CARBON MASTERS

A Carbon Neutral company

carbonlites

Clean Energy for a clean low Carbon World

ABOUT CARBON MASTERS

- Carbon Masters is carbon management company that was spun out of the University of Edinburgh, Scotland in 2010 and today has a business established in Bangalore India .
- Our mission is to help clients reduce their carbon impact by replacing their fossil fuel consumption with innovative, clean energy solutions.
- Carbon Masters India Pvt. Ltd was established in 2012 in Bangalore, and is a pioneer in providing clean energy solutions that reduce the risks of climate change.
- We have developed 2 product lines – Carbonlites Bio-CNG and Carbonlites Organic Fertilizer- both of which help reduce carbon emissions

Carbon Masters won the WWF Climate Solver 2017 Award.

3 big problems impacting Many Developing Countries Today

Rapid Urbanisation

- 11.2 billion tonnes of waste is dumped in landfills annually releasing Methane a toxic GHG (32x CO_2)
- Methane emissions from landfill represent over 12% of all methane emissions

In India 62 million tonnes of MSW from over 4,000 cities are sent to landfills causing health and environmental problems

Growing Demand for Cleaner Fuels

- India imports 80% of its Oil and 50% of its gas
- This drives up its carbon footprint
- Decreases its air quality
- Decreases its energy security

Minister of Petroleum announces major SATAT programme to use bottled Bio-CNG to provide a low carbon transport fuel. Targets 5,000 biogas plants to be built by 2025

http://pib.nic.in/newsite/PrintRelease.aspx?relid=183787

Declining Soil Carbon

Indiscriminate and imbalanced use of chemical fertilizer and low addition of organic matter is reducing soil health impacting crop yields and farmers income

Indian market for chemical fertilizer is US$ 71 Billion (Subsidy is US$ 9 billion mostly on Urea)

Government wants Indian farmers to cut Urea consumption by half by 2022

Carbonlites: Enabling the Circular Economy

Consumption

CL displaces LPG in restaurants and to run vehicles. Manure is used in farming.

Waste Generation

Organic waste is generated at households, farms, hotels restaurants and offices

Distribution

Carbonlites bio-CNG and CL Fertilizer are distributed to hotels and restaurants for cooking and to farmers via a dealer network

Waste Collection

Separated waste is collected in our smart bins & transported by trucks running on bio-CNG

Production

Waste undergoes anaerobic digestion to produce biogas and organic slurry. The gas is purified, compressed & either bottled or piped into the kitchen . Slurry is treated to produce organic manure.

CARBONLITES Value Proposition

BOTTLED BIO CNG

Carbonlites bottled bio gas is used in commercial kitchens as a replacement for LPG. It is also used as a fuel in transport application in CNG vehicles.

- **Cooking performance preferred by Chefs**
- **Costs less in use versus LPG**
- **Saves costs and $C0_2$ emissions**
- **Can be piped directly into the Kitchen**
- **Or via**

Unique cylinders and cascades that facilitate easy and safe replacement of LPG

FERTILIZER

Sold to farmers directly or via a dealer network

- **Supplies organic carbon, macro and micro-nutrients and beneficial soil microbes**
- **Improves the water holding capacity of the soil**
- **Reduces the incidence of pest and diseases**
- **Increases yield**
- **Reduces the usage of chemical fertilizers and pesticide**
- **Reduces carbon emissions**

