COMPANY OVERVIEW

XTEND
ELEMENTS

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XTEND ELEMENTS

COMPANY OVERVIEW

120 Degrees (Pty) Ltd (trading as XTEND Elements) designs and manufactures energy efficient, PTC ceramic, stainless- steel water heating elements. Our elements are designed to use less power than standard elements by reducing system losses.

XTEND Elements are engineered to address heat losses, element failure in hard water areas and to work with solar PV (electricity) systems. Adoption of solar PV is accelerating, banks are providing better financial products to support this and customers are keen to manage future costs and gain energy security. XTEND Elements reduce system complexity and maintenance costs, maximising customer satisfaction and savings.

Our management team includes many years of financial, electrical, solar, plumbing and geyser manufacture and design expertise.

XTEND elements are stocked nationally by Plumblink and are available through many stores supplied by Agrinet, as well as a growing network of independent customers.

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PRODUCTS

All XTEND products have been tested and approved by SABS to SANS 504 standard. XTEND elements are approved for installation by most major manufacturers and (are) compliant with their warranty terms.

A 2kW XTEND element heats water at approximately the same rate as a 3kW standard resistive element, reducing energy consumption by 1kWh per hour of use. For an average household this is approximately 1000 units each year. **2kW XTEND element = 3kW standard element: 3kW XTEND element = 4kW Standard element.**

