Biogas boon

Even the most successful of ventures have a modest start. Yet, it is these very humble beginnings which inspire ideas, encourage innovation and eventually, pave the way for growth. Perhaps, this is what best sums up the flexi biogas plant which was launched at a village in UP recently and could well be the solution to hassle free cooking, writes **Upendra Singh**

For villagers of the quite, almost obscure hamlet of Chiranjeevpurva, in Unnao district of Uttar Pradesh, October 2012 will be etched in their memory forever.

All because of an innovative venture, a flexi biogas plant, which was launched by Naturetech Infrastructure Pvt. Ltd, to not only address, but also solve the problem of indoor pollution and make cooking hassle free. This plant operates on cattle manure fed into its tank. Since the initial response from villagers has been encouraging, this renewable energy company based in Lucknow, is now planning to take the project to other parts of India as well.

Elaborating, Shyam Patra, director and founder of the company, states, "Even smokeless chullahs and energy efficient biomass cook stoves will be no match to the flexi biogas

Convenient cooking: Shyam Patra with the smokeless chullah

plant. As of now, we are supplying and installing this innovative clean cooking solution to serve the needs of the poor, especially in rural areas."

What is needed

The basic requirement for a 1 m3 Flexi biogas plant is the availability of cattle, atleast one or two of them. A household with cattle will not have any problem in operating the biogas plant, since it is the primary source of fuel. "This plant could be a boon for households which have cattle," says Patra. It can also take kitchen and food waste.

Installation

This low cost, easy to install system has been designed to provide a hassle free and tearless cooking experience. The first step in the installation process of the Flexi biogas plants is the digging up of a pit (of an area of 4.5' x 4.5' and a height of 3.5') in close proximity to the kitchen. A plastic sheet is laid down for the digester or the flexi biogas holders. This is then filled with cow dung, not more than one month old, in a slurry form, through an inlet pipe, till the ground level. Currently, the company has tied up with a manufacturer in Salem, Tamil Nadu, for supply of the flexi biogas holders.

Within two to three weeks of fermentation, gas will begin filling inside the digester and is ready to be taken out for use to the biogas burner through an air hose. A water remover is placed in between the gas holder and the burner. Thus, a household can cook without any prior effort whatsoever.

Hassle-free: The wife and daughter of Ranjit, one of Naturetech Infrastructure's customers, cook in a smokeless environment

The gas which burns in the burner, does not emit any smoke. Raw biogas has a calorific value of around 5000 Kcal/m3. After the first 21 days, the daily requirement of cow dung per 1 m3 plant is just 25 kg. This is to be fed in after mixing it with water, in the ratio of 1:1. The slurry coming out of the biogas plant is free from odour. Moreover, each 1 m3 biogas plant is likely to provide around 40 litres of by-product every day. This liquid fertilizer which is rich in nitrogen, phosphorous and potassium, can be used as a fertilizer in the fields too.

Benefits

Presently, only 5 per cent of the rural households in eight low income states of India (UP, Bihar, West Bengal, Odisha, Madhya Pradesh, Rajasthan, Jharkhand and Chhattisgarh) have access to LPG. The others mostly use either firewood, crop residue or cow dung cake. Also, most women end up spending their valuable time in collection or in preparation of fuel for cooking.

Since about 60 per cent of rural households do not have a kitchen, they cook in their living room. This leads to smoke and suffocation whilst cooking with conventional methods such as cow dung cake and firewood, informs Patra. It is in such places that this plant will be of immense help.

Another benefit of this system is its simplicity. As against a traditional biogas plant, the flexi biogas plant is easy to transport, can be installed in a single day, does not require any trained mason/ construction materials, is easy to operate and maintain.

More importantly, the product is cost-effective too. Compared to

> Plans are on to promote this product in Uttar Pradesh, Bihar and Orissa, and eventually other parts of the country as well

Belief in biogas: Ranjit, who has invested in the innovation

traditional biogas plants, the flexi biogas plant is 15 to 20 per cent cheaper. For instance, the cost of 1 m3 biogas plant is around ₹11,000 to 12,500, for end consumers depending on where it is sold and the number of burners. On an average, a flexi biogas plant lasts for 7 to 8 years.

On the anvil

To begin with, Naturetech Infra plans to promote this product in Uttar Pradesh, Bihar and Orissa, and eventually, take it to other parts of the country. Patra adds that the state renewable energy nodal agencies of Bihar (BREDA) and Orissa (OREDA) have evinced interest in their project. "In the near future, a few pilot installations are being planned too."

On choosing biogas to address the needs of the poor, he reasons, "When you think about conventional sources of energy, the situation is a complex one and not very encouraging either. This prompted me to think about an alternate source of energy and develop a sustainable, profitable, scalable business model which centered around renewable energy. Also, the aim was to usher inclusive growth or social impact for people living at the Base of the Pyramid. Hence, the concept of clean and smokeless cooking for the poor through biogas, was incepted."

The biogas can be used for lighting needs too, but since their customers are already getting electricity from solar energy, this possibility (gas based lighting solution), is not being explored, reveals Patra.

As of now, the company has not received financial support from any government or private organisation. However, it plans to garner some financial aid or lending support, since not many rural households can spend more than ₹10,000 in one go. "Since we are in the launch mode, we are looking out for some financial support for working capital management," avers Patra.

He is hopeful that through better customer education, market access and financial support from Ministry of New and Renewable Energy (MNRE), state nodal agencies (SNAs) and domestic/international aid agencies, the cost of the product could be reduced so as to benefit a larger section of the populace. "We hope to make a lasting impact on the lives of rural women with this venture. Therefore, it would help if corporate foundations, MFIs and international aid agencies support us. This will enable us to reach out to more poor rural households," concludes Patra.