** CO_2 emissions from burning Carbonlites are biogenic and do not add to carbon stocks

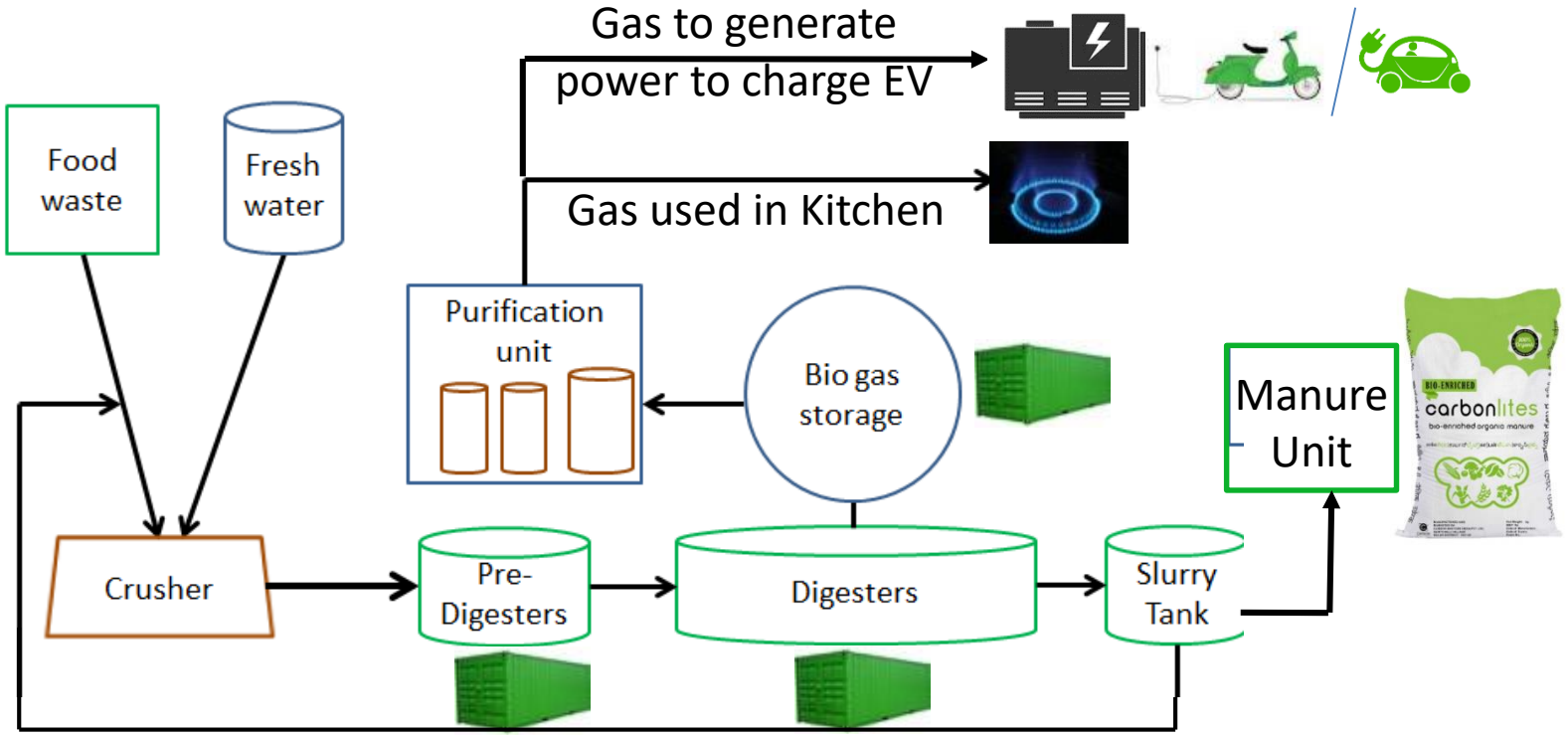
Carbonlites
In a box

www.carbonlites.com|www.carbonmasters.co.in

WHAT IS CARBONLITES IN A BOX?

- Carbonlites in a box is a modular, fully functional biogas plant built inside refurbished 20ft/40ft shipping containers
- It’s completely customizable and can process organic waste streams from 500kgs to 5 tons
- Each ton of waste generates an LPG equivalent of about 50kgs and 100kgs of manure every day
- An ideal solution for hotels, restaurants, apartments, Universities, Temples, IT parks and other organizations for whom space and cost constraints prohibit them from building a conventional biogas plant.
- The biogas generated is then scrubbed and piped to the point of usage to displace LPG
- The digestate is utilized in the manufacture Carbonlites organic manure

PROCESS FLOW



The pre digesters, anaerobic digesters and biogas storage are housed shipping containers. These components occupy most of the space in a biogas plant