FLANGE MODEL

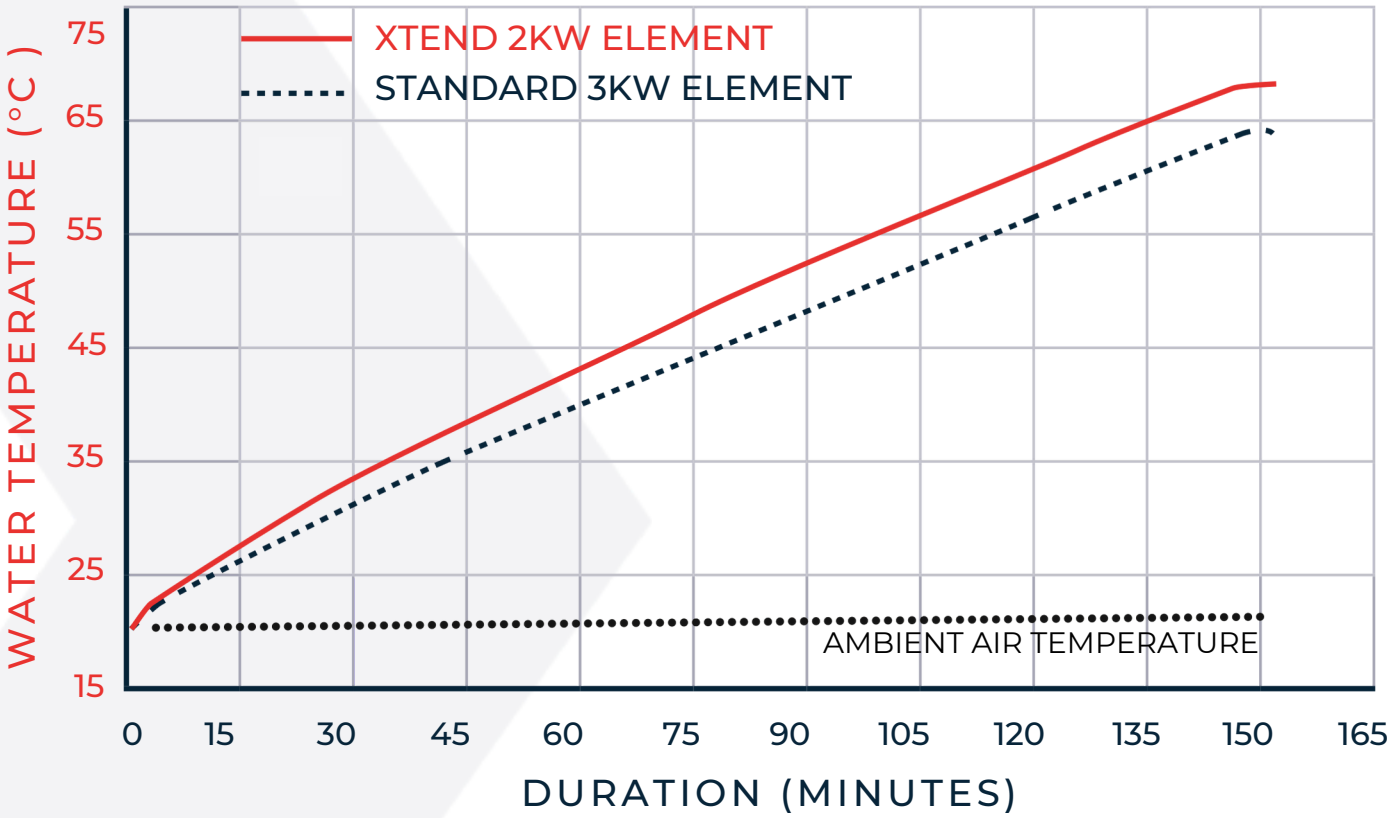
SCREW-IN MODEL

XTEND TECHNICAL SPECIFICATIONS

MODEL	2KW FLANGE	3KW FLANGE	2KW SCREW-IN	3KW SCREW-IN
Power (w) ± 10˚C	2000	3000	2000	3000
Rated Voltage (V)	230	230	230	230
Inrush Current (A)	11-15	17-23	11-15	17-23
Inrush Duration (s)	35	35	35	35
Steady State (A)	9	13	9	13
Resistance (Ω)	50-200	50-200	50-200	50-200
Dry Burn Cycles	Tested to over 5000 cycles			
Material	316 Stainless Steel with PTC ceramic core			
Weight (kg)	1.79	1.85	1.00	1.16
Length (mm)	400	400	300	360
Diameter (mm)	50	50	35	35
Surface Temp (˚C)± 10˚C	220	220	220	220

PRODUCTS

The graph shows that a 2kW Xtend elements heats water at around the same rate as a 3kW standard element, reducing energy consumption by 1kWh per hour of use. These are independent results from Kwikot test facilities comparing new elements. Over time, Xtend elements will maintain efficiency better than a standard elements due to reduced scale build up.



BENEFITS

ENERGY SAVING	XTEND elements use around 25% less energy than a standard element, by reducing heat losses. XTEND elements use positive temperature coefficient (PTC) instead of resistive wire. PTC has a lower watt density and better heat transfer. XTEND elements have a maximum surface temperature (in air) of 240°C. A standard element is over 500°C. To compensate for the lower watt density, XTEND elements have a much larger surface area than standard elements. The combination of PTC and other design features ensure that more of the heat is transferred to the water and less to the environment.
HARD WATER	XTEND elements PTC heating chips are protected by 316 (marine) stainless-steel. The low watt-density reduces the rate at which lime scale and other solids build up on the element and inside the tank. By the time a standard element fails it is only heating at around 50% efficiency. XTEND elements maintains efficiency over time and can be cleaned if required. XTEND elements will also not burn out, it will simply stop drawing power. (See dry burn below)
SOLAR PV	A 2kW XTEND element heats at a similar rate to a 3kW standard element (see graph). A 2kW load works well with any solar PV system and turns the geyser into an energy storage asset, not an additional problem.
DRY-BURN	The key property of PTC is that the internal resistance increases to 100% at the designed set point. I.e. once the element reaches 240°C it stops drawing power. If a geyser empties a standard element will quickly melt and fail. XTEND elements will reach 240°C and stop drawing power in air. After about 15-20 minutes, as the element is in an insulated geyser, the XTEND elements will turn on briefly, reach 240°C and turn off again. This is defined as a dry burn cycle. XTEND elements are tested to over 5,000 of these. This means that if the geyser empties or fails, the XTEND elements can be installed in the new geyser and will work as designed.
SIMPLE INSTALLATION	XTEND elements require no additional parts and are installed exactly like a standard element. Any qualified person can do this. We would recommend installing a new thermostat when you install an XTEND element. Installing a timer can also reduce heating costs and is required for XTEND elements to work well with solar PV.

