



Switch on to solar with Eskom

I. Introduction

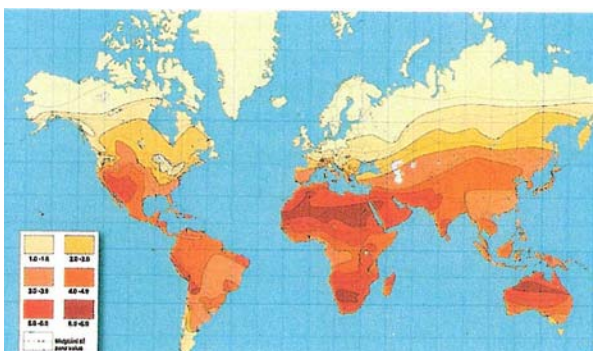
2007 will be remembered for the advent of large-scale solar water heating in South Africa. Eskom and the National Energy Regulator of South Africa (NERSA) have collaborated with several other national energy-related organisations on the development of a five-year programme to introduce solar water heaters to as many homes as possible. The programme is now being implemented.

Not only does the programme aim to significantly increase the number of solar water heaters sold in South Africa, but, more importantly, it wants to see this technology improved and become available to all aspects of society.

2. Why the programme?

There are four main reasons for the solar water heating programme:

- a. According to energy experts, water heating accounts for 30% - 50% of the electricity consumed by an average household. It is therefore easy to understand the savings potential of warming water with solar energy.



- The Central Energy Fund (CEF):
 - the Energy Development Corporation (EDC)
 - the National Energy Efficiency Agency (NEEA)
 - the South African National Energy Research Institute (Saneri).
- Eskom
- The Sustainable Energy Society of Southern Africa (SESSA)
- The National Energy Regulator of South Africa (NERSA)
- The Department of Minerals and Energy (DME)

An advisory body will oversee and guide the implementation of the programme, and include representation from:

- Department of Minerals & Energy (DME)
- Eskom
- CEF
- SESSA SWH Division
- NERSA
- Metro's and municipalities
- South African Bureau of Standards (SABS)
- Sustainable Energy Africa

- b. South Africa is one of the sunniest countries in the world, making solar energy an obvious alternative for electricity.
- c. The South African government has set a target for renewable energy to contribute 10000 gigawatt-hours (GWh) offinal energy consumption by 20 | 3. Research completed by the Department of Minerals and Energy estimates that up to 23% of this target could be contributed by solar water heating.
- d. Although solar water heating (SWH) technology is not new, the industry in South Africa is still characterised by high manufacturing costs and low sales volumes. World experience has shown that a well planned and well executed programme that offers incentives to consumers to select more appropriate technologies, can increase sales volumes and make SWH more accessible.

These four factors combine to provide a powerful motive for the programme



3. How does the programme work?

The programme is structured around an incentive scheme which reduces the selling price of a solar water heating system. The reduction in price is based primarily on the performance of the solar water heater and the associated electricity saving potential.

Consumers will receive the discount directly from the supplier from which they buy their system, provided that the product and the supplier are registered for the programme and that the installation is signed off by a registered installer.

3.1 Product inclusion

In order to be eligible for the incentive, a solar water heater system will be checked against a set of criteria, which include the following:

It must be a high-pressure system.

The system must be installed in conjunction with a timer OR a load management device (i.e. geyser buddy or ripple relay) to optimise energy savings and regulate everyday usage. Alternatively, systems installed with no electrical backup at all will also be eligible for the incentive.

The system should be sold with a comprehensive guarantee of at least five years and should offer a life expectancy of ten to fifteen years.

The system must have passed the South African Bureau of Standards (SABS) test, and comply with the South African National Standards (SANS) for thermal and mechanical performance and safety.

A copy of the Conformity Report, which is a summary of the test results and other relevant information, should be available and can be requested from participating suppliers.

A list of approved suppliers and the registered products supplied by them is available on www.eskom.co.za/dsm or from the contacts listed in this brochure.

3.2 Incentive value

The value of the incentive applicable to any participating solar water heater is based on the capability of the system to replace the use of electrical energy. Each system tested by the SABS receives a system rating (Q factor), which indicates the kilowatt-hours (kWh) of electricity it is expected to save on a typical day as determined by the SABS testing procedure. All solar water heating systems included in the programme will have a SABS test conformity report rating their efficiency. Based on the test result, a system will qualify for an incentive ranging typically between R1 500 and R5 000.

Consumers should bear in mind that larger systems save more electricity than smaller ones, and would subsequently qualify for a greater incentive, but is likely to also cost more. All factors, ie the incentive value, optimal system size, efficiency, cost of the system and your own personal needs should therefore be considered when a system is selected.

Fortunately, information on the technology is at hand to aid you in making a decision.

On www.eskom.co.za/dsm you will be asked to enter the number of people and applicable appliances in your home in the field provided, as well as the town or city in which the installation will take place. A list of pre-approved suppliers and registered products, in that area will appear with their corresponding Q factors. When a specific water heating system is chosen, the incentive value is calculated, based on the Q factor.



