

ECO BEAN

NO BURNING. NO FUEL. MINIMAL ELECTRICITY

REVOLUTION IN WASTE
DECOMPOSITION



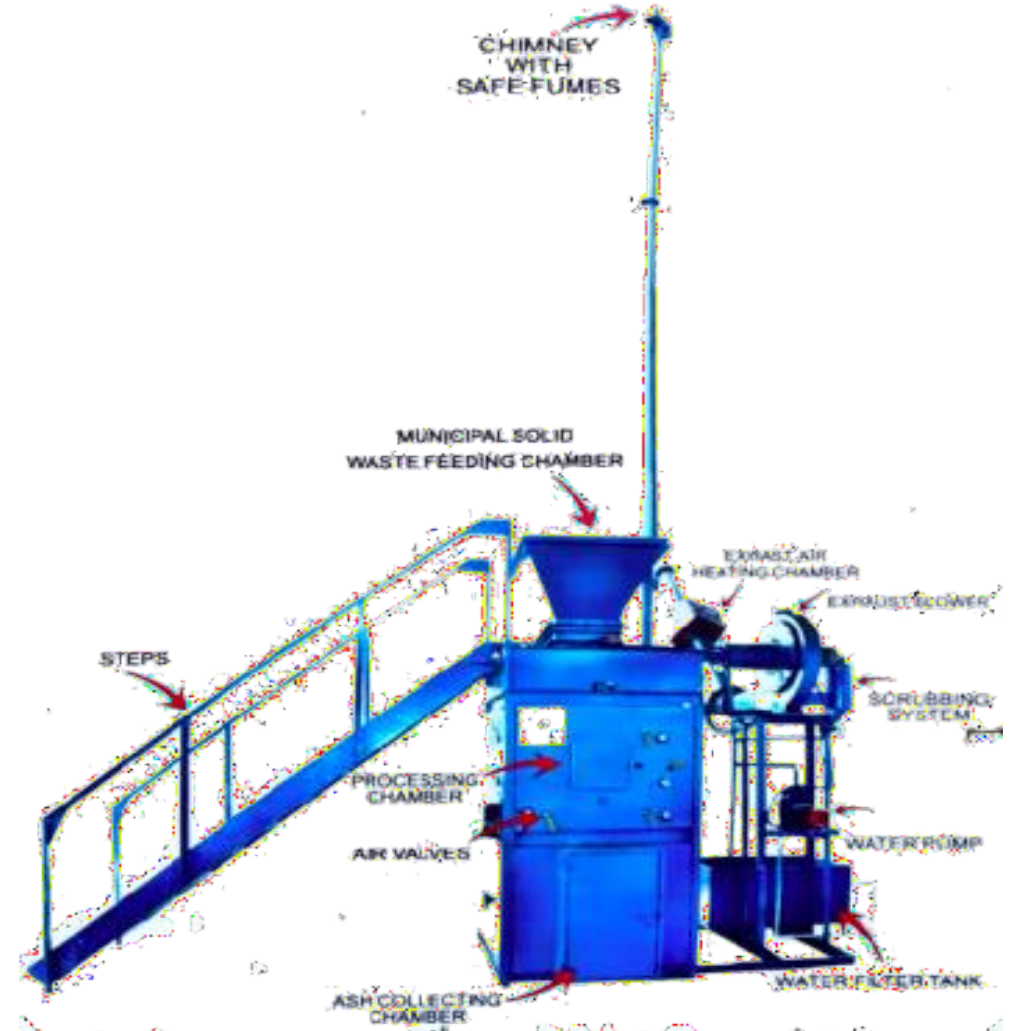
PYROMAG WORLDWIDE

TOGETHER, WE CAN MAKE THE WORLD BETTER

LET'S
REDUCE
OUR
IMPACT
ON THE
WORLD



ECO BEAN



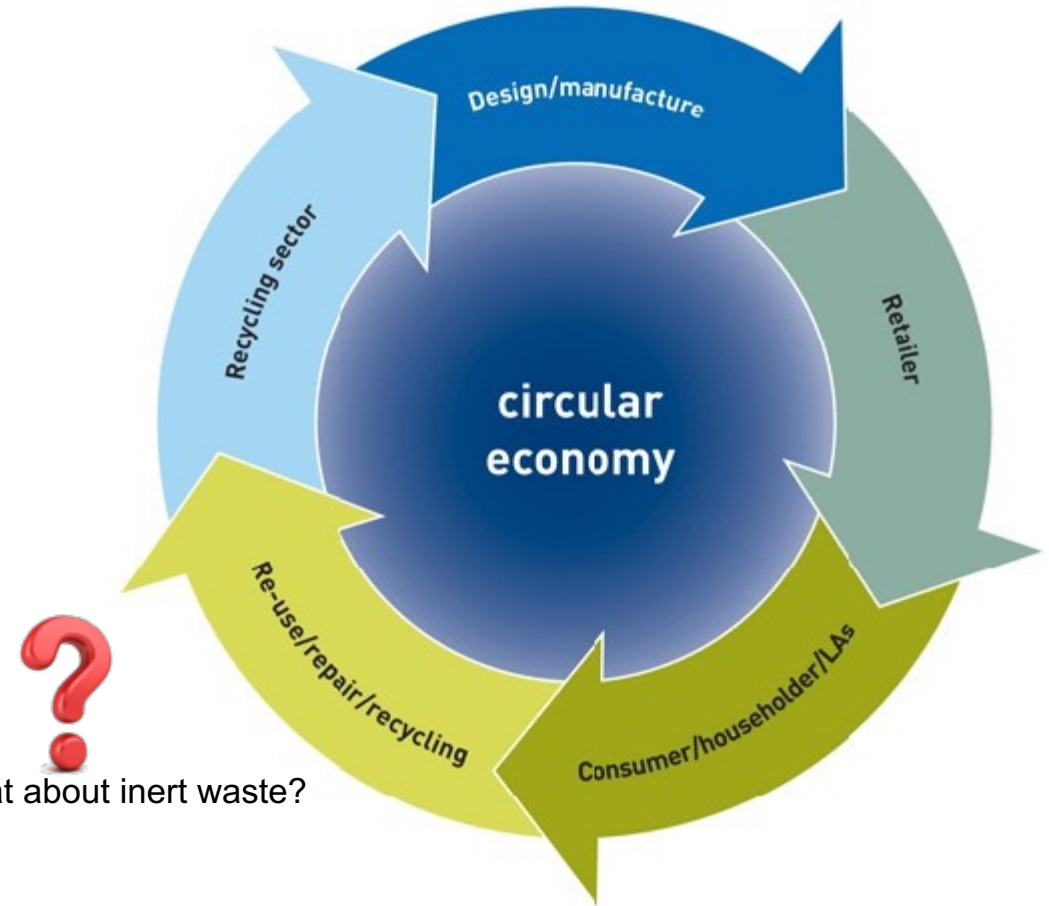
Ensuring Circularity of Waste

Our organisation strongly believes in the circular movement of waste.

- Waste that comes from nature should go back to nature, through processes of vermicomposting.
- Waste that can be recycled, must be recycled.
- Landfills must undergo process of bio-mining for reclamation of land.

Yet there are still gaps in the system. Landfills heaps are increasing. Segregation is not carried out systematically by people. Transport cost of waste is mounting.

With our latest technology we are able to scientifically plug these gaps.