XTEND & SOLAR PV EXPLANATION

Solar PV prices have decreased significantly. Battery prices even more so. In conjunction with this electricity prices have increased significantly, and look set to continue to do so. Electricity supply is also unstable, and most people are looking for solutions.

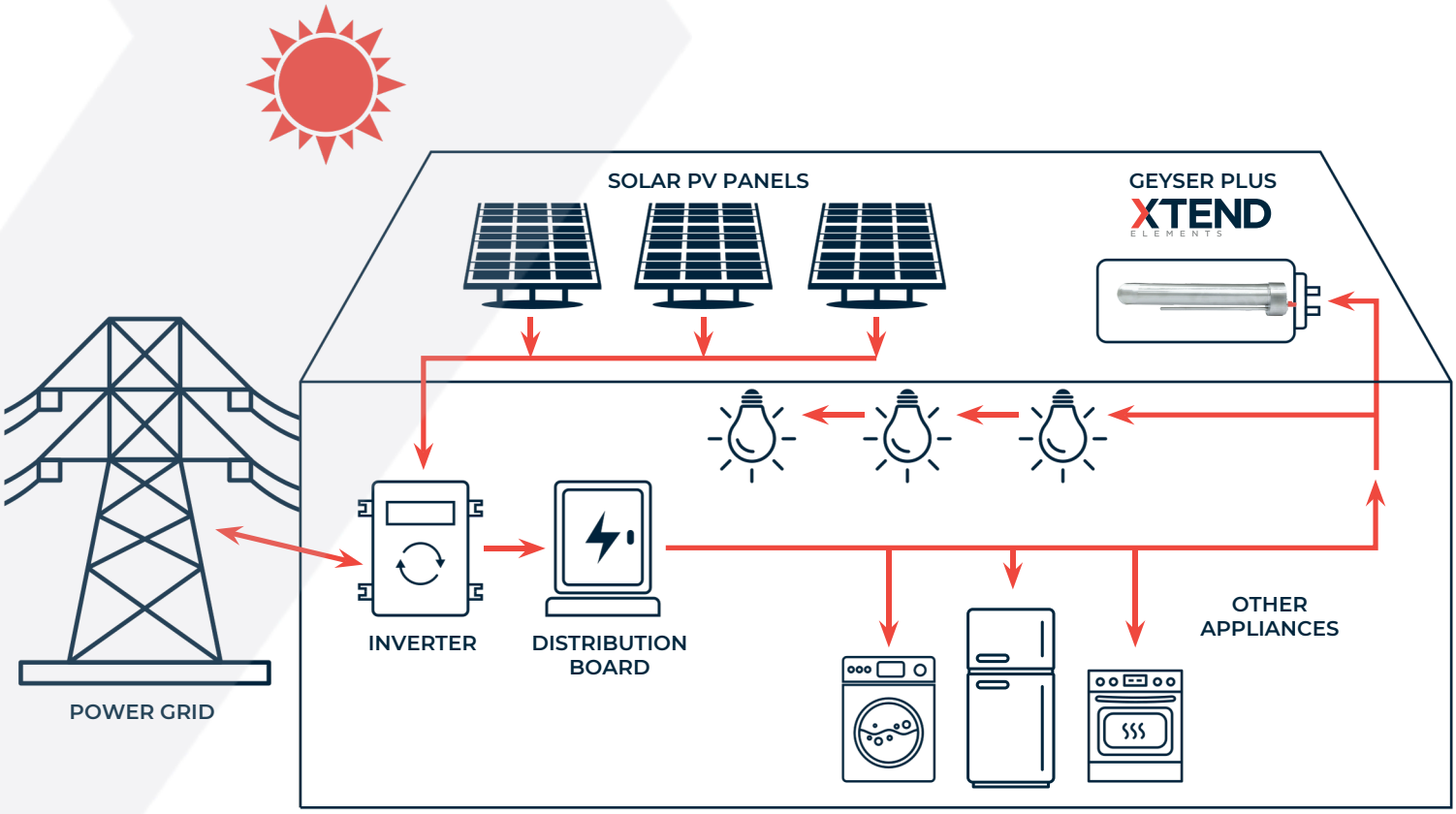
XTEND elements use 25% less energy (kWh) and 33% less power (kW / instantaneous energy) than a standard element. This allows the geyser to be powered by solar PV systems without overloading them.

