LEMORI ENERGY
CLEAN ENERGY FOR ALL

# Solar Water Heaters

## FREQUENTLY ASKED QUESTIONS

### Why Solar Water Heating?

Grid electricity is not only a scarce resource in Kenya, but it is also costly, unreliable and continually increasing in price. Solar, on the other hand, is a free fuel available for all to use, and it is Green! The Government has recognized this and provided for recent regulation which requires that all consumers of Hot Water in excess of 100L (a home accommodating more than 2 people) use Solar Water Heaters. This not only serves to free up Electricity for other consumers, but also allows for you, the consumer, to save significantly on your electricity costs, with immediate effect. All consumers must comply by November 2017, while new construction must comply with immediate effect.

### How much will I save from my power bill?

After installing our high-efficiency Solar Hot Water system, a typical household using a conventional electric hot water geyser will save upto 60% from their monthly Power bill. This means that you should recover your investment over 2-3 years of savings from your monthly Power bill, depending on your configuration and which type of system suits you.

### What are the main components of the system?

The system is basically made up of the Tank and the Collectors. The Tank is comprised of the inner and outer layers, separated by a highly-effective, heat-insulating material; this ensures that all hot water in the tank stays hot for a long period of time. The Collectors are high-efficiency vacuum tubes, whose inner layer traps heat from the sun via a triple-absorption coating. The absorption coating in turn transfers heat to the water. This heat is prevented from escaping by a vacuum in between the double-layer coaxial glass structure of the tube - making the complete system highly efficient.

### How does it work?

The basic working principle for our Non-pressure Solar systems is known as the thermosiphon effect. Warm water rises due to natural convection, resulting in water circulating between the collectors and tank. The system is installed at an angle with tank above collector. As water in the collector tubes is heated by the sun, it becomes lighter and naturally rises into the tank above. Simple, effective and efficient, with no mechanical parts - this is the beauty of the basic system which has very few components which are prone to failure. For a Pressurized Solar system, each vacuum tube contains a copper heat pipe and aluminium fin. These transfer the heat from the vacuum tube into the heating pipes inside the tank, via use of a Freon-like gas (similar to what is contained in your typical fridge).

### Will I get hot water if there is no mains power?

We have several configurations of solar systems; in summary if your configuration relies only on gravity to push water through the solar system, you will get hot water from the solar system if there is no mains power (as long as your cold supply tank has water). However, if your configuration is a pressurized system which requires an electric pump to drive hot water through the solar system into your taps, you will not get hot water in your taps when there is no mains power. However, if this occurs during the day, you will still benefit from solar heating of the water stored in the solar system; and be able to use this hot water immediately once mains power is restored.

## How does it integrate with my existing plumbing?

We will conduct a site visit to determine how best to fit the system. However, for a dwelling which already uses hot water, we do not expect major plumbing works, as we will utilize the breather of your existing hot water geyser. Nor do we expect major structural works, since the system typically sits on your roof, which we neatly integrate into various types of roof structure.

## How hot does the water get?

When heated by the collector tubes on a sunny East African day, the water temperature will rise to approximately 65 degrees Celsius. However, it really depends on the capacity of system which we recommend for you as well as your usage. If not used for some time, the water will boil! Moreover, we provide our customers with an Intelligent Controller, fitted in your home. This will give you full control over the system, showing exact temperature of the water. It also allows you to pre-set a preferred Constant Temperature - the Intelligent system will trigger the integrated Electrical Heater to boost your water temperature on cloudy days.

## Will I get hot water at night?

Indeed, you will. Hot water in the tank is kept hot thanks to the highly-efficient, heat-insulating material between the inner and outer layers of the tank; this ensures that all hot water in the tank stays hot for a long period of time. Actually, you will only lose 1 to 2 degrees-Celcius overnight! Depending on your usage pattern, you will be able to set the system to automatically boost the temperature of the water, should the need arise.

