PowerOptimal Elon® 100 User Manual

Version 2.21 · Last updated June 2026

Patented: ZA2019/02129

SAFETY WARNING

Installation of the Elon® 100 should ONLY be performed by an electrical contractor registered with the Department of Labour (the so-called “wireman’s licence”) and strictly according to the installation instructions in this manual. **The electrician should provide you with a Certificate of Compliance (CoC) once installation is completed.**

- We strongly recommend that you use a reputable and experienced solar photovoltaic (PV) system installer to install your solar PV modules.
- **Solar PV modules exposed to the sun are live** (i.e. will produce electricity) and can give an electric shock. Special care should be taken and only trained solar PV installers should install the modules.
- **Do not attempt to** alter or service the electrical installation, or open the Elon® 100 unit or controller for any purpose.
- Use the Elon® 100 **only for its intended purpose**.
- **Always** make sure that every wiring connection is **properly tightened**.
- **Do not earth** either of the solar module wires (but do earth the frames).
- All installation wiring should be at least 2.5mm².
- Avoid coiling, since DC switching can create damaging spikes.
- Keep all wires as short as possible.

Refer to the PowerOptimal website for the following:

Elon® 100 Installation Guide & Quick Reference User Guide	**www.poweroptimal.com/manuals**
Online User Instructions Video	**www.poweroptimal.com/elon100**
Online Elon® Basic Training Course	**https://moolmaninstitute.com/p/elon-course**

Table of Contents

Table of Contents

1. Introduction

1.1 System overview

1.2 Main system components

1.3 Deciding on size of Elon® system (basic guide)

2. Operation

2.1 Elon® 100 controller

2.2 Mains and solar indicator lights

2.3 Control dial settings

2.4 Holiday settings

2.5 How to maximise your savings

3. Maintenance

3.1 Solar PV module maintenance

4. What to expect in terms of performance

4.1 Hot water production

4.2 Impact of location and seasons

4.3 Payback period

5. Troubleshooting

5.1 Troubleshooting Guide for Users

5.2 Troubleshooting Guide for Electricians

Appendix A. IEC/SANS and EMC Test Certificates: Elon® 100

Appendix B. Warranty

Appendix C. Terminology

Notes

1. Introduction

Thank you for buying the PowerOptimal Elon® 100 solar PV water heating unit! You can look forward to many years of savings and free energy from the sun.

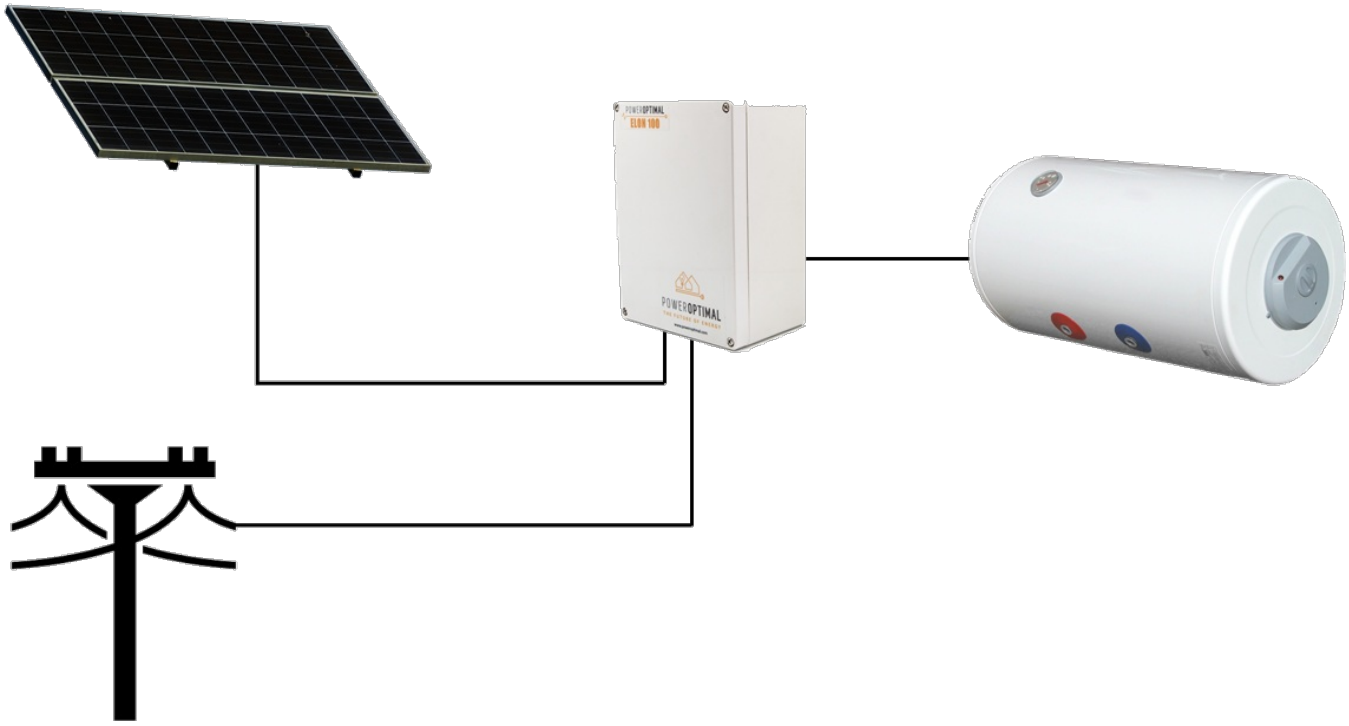
1.1 System overview

The PowerOptimal Elon® 100 operates on a very simple principle: it enables you to connect solar PV modules directly to a standard geyser with alternating current (AC) heating element and AC thermostat, with **no need for an inverter**. It **uses the water in your geyser as a battery** to store solar energy in the form of heat.

You can connect the system completely off-grid or connect it to your existing grid AC power supply. Connecting the system to the existing grid supply allows for grid power backup in case of cloudy / overcast days, or where you use more hot water than your solar PV array can generate.

Note: the system is designed in such a way that there is no possibility of solar array-produced electricity feeding back into the grid. For municipal registration purposes it is classified as "off-grid".

Below is a simplified layout of the main components of the water heating system.



An array of solar modules (a string of 3 to 6 solar modules connected in series, or two parallel strings of 4, 5 or 6 solar modules each) is connected to the Elon® 100. Grid electricity is also connected to the Elon® 100.

The Elon® 100 is connected to the geyser element and thermostat.

When the solar modules are producing electricity, the Elon® 100 feeds this into the geyser element to heat water, until the water reaches the temperature setting on the thermostat.

The Elon® 100 controller dial setting (see Section 2.3) will determine if or when the Elon® 100 will boost the water heating with grid electricity.