Installing only an XTEND element into the geyser, instead of installing solar thermal (or) and heat pumps, reduces risk and complexity around the geyser. This is good for architects, builders, the homeowner and insurers.

It is far more effective to install a system that can power any appliance in the home, not just the geyser. Once a geyser has reached the set temperature all additional energy potential is wasted as the power cannot be directed elsewhere.

On a solar PV system for the home, the power can be used by any appliance. The geyser, using a simple timer, can be configured to use the spare power generated, once all other loads have been taken care of.

The configuration of an XTEND element plus solar PV reduces plumbing complexity and ensures that the direct current (DC) electricity is connected only to the inverter and not directly to any appliance. This is safer.



NEW BUILD CONSIDERATIONS

New build properties require at least 50% of the water heating to be from an alternative energy source. While the standard is poorly worded, it does allow the solar PV system to be separated from the geyser. In conjunction with Xtend elements, this gives the developer an opportunity to restructure their budget.

For single houses, the budget allocation for hot water can be reallocated to solar PV, bringing a more desirable product to market for the same cost. The developer can add optional larger solar PV systems to the Offer to Purchase.

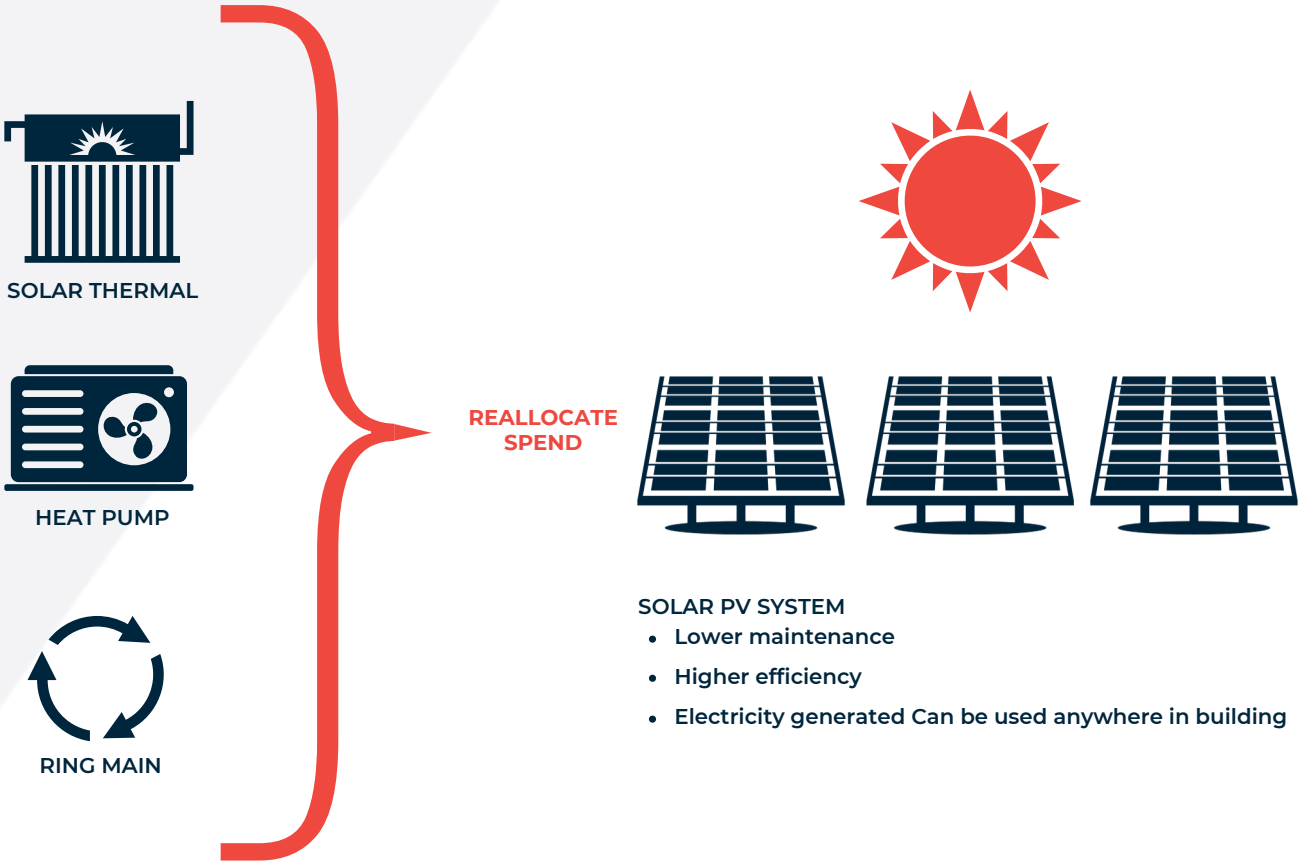
Centralised heat pump systems are costly to install and maintain. If the hot water usage is low the landlords can end up carrying the unrecovered costs in the levies. Smaller geysers in each apartment and a central solar PV system will allow each tenant to control their hot water usage without affecting other owners