3.3 Selecting a solar water heating system

When selecting the SWH system, the following should be taken into consideration:

- Appropriate sizing for the household to ensure optimal benefits, ie an oversized system may result in an extended payback period, whereas an undersized system could leave you with cold water. A typical indication is to select a tank with a capacity of between 50 and 100 litres per person.
- Appropriate system for the area in which it is installed, especially in terms of frost protection and water quality compatibility. Not all systems are suited to areas that experience freezing conditions. Freeze resistance is tested and reported on by the SABS. Any limitations in this regard will be reported in the SABS Conformity Report, which is available from participating suppliers.
- Similarly, systems with a direct water heating configuration are not suited to areas with hard water.

Any of the suppliers registered for participation on this incentive programme should be able to advise you appropriately on the selection requirements. Comprehensive guidance on the optimal and appropriate selection of a solar water heater is also available from www.eskom.co.za/dsm. Alternatively, you can contact the SESSA SWH division for advice.

3.4 Suppliers and installers

All suppliers and installers participating in the solar water heating programme have been registered through a process managed by an auditing firm.

3.5 Who pays for the programme?

The programme is funded through the Demand Side Management (DSM) Fund. This fund is financed through a levy on the electricity tariff and was established under the auspices of NERSA. Eskom DSM acts as an agent of the fund, which is intended to support energy efficiency in South Africa.

SABS mark approval vs valid test report

In order to participate in the Eskom DSM programme, a supplier has to obtain as a minimum requirement a test certificate from the SABS to verify the mechanical and thermal performance of the specific solar water heating system. This serves as an indication of the quality of the system, but does not constitute SABS approval.

• SABS mark approval

SABS product certification mark approval is a voluntary scheme that entails the submission of a test report to the approvals board and an audit of the applicant's factory manufacturing quality system (eg ISO 9001).

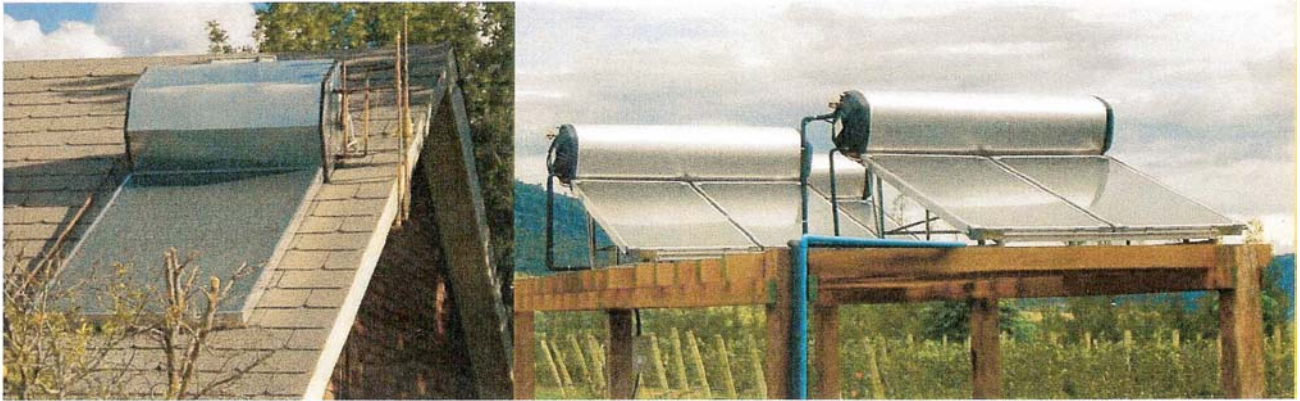
To maintain SABS mark approval acceptance, manufacturers have to submit samples for testing to demonstrate ongoing acceptance and conformance to the relevant specifications.

Only manufacturers that are in possession of a valid and current permit to apply the SABS mark may claim to be "SABS-approved".

• SABS test report

A test report relates only to the specific sample(s) tested as identified in the report. 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.

SABS approval gives a vastly better assurance of quality products, and consumers should bear this in mind when making a decision about price and longevity of products.



Electrical Certificate of Compliance

Your solar water heating system installation must be signed off by a registered installer. Once completed, the installation should also be inspected by a certified electrician. If the installation is in order, the electrician will issue an Electrical Certificate of Compliance (CoC). This is a very important step given the fact that the supplier can only claim the discount amount once the Electrical Certificate of Compliance has been issued.

Please also note that to comply with building regulations, some structures may require inspection and certification by a registered structural engineer. Your solar water heater supplier will be able to advise you on this matter.

In terms of the environment, the benefits are impressive. A 150 litre solar water heater will replace in the order 0(4.5 kWh of electricity per day, resulting in the following environmental savings:

Savings per kWh ¹	Approximate annual savings
Water: 1.26 l/kWh	2.07 kilolitres
Coal: 0.5 kg/kWh	821 kg
Ash: 0.28 g/kWh	460 g
SO ₂ : 8.79 g/kWh	14.4 kg
NO _x : 3.87 g/kWh	6.4 kg
CO ₂ : 0.96 kg/kWh	1.6 tonnes

¹As obtained from Eskom corporate Technical audit

4. The benefits of solar water heating

Solar water heating benefits people and their pockets in two main ways. Economically speaking, homeowners stand to make considerable savings on their electricity usage, at least 70% of their electrical geyser consumption depending on the system selected and how you use it.

5. Where to find more information

- www.eskom.co.za/dsm
- Solar Programme Help Desk (011) 8004744
- Participating suppliers
- SESSA SWH division
- Eskom's Energy Advisor (08600 37 566)
- Eskom SWH Programme Manager:
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