1.2 Main system components

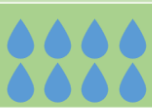
The main components of the system are as follows:

- **Solar modules** with struts, brackets and cabling
- **PowerOptimal Elon®** unit with controller
- Existing or new **water heater or geyser** (hot water tank with AC heating element and AC thermostat)
- **Isolators** for grid and solar connections

1.3 Deciding on size of Elon® system (basic guide)

The table below provides a basic guide to selecting the size of your Elon® system based on number of people in the household and/or hot water use. The **Installation Manual** (which you can download from www.poweroptimal.com/manuals) contains a more detailed guide.

HOW MANY SOLAR PV MODULES DO I NEED?

Solar PV array size (kW_p)	Showers per day*	50%+ of daily hot water use provided for how many people?	How many people off-grid for hot water?	Typical number of solar PV modules
1 – 1.6				2 -3 modules
1.6 – 2				3 - 4 modules
2 - 3				4 - 5 modules
3 – 4 (two parallel PV strings)				6 - 8 modules

* 6-minute showers at 40 ºC with 8 litre/min (low-flow) showerheads

WHAT SIZE GEYSER ELEMENT IS THE BEST MATCH?

Solar PV array size (kW_p)	Best matching geyser element size (kW)	2nd choice geyser element size (kW)	Geyser size – bigger is better (litres)
1 – 1.6	4	3	100 - 200
1.6 - 2	3	4 or 2	100 - 200
2 – 3	3	4	150 – 300
2 – 4 (two parallel PV strings)	4	NA	150 – 300

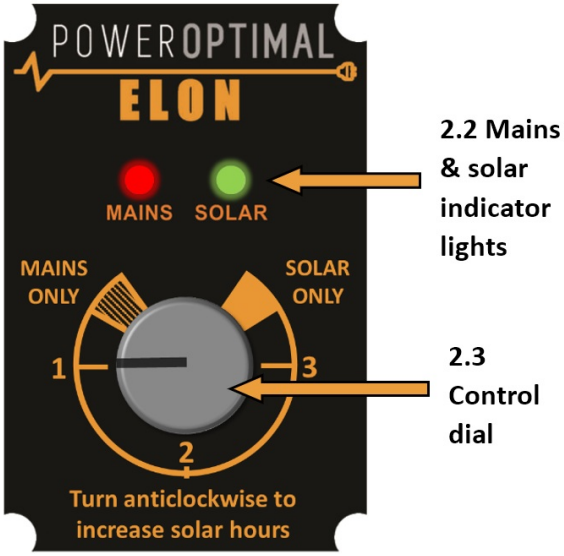
Short-Circuit Current @ STC I_{sc} < 20A **Open-Circuit Voltage @ STC V_{oc} < 250V**

2. Operation

Refer to our easy-to-understand instruction video on how to use the Elon 100.

Instruction video: www.poweroptimal.com/elon100

2.1 Elon® 100 controller



Your Elon® 100 has a controller that is typically installed next to your DB (distribution board). The controller has **two main functions**:

1. INDICATING ACTIVITY AND STATUS:

Indicating heating activity and status through the **mains (red) & solar (green) indicator lights** *(Section 2.2)*

2. CONTROL TIMING:

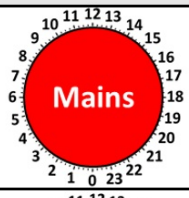
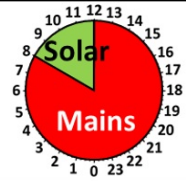
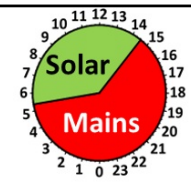
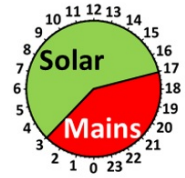
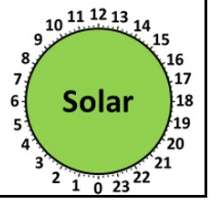
Setting the timing on the **control dial** *(Section 2.3)*

2.2 Mains and solar indicator lights

The **Mains & solar indicator lights** indicate the following conditions:

Lights	Meaning
Green light **ON**	**Geyser on temperature**
Green light **flashing**	Heating with solar
Red light **ON**	Mains power available (power to Elon® unit on)
Red light **flashing**	Heating with mains
Both lights **ON**	Geyser is on temperature. Mains power available (mains power to Elon® unit on)
Red light **ON** & **Green** light **flashing**	Heating with solar. Mains power available (mains power to Elon® unit on)
Red & **Green** light **flashing fast**	Isolation fault (contact electrician)
Both lights **OFF**	No power to unit (for example: no sun plus a power failure, or no sun plus geyser breaker at DB board is switched off) OR supply voltage outside specifications

2.3 Control dial settings

Dial Setting	Time on Mains*	Time on Solar*	24-Hour Clock
MAINS ONLY	24 hr	Never	
1	12:00 to 08:00	08:00 to 12:00	
2	14:30 to 05:30	05:30 to 14:30	
3	17:00 to 03:00	03:00 to 17:00	
SOLAR ONLY	Never	24 hr	



** Times are approximate – will vary slightly with season and location*

Think of the water in your geyser as a battery that can store energy in the form of hot water. To charge the battery (or heat the water) with solar energy during the day, it must cool down a bit in the morning. In other words, the water must be below its setpoint temperature by the time the sun comes up.

The Elon® achieves this by switching off mains power at some time in the morning, while you are still using hot water from the geyser. The table above indicates approximate switching times for different dial settings.

As you can see, as you turn the control dial from “MAINS ONLY” to “SOLAR ONLY”, the time period during which mains power is allowed to heat the water decreases to zero.

When the control dial is set to**"MAINS ONLY"**, your geyser will use mains power 24 hours a day (in other words, it will never switch to solar power). The geyser will behave the same as any standard geyser.

Why would I ever want to set the control dial to “MAINS ONLY”?

Here are some example reasons why you might want to set the control dial to “MAINS ONLY”:

- You have a large number of guests, and you want to ensure hot water for everyone at all times;
- You want to do maintenance on the DC (solar) side, but still want hot water;
- There is a problem on the DC side (e.g. an insulation fault), but you still want hot water;
- You are going away for a long time and don't want the water in the geyser to be heated up whilst you are away. (Then you would set the switch to "MAINS ONLY" and switch off the geyser at the main house DB – see Section 2.4 Holiday Settings).
- Any other reason you might want to turn the geyser heating off completely.

If you only use hot water early morning and in the evenings, you can set it just outside the “SOLAR ONLY” zone (around the “3” mark) to benefit from a longer solar energy heating period (and save more money).

When the control dial is set to**“SOLAR ONLY”**, the Elon® 100 will ONLY use solar power to heat water.