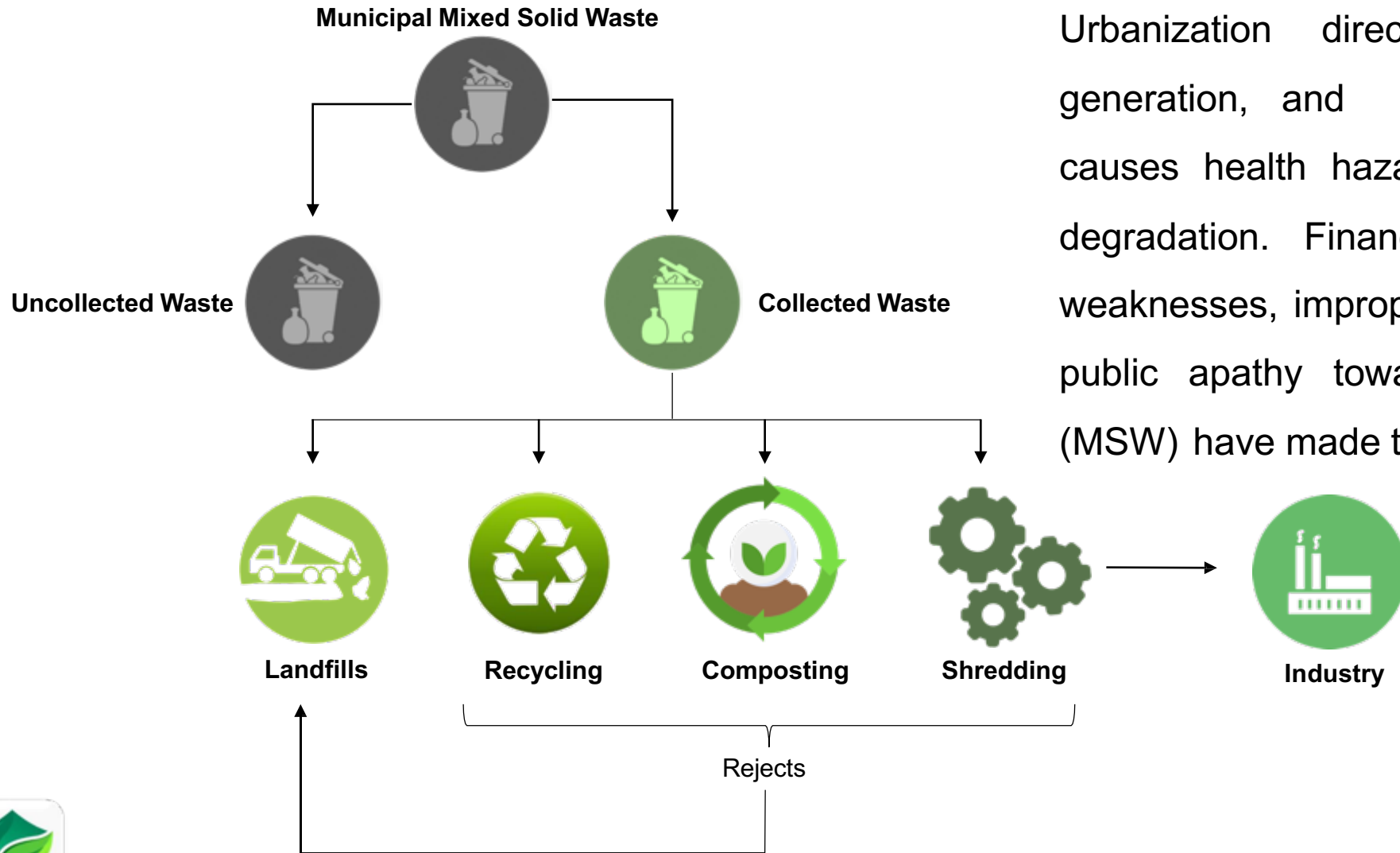


What about inert waste?

What can be done with waste that is rejected from all possible types of recycling?

Earth Goal – Zero Landfill

A unique one-of-a-kind technology in Mixed Solid Waste scenario



Urbanization directly contributes to waste generation, and unscientific waste handling causes health hazards and urban environment degradation. Financial constraints, institutional weaknesses, improper choice of technology and public apathy towards Municipal Solid Waste (MSW) have made this situation worse.

PRESENTING A REVOLUTIONARY TECHNOLOGY IN THERMAL WASTE DECOMPOSITION

Pyromag Worldwide LLP has introduced a very unique and first-of-its-kind technology for destruction of Mixed Solid Waste using scientific principles of **Magnetic Pyrolysis**. The technology does not use fire, fossil fuels and works on a minimum power connection, thus making it an environmentally friendly and at the same time, an efficient technology compared to any of the traditional solutions that are in existence today.



Eco Bean can efficiently play the last
mile connectivity role in the MSW
Waste Value Chain

Presenting the ECO BEAN

The **ECO BEAN**, thermal waste decomposition machine, works on the scientific principle of **Magnetic Pyrolysis**. Magnetic Pyrolysis is an entirely new approach to waste destruction that does not require any fuel, minimal electricity (2-3 Kw), and no furnace for destruction, no high-temperature boilers for burning, thus making it environmentally harmless.

Magnetic Partial Slow Pyrolysis is the process of thermal decomposition of waste occurring in the absence of oxygen or in the presence of very little oxygen. The machine requires heat initiation to start thermal decomposition and the reactor is designed to generate and hold heat up to 700° Celsius or more. The machine does not use any fuel-stock i.e. gas or diesel. Instead, heat is generated based on an initiation point and is further built using ionized air that is channelled into the chamber.

