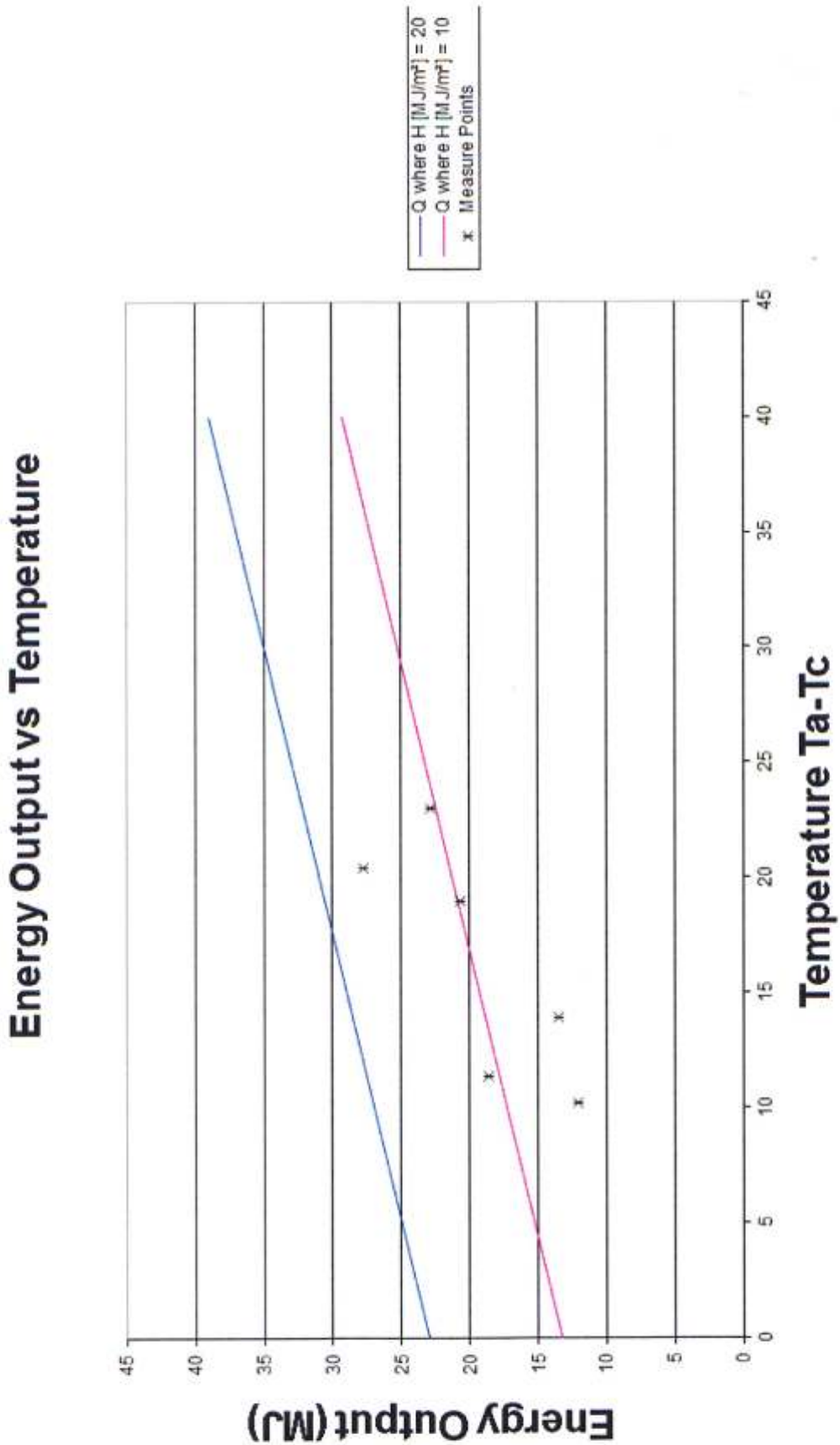
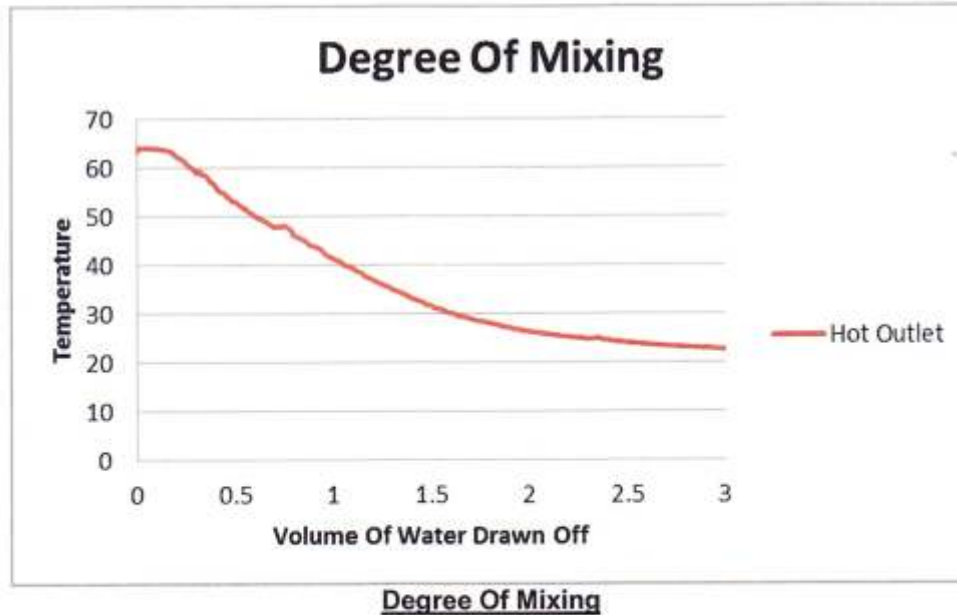


