

A biogas kitchen

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A Pune-based scientist has found an efficient way of producing and using biogas as cooking fuel.

In addition to the benefits in terms of environment and household budgets, the CBP can be a life-saving device for those who use indoor biogas 'choolas' (stoves).



DR ANAND KARVE with the eco-friendly biogas plant developed by him. Picture courtesy: www.arti-india.org

There are ways you can contribute to the environment even as you stand in the kitchen. Rather than throw the banana peels or spinach stems or other biodegradable waste into the dustbin, you could toss them into the Compact Biogas Plant to create pollution-free methane gas and, in effect, help conserve planet earth's depleting fossil fuels.

The Compact Biogas Plant (CBP), an innovation of scientist Dr Anand Karve, was awarded the prestigious international Ashden Award last year.

Pune-based Karve's environment-friendly device has helped popularise the conventional Indian practice of using biogas as cooking fuel, albeit in a more efficient manner.

Karve, who established the Appropriate Rural Technology Institute (ARTI), an NGO funded by Shell Foundation and the Ministry of Rural Development in 1996, explains the significance of his innovation: "Traditionally, biogas is produced from dung. Around 40 kg of dung needs to be fermented for 40 days to produce 250 grams of methane. Due to this highly inefficient process, biogas has not emerged as an alternative to LPG. However, my system requires just 1 kg of sugar or equivalent in biodegradable substance to be fermented for 24 hours, to produce the same amount of methane." It is this efficiency and uniqueness, as compared to other biogas projects, that earned Karve the Ashden Award last year. Founded in 2001 by the London-based Ashden Trust, the awards recognise innovations in sustainable energy.

Karve received his first Ashden Award, in 2004, for converting sugarcane leaves into charcoal. He has also headed the Centre for Application of Science and Technology for Rural Development (funded by the Ministry of Science and Technology).

Tremendous acceptance

The CBP has found tremendous acceptance in Pune. Currently, the plant system has been installed in 1,000 households in rural as well as urban Pune and in surrounding areas. This may be a conservative figure.

Karve says, "We also sell VCDs outlining the procedure to be followed while installing the biogas project... till date we have sold around 10,000 VCDs so we don't really know how many households are actually using the compact biogas plant."

Karve does know, however, that the Pune Municipal

Corporation has installed a plant at its Mangal Ward office and that the Thane Municipal Corporation has installed a 20,000-litre plant. "They use the feedstock from a nearby restaurant. The Thane Municipal Corporation is looking at increasing the capacity of the plant by four times," says Karve.

Incidentally, the Thane Municipal Corporation CBP produces 1.83 lakh kg of methane gas per annum, which otherwise would have cost the civic body Rs 76.5 lakh annually to generate. The methane is used for various heating applications such as those in use at hospitals and crematoria, and has resulted in a reduction in the use of diesel.

While the CBP is more suitable to farmers (for whom installation space and biodegradable materials, such as farm waste, are easily available), city households and, more appropriately, bungalow residents can also avail of the device.

How it works

The plant is installed in an open area close to the house. The device has several pipes through which feedstock is added to the approximately 6 ft X 6 ft fermentor; digested residue is removed and the generated blue methane biogas travels into the kitchen to a special burner.

Karve points out that the biogas is not really a substitute for LPG, but is a standby and can be used alongside LPG. Installation costs at Rs 9,000 for a 1,000-litre fermentor (compared to Rs 5, 000 for an LPG cylinder with a two-burner range) may seem steep, but the kitchen budget does eventually get a breather.

The per-day running cost of a CBP fed on waste flour would come to around Rs 2, compared to the Rs 30 a day equivalent usage in terms of LPG.

In addition to the benefits in terms of environment and household budgets, the CBP can be a life-saving device for those who use indoor biogas *choolas* (stoves). According to the World Health Organisation, about three million people die every year due to exposure to suspended particle matter in the air, and 85 per cent of those deaths are due to indoor air pollution.

"Indoor pollution is caused mainly due to traditional cooking stoves, using traditional biomass-based fuels. Use of methane as cooking fuel can prevent these deaths," says Karve.