WWF IND 2018

CLIMATE SOLVER 2017 AWARDEE

GHG REDUCTION: CARBONLITES: BOTTLED BIO-CNG (BY END TO END ORGANIC WASTE MANAGEMENT)

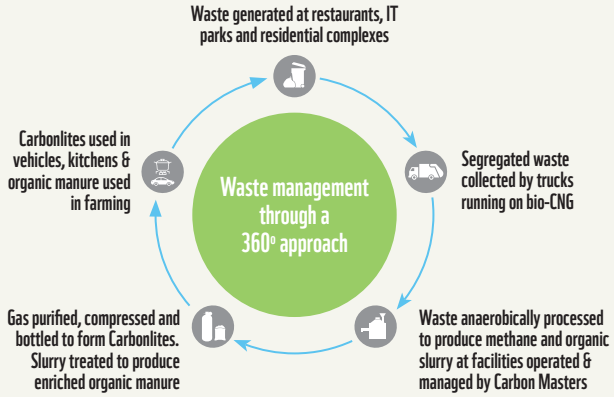
Developed by: Carbon Masters India Private Limited

INNOVATION

With a global population of 7.6 billion, over 50% resides in urban areas which is estimated to further rise over the coming decades. The rapid pace of urbanization has the potential to bring about great changes for the betterment of the society but also presents many environmental challenges.

Globally, 11.2 billion tonnes waste is generated every year and is amongst the biggest threats affecting our ecosystem. Solid waste dumped at landfill sites produce large amount of methane, which accounts to 12 percent of total global methane emissions. Methane which is the second most common greenhouse gas (GHG) after carbon dioxide, has 21 times the global warming potential (GWP) of carbon dioxide. In India, out of the 62 million tonnes of waste generated annually across 4000 cities and towns, 50 percent is organic and biodegradable, that can be disposed in environment friendly ways.

Carbon Masters India Private Limited has devised an innovative way for managing the organic waste by collecting and converting the waste into useful fuel. Carbon Masters collects the waste generated in their bio-CNG trucks from various bulk waste generating establishments such as IT parks, residential complexes and restaurants and then treats the waste anaerobically to produce methane gas and organic slurry. The gas is purified, compressed and bottled to form Carbonlites which is used as a substitute to LPG for cooking and as fuel in vehicles, while the slurry is treated to produce organic manure used as a replacement to chemical fertilizers. Right from collection of segregated waste till the production of Carbonlites and organic manure, Carbon Masters ensures that it collects the organic waste using bio-CNG trucks and manages it to produce clean fuel through a 360-degree waste management approach. By handling the operation, maintenance and sale of the products, Carbon Masters has created a sustainable revenue sharing model, thus creating a circular economy. It has also formed strategic alliances with large corporates as well as municipal corporations.



Carbonlites bottled bio-CNG and Carbonlites organic manure

BENEFITS

The bottled bio-CNG saves 10-15% as compared to conventional LPG and comes in unique cascades of 2-4 cylinders. Carbonlites organic manure helps farmers replace chemical fertilizers with an organic solution that is cost-effective and has minimal environmental footprint. The estimated GHG reduction by global adoption of this technology is likely to be 28.6 million tonnes by 2027.

CARBON MASTERS

ABOUT THE COMPANY

Carbon Masters is a carbon management company that spun out of the University of Edinburgh, Scotland, and today has offices in the UK, India and Ecuador. Carbon Masters won the Action for India Silicon Valley Challenge and was recognized as one of the top 5 Social Impact Companies in India for 2017. It was also selected as one of the three winning finalists in Shell's #makethefuture Accelerator India programme 2017.

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CLIMATE SOLVER 2017 AWARDEE

GHG REDUCTION: CAPTURING PARTICULATE MATTER FROM DIESEL GENERATORS

Developed by: Chakr Innovation Private Limited

INNOVATION

9 out of 10 people worldwide breathe highly polluted air, and more than 80 percent of urban dwellers are exposed to outdoor pollution that exceeds health standards. Air pollution, particularly in the form of particulate matter (PM), is a serious challenge in India where 14 of world's 15 most polluted cities are located.

PM emissions are generated by various anthropogenic activities, and burning of fossil fuels is the major source. Of the total diesel burned in the world, 30% is from non-transport activities. Diesel Generators (DGs) are widely used for supplying round the clock power, or as back up for large residential, commercial as well as industrial sectors. A significant part of the PM or soot emitted from the DG sets is in the form of Black Carbon, which is a climate forcing agent having a net warming effect.

Chakr Shield – the technology developed by Chakr Innovation Private Limited is a retrofit solution that captures PM and helps combat air pollution. The device is installed over the exhaust pipe of the DG that captures the exhaust and cools it to cause agglomeration of the soot particles. These soot particles, which primarily consist of PM are then made to pass through contours and meshes and captured with up to 90% efficiency. The collected PM is used as a raw material for making inks.

Chakr Shield is available for use in a wide variety of DG capacities ranging from 20 kVA- 3000 kVA. Chakr Shield consists of non-moving parts, and therefore is a low maintenance device which is made of corrosion free material for better performance.

Chakr Shield retrofitted on a DG set

KEY FEATURES

- Reduces PM emissions up to 90%- helps reduce air pollutions and GHG emissons
- Applicable for use in diesel generators using biodiesel as well
- Successfully completed over 40 installations covering more than 4 MW of generation capacity
- Applications in telecom towers, large residential societies, construction sites, malls, multiplexes, hospitals and industries
- Used in diesel generators of wide range of capacities

BENEFITS

Capturing PM using Chakr Shield is an effective solution to reduce the emissions to the atmosphere and to improve the quality of air. Chakr Shield ensures prolonged life for old diesel generators by equipping them to meet the latest environmental norms. The estimated GHG reduction by global adoption of this technology is likely to be 10.5 million tonnes by 2027.

CHAKR INNOVATION

ABOUT THE COMPANY

Chakr Innovation Private Limited is a technology start-up based in New Delhi, incorporated in the year 2016, which aims to create pioneering, sustainable and scalable technologies to combat the grave threat posed by pollution. Its first product, a retrofit emission control device for diesel generators, aims at effectively controlling pollution by capturing it at source. The company has received awards from reputed organizations such as ASME, University of Chicago, MIT and Entrepreneurship Development Cell (IIT Delhi).