

# Batteries

Check the charge controller every evening to know the state of charge. If the charge is very low, switch off all appliances until the batteries are fully charged again.



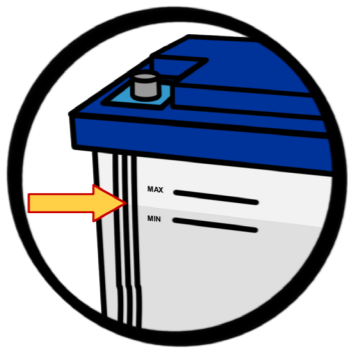
Do not use any other appliances than those agreed on in the system design.



Do not add any new batteries to an existing battery bank. Replace all batteries at the same time.

Clean the tops and terminals of the batteries once a month. Use a damp cloth to clean the battery tops and apply petroleum jelly to the terminals to protect them from corrosion.

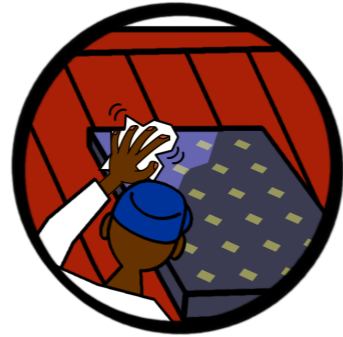
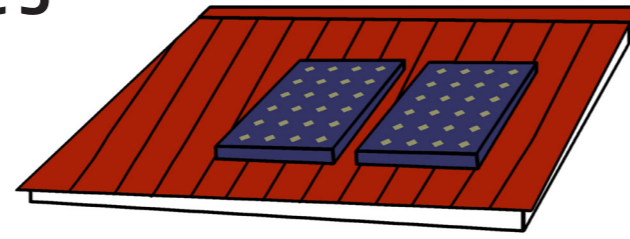
Check the electrolyte level in the batteries once a month if wet-cell batteries were used for the installation. If the level is below the lower mark on the outside of the battery, use de-ionised/distilled (battery) water to fill it up, but not above the upper mark! Do not use tap water or battery acid for refilling! Sealed maintenance-free batteries do not need to be refilled.



Do not throw away old batteries because they will pollute the environment! Take old batteries to your battery dealer or to a battery manufacturer for recycling.

Normal solar batteries will last on average between 2 and 5 years (compared to only 2-3 years for ordinary car batteries). After this time, you will notice a decrease in the battery performance. A technician will be able to tell you when your batteries need replacement.

# Modules



From time to time, check the condition of the modules. If they are dusty or dirty, carefully wash the modules' top glass surface using water and a soft cloth.

Once a year, check and ensure that the module connections are tight enough and not rusty.

Remove any cobwebs, nests and vegetation that may have fallen onto or below the module as soon as possible.

Ensure at all times that modules are not in shadowed areas due to growing vegetation (like trees) and/or new buildings. Hard objects (e.g. stones) should not be thrown onto the module.

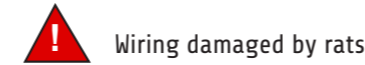
Check the module mounting to ensure it is still firm, has not rusted and that the tilting angle has not shifted.



Make sure modules are kept clean and no shadow is cast on the modules. Always ensure mountings are still tight and firm.

# Wiring

When you notice any of the following, call a technician:



Wiring damaged by rats



Loosely hanging wires, conduits and trunkings



Loose screws



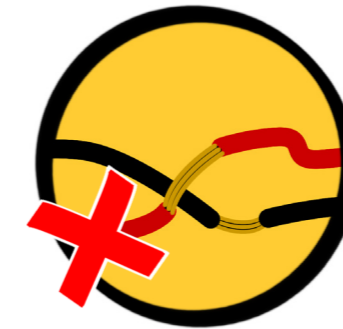
Loose, cracked or broken switches and sockets