Figure 4: energy output/temperature graph

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5.5 Degree of mixing. (Accredited).

The data collected when the degree of mixing of the sample was tested as described in the standard, is depicted in the graph below.



Results: Required minimum temperature 50°C: Measured 51°C.

5.6 Over night heat loss coefficient. (Accredited).

When the 5.6 Over night heat loss coefficient of the sample was tested as described in the standard, the following data was collected.

Time (t)	Initial Temp. (T _i)	Average ambient Temp. (T _{a(night)})	Final Temp. (T _f)	Density of water	Heat capacity J/(kg K)	Heat capacity (J/K)	Volume (m ³)	Heat loss coefficient (W/K)
45780	65.774	12.287	37.306	980.72	4185.34	820929.3	0.2	13.625
Sec	°C	°C	°C	kg/m ³	C _p	C _s	m ³	U _s

Results: No Pass or Fail Criteria.

9 GENERAL

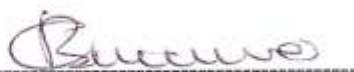
The (See clause 1 on page1 for sample description), was tested and it complied to the full requirements of SANS 6211-1:2012.

Note: For Eskom, At 16MJ/m²/d from the sun and at a temperature difference of 10°C the system output is 23.1MJ.

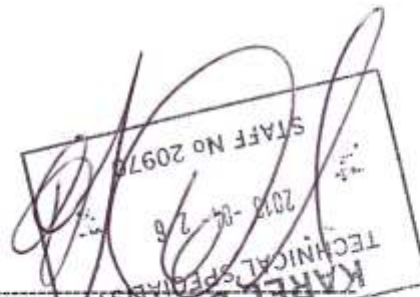
For SANS 1307 clause 5.6, At 20MJ/m²/d from the sun and at a temperature difference of 10°C the system output is 27MJ.

All the performance tests were done at an inclination angle of latitude plus 10°. (35°)

All test samples will be disposed of if not collected within 7 days from date of this report



C.R. Tshitho
Test Officer (Technical Signatory)
Solar Technology Laboratory



K.F.C. Deist
Technical Specialist
Solar Technology Laboratory

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