IN SECTIONAL TITLE DEVELOPMENTS, THE DEVELOPER CAN:

1. Transfer ownership of solar PV system to the body corporate
2. Retain ownership of the solar PV system and maintain an annuity revenue stream
3. Outsource the solar PV finance and build to a 3rd party and keep the savings.

Solar PV systems have the following advantages over centralised water heating systems, either solar thermal or heat
pump powered:

1. No ring main for hot water with all the associated costs and energy losses
2. No hot water meter required
3. Each homeowner/tenant has full control over their own hot water supply
4. The electricity generated can be used anywhere in the building, not just for water heating, or sold to the grid



CASE STUDIES

SAVINGS	**Issue:** Electricity cost too high in home **Solution:** Install XTEND element **Result:** R1,000 went from lasting 7 days to 10 days **Customer Comment:** I have noticed an immediate saving in my electricity bill. I have a prepaid meter and my usage has been very constant amount that would last almost exactly a week. I am now topping up the meter every 10 days or so. Awesome.
SAVINGS	**Issue:** Solar PV system installed and the geyser was using too much energy and power. **Solution:** Install XTEND element in Kwikot geyser **Result:** Energy used by geyser reduced from 180kWh to 140kWh for the test periods **Customer comment:** All energy is measured in detail on my house including my geyser. XTEND element has reduced my electricity purchase costs.
HARD WATER	**Issue:** South 32 mines was replacing elements every 2- 3 months due to the water quality **Solution:** Install XTEND element **Result:** After 12 months the XTEND element was still working. It was removed and inspected. There was some limescale, but much less than a normal element after 3 months. The limescale was not uniform and was not affecting performance. The XTEND element was cleaned to remove all scale and reinstalled. It is still working well after 18 months. **Customer Comment:** XTEND elements has saved me 6 elements changes so far. This is a lot of money saved and irritation avoided.
SOLAR PV	**Issue:** Batteries on home solar system not lasting through the night **Solution:** Install XTEND element in 1 x 150L Kwikot geyser **Result:** The batteries last through the night as XTEND requires less energy in the morning to top up the heat after night-time water use. The batteries are full faster and there is more energy from the solar system to power other loads. Installing an XTEND element has significantly reduced the amount electricity I purchase.

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