Case Study – The Akshaya Patra Foundation, Bangalore

The Akshaya Patra Foundation is a not-for-profit organisation headquartered in Bangalore, India. The organisation strives to fight issues like hunger and malnutrition in India. By implementing the Mid-Day Meal Scheme in the Government schools and Government aided schools, Akshaya Patra aims not only to fight hunger but also to bring children to school. Today Akshaya Patra is the world's largest (not-for-profit run) mid-day meal programme serving wholesome food to over 1.4 million children from 10,661 schools across 10 states in India.

This case study gives an overview of the BioUrja installation at the kitchen and how it has successfully substituted the use of LPG with clean gas produced using the organic waste generated in the kitchen itself.

Project Details

Waste Processing Capacity	Max. of 750 kg per day
Water Intake	NIL
Main Reactor Base Area	6 sq m
Delivery Time	2 months
Operational since	March 2013
Inauguration Date	5th June 2013

The biggest challenge in the project execution was the lack of space available to install a waste processing unit. GPS' Engineering and Design team customized the layout in such a way that the complete BioUrja system, except for the gas vessel, was installed in 17 square metres of area which was part of bike parking lot.

Performance

The current level of waste addition is 600 kg/day based on the kitchen's current LPG needs. The waste stream includes both food preparation waste (uncut vegetables, etc) and cooked food waste (rice, sambhar, curries, etc). The energy generated from the BioUrja fuels 3 large burners, which run from morning till evening.

Even though the calorific value of methane is lower than that of LPG, the cooking times and cooking experience at VK Hill has been the same as that of LPG. This is made possible thanks to the GPS AGCU (Automated Gas Compression Unit), which ensures that the gas generated is stored automatically in a special cylinder. The AGCU ensures that gas is stored under pressure which ensures that the burners have gas at sufficient pressure so that the cooking times don't get affected. It also manages the air mix ratio so that the cooking experience remains the same as that of LPG. The performance statistics are summarized below.

Current Waste Input	600 kg
Energy Productivity	~ 70 kg of LPG equivalent
Daily Raw Gas Production	140 cu m of biogas per ton of food waste
Daily LPG equivalent production	~45 kg per day
Annual Waste Processing Capacity	273 tons
Annual GHG mitigation	More than 300 tons of carbon dioxide equivalent

Operations & Maintenance

The system was initially operated by GPS personnel and Akshaya Patra staff were trained on O&M procedures. The high level of automation ensures that even unskilled personnel can carry out the basic operation procedure of feeding the waste in about 2-3 hours every day.

GPS Renewables, through our proprietary Remote Monitoring System (RMS) tracks the operational parameters 24x7. Any anomalies or alarms are immediately received by the back end team, which, in coordination with the maintenance team, ensures that any issues identified are immediately addressed and resolved. RMS is at the very heart of our philosophy of O&M and has ensured that downtimes have been less than 2% for all our installations.

Financial Returns

Operational Cost of generating 1 kg LPG equivalent Gas	~Rs 6
Net Present Value of the Project	>Rs 1.5 Cr
Rate of Return (IRR)	>50%
Payback Period	<2 years

About GPS Renewables

GPS Renewables is a Bangalore headquartered company and pioneer in decentralized waste-to-energy solution. BioUrja, our inaugural product, is based on cutting edge technology that delivers twice the amount of energy as compared to any other solution and comes complete with Cloud Based Remote Monitoring System which enables us to offer our Clients system up-times of more than 98%. GPS Renewables was amongst *top 5 finalists* at **The Tech Awards 2014** from across the world and BioUrja has been hailed as "*one of the top Indian innovations in 2013*" by **MIT Technology Review**.