If you set the control dial to ‘**SOLAR ONLY**”, you can increase the geyser thermostat temperature to 60 ºC to get maximum benefit from your solar array installation. **We do not recommend setting the thermostat temperature above 60 °C**. Remember to reduce the thermostat temperature again if you reduce the efficiency setting.

Warning: Do not set thermostat temperature above 65 ºC due to increased scalding risk. Be careful when opening hot water taps located close to your geyser. You can install a thermostatic mixing valve to reduce the risk of scalding – ask your plumber.

Please note: DO NOT install a separate timer on the AC side to try and regulate mains power use. Use only the Elon's control dial to control mains power use. If you install a second timer, it will work at cross-purposes with the Elon and you will reduce performance and hot water availability.

Can I boost the water temperature with a single grid heating cycle whilst on "SOLAR ONLY" or any of the other settings?

The answer is YES. To boost water temperature to setpoint with a single grid heating cycle, turn the dial into "MAINS ONLY" until the red light starts flashing. Then turn the dial back to whatever previous setting it was on (or whatever setting you wish it to be on after the single grid heating cycle). The Elon will complete the single grid heating cycle (in other words, heat the water with grid power until it reaches the temperature set point) and then return to whatever setting you leave the control dial on.

2.4 Holiday settings

What setting should I use when I go on holiday?

You can either switch off both solar and mains power OR you can switch off mains power.

Setting	How to set it	Benefits & comments
Mains power off	Turn dial to **SOLAR ONLY**	You will have hot water on your return, and it will cost you nothing. It will also prevent Legionella growth in your geyser.
Both Mains & Solar power off	Turn dial to **MAINS ONLY** and **switch off geyser at distribution board**	Remember to switch system on when you return.

2.5 How to maximise your savings

Control dial

The best way to maximise your savings is to set the Elon® control dial to **SOLAR ONLY**". This will ensure that the unit will never use grid (mains) power for heating water. You can still boost with mains power (for example on a cloudy day) by turning the dial to "**MAINS ONLY**" if needed.

However, the "SOLAR ONLY" setting will only be feasible if you have enough solar PV modules for your household (see the table in Section 1.3 above).

For most people, setting the dial at "**3**" will yield the most savings whilst maintaining hot water availability mornings and evenings.

Please note: The water in your geyser should be heated to 60 °C at least once a week to prevent Legionella bacterial growth[1]. If you have heavily overcast weather for more than a week on the SOLAR ONLY setting, turn the dial clockwise outside of the SOLAR ONLY zone for a day in order to supplement the solar water heating with grid electricity to reach the thermostat temperature setting.

When is the best time to shower?

If the control dial is set to "SOLAR ONLY", it is best for people in the household to shower either in the morning or in the evening, but not both. (If you shower in the evening, cold water will mix with the remaining warm water overnight, and you will have cold water the next morning. If you do not shower again in the morning, the water will be heated during the day.)

If the control dial is set to any setting outside "SOLAR ONLY" or "MAINS ONLY", it is best to **shower in the morning for maximum savings**.

General hot water energy saving tips

- Shower, don't bath
- Install water-saving / low flow shower heads (these also save energy because of reduced hot water use!)
- Reduce shower duration
- Check that your geyser is well insulated

South Africa is a water-scarce country – reducing hot water use saves both energy and water!

3. Maintenance

The Elon® 100 has been designed to last for a very long time and has no moving parts aside from three electrical relays. No maintenance is required on the Elon® 100.

3.1 Solar PV module maintenance

It is recommended that a qualified electrician inspect your solar PV installation at least once a year.

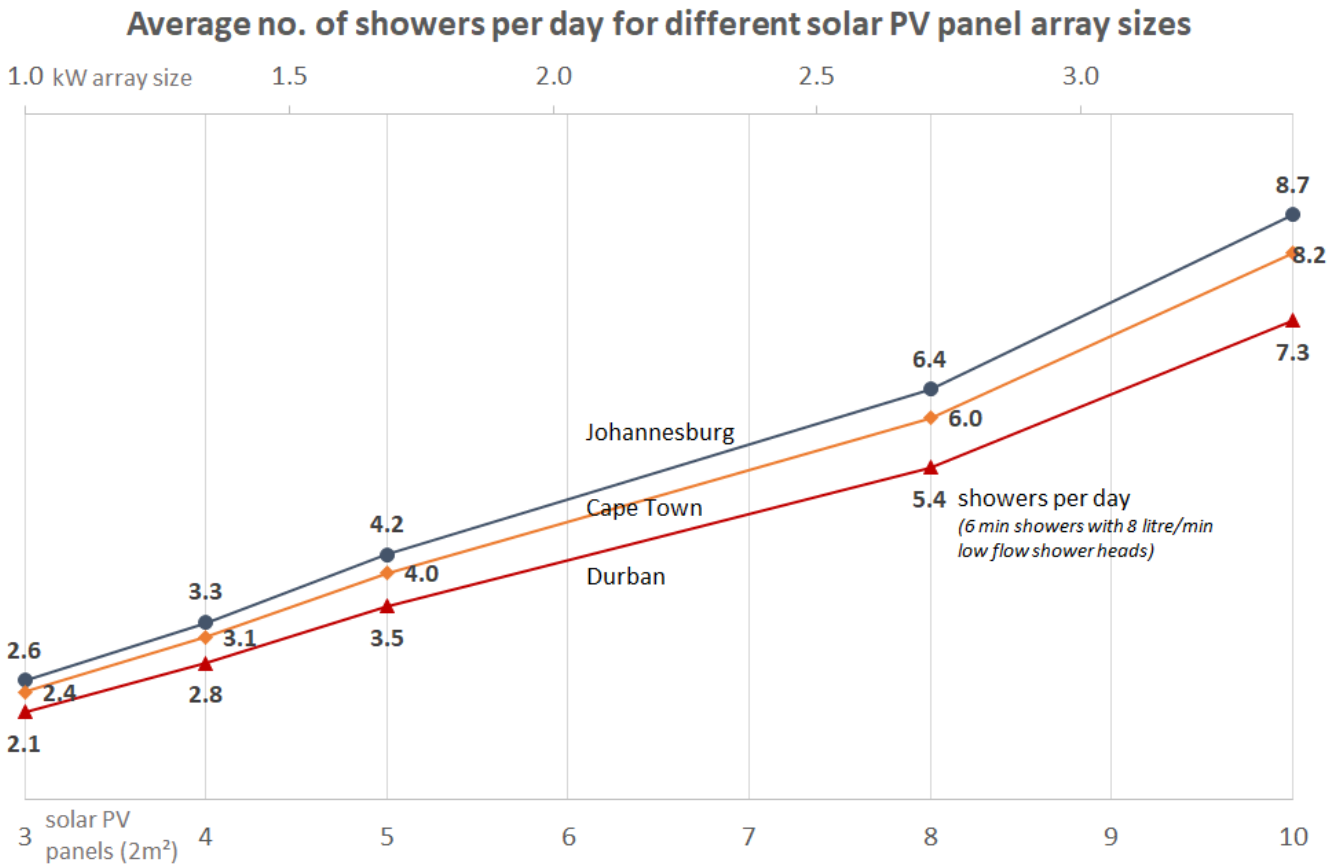
1. At least once a week, check whether the indicator lights are flashing rapidly. (This indicates an isolation fault – call your electrician.)
2. Perform regular visual checks (at least once a year). Check for soiling or any visible damage to any of the modules.
3. If the modules have been soiled by dirt, dust, debris, bird droppings or any other materials, use water only and a sponge or soft cloth to clean them. Do the cleaning early in the morning or late in the afternoon, as the modules are hot during the day. Avoid using a water jet that may leave streaks on the modules.
4. Visually inspect cables for any degradation or loose fittings.
5. Look for any shading problems, such as trees that may have grown.
6. An electrician can check solar power production on a sunny day to ensure that the system is still producing power at expected levels. A thermal imaging camera can be used to inspect modules for hot spots.
7. Follow any specific maintenance instructions from the solar PV module manufacturer.

