ECO WASTE COMPOSTER

Model: R810T

What is Eco Waste Composter (EWC)

1.1 About Eco Waste Composter

- Unique and distinct garbage Decomposition/Destruction Equipment.
- Special air space filled with super-strong magnetic and hyperthermia (350 - 1100°C).
- Dispose the Garbage in a scientific way **without consuming fossil fuel**
- Decompose any type of waste without segregation.
- Ability to reduce the volume of disposed garbage to below 4% ashes.
- Bi-Product is a small volume of Ceramic Ash of about just 3-4% of the input waste which can be taken to landfills (or) for improving Soil amendment and as a disinfectant.

1.2 Features & Highlight of Eco Waste Composter

- ***PATENTED TECHNOLOGY.*** System is patented in Malaysia and 6 other countries for Technology, Design and Process.
- ***PROCESS AT PLASMA STATE.*** After initial start-up fire, destruction starts slowly by splitting the molecules into atoms These atoms further ionized as electron, proton and neutron and this state is called as "Plasma State"
- ***SMALL FOOTPRINT.*** A small floor space depending on the system size sufficient to accommodate system anywhere close to source.
- ***QUICK & FAST.*** Decomposition of waste takes place at a faster rate in 1-3 hours.
- ***SELF-SUSTAINING, NO FUEL, NO BURNING.*** Doesn't need the combustion process.
- Electricity for primary equipment used for closed chamber Destruction / Decomposition.
- ***NO SEGRAEGATION.*** Mixed Solid Waste (MSW) containing mixer of both dry and wet waste generated from households are suitable. Any waste material going to the Landfill can be fed into Eco Waste Composter including tires & asbestos.
- ***DECOMPOSITION AT SOURCE.*** De-Centralized and Scientific method of disposal, which avoids costly logistics to transport the waste to landfills.
- ***USER FRIENDLY.*** Simple operation and easy to load, MSW garbage bags can be loaded.

- ***NO POLLUTION, NO FLAMES, NO DIOXINS.*** Does not produce any flames, any dioxins or any other poisonous gases are eliminated, even when plastics and PVC are processed.

- ***MASSIVE VOLUME REDUCTION.*** Reduces the output by 96 % from the amount of the input waste loaded.

- ***BY PRODUCT.*** Small volume of normal ashes of about just 4% of the input waste which can be taken to landfills or for improving soil amendment and as a disinfectant.

- ***CAN'T DECOMPOSE.*** Such inorganic substances such as glasses, sand, soil, ceramics.

- ***CERAMIC RICH.*** Refractory coating compound containing high percentage Ceramic applied over inner walls of chamber to protect from corrosion and erosion.

- ***ECO FRIENDLY.*** Total Eco Friendly and 100% environment compliance product.

- ***WET WATER BASED SCRUBBER.*** The dioxins and furans are destroyed inside the wet scrubber system which comes along with the equipment.

- ***BODY TYPE.*** The equipment made with Mild Steel and Stainless Steel with grade SS 310L which is anti rust and corrosion free.

Eco Waste Composter is a revolutionary self-powered, Non-Combustion system which uses the Plasma Technology to reduce the volume of waste to 4 % ashes in 1 - 2 hours without using any external power source and is Smoke Free.

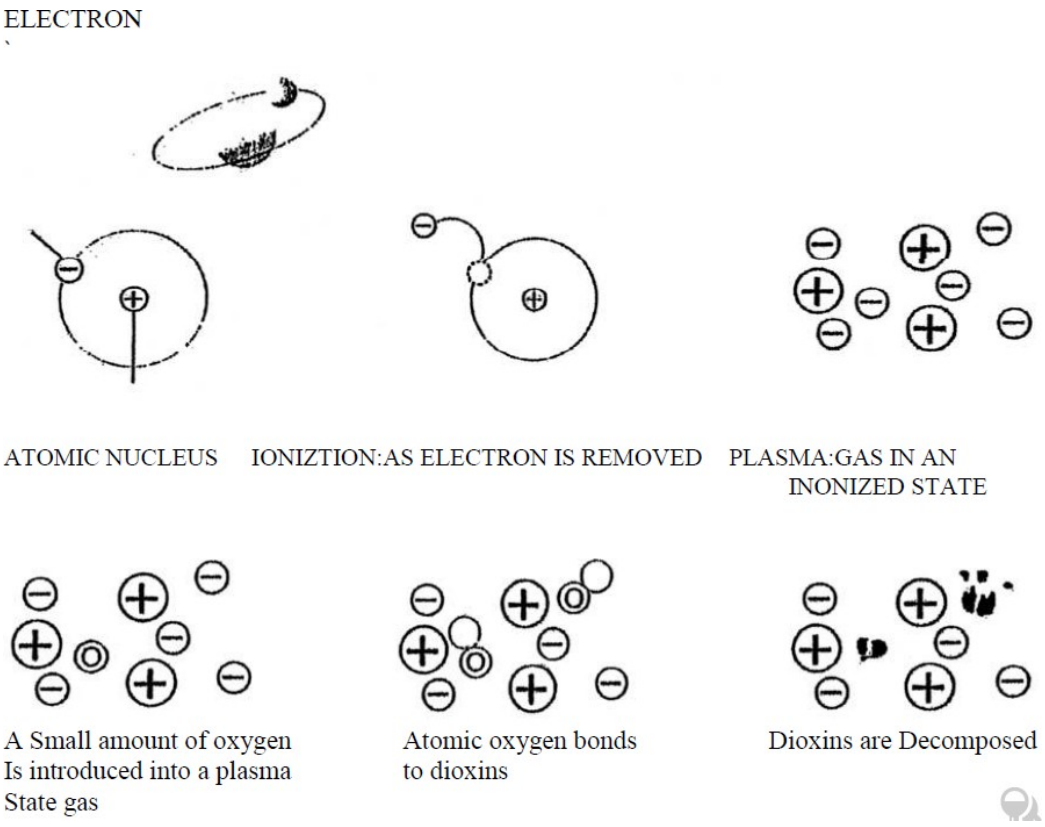
Flue gas emitted from the heating chamber after the destruction by using this technology that complies as per US EPA Std guidelines on Waste Incineration specification limit.

On the other hand, the chamber temperature is regenerated to dry the input wastes by increasing the volume of waste destruction.

Technical Details

2.1 Theory of Plasma

Plasma (is an ionized gas, in which some electrons are removed from atoms and molecules and are free) is created by permanent reactors at high temperatures 300 - 400°C. When a small amount of oxygen is absorbed into the plasma, highly reactive, negatively charged oxygen ions (Atoms and molecules that have lost electrons are positive ions (positively charged); electrons that have been removed are negative ions (negatively charged) are formed. This oxygen (negative ions) is highly oxidative, thus decomposing dioxins and other harmful compounds by oxidation.



2.2 Working Principle

The decomposition temperature is around 350 - 800°C depending on the solid waste input. Do not require fuel for organic substances for decomposition.

2.3 Solutions to Air Pollutions

It has been suggested that one of the causes of dioxins in an incinerator is the retention of oxygen due to imperfect combustion and low processing temperature (300 - 350°C).

Consequently, it became mandatory to process waste at high temperatures, at 800°C or higher.

On the other hand, Decomposition system processes waste at low temperatures; however, the generation of dioxins is inhibited.

The system also inhibits the benzene rings themselves from being produced by utilizing the effect of anions. ***This process destroys the Dioxins and Furans***

Technical Specification – Model R810T (Solar Operated)

Specification

Chamber Capacity	:	250 kgs
Chamber Volumn (Approx)	:	$1m^3$
Overall Size (Outsize)	:	Height 632cm * Width 132cm * Length 206cm
Door Opening	:	84cm * 50cm
Ash Removal Door Opening	:	29cm * 75cm

Structure Material

External	:	Mild Steel Shell (6mm)
Internal	:	Grade 310L (10mm)
Refractory Lining	:	120mm
Total Height	:	6.4 meter
Total Weight	:	3,000 kgs
Warranty	:	12 months

Spare Parts List

Solar Panel	:	3 pc
Solar Battery 12 V 200Ah	:	2 pcs
12V DC Fan	:	4 pcs
12V DC Water Pump	:	1pc

Eco Waste Composter Filter Tank Materials

(1) Nanogreen Solution for the Eco Waste Composter - **200 liters**
**(Nanogreen Concentration Solution – 8 drums of 25 liters, to use 2 drums of concentration Nanogreen Solution to dilute with 230 liters of water before using.)*

(2) Ash Tray – **2 units**

(3) Oil Trap Netting – **2pcs**

(4) HLC 2080 Nanosilver Flue Gas Carbon – **60kgs** **(change 15kgs every 3 months)*

(5) HLC 5050 Nanosilver Flue Gas Carbon – **60kgs** **(change 15kgs every 3 months)*

(6) HLC 4080 Nanosilver Flue Gas Carbon – **60kgs** **(change 15kgs every 3 months)*

(7) Hi Alkaline Carbon Block – **4pcs** **(change 1pc every 3 months)*

(8) Fibre Glass Sediment Filter – **2pcs** **(change 1pc every 6 months)*
can be taken out to clean every 7 days

Maintenance for Eco Waste Composter

Daily:

a) Take out the bottom ash tray twice daily. Clear the ashes in the tray.

b) Leave the ashes to cool down then sieve the ashes before mixing the ashes with sawdust and can be sold as organic fertilizer.

Every 2 days:

a) Take out the oil trap netting and change a set of cleaned oil trap netting into the filtration chamber.

b) Soak the oil contaminated oil trap into a drum of detergent solution to remove the oil from the oil trap, before cleaning it with clean water and let it dry, and is ready for use.

Every 7 days:

a) Connect the Hi Alkaline Filtration System (Optional) to the EWC Water tank outlet and inlet to filter the contaminated acidic water and recycle it through the Hi Alkaline Filtration System for 30 – 45 minutes of which it will filtered all the sediments in the acidic water and turn it into Hi Alkaline Water.

Remarks:

The Hi Alkaline Filtration System, Fiber Glass Sediment Filter and NanoAg Hi Alkaline Carbon Block can be taken out and clean with clean water after each filtration.

After changes of new Fiber Glass Sediment Filter and the Hi Alkaline Carbon Block. Throw the used Fiber Glass Sediment Filter and Hi Alkaline Carbon Block into the EWC chamber to be incinerated.

Every 3 months : Change the Filtration Media.

a) Tray 1 = 15kgs HLC 4080 Flue Gas Carbon
b) Tray 2 = 15kgs HLC 5050 Flue Gas Carbon
c) Tray 3 = 15kgs HLC 2080 Flue Gas Carbon
d) Chamber Water Tank 1&2 = 2 drums Nanogreen Concentration Solution dilute with 230 Litres of water.

Remarks:

The already contaminated Flue Gas Carbon can be thrown into the EWC chamber to be incinerated.

System Description For Eco Waste Composter

Model	:	R810T
Capacity of the Machine in kg	:	2 Tons Decomposition System
Dimension	:	H 6325mm x W 1320mm x L 2060mm (Ground to Stack)
Material Characteristics	:	Organic Waste with less than 50% moisture (Avoid Watery / Liquid MSW Waste)
Number of Feed Intervals	:	Every Hour
Temperature	:	350°C – 1000 °C
Type of System	:	Mixed Solid Waste Decomposition System
Area of Operation	:	Non-flame Proof
Material of Construction	:	MS/SS Fabrication

Technical and Technology Specifications, and Decomposition Methodology

System Generics	:	Self Powered Mixed Solid Waste Disposal Equipment
MSW Disposal Methodology	:	Programmed Oxygenated Plasmic State Treatment
Power / Electricity Utility	:	No Electricity or Fuel needed for Primary Equipment
Scrubber for