TEST REPORT

SABS

SolarMax cc.
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Date	:	2010-04-28

TESTING TO SANS 6211-1:2003

SUMMARY

A full specification test was performed on the direct Solarmax 200 litre storage tank and 2 x (1.57m²) flat plate collector system submitted. The system submitted passed. Refer clause 9 for a summary of the results and Annex A for photos of submitted system.

1 DESCRIPTION OF SAMPLE

The following direct Solarmax 200 litre storage tank and 2 x (1.57m²) flat plate collector system was submitted by Mr. J. van Dyk on behalf of the company SolarMax cc.

Sample No.	Quantity	Sample Description
010S020 b	1	Direct Solarmax 200 litre storage tank and 2 x (1.57m²) carbon blend solar compound absorber fin coating flat plate collector thermosiphon 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 or Eskom Acceptance Scheme, the validity of the test reports shall not exceed a period of one (1) year.

3 SAMPLE SUBMITTED

The direct Solarmax 200 litre storage tank and 2 x (1.57m²) flat plate collector system was received in good condition and suitable for testing.

Date sample received	: 2010-02-08
Test start date	: 2010-04-13
Test completion date	: 2010-04-23

4 TEST REQUESTED

To test the direct Solarmax 200 litre storage tank and 2 x (1.57m²) flat plate collector system submitted for testing with the full requirements of SANS 6211-1:2003.

5 METHODS OF TESTING

Methods used according to SANS 6211-1:2003.

6 CONDITIONING AND TEST ENVIRONMENT

Not applicable

7 LABORATORIES

All tests were performed by SABS laboratories.

8 TEST DATA

8.1 DAILY RESULTS

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

Measured					Calculated
Q	H	Ta	Tc	Delta T	Q
21.533	16.13	29.622	29.641	0.019	24.017
30.771	24.004	27.138	25.293	1.845	31.527
28.105	20.324	27.544	25.219	2.325	28.742
21.609	10.642	24.678	25.035	-0.357	19.270
19.609	10.056	19.662	15.602	4.061	21.184
32.056	19.953	19.179	15.916	3.262	28.943

8.2 Energy output of the system

The test data collected were 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	10.653	unit less	Intercept Value
α_1	0.828	unit less	Irradiance Coefficient
α_2	0.543	unit less	Temperature Coefficient

8.3 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.