4. What to expect in terms of performance

4.1 Hot water production

Heating water takes a LOT of energy. A household geyser can use up to 40% of a house's electricity. Heating a single 200 litre geyser from 15 °C to 60 °C will use over 10 kWh. This is about the same amount of energy burnt by a person running a distance of over 100 km at 10 km/hr, or enough energy to watch more than 120 hours of TV[2].

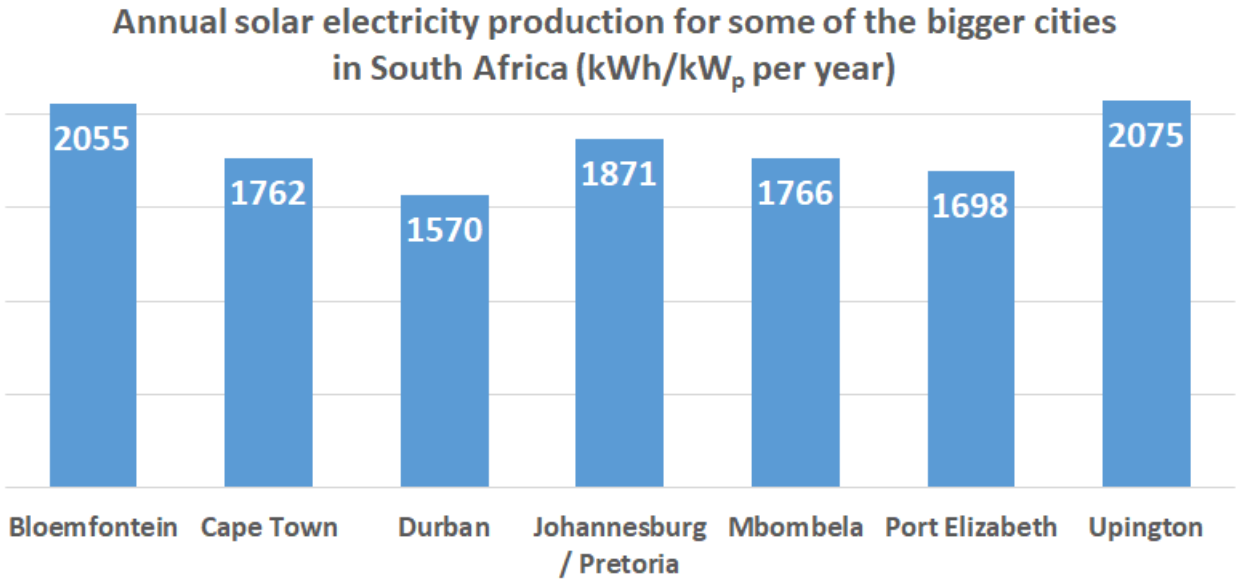
The more solar panels you have on your roof, the faster the Elon® 100 system will heat your water. Typically, the number of panels has been selected to heat water over most of the sunlight hours (from morning to afternoon). This will be slower than heating water using grid electricity. So you can expect **a gradual temperature rise from morning to afternoon**.



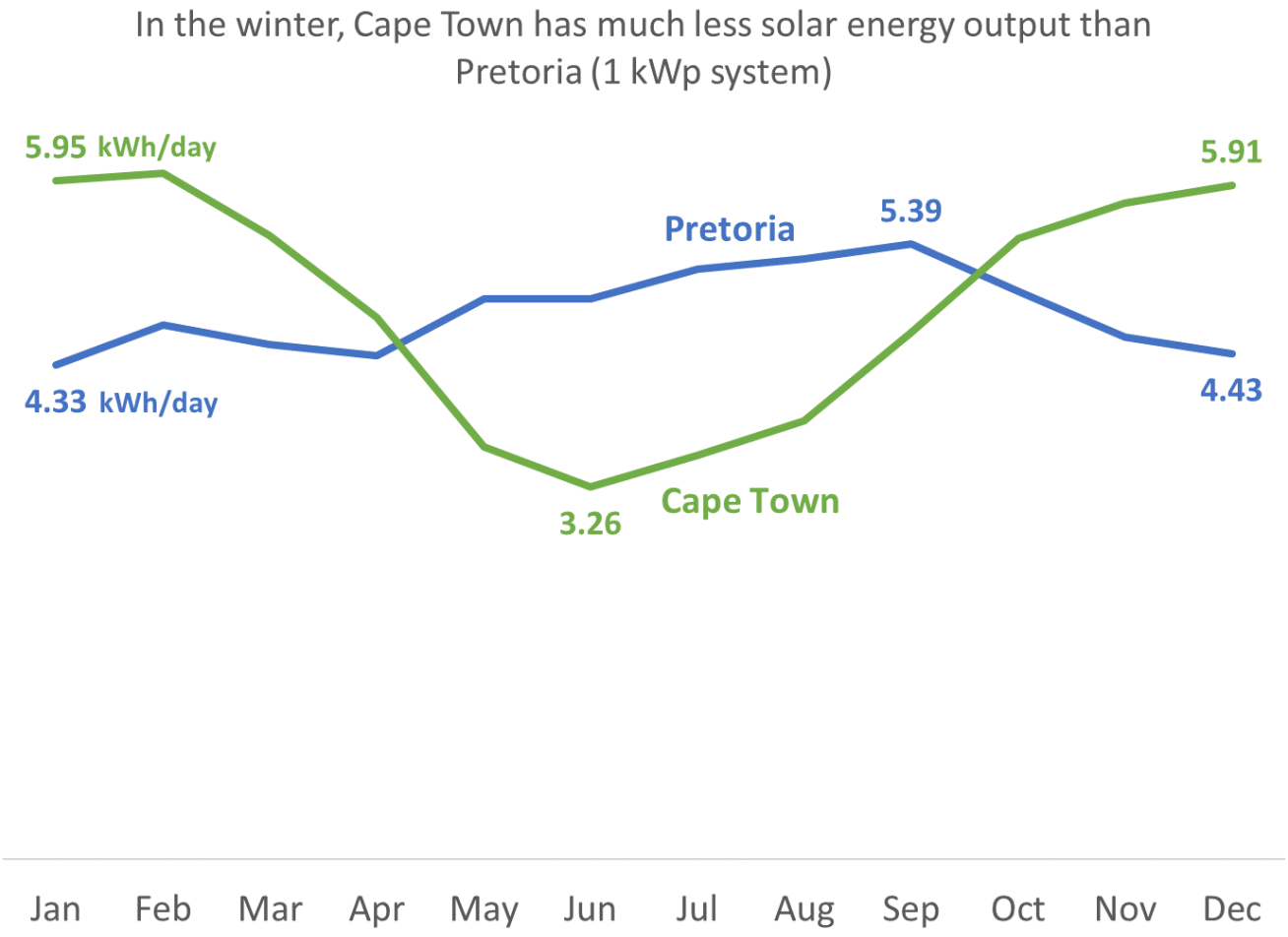
As one would expect, hot water production increases with increase in number of solar panels. Keep in mind that these numbers are averages over the year. This means that you should expect a lower number in winter and a higher number in summer.