Insects living in junction boxes



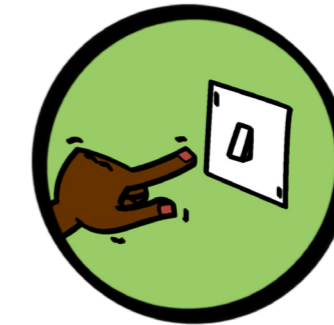
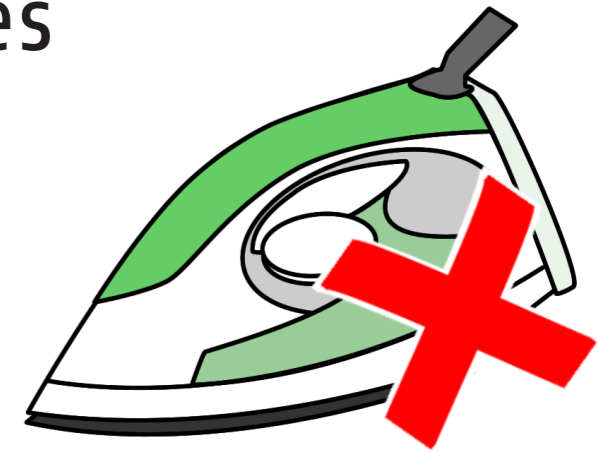
Bare wires



Only use appropriate plugs and do not insert anything else into your sockets. Do not touch bare wires because of the risk of electric shocks.

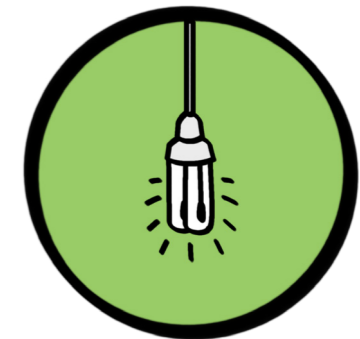
# Appliances

Do not use appliances that use a lot of power, e.g. flat irons, electric cookers, water heaters or electric kettles.



Switch off lights and other appliances when you do not need them.

Clean lamps regularly with a damp cloth. Replace blackened lights that are not working, with other ones of the same wattage (W) and voltage (V). Use only energy saving lights – fluorescent tubes or compact fluorescent lights (CFL).



If lights need to be replaced frequently, contact a technician to find out if there is a problem with your system.

The battery is responsible for storing the electricity so that it can be used at times when there is no sunshine, for example at night or during cloudy weather. From the battery, the electricity then travels to the appliances that consume electricity.

If you have an alternating current (AC) system, there is also an inverter between the battery and the appliances. The inverter transforms the 12 V direct current (DC) from the batteries into 230 V alternating current that is required by some appliances such as colour TVs. If you have a DC system without an inverter, you cannot use certain standard appliances that require AC. For DC appliances that use less than 12 V, you will need a DC-DC converter.



#### How should your system be operated?

- a) Solar PV systems are limited by the capacity of the modules and the batteries. When you purchase the solar PV system, you will be informed for how many hours the system can power how many lights and appliances.
- b) It is very important that you only use your lights and appliances for the number of hours agreed on! Switch off lights and appliances when you do not need them!
- c) Do not add any additional lights and appliances! Otherwise, you will overuse the system, resulting in rapid depletion of the batteries and other technical problems.
- d) Every evening, check the charge controller display to see if the batteries are fully charged. If they are not fully charged, you should keep lights and appliances switched off or use the available electricity sparingly.



#### When do you need a technician?

In general, the system should be inspected by a qualified technician every 6 months. If you have a problem with your solar system, contact your dealer or another trained solar technician. You also need a technician for any maintenance or repair tasks other than those described in this brochure. Do not attempt to repair any parts of the system yourself! Especially, do not tamper with the charge controller or the inverter! Also keep in mind that you usually have a warranty of 1 year on the entire solar PV system. During this time, technical problems resulting from poor installation or supply of faulty components will be fixed by the responsible solar company at no extra cost.

For more information please contact your service provider (company that installed your solar system) or a solar technician in your area.