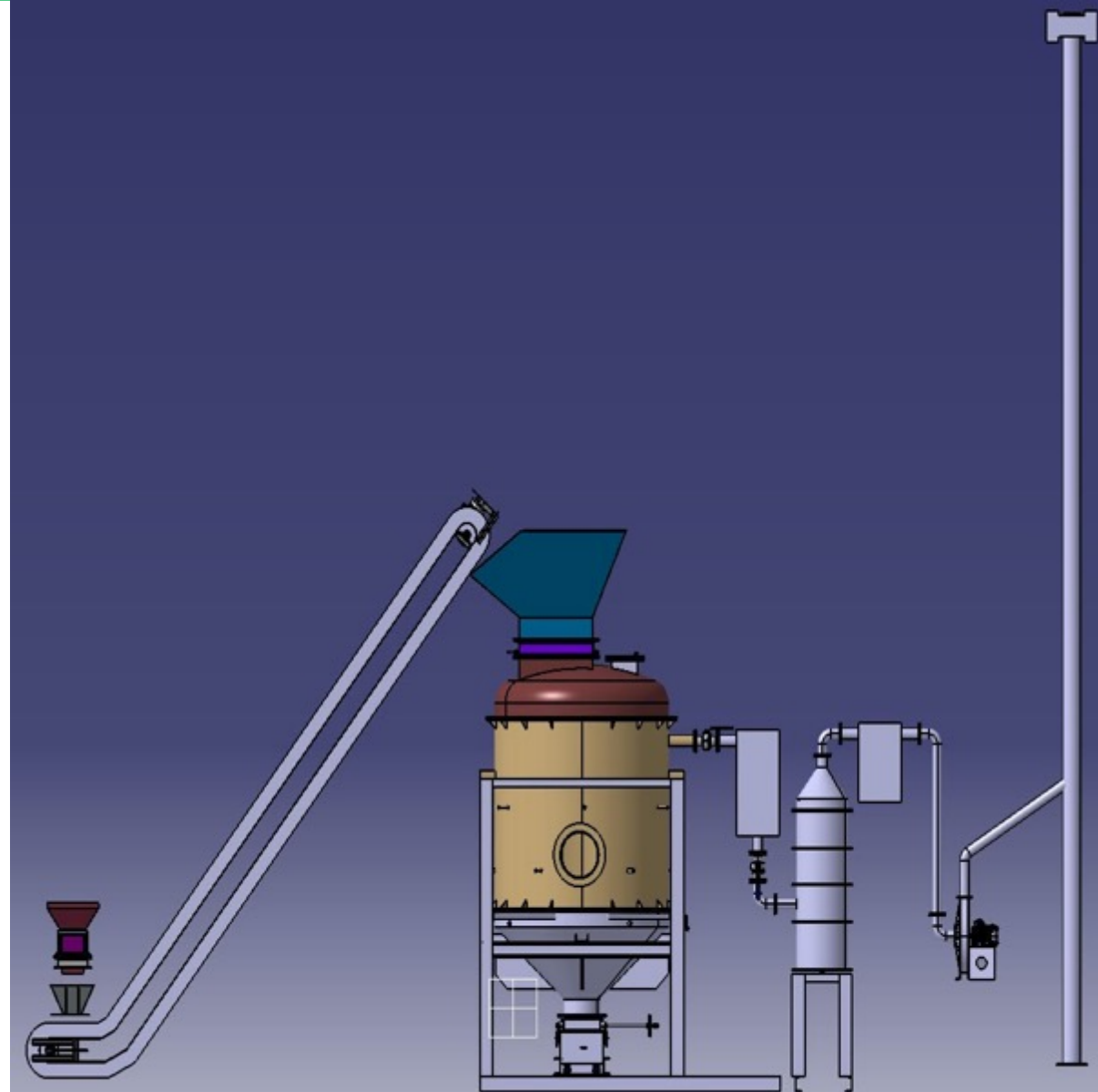
- NO BURNING.
- NO FUEL.
- MINIMAL ELECTRICITY