4.2 Impact of location and seasons

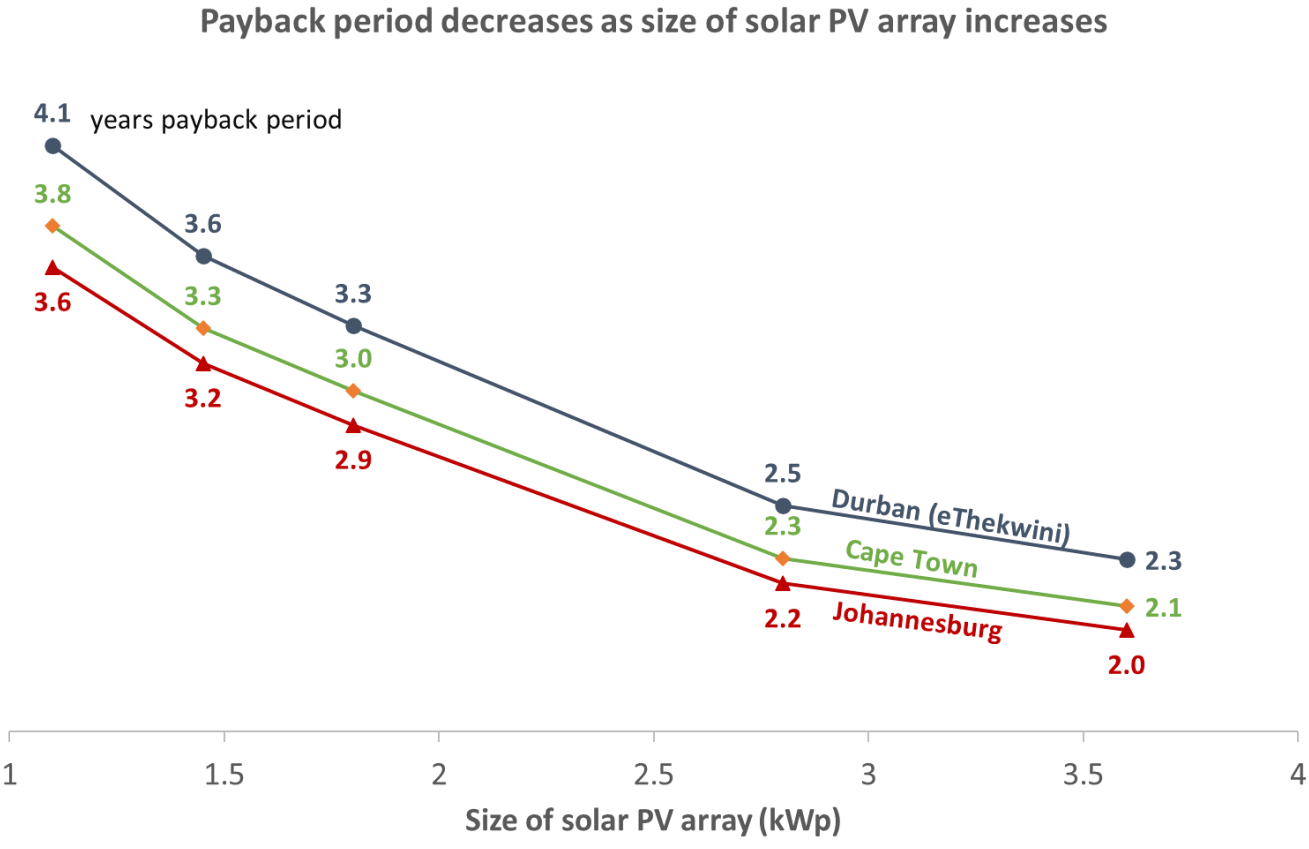
The amount of energy from the sun depends on your location, the time of year as well as the orientation of your solar panels. The best direction for panels in South Africa is to face north, at an angle of about 25 to 35° from horizontal.



Although Gauteng (Johannesburg / Pretoria) & Cape Town may seem quite similar in terms of total solar energy per year, Cape Town has winter rainfall and Gauteng has summer rainfall. This leads to Cape Town having much lower solar electricity production than Gauteng in winter (see the below graph).