## How long does the Hot Water last?

Solar being a natural renewable resource which is not “firm” (due to clouds and other weather patterns), we are forced to size the solar system based on your average daily needs. For instance, a family of 4 taking showers on average 1.5 times a day will use approximately 180L per day; there we recommend a 200L system. The tank’s hot water outlet is at the top (hot water rises) and so you will have readily-available hot water throughout the day as cooler water is being heated from the bottom of the tank. In hot months, the water will be hotter than in June/July. The amount of hot water depends on the rate of heating and the rate of use.

## What happens if the weather is bad?

Our systems can come with an Integrated Electrical Heater to boost your water temperature on cloudy days. We also provide our customers with an Intelligent Controller, fitted in your home. This will give you full control over the system, showing exact temperature of the water, allowing you to choose when to manually boost the temperature. It also allows you to pre-set a preferred Constant Temperature - in this way, the Intelligent system will trigger the integrated Electrical Heater to boost automatically.

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## What does it cost to purchase the system

We have several types of solar systems depending on your needs and configuration of your dwelling. Contact us today for your free site assessment and estimate, based on your current plumbing, number of people at home and structure of your roof. We promise you the best price for quality and peace of mind in town.

## What if I can't afford to pay right away?

We have an arrangement with several major local banks who will gladly offer you a reasonable payment plan.

## Is there maintenance required? How much does it cost?

Limited maintenance is required on the system, depending on your usage and the type of water you use. Contact us today for your free site assessment and estimate, including maintenance contract. Remember, it is in our interest to maintain your system so that it performs well; therefore we typically charge maintenance at cost.

## Howoften does the tank / collectors need to be replaced? What is the Warranty?

The system is designed for a lifetime of 10-15 years. We offer you a product warranty which covers manufacturing defects for a period of 5 years, provided the system is installed and maintained by us, or by a technician who is certified by us.

## What is the advantages of having the Intelligent computer controller?

This displays the temperature of water in the system and allows for manual boosting (backup) of water when one has several consecutive days of dull weather. Is also fully configurable as it allows for automatic boosting according to customer preferences (time, temperature).

## Is it easy to install . I.e. No damages on roof etc?

Yes there is no damage, we have previously gained expertise from having installed in multiple numerous roof types, eg. mabati, concrete slab, various types of times (including bruce-lee tiles, etc.). Our installation technique is highly unique in the industry in that in most cases we do not penetrate the roofing material!

## What if after installation the capacity turns out not to be enough, what then?

We will size and design the system based on the number of users of water, eg. 5 consumers of water at average of 30L per shower, for an average of 1.5 showers per day gives an average daily usage of 225L, so we recommend a 250L or 300L system. This assumes that the kitchen will be disconnected from solar hot water and use an undersink heater or other. Electric booster can be used when one has guests OR in the event that numbers increase for the long-term, one can add an extra system to facilitate the usage of those who are using.

## What happens in cold months when there is no sunshine?

On days when there is no sun, if it is for a day or two, you still get warm water as water gets heated due to diffuse radiation available in the atmosphere. The system, however, is connected to an electrical back-up via the Intelligent Controller -  .

## What happens when I go on vacation?

## Orduring hot season it becomes too hot?

One is required to have a two line system which will enable the cold and hot water mix at some point thus the water wont be too hot to use in the shower. The system has a safety Temperature/Pressure Relief valve which releases steam and water over 93-C. However, to allow for longevity of the tank, one is advised to have the solar tubes covered if one is going on holiday for more than 10 days.

## What if we want to use our instant hot water showers along with it, is that possible?

Yes, you can choose not to boost the water in the solar system via the Controller and Electric heater, but simply use the cold water with instant shower.

## Will it heat the other water taps around the house as well, like the kitchen and other sinks?

All water taps currently connected to your existing hot water geyser will get hot water except the kitchen.

## Will the system by pass thecurrent hot water Geyser? As in it will not be useable?

Yes. It will be disconnected and you can remove it separately after we finish to get more closet space if you choose so. This is NOT covered in our works.

## Any other Questions?

We'd be happy to address any other questions you might have, so please call us today on +254-720-780803 or email at info@lemorioenergy.com . We look forward to serving you!