

Greenolution is at its full swing. With **GREEN HEROES** planting trees and taking up other initiatives, we have come up with some exciting sections for you! So go ahead and participate .

Happy Reading!

CGPL Going Green

Plantation program was organized in the External Coal Handling plant at West Port on 17.07.2012, with the entire coal handling team and O&M contractors.

M/s F L Smidth participated with their members and about 150 plants were planted adjacent to conveyor belts, JNT, pump house etc. to convert the surrounding area into a green belt .



DCS Volunteers for Tree Plantation Programme at Lonavla

55 employees and their families from Distribution Customer Services volunteered for a tree plantation programme held at Lonavla on 22nd July 2012, Sunday. A total of 60 saplings of various forest species were planted. The importance of planting these saplings and methods of plantation were explained to all. Some of the species planted were Mahogany, Bauhinia, Butea, Dalbergia, Erythrina. A treasure hunt game and many fun engagement exercises were organised to keep energy levels soaring.



Green Desk

Sustainable Waste Utilization

As a conscious citizen each of us can play a role in waste management of the city, starting by managing it at home by proper disposal and re-use using methods like composting. By following the following simple steps, you can compost your kitchen waste at home and use the composted waste in your home garden:

What can you compost?

Greens: All your leftover food waste, vegetable and fruit wastes (including rinds and cores) even if they are moldy and ugly, old bread, noodles (anything made out of flour)! Grains (cooked or uncooked): rice, barley; ground coffee, tea bags, filters; Egg shells (crush well)

Browns: Outdated paper boxes, waste paper, fallen leaves, twigs, branches

Do Not Add: Plastic, Grease or oil of any kind, dairy products



First day: green and brown items visible; egg shells, vegetable peelings, scrunched up cardboard, grass cuttings, prunings etc



After a couple of weeks: looking a bit moist, no smell, the level will keep dropping and air pockets will be letting it breathe

- **Observe the general amount of kitchen waste generated at your home, based on the average waste; take a large bucket (Plastic or metal). Make small perforations at different heights on the bin to allow passage of air.**
- **An ideal waste ratio would be 50/50 Greens and Browns, however to compensate for less amount of browns you can add one layer of greens mixed with browns and another of soil.**
- **Fill about half the bin with these layers and leave the remaining half for the daily waste that will be added.**
- **Cover the bin with a lid to avoid birds and rodents picking on the waste**
- **It takes about 5-9months for the bottom-most layer to convert to compost. Once ready upturn the bin and remove the ready layers of compost from the bottom.**

First day: green and brown items visible; egg shells, vegetable peelings, scrunched up cardboard, grass cuttings, prunings etc
 After a couple of weeks: looking a bit moist, no smell, the level will keep dropping and air pockets will be letting it breathe

The green items will contain bacteria that will generate the initial heat that is required by the process. A healthy compost bin is a living ecosystem. By keeping a good mix of green and brown material you will provide the perfect conditions for a variety of mini-beasts and can let them do all the hard work.



After a couple of months: clumps of green material are still visible, brown items are still showing but starting to decompose



9 to 12 months: black and crumbly, no smell, some woody brown material still visible, some worms and bugs

Make sure you keep adding the right combination of greens and browns... and you'll have a continuous supply of nutritious compost for your garden. Don't forget to aerate your compost once in a while by using a fork or a broom handle

Use of Compost

You can use the compost in potted plants as well as garden lawns. If you do not wish to use it, you can bag it and keep for later use.

Tip-

To avoid the compost bin becoming an eye-sore you can Screen it with Live plants, Trellis or a bamboo screening.



Taking ahead the concept of Sustainable waste management, we at Tata Power decided to setup a Biogas plant at the corporate centre canteen to utilize the organic waste generated. Approximately 20kgs of organic waste is generated at the canteen which was earlier being disposed off in the municipal garbage bins. However with the setup of this plant, the amount of waste being sent to the landfill has reduced and there is sustainable utilization of the same within the premises.

Facts about Biogas

Biogas is a natural gas produced from anaerobic decomposition of waste. It comprises of the following elements.

Parameter	Range
Methane	60-70%
Carbon dioxide	35%
Oxygen	0.1%
Nitrogen	0.4%
Water	0.3%
Hydrogen sulphide	0.004%