4.3 Payback period



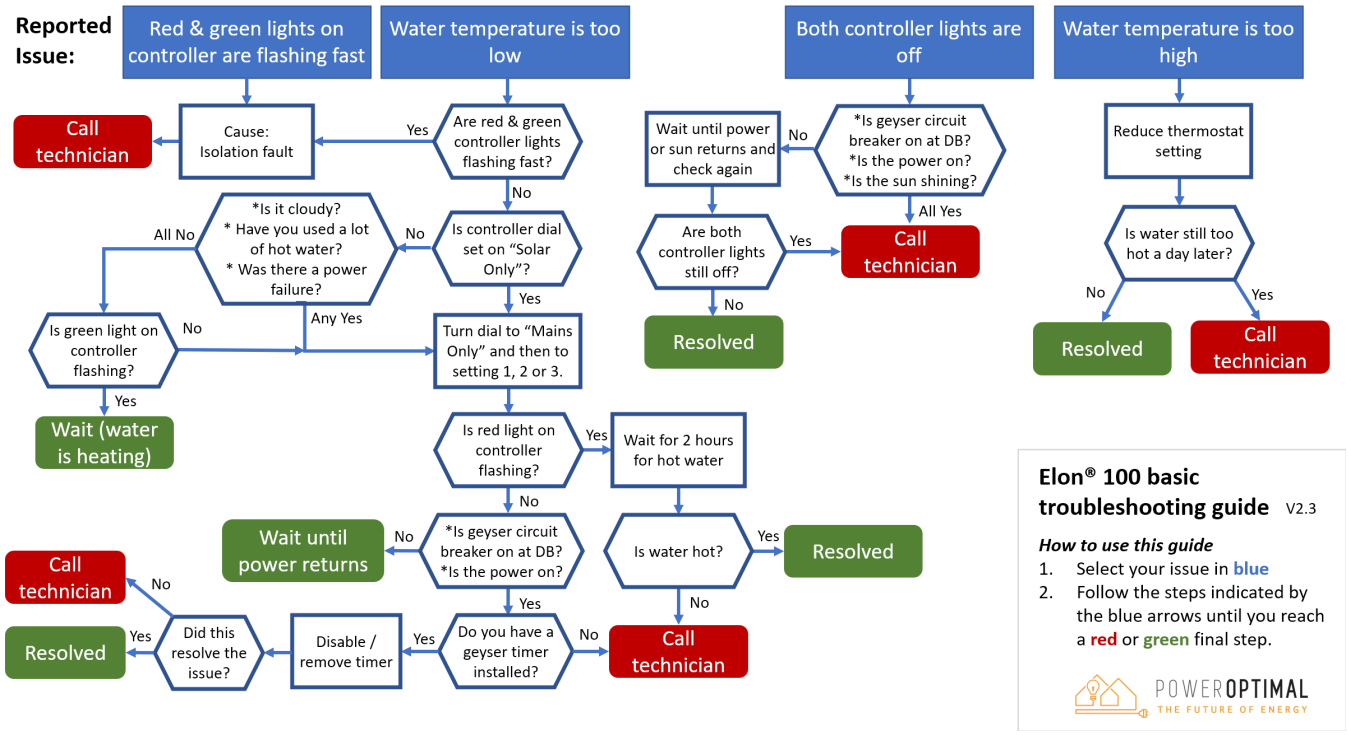
As can be seen from the graph above, payback period decreases as number of solar panels increases, and is also

different for Johannesburg, Cape Town and Durban[3].

The reason that payback period improves (decreases) as number of solar panels increases, is because there are some fixed costs (such as engineering design & safety components) and some costs that do not scale linearly with array size (such as labour, wiring, mounting kit costs, etc.).

5. Troubleshooting

5.1 Troubleshooting Guide for Users



Below you can find the same information with some further detail in table format. If you cannot resolve the problem using the diagram or table, please contact your installer.

Issue	Possible causes	What to do
Water temperature too low	1. High hot water usage levels 2. Cloudy or rainy day 3. Dirty solar modules 4. Mains circuit breaker has tripped 5. Thermostat connection or thermostat defective	1. Turn control dial clockwise (2.3) OR Reduce hot water use (2.5) OR Add additional solar modules to your solar installation (**first consult** with your installer) 2. See 1 above 3. Inspect solar modules. If they are soiled, clean them with water and sponge (4.1) 4. Check mains circuit breaker 5. Call electrician for inspection
Water temperature remains low after turning dial to "MAINS ONLY". (Note: the red LED light should start flashing once dial is turned to "MAINS ONLY", indicating that the water is being heated.)	1. Sufficient time has not been provided for water to be heated after dial has been turned 2. It is a cloudy day and there is a mains power failure 3. There is an electrical fault or the Elon® 100 is defective 4. Thermostat connection or thermostat or element defective	1. Wait for 2 hours after turning the dial to "MAINS ONLY". 2. You will have to wait until either the solar or grid power returns to heat the water 3. Check if the mains light on the Elon® 100 controller starts flashing after you turn the dial to "MAINS ONLY". If it does not and your water remains cold, call your electrician to inspect the installation for any electrical fault. 4. Call electrician for inspection
Water temperature too high	1. Thermostat temperature setting is high and you are using hot water from a tap close to the geyser 2. Thermostat connection or thermostat defective	1. Reduce thermostat temperature set point OR Open the cold water tap first OR Install a thermostatic mixing valve 2. Call electrician for inspection.

Issue	Possible causes	What to do
Hot water production is lower than it used to be	1. Dirty solar modules 2. Trees / plants have grown and are causing shaded areas on solar modules 3. Damage to solar modules	1. Inspect solar modules. If they are soiled, clean them with water and sponge (4.1) 2. Trim trees and plants 3. Installer or electrician should test solar array power production in sunny conditions and compare with specifications. If one or more modules are damaged and they are still under warranty, contact manufacturer for replacement
Both indicator lights off	1. There is a power failure and it is overcast or night-time 2. Geyser breaker at DB board switched off and it is overcast or night-time 3. Mains power is over- or under-voltage	1. Wait until power or sun returns and check if any indicator light comes on. 2. Switch on breaker at DB board. 3. If actions in a. and b. above do not resolve the issue, call your electrician.
Red or green indicator light flashing very fast	1. Isolation fault	1. Please call your electrician.

5.2 Troubleshooting Guide for Electricians

NOTE: This Troubleshooting Guide is intended for electricians and not general users. Users should please refer to Section 5.1.

