

SUNLIGHT AT NIGHT

In many parts of Africa people who live in rural areas have no access to electricity. Despite ambitious government plans, the constraints imposed by a scarcity of financial resources and the sheer practical difficulties of transmitting and distributing grid electricity over huge areas means that most people face the prospect of going without a connection for many years to come.

As a result, most families are forced to rely on candles or Kerosene lamps to provide basic lighting in their homes. In Kenya for example, 96% of householders use kerosene for lighting, while 70% also spend significant amounts of hard earned cash on dry-cell batteries for torches. This recurrent cost every month eats up valuable financial resources that could otherwise be directed towards children's education or family health.

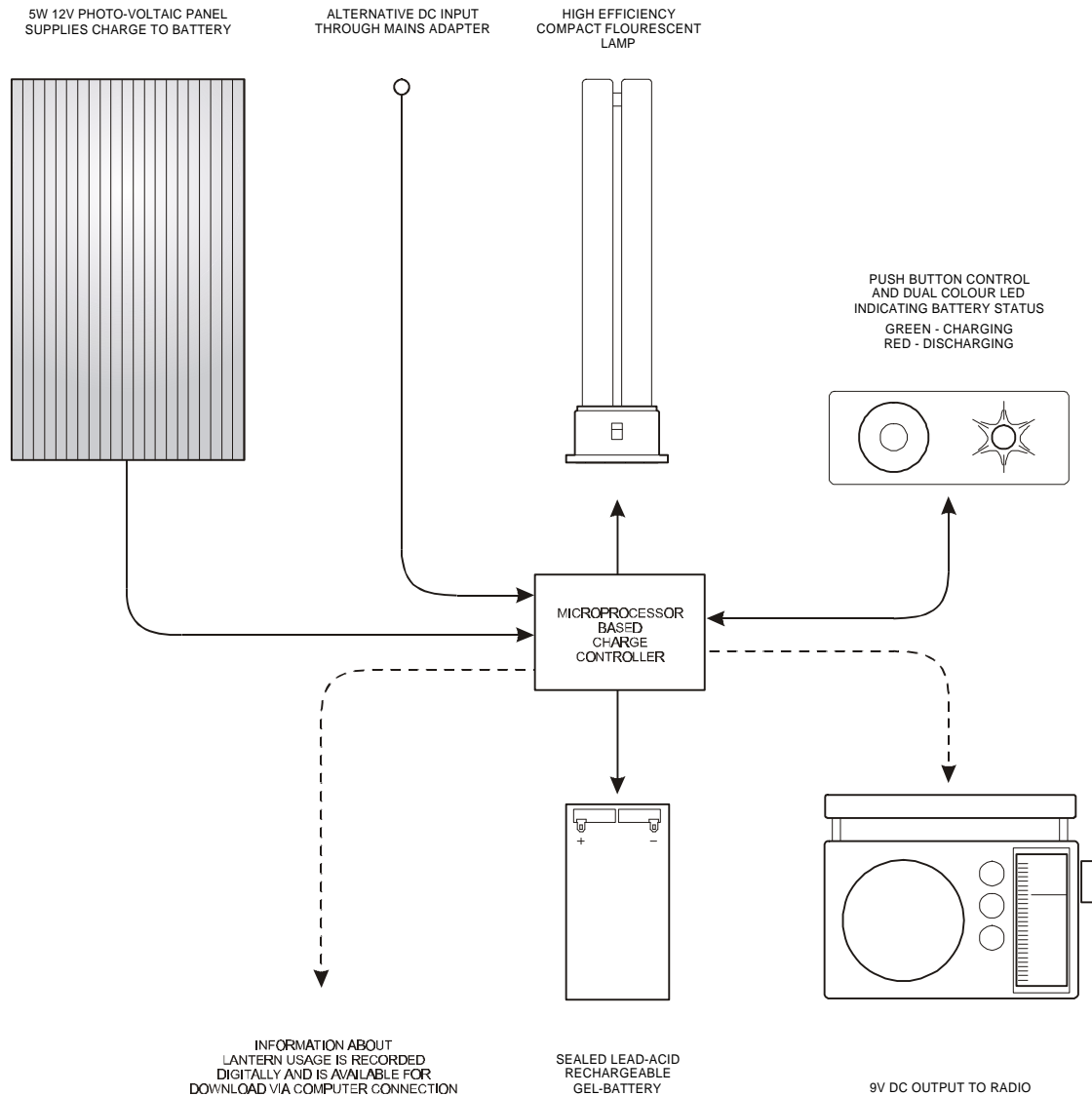
Energy from the Sun is available for free and Kenyans have it in plentiful supply. As a result there has been a growing interest in Photo-Voltaics (the devices used to convert the Sun's energy into electricity) and sales of Solar Home systems have been growing steadily over the last few years. Unfortunately the cost of installing even a moderate Solar Home System puts it out of reach for most Kenyan families.

The IT Solar Lantern has been designed as a low-cost alternative to a Solar Home System and is intended to allow rural African families to climb the first step on the "energy ladder".

Design and Development

To help define the new product, project partners Energy Alternatives Africa undertook market survey work with rural families in Kenya. Potential customers were asked what characteristics they would like to see in an ideal Solar Lantern. The information, which included everything from suggestions on retail price and operating hours to the provision of a socket to power a small radio, was then used as the basis for a design brief. Together with local manufacturers in Kenya the ITC team then proceeded to design a product to fit the bill.

During the development process, the team were able to exploit the latest computer solid modelling and rapid prototyping techniques to build a series of models for demonstration and testing. A batch of these prototype lanterns will be tested with rural families in Kenya shortly. Feedback and suggestions from these tests will be used to make any changes to the final design before full-scale production of the lantern goes ahead later this year.



How does it work?

The Solar lantern kit consists of a Photo-Voltaic Panel, and a lantern containing a high efficiency lamp, a rechargeable battery and a charge control circuit. The concept is a simple one – during daytime, sunlight falling onto the Photo-Voltaic Panel generates a small electrical voltage. This is used to charge the Lanterns battery so that the lamp can provide light during darkness.

The charge control circuit housed within the lantern is the “brain” of the unit. Not only does it ensure that the

battery is charged and discharged correctly so that it gives a lifetime of maintenance free service, but it can also “decide” to give the battery an extra top-up charge if the panel has gone without its full quota of sunlight for a few days. It’s on-board microprocessor will even store information (which can be downloaded later after “interrogation”) on how the lantern has been used over a period of time. This information is extremely useful and will help the designers build a picture of how customers use their lanterns. This information will be used to design better lanterns in future.

Win a solar lantern



Now that the detailed design work has been completed, the Lantern team are about to finalise another important detail – its name! “Small World” readers are invited to put their pen to paper and help us to decide on a suitable name under which to market the new lantern. As a guide, the name should be short, simple and easily remembered and of course it should be appropriate for use over a wide range of countries! The author of any of the names that are used will receive as a prize, a brand new Solar Lantern (as soon as they go into production).

Use the form in the centre of the magazine to send in your suggestion or visit the Solar Lantern Website at <http://www.oneworld.org>