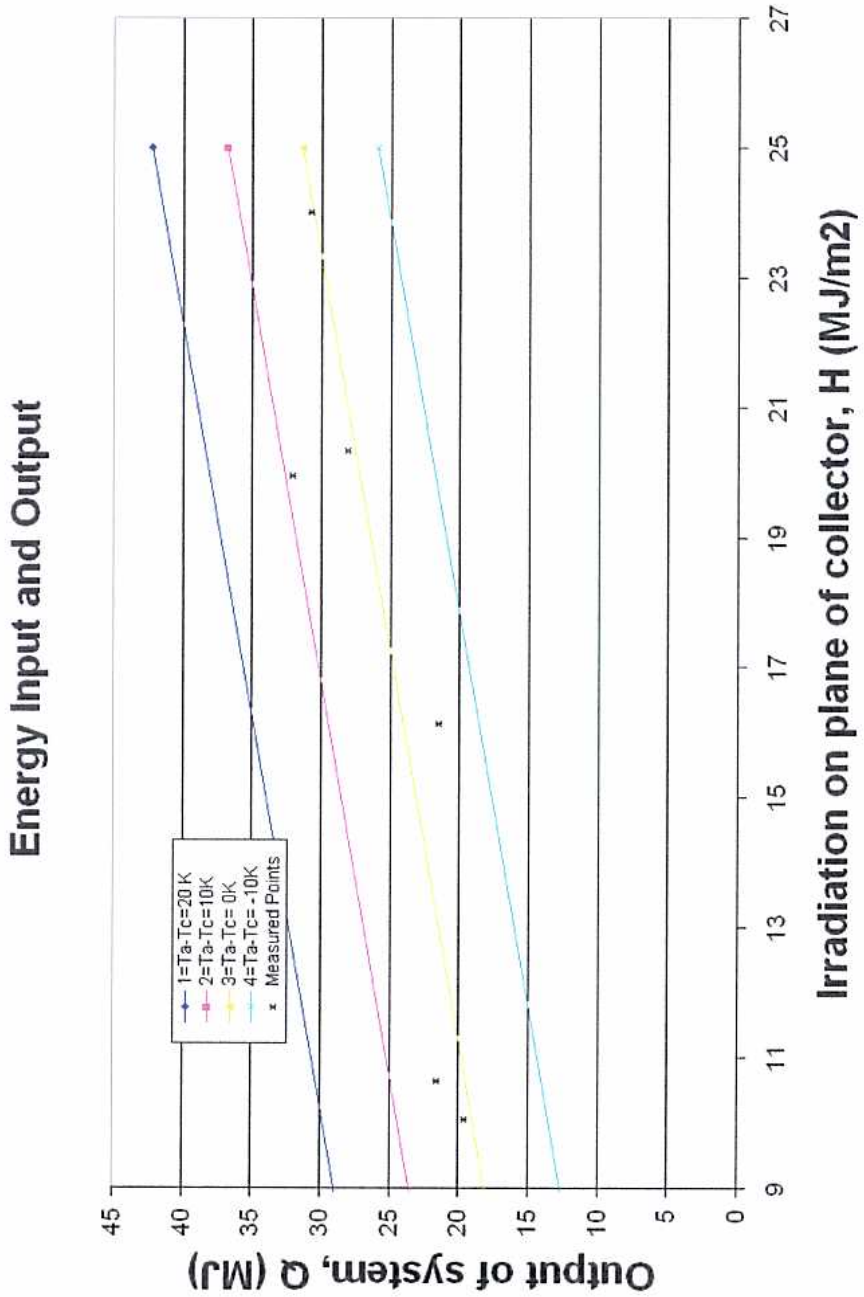


figure 3: energy input/output graph

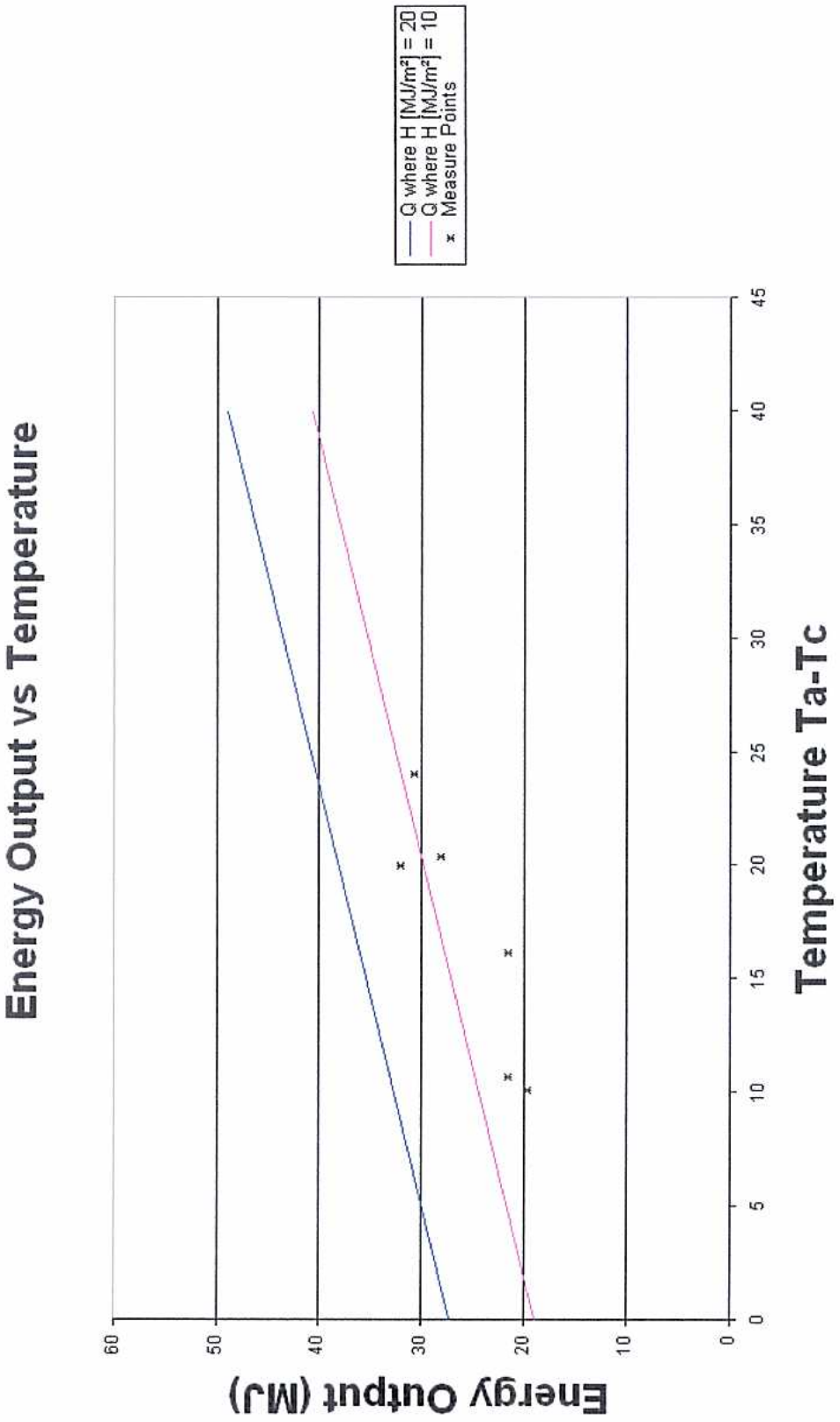
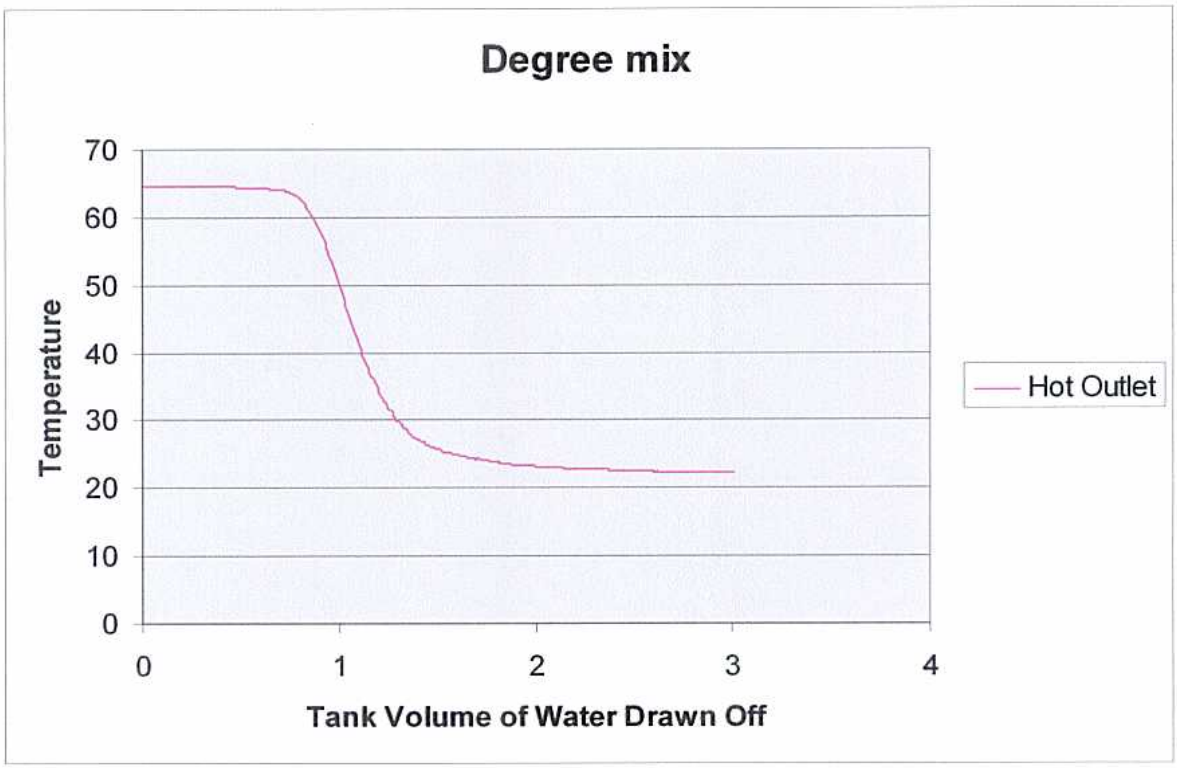


Figure 4: energy output/temperature graph

This test was performed by SABS Commercial (Pty) Ltd, an affiliate of the SABS.
This report relates only to the specific sample(s) tested as identified herein. It does 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 complete conditions printed on the back of official test reports.)

8.4 Degree of mixing

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



Degree Of Mixing

Results: Required minimum temperature 50°C: Measured 63°C.

8.5 Over night heat loss coefficient

When the 8.5 Over night heat loss coefficient of the sample was tested as described in the standard, the following data were collected.

Time (t)	Initial Temp. (Ti)	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)**
44680	64.179	14.039	54.668	980.75	4184.53	820795.6	0.2	**3.864**
Sec	°C	°C	°C	kg/m^3	Cp	C_s	m^3	**U_s**

Results: No Pass or Fail Criteria.

9 GENERAL

The Direct Solarmax 200 litre storage tank and 2 x (1.57m²) flat plate collector thermosiphon system was tested to the full requirements of SANS 6211-1:2003.

Note that at 16 MJ from the sun at a temperature difference of 10°C, the system's output will be 29.330 MJ.

Note that 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

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