WHAT ARE THE ADVANTAGES OF CARBONLITES IN A BOX

Saves space	• The containers can be stacked on each other, thereby saving space. Civil works are much reduced.
Modular	• A modular design ensures that plant capacity can be easily increased for future requirement.
Cost effective	• The design is cost effective for setting up small sized bio gas plants for waste processing of from 1 to 5tons per day
Portable	• Since there is minimal civil work involved, these digesters can be easily relocated compared to conventional digesters
Customizable	• Customizable with capacities ranging from 1 ton to 5 tons per day
Sustainable	• Saves costs and carbon emissions. Organic waste is processed on site and not sent to landfills saving both tipping fees and GHG emissions

CARBONLITES IN A BOX PROJECTS

Carbonlites-In-A-Box
ISKCON, Bangalore, India

•Box installed in August, 2016
• Capacity – 1 TPD
• Produces 50 kg of Carbonlites Bio-CNG per day and displaces equivalent LPG
• Produces 100 kg of Carbonlites Organic Fertilizer per day

Carbonlites-In-A-Box
University of Agricultural Sciences, Bangalore, India

- Box Installed in march 2017
- Project in collaboration with the Govt. of India
- Box installed in Hassan, Karnataka, India
- Capacity – 300 kg/day
- Will be used to generate power using a biogas--based power generator

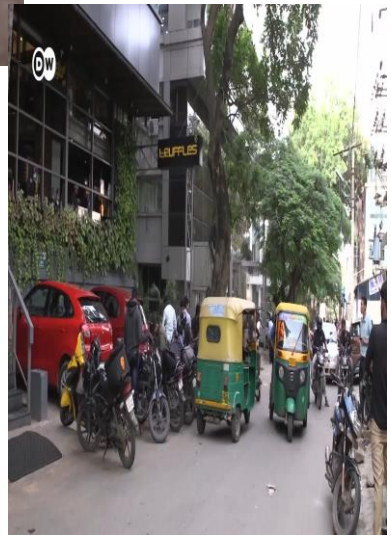
CARBONLITES IN A Box BBMP Project

Crushing

Anaerobic Digestion

Purification

Usage



WINNER 19 BETTER TOGETHER AWARD Collaborative solutions for local climate action

Winner May 2019

Dec 2019

Visit by MP's from Bundestag

The business case for Carbonites technology in South Africa/ Africa

	India	South Africa
Waste generated	62 million tons pa	58 tons pa
% Biodegradable	55%	33% of all food waste sent to landfill
Current solution	Landfill	Landfill
Oil imports	80%	80%
User Charges	4 INR /kg	4 ZAR=17 INR/kg
LPG prices	60inr/kg	c 25 rand per kg=110INr/kg
Fertiliser prices	10INR/kg	55 rand /kg= 25 INR/kg
Labour costs	15,000 INR per month	3500 rand/m=15418/month

CARBONLITES IN A BOX PROJECTS

CarbonLites-in-A-Box in Koramangala, Bangalore Being expanded

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3 Additional Boxes being added

CarbonLites-in-A-Box at Akshaya Patra Kitchen, Mandya, Karnataka.

- FIRST OF A KIND Integrated food and wastewater treatment facility. Recently installed in the Akshaya Patra Kitchen near Mysore
- Treats 500 kgs of kitchen waste per day / 35,000litres of wastewater
- Produced CarbonLites gas is piped to the kitchen & manure for the fields and clean water for agri use.

More Pop up Power plants

Feb 2020

MOU signed with Tata projects
To explore co digestion of Sewage sludge and food waste to produce Carbonlites
Pilot Project in Jaipur will use Carbonlites in a box

Location	Client	Project
Yaounde Cameroon	Sanaga Technologies	5 TPD Cl in a box for transport solution
Bangalore	Police College	2 TPD plant for cooking
India	National Bank for Agriculture and Rural Development(NABARD)	1TPD plant for 100 cow Goshala
Maharastra	Uk Innovation Challenge on climate change and covid19	Bio-CNG cold chain solution for Covid 19 vaccines