Production of Biogas

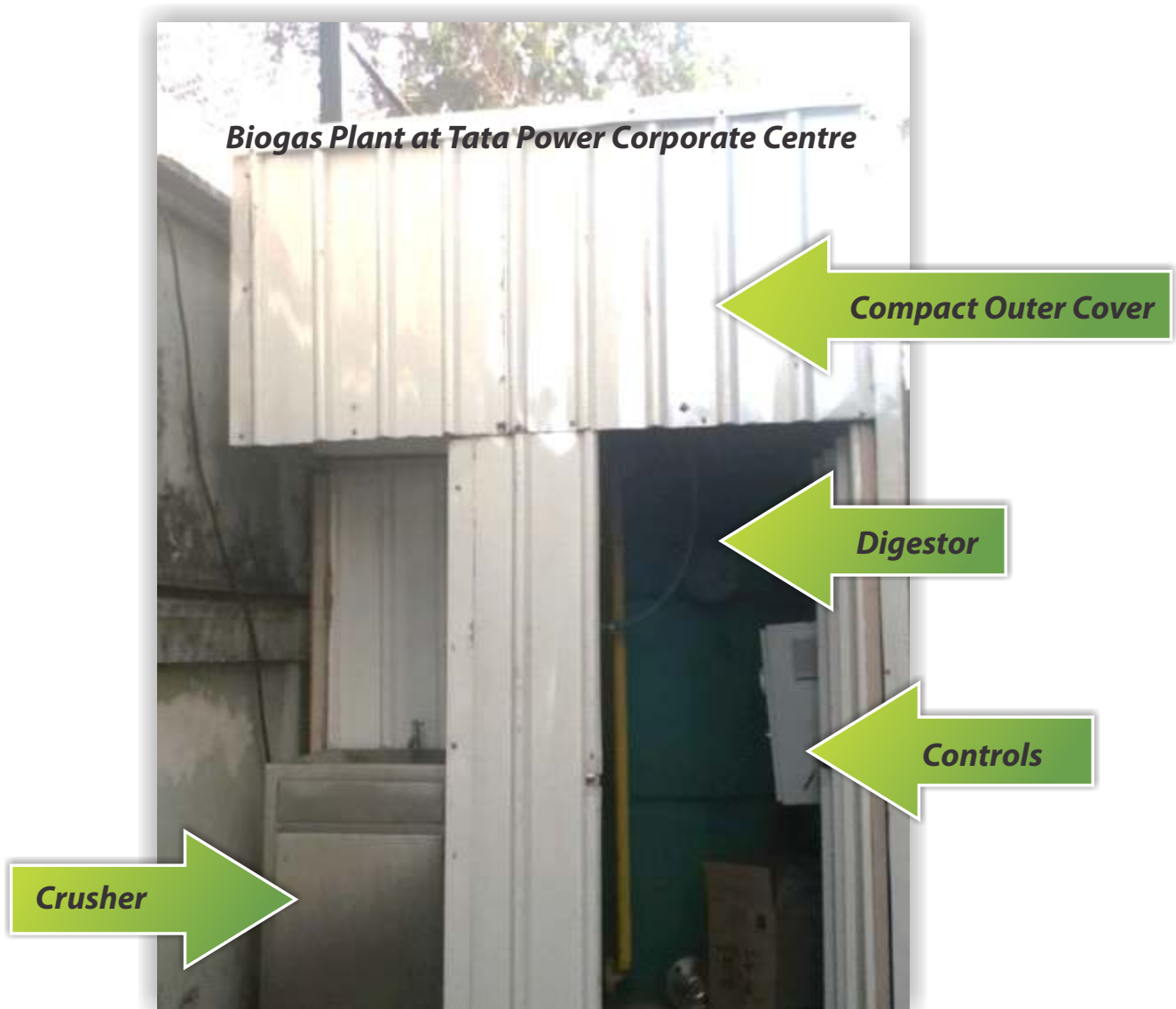
In the process of production of Biogas, many different microorganisms participate in a complex web of interacting processes which result in the decomposition of complex organic compounds such as carbohydrates, fats and proteins to the final products of methane and carbon dioxide. The overall conversion is described in a three-stage process which may occur simultaneously in a fusion of aerobic along with anaerobic digester.

Hydrolysis- Organic matter is simply converted into a soluble form that can be utilized further by bacteria

Acidogenesis- It is a complex stage which involves acid forming fermentation, hydrogen production and an acetic acid forming step.

Methanogenesis- The formation of methane which is the ultimate product of anaerobic treatment

Biogas Plant (GreenBox) at Corporate Centre



The GreenBox can produce 65-80m³/month of biogas and around ~120kg/day of organic manure.

Technical Features of the plant

Capacity of the plant	25kgs/day
Food crusher	The crusher reduces the waste to 4mm particle size which facilitates optimum digestion of waste
Digester	<ul style="list-style-type: none"> • It is a continuously stirred tank reactor. The effluent is transformed overtime by the bacterial population within the reactor in to biogas and bio-sludge. • The entire internal temperature is monitored continuously and maintained at 400C
Gas Collection System	<ul style="list-style-type: none"> • A small compressor has been fit at the end of the digester. The compressor is timed to collect the biogas from the digester at regular intervals. The compressor is further connected to the Biogas burner in the canteen. Until the Biogas is used it is stored in the compressor

After the successful implementation of the plant at the Corporate Centre, we would like the various divisions and locations to take up such initiatives for the utilization of the organic waste.

-Ms.Tulika Verma,

Clean Technology Projects

Know Your GQ!

Go ahead and test your Green Quotient. The correct entries will win exciting prizes!

If you have any other question related to the Green area which will tickle our brains send it to us (with the answer and explanation along with your name) and we shall feature your question in our next edition. Send your entries at Greenolution@tatapower.com


 **Name the Green Car of the Year by the Green Car Journal.**

Name the six most prevalent greenhouse gases. 

 **What common social ritual produces 63 tons of CO2 and 400-600 pounds of trash?**

What do all the numbers on plastic bottles represent? 

 **What is LCA and why is it an important factor in product design?**

In a conventional washing machine, what percentage of energy is used to heat the water? 

 **What is LCA and why is it an important factor in product design?**

Your Green Canvas

This canvas is specially created for all of you who believe GREEN is the new way of Living!

Next time whenever you come across a GREEN thing, capture it and send it to Greenolution@tatapower.com ! We will feature the top 10 clicks on our Greenolution Digest.



The first edition of GREEN Canvas is created by Team Greenolution.