# Operation and Maintenance of Solar Photovoltaic Systems



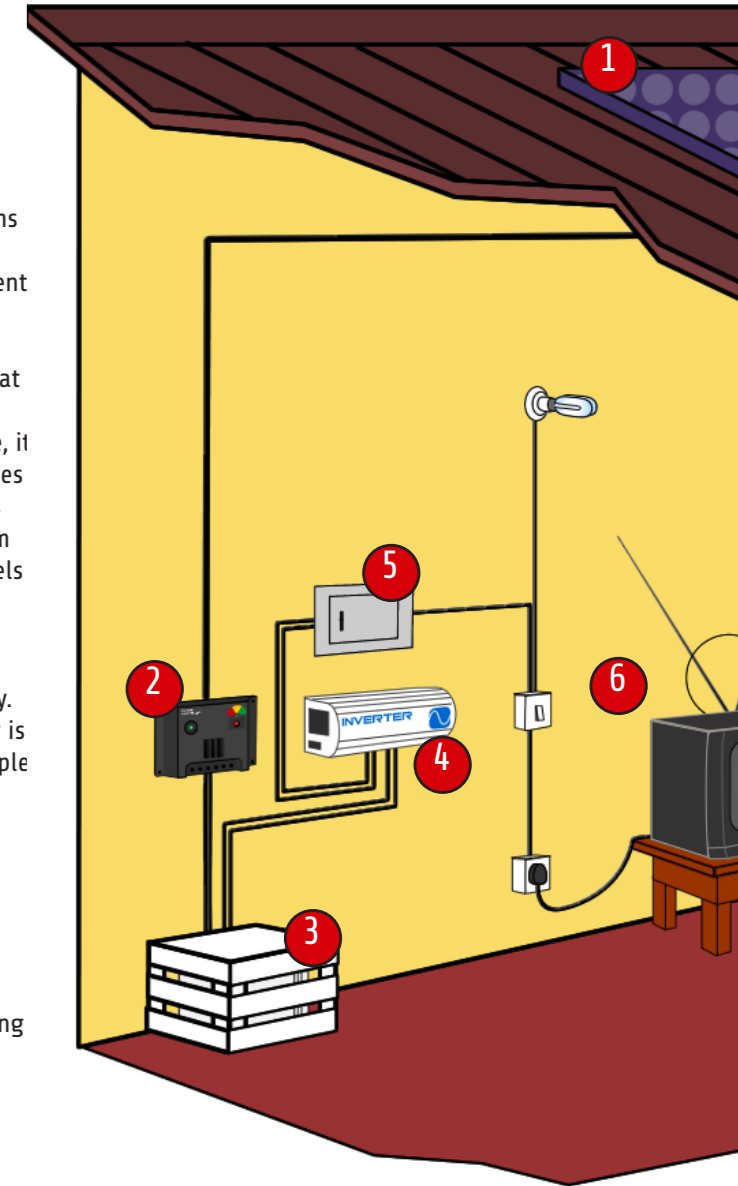
Promotion of Renewable Energy and Energy Efficiency Programme (PREEEP)



Solar photovoltaic (PV) systems use energy from the sun to produce electricity. Once installed in your home or institution, you have to regularly maintain the solar PV system so that it can work properly and last 20 years or even longer. You can do most of the maintenance yourself as described in this brochure. However, the system should be inspected by a qualified technician every 6 months. The technician will also be able to tell you if there are any technical problems with your system.

#### How does your solar PV system work?

Solar photovoltaic (PV) systems use energy from the sun to produce electricity. The different components of a solar PV system are displayed in the picture below. The sunlight that shines on the solar modules produces electricity. Therefore, it is important that these modules are not shaded by trees, parts of the building, dust, etc. From the modules, the current travels through the wiring to the charge controller. This small device controls the charging and discharging of the battery. It makes sure that the battery is not being damaged, for example by taking out too much of its charge.



- 1 Solar module
- 2 Charge controller
- 3 Battery in protective housing
- 4 Inverter
- 5 Distribution box
- 6 Appliances