

Fuel from waste

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EVERY time A Saji Das sees a mound of kitchen trash, he smells an opportunity. All of it could be made into useful fuel, he says.

For 13 years, starting 1985, Das experimented, largely by trial and error, till he developed a technology to generate biogas from food waste. The technology, which got patented last month, is already a source of clean gas for 22,000 domestic kitchens and 250 institutions in Kerala, besides providing power supply to 50 local governing bodies, mainly in the state. Das's NGO Biotech now works on promoting biogas technology and other non-conventional energy sources.

Das says he hit upon the idea of generating gas from food and other degradable waste while attending a programme on biogas plants. Since installing the first biogas plant in 1998, hundreds of houses and institutions now use biogas made from food waste. Local bodies even use this biogas to power street lights.

"A major feature of Biotech's technology is that we have a host of models that are suitable for houses and institutions, depending on the quantity of waste generated. A plant would work even with 500 grams of waste a day. In Western countries, such projects have been designed on a large scale, requiring

huge investment. But we have made it affordable for Indian cities and villages," said Das.

The main feed for the biogas plant is food waste. Cow dung needs to be used initially to enable the bacteria to get the digestion process started in the tank that's pre-fabricated from ferro-cement. The tank could be either buried in the ground or kept in an open space. A gas-holder drum, built using fibreglass reinforced plastic, floats over the digester tank.

The kitchen waste is mixed with water and poured into the tank through an inlet. As the waste gets decomposed, the gas stored in the holder flows into a special stove. The residue from the plant could be used as organic manure. A plant costing Rs 21,000 is enough for a house that generates two kg of solid waste a day. While the Kerala government subsidises a part of the cost (it costs Rs 9,950 to set up the plant in the state), in the rest of the country, it costs Rs 17,000. A two kg plant would meet the cooking gas requirements of a five-member family.

Das says the gas plants do not discharge any effluents. Instead, 10 per cent of the waste fed into the plant becomes organic manure. "This would eliminate the problem of waste at its source. This way, local bodies can save on collection, transportation and segregation of waste," he says.

In 2007, Biotech bagged the Ashden Award (Green Oscar 2007) instituted by Ashden Trust, London.

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A biotech plant in Thiruvananthapuram