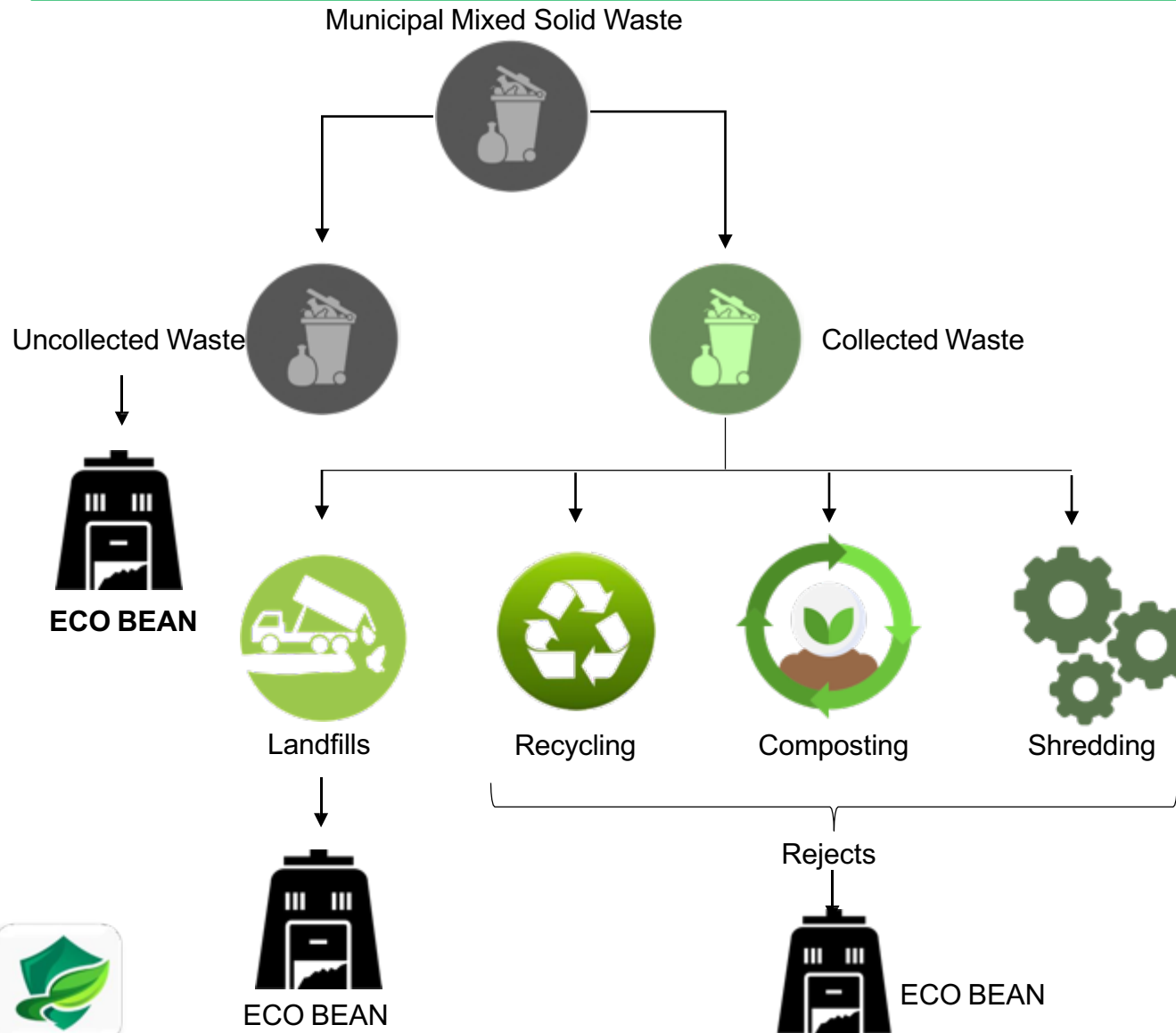
Eco Bean Process

What happens inside the **ECO BEAN** chamber?

- At the heart of **ECO BEAN** is partial pyrolysis, a transformative process using high temperatures in the absence of oxygen to decompose waste to smaller volumes.
- These high temperatures are created without the use of any fuel, burning or electricity – hence making the machine self powered.
- The pyrolysis process is conducted in an oxygen-free environment inherently lowering emissions. This is done with the help of industrial grade magnets.
- A small electric ignition heater is used during initial ignition and later switched off. The process of pyrolysis (generating heat) is caused by infusing powerful magnetized air into the chamber. This causes a negative pressure state of ionization space within the chamber and thereafter negatively charged electrons and positively charged nucleus constantly interact with each other and form a hot plasma state.
- It forms a pyrolysis field with great energy, makes the matter completely decompose and completes a pollution-free disposal of mixed solid waste.
- Thereafter the machine uses the calorific value of the waste to keep the heat generation constant. Once the machine reaches a level of 700°C, the machine operators keep feeding it with waste 24/7 to keep it going.



This technology can efficiently play the last mile connectivity role in the MSW Waste Value Chain



TYPES OF WASTE

Organic Waste: Kitchen Waste, Vegetables, Flowers, Leaves, Fruits, Meat and Seafood

Inert Waste: Legacy Waste that will not dissolve, burn or otherwise physically or chemically react, biodegrade or transform

Recyclable Waste: Paper & Plastic

Medical Waste: PPE Kits, Surgery Masks, Aprons, Gloves, Caps, Shoes covers, biomedical suits, cotton, surgical clothes, plastic disposables.

The machine cannot decompose metal, glass and rock/cement.

The **Eco Bean** is capable of decomposing and destroying all types of urban mixed solid waste like paper, plastic, cloth, leaves, kitchen waste, human waste, vegetables, flowers, fruits, meat and seafood, cottons, plastic disposables.

Salient Features of the **ECO BEAN**



ANTI CORROSIVE

Anti corrosive zirconium coating

SELF POWERED

No fuel. No burning. No furnace

UNIQUE / SCIENTIFIC

Unique distinctive scientific thermal waste decomposition technology.

SCIENTIFIC

Special air filled with super-strong magnetic induction and hyperthermia generating heat up to 700° C

HIGH DECOMPOSITION

Decompose mixed solid waste in a ratio of almost 1/200 or 1/300. (1000KG to 3KG)

DECOMPOSITION

Decompose waste in a scientific manner with no expensive power consumption or use of fossil fuels.

EMISSION NORMS

Functions well below incineration norms of the CPCB in India.

SPACE AND EFFICIENCY

Machines require minimum space and can operate 24/7 without causing environmental harm.

Building a Carbon Neutral Planet

Sustainability Advantage



Mission
**Building a Carbon
Neutral Planet**

1 L of petrol
generates
2300 g of CO₂



Vision
**Zero Waste goes to
Landfill**

1 kg of non-recycled
waste generates
700 g of CO₂



Purpose
**Making positive impact
to remove carbons**

**India has legacy
waste of 1.40 Billion
Tonnes**

Every Country has
millions of tonnes
waste in Landfill

An average person
generates 1800
grams of Waste

**Every individual/entity
ensure they leave zero
waste on planet**

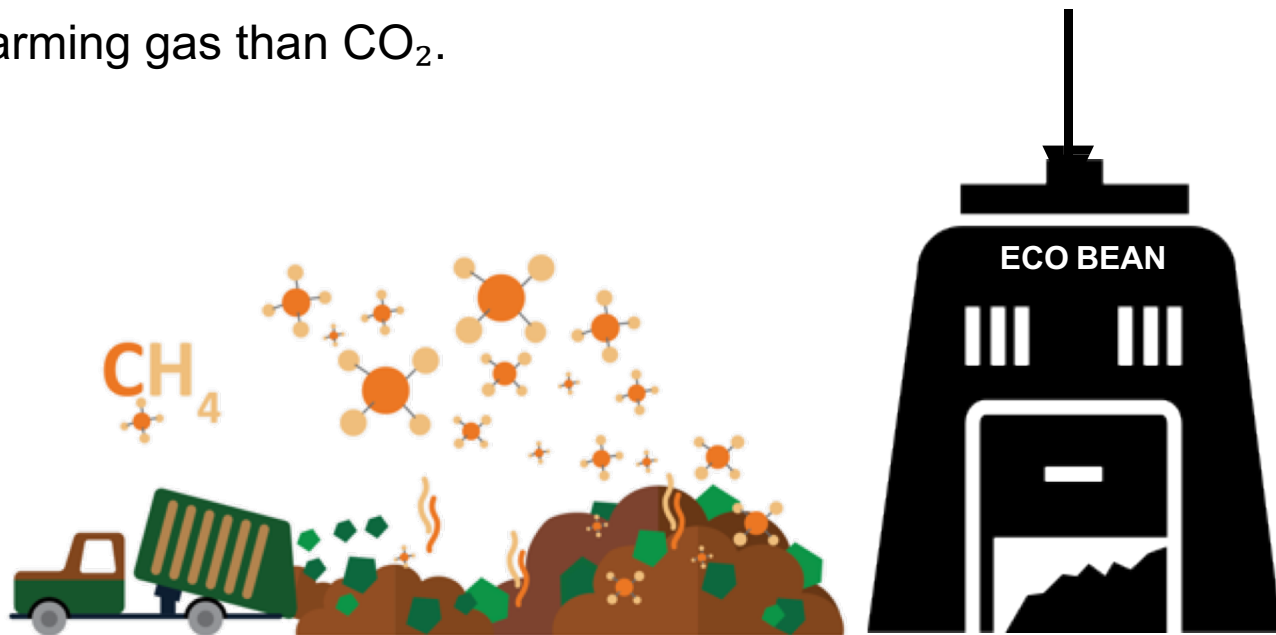


Sustainability Advantage

- Facilities with Eco Bean installed, can potentially, divert waste from going to landfills
- Facilities can be designed to convert the waste that remains after recycling towards odorless scientific environment friendly treatment with a high rate of reduction
- Eco Bean is a technologically advanced means of waste disposal that will help reduce greenhouse gases – particularly methane – by eliminating emissions from landfills
- Landfills are super emitters of methane; a greenhouse gas that is 84 times more potent as a climate-warming gas than CO₂.

EVERY TECHNOLOGY TO
TREAT WASTE HAS NOW
BECOME A **NECESSITY**.

NO ONE TECHNOLOGY
HAS ALL THE ANSWERS.



By-products / effluents of the **ECO BEAN**



Ceramic
Ash

The magnetic pyrolysis machine is capable of destroying waste to a great degree. The multiple of waste destruction is 1 by 300. Which means 1000 Kg of mixed solid waste can be destructed to 3-4 Kg of non toxic by-product. The by-product in this system is ceramic ash. Ceramic ash has commercial value, used in the tiles and ceramics industry.



Scrubbed
Water

Any process of thermal decomposition creates some amount of flue gases. The volume of flue gas generated in this machine is very less and the purpose of scrubber is to remove any acidic fumes generated. The scrubber water quantity is relatively less and it is recirculating throughout 24 hours. The scrubbed water pH after 24 hours is only around 7 and tested as per inland surface discharge standards and complying all the parameters before discarding.

WHEN DESTROYING WASTE IT IS IMPORTANT NOT TO CAUSE OTHER ENVIRONMENTAL PROBLEMS IN THE PROCESS

ECO BEAN Machines meet the standards of NABL accredited laboratories and our emissions are well below the accepted standards in India.

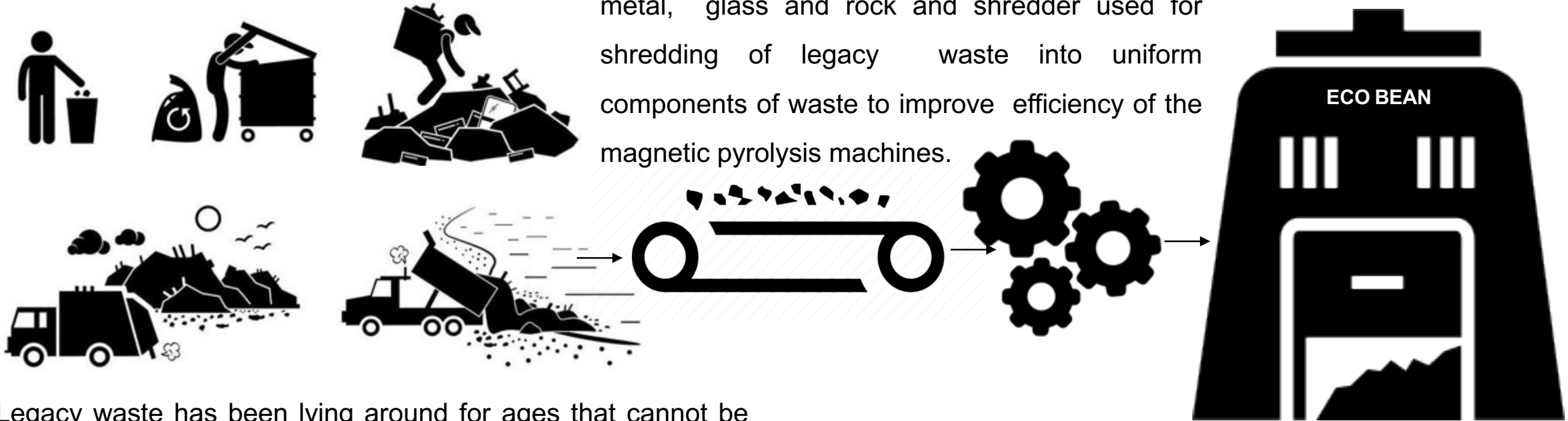
Description	Units	Results	Standards
Carbon Monoxide (CO)	mg/Nm ³	88	< 100
Carbon Dioxide (CO ₂)	mg/Nm ³	9%	< 12%
Oxygen (O ₂)	mg/Nm ³	10%	NA
Nitrogen Oxide (NO _x)	mg/Nm ³	108	< 400
Sulphur Dioxide (SO ₂)	mg/Nm ³	35	< 200
Dioxin	ng ITEQ/Nm ³	0.06	0.1ng
Particulate Matter (PM)	Mg/Nm ³	18	< 50

Emission standards of Central Pollution Control Board in India and other Government agencies have approved the test results and standards of laboratories accredited by NABL

Since what we input in our machines is not harmful to the environment, i.e. we do not use any type of fuel, we do not use the process of burning by fire, and we use very minimal electricity – the emissions that are let out during the process are controlled and further taken through a water scrubbing and heating process, to further destroy any harmful substances before discharge through the chimney.

Ideal Process – Legacy / Inert Waste

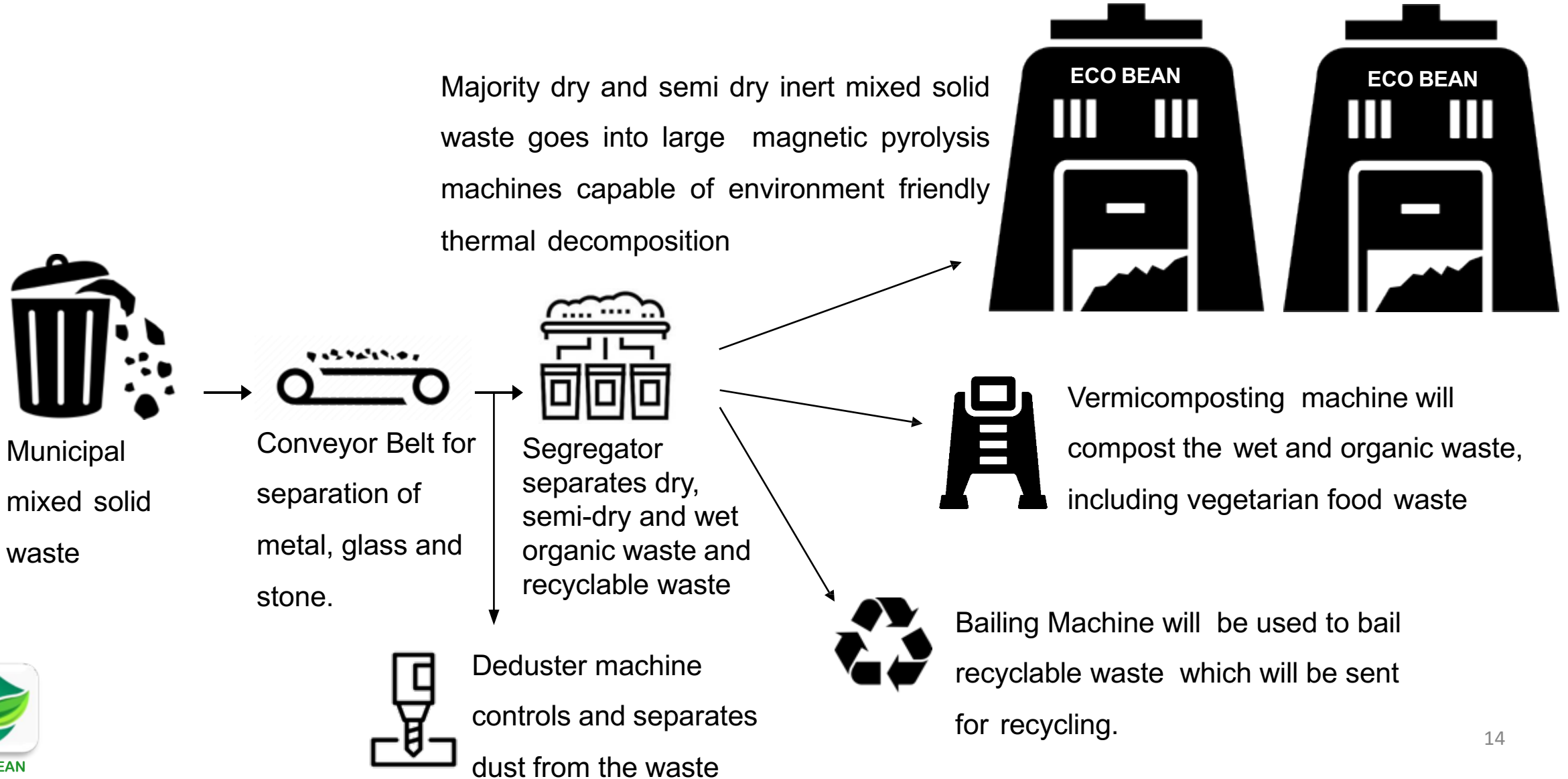
Conveyor belt used for segregations of e-waste, metal, glass and rock and shredder used for shredding of legacy waste into uniform components of waste to improve efficiency of the magnetic pyrolysis machines.



Legacy waste has been lying around for ages that cannot be recycled or composted or reused in any other meaningful way.

Majority dry and semi dry inert mixed solid waste that has been lying around in landfills for ages goes directly into large magnetic pyrolysis machines capable of environment friendly thermal decomposition

Ideal Process – Fresh Waste



Eco Bean Sizes

Eco Bean Product Description
<p>Eco Bean 0.5 Cu. – (500-750Kg/day minimum) Waste Destruction System with Water Scrubber, Necessary Heating & Control equipment incorporated and 10 Meter height MS make Chimney. Manual Loading</p>
<p>Eco Bean 1.0 Cu. – (1000-1500Kg/day minimum) Waste Destruction System with Water Scrubber, Necessary Heating & Control equipment incorporated and 10 Meter height MS make Chimney. Manual Loading</p>
<p>Eco Bean 2.0 Cu. – (2000-2500Kg/day minimum) Waste Destruction System with Water Scrubber, Necessary Heating & Control equipment incorporated and 10 Meter height MS make Chimney. Auto Loader included</p>
<p>Eco Bean 5.0 Cu. – (4500-5000Kg/day minimum) Waste Destruction System with Water Scrubber, Necessary Heating & Control equipment incorporated and 10 Meter height MS make Chimney. Auto Loader included</p>

Customized Eco Bean according to requirement can also be commissioned. 13



Eco Bean Feasibility Features

Project Feasibility	<ul style="list-style-type: none"> • No raw materials required • Minimum water and electricity • Only input is mixed solid waste
Land Allocation	<ul style="list-style-type: none"> • Compact machine with small footprint • Can be installed and accommodated in and around existing micro composting sites or other nodal points on a small area of land
Statutory Approvals	<ul style="list-style-type: none"> • Machine emissions have been tested by NABL laboratories • Machine betters CPCB incinerator norms by a large margin • Some State PCB's have approved these machines
Construction	<ul style="list-style-type: none"> • Limited civil work. • Concrete platform and shed required which will be built
Fabrication & Installation	<ul style="list-style-type: none"> • Ready machine to be procured from manufacturer and can be installed in just 2 days • Manufacturing of machines will take 2 – 3 months depending on order size.
Trial Run	<ul style="list-style-type: none"> • Trial run can be carried out within a week of installations • New stack emissions can be sent to labs for testing
Operations	Operations can begin as soon as trial run is over and lab results are back

Installed Eco Beans

Thanjavur Medical College, Thanjavur
Tamil Nadu

Eco Bean 2.0



Kalpakkam Nuclear Power Plant,
Kalpakam, Tamil Nadu



Neral Village, Maharashtra



Gulzarpet, Anantapuram Municipal Yard,
Andhra Pradesh



Eco Bean 2.0



Rajahmundry Municipal Dump Yard,
Andhra Pradesh

Eco Bean Design for Larger Setups

Since the Eco Bean is made-to-order, larger projects can be implemented to address bigger waste concerns

