



IND

2014

CLIMATE SOLVER 2013 AWARDEE

Energy Access: Low Cost Smart AC Solar Micro Grid

Developed by: Naturetech Infrastructure Pvt. Ltd

Innovation

International Energy Agency (IEA) estimates that the number of people without access to electricity is close to 1.3 billion. In the absence of electricity, kerosene is the main source of lighting which comes with the hazards of indoor air pollution and poor illumination at a high expense. Most homes today have a mobile phone even in remote areas; however, charging of phone batteries incurs additional travel and cost.

Naturetech's Smart AC solar micro grid provides 24 hours of green electricity using solar energy. The solar power plant caters to customer households through an underground distribution network and smart prepaid metering that avoids theft and tampering. The land requirement and installation cost have been reduced since the panels are mounted on streetlight poles and the battery bank is housed in a compact metal enclosure. Each household has a basic load of two LED bulbs and mobile charging point and can avail electricity for about five hours any time during the day as per their requirement. Besides the minimum pre-paid charges, the households have an option to meet additional energy demand requirements such as for TV, fans and so on, by additional recharge. Also, the village youth have been trained by Naturetech to operate the plant which instills a sense of ownership among the community.

Benefits

This innovative solution provides better lighting facility leading to reduced usage of kerosene, better communication through phone charging points and extended light-hours that enhance education and local business. If this solution is replicated



Smart AC micro grid



Battery bank

Smart prepaid meter

at a large scale in the developing world, it has the potential to reach out to 21 million people by the year 2023.

About the Company

Naturetech Infrastructure Pvt. Ltd is a Renewable Energy Services Company, which commenced operations in October 2009. They are one of the empanelled consultants with UP New & Renewable Energy Development Agency (UPNEDA), Government of Uttar Pradesh, to promote and mobilize proposals for various renewable energy applications. The company designed and built the first few Solar DC micro grids for UPNEDA in October 2011, which later became a model for large-scale replication for supply of electricity in rural areas.

CLIMATE SOLVER 2013 AWARDEE

Energy Access: Improved Biomass Cook Stoves

Developed by: Envirofit India Pvt. Ltd

Innovation

According to International Energy Agency (IEA), 2.6 billion people, especially in developing countries, rely on traditional use of biomass, such as fuel wood, charcoal, agricultural waste and animal dung, to meet their energy needs for cooking. According to World Health Organization (WHO), 4.3 million people die prematurely every year from illness attributable to the household air pollution caused by the inefficient use of solid fuels. The traditional cook stoves used in most rural households have low efficiency leading to high utilization of biomass fuel, thereby causing indoor air pollution and related health hazards.

Envirofit cook stoves are improved biomass cook stoves that use traditional biomass fuel but are designed to operate with higher efficiency to ensure that maximum heat is utilized, and are hence improved compared to the traditional cook stoves (*chulhas*). Envirofit improved cook stoves use the Enviroflame Combustion Technology which helps in retaining the heat and also directing most of it towards the pot. In addition, insulation between the inner chamber and outer body of the cook stoves reduces the wastage of heat. These cook stoves reduce smoke and toxic emissions up to 80 per cent, fuel wood consumption up to 60 per cent and cooking time up to 50 per cent. Different models of Envirofit cook stoves have demonstrated 32-36 per cent thermal efficiencies under lab conditions. The product is portable and comes with two years guarantee.

The business plan depends on retaining and creating partnerships that help the products reach the communities and designing a product that meets customer expectations. Envirofit is one of the first organizations to have explored non-retail channels of marketing for improved cook stoves through microfinance institutions (MFIs), self help groups (SHGs) and corporate social responsibility (CSR) initiatives. It is actively working with MFIs to ensure that cost does not become a barrier for people who wish to use improved biomass cook stoves. The customers have an option to pay for the product in installments. This channel of payment helps in reaching out to a



Biomass cook stove



Enviroflame Combustion Technology



Insulation to reduce heat wastage

larger audience and also offers an affordable solution at the same time.

Benefits

Envirofit cook stoves, with their higher efficiency, address issues of fuel wood consumption, indoor air pollution and greenhouse gas (GHG) emissions providing a clean and affordable cooking option for rural households. Assuming that this solution will be able to reach out to the larger market in developing countries, about 12 million people could benefit by the year 2023.

About the Company

Envirofit India Pvt. Ltd is a subsidiary of Envirofit International, Colorado which is a leading technology provider in designing and developing improved biomass cook stoves. Envirofit India has been working in the space of improved biomass cook stoves in India since 2008. So far, Envirofit India has disseminated more than 4,00,000 cook stoves in India, Nepal and Bhutan. It has a presence in most of the Indian states and has been reaching out to communities through multiple retail and non-retail distribution channels.