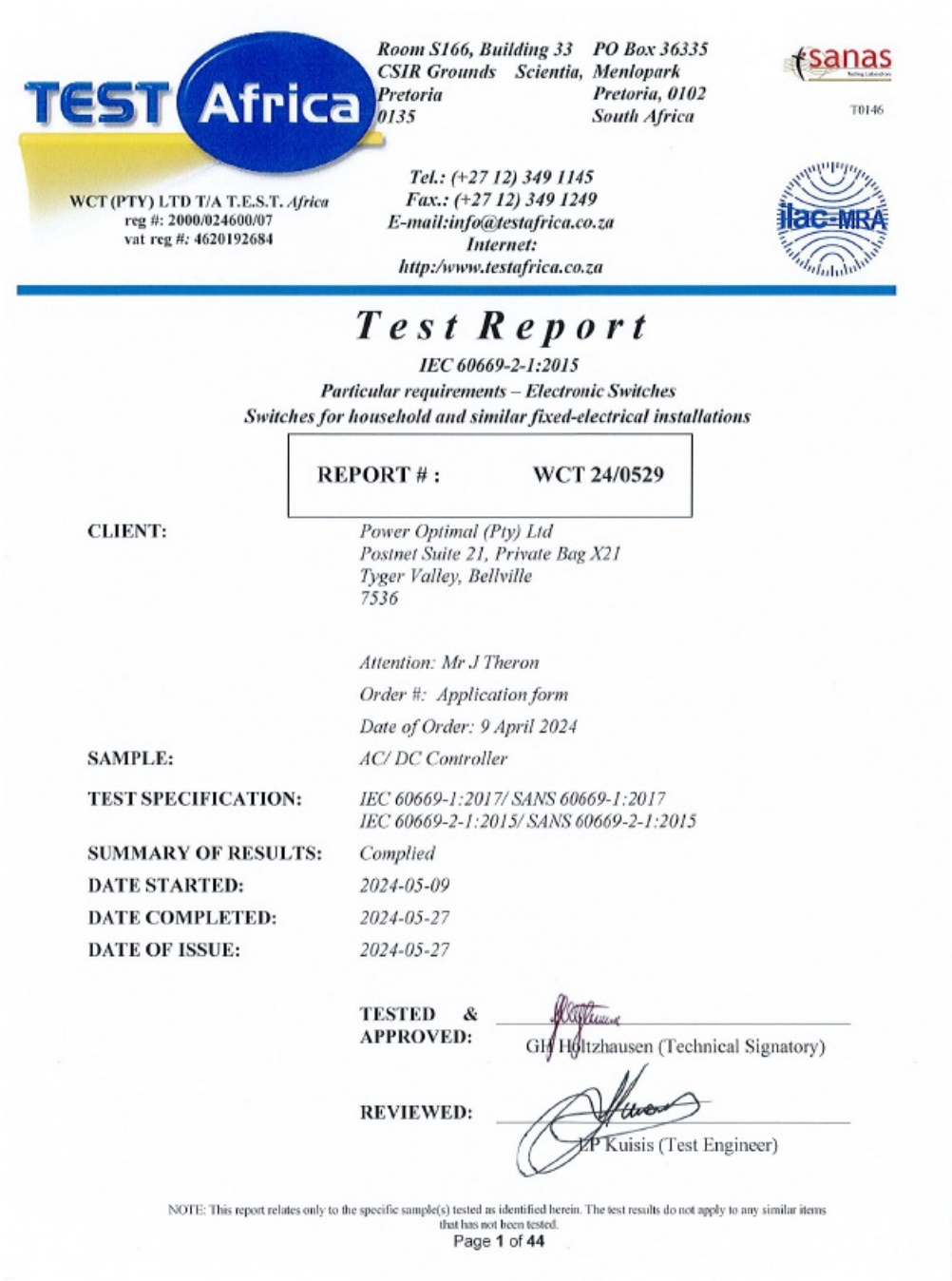
Things to Remember

- The **red mains LED** will only start functioning once stable mains voltage between 160 and 260 V AC is present for more than **4 minutes**. (In other words, the Elon® will only allow mains power to the element 4 minutes after mains connection or switch-on.)
- **Solar power** is only recognised **40 seconds** after active solar panels are connected to Elon®.
- An **open thermostat** (water at correct temperature) measures between **11 and 14 V DC** across the "thermostat" terminals on the Elon®. Polarity across these terminals is not important.
- A **closed thermostat** (cold water) **measures 0 V** across the "thermostat" terminals on the Elon®.
- **How to switch on solar power to element**: With enough solar energy (check at solar terminals), solar power will be routed to the element within 15 seconds after the thermostat closes and the controller dial is set to "**SOLAR ONLY**". A green flashing LED indicates this condition.
- **How to switch on mains power to element:** Turn control dial to "**MAINS ONLY**" and, if the thermostat is closed, mains power will be directed to the element indicated by a red flashing LED.
- **Note:** Once the dial has been turned to "**MAINS ONLY**", it will complete a full mains heating cycle (until the thermostat opens). Turning the control back to "**SOLAR ONLY**" at this point will not immediately switch the unit back to solar power. It will only switch back again after the mains heating cycle is completed (i.e. the thermostat opens) and the thermostat then closes again. You can finish the mains heating cycle faster by reducing the thermostat temperature setting until the thermostat opens. **Test solar power first**.
- **Fast flashing red / green LEDs** indicate a short between a PV (photovoltaic) lead and earth OR a partial short of the element to earth. Wait at least 20 seconds after any disconnection or other correction step for the LEDs to stop flashing.
- If you are having DC power supply issues, **check if the DC circuit breaker or isolator is faulty** by measuring the voltage across the DC circuit breaker or isolator whilst DC power is being supplied to the element. If there is a voltage drop across the disconnect switch, it is faulty and needs to be replaced. Also check all DC fuses if installed.

Troubleshooting Steps

1. □ Confirm correct wiring and polarity to Elon®. Also confirm test meter wires are connected correctly, black to common!
2. □ Confirm correct voltages and currents of all connections through the following steps:
   - Confirm open / closed **thermostat** voltages (11 – 14 V DC open, 0 V DC closed).
   - Confirm **controller wire** is connected properly. The connections should "click" into place and appropriate LEDs should indicate (be active).
   - With solar power to element switched on (green LED flashing), confirm same **DC voltage to element** as measured at solar terminals.
   - With **DC clamp meter** confirm that there is an **active current through element**.
   - With mains power to element switched on (red LED flashing), confirm same **AC voltage to element** as measured at mains terminals (should be approx. 230V AC).
   - With **AC clamp meter** confirm **active current through element** of between 9 and 18 Amps depending on element rating.
3. □ If you used a test controller for troubleshooting, remember to plug the wire from the installed controller back into the Elon® and check functioning. Set thermostat back to original setting.

Appendix A. IEC/SANS and EMC Test Certificates: Elon® 100



TEST Africa

WCT (PTY) LTD T/A T.E.S.T. *Africa*
reg #: 2000/024600/07
vat reg #: 4620192684

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sanas T0146

ilac-MRA

Test Report

IEC 60669-2-1:2015
Particular requirements – Electronic Switches
Switches for household and similar fixed-electrical installations

REPORT # : WCT 24/0529

CLIENT:	*Power Optimal (Pty) Ltd* *Postnet Suite 21, Private Bag X21* *Tyger Valley, Bellville* *7536*
	Attention: Mr J Theron
	Order #: Application form
	Date of Order: 9 April 2024
SAMPLE:	*AC/ DC Controller*
TEST SPECIFICATION:	*IEC 60669-1:2017/ SANS 60669-1:2017* *IEC 60669-2-1:2015/ SANS 60669-2-1:2015*
SUMMARY OF RESULTS:	*Complied*
DATE STARTED:	*2024-05-09*
DATE COMPLETED:	*2024-05-27*
DATE OF ISSUE:	*2024-05-27*

TESTED & APPROVED: GH Holtzhausen (Technical Signatory)

REVIEWED: EP Kuisis (Test Engineer)

NOTE: This report relates only to the specific sample(s) tested as identified herein. The test results do not apply to any similar items that has not been tested.

Interference Testing And Consultancy Services (Pty) Ltd

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EMC TEST REPORT

TEST METHOD / STANDARD	:	**CISPR 11 & IEC 61000-6-1**
CLIENT / APPLICANT	:	**Power Optimal (Pty) Ltd**
DEVICE TESTED	:	**Elon 100**

REPORT NUMBER	:	**R 7932/19**
REVISION	:	**1.0**
DATE ISSUED	:	**27/06/2019**
COPY	:	**Master**

CONFIGURATION CONTROL

ORIGINAL ONLY IF THIS NOTE IS IN RED INK

This test report was prepared by : ***Name:*** *S Joubert* ***Title:*** *EMC Engineer*

This test report was reviewed by : : ***Name:*** *C Fouche* ***Title:*** *Technical Director*

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12. CONCLUSION

The Elon 100 version V2 with serial number: 19283 meets the requirements of the following specifications called for in CISPR 11 & IEC 61000-6-1:

12.1 APPLIED TEST METHOD / STANDARDS

12.1.1 SANS / CISPR

- CISPR 11 (2016-06 ED.6.1): *'Industrial, scientific and medical equipment – Radio-frequency disturbance characteristics – Limits and methods of measurement'*

12.1.2 SANS / IEC

- SANS 61000-4-2 (2009) / IEC 61000-4-2 (2008): *Testing and measurement techniques – Electrostatic discharge immunity test*
- SANS 61000-4-3 (2008) / IEC 61000-4-3 (2010): *Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test*
- SANS 61000-4-4 (2011) / IEC 61000-4-4 (2011): *Testing and measurement techniques – Electrical Fast Transient / Burst*
- SANS 61000-4-5 (2006) / IEC 61000-4-5 (2005): *Testing and measurement techniques – Surge immunity test*
- SANS 61000-4-6 (2009) / IEC 61000-4-6 (2008): *Testing and measurement techniques – Immunity to conducted disturbances, induced by radio-frequency fields*
- SANS 61000-4-11 (2005) / IEC 61000-4-11(2004): *Testing and measurement techniques – Voltage Dips, Short Interruptions and voltage variations immunity test.*

13. COMPLIANCE STATEMENT

The EUT complies with the requirements of the specifications listed in 12.1 above.

END OF REPORT

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Test Report

SANS 60335-2-21:2000
Safety of household and similar electrical appliances
Part 2: Particular requirements for storage water heaters

REPORT # : WCT 24/0033

CLIENT: *Electrolux SA (Pty) Ltd*
P.O.Box 389
Benoni
1500

Attention: Ughard de Clercq
Order #: MNF07poh000014532
Date of Order: 2024-01-12

SAMPLE: *ELON 100 CONNECTED TO A 150 L GEYSER*

TEST SPECIFICATION: *SABS IEC 60335-1:1991 SABS 60335-2-21:2000*

SUMMARY OF RESULTS: *Complied*

DATE STARTED: *2024-01-00*

DATE COMPLETED: *2024-02-16*

DATE OF ISSUE: *2024-02-16*

TESTED: KJ Anderson *(Test engineer)*

APPROVED: LP Kuiris *(Technical Signatory)*

NOTE: This report relates only to the specific sample(s) tested as identified herein. The test results do not apply to any similar item that has not been tested.

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ilac-MRA

Test Report

IEC 60730-1: Automatic Electrical controls
Part 1: General requirements

REPORT # : WCT 23/1303

CLIENT:	*Electrolux SA (Pty) Ltd* *PO Box 389* *Benoni* *1500*
	Attention: Ughard de Clercq
	Order #: MNF07POH000014366
	Date of Order: 30 November 2023
SAMPLE:	*Geyser Controller*
TEST SPECIFICATION:	*IEC 60730-1:2013/ SANS 60730-1:2016*
SUMMARY OF RESULTS:	*Complied*
DATE STARTED:	*2023-12-01*
DATE COMPLETED:	*2023-12-11*
DATE OF ISSUE:	*2023-12-11*

TESTED & APPROVED: GH Holtzhausen (Technical Signatory)

REVIEWED: LP Kuisis (Test Engineer)

NOTE: This report relates only to the specific sample(s) tested as identified herein. The test results do not apply to any similar items that has not been tested.

Appendix B. Warranty

If the PowerOptimal Elon® 100 (“the Product”) is found to be defective, you will be entitled to a repair or replacement

within 2 (two) years of the date of delivery of the Product to you. **Please keep your receipt as proof of purchase**. If you are a consumer as defined in the Consumer Protection Act No. 68 of 2008 ("the CPA"), you will be entitled to such remedies as are made available under the CPA in relation to the return of goods.

PowerOptimal will not have any liability or obligation to you where the Product has been subjected to abuse, misuse, improper use, improper testing, negligence, accident, alteration, tampering or repair by a third party.

To the maximum extent permitted by applicable law, in no event shall PowerOptimal be liable for any special, incidental, indirect, or consequential damages whatsoever, including, without limitation, damages for loss of business profits or business interruption, arising out of the use or inability to use this product.

Please note that this unit must be installed by an electrical contractor registered with the Department of Labour. Failure to do so may invalidate this warranty. Please keep the CoC (Certificate of Compliance) issued by the electrical contractor on completion of the installation.

Appendix C. Terminology

AC Alternating Current – an electric current that reverses its direction many times a second at regular intervals, with voltage typically varying in the form of a sine wave.

CoC Certificate of Compliance – to be issued by the electrician installing your Elon® 100 system

CPA Consumer Protection Act No. 68 of 2008

DB Distribution board – the main electrical distribution board / panel in your home, containing circuit breakers and switches.

DC Direct Current – an electric current flowing in one direction only. Solar PV modules produce direct current electricity.

Geyser South African term for a water heater

IEC International Electrotechnical Commission

kWh A derived unit of energy equal to 3.6 MJ (megajoules). The amount of energy used by a 1 kW electrical device over a period of 1 hour.

kW_p or **W_p** The peak power rating in kilowatt (kW) or watt (W) of a solar module or array – i.e. the output power achieved under full solar radiation. This is usually reported at STC and NOCT.

PV Photovoltaic – referring to the production of electric current at the junction of two materials exposed to light.

SANS South African National Standards

Notes

1. See for example: http://www.eskom.co.za/sites/idm/Documents/Legionaires_Fact_sheet_hot_water_bacteria_simple_facts.pdf and http://standards.nsf.org/apps/group_public/download.php/30413/How%20to%20Avoid%20LD%20at%20Home.pdf ↑
2. 46" OLED TV at 82W. ↑
3. Calculations based on actual Elon performance, assuming a 20% reduction due to non-optimal user behaviour, an initial electricity tariff of R3/kWh and an annual electricity price increase of 8%. ↑

★Created 2026-06-10 04:00:38 UTC by Sean Moolman
✎Updated 2026-06-21 09:08:24 UTC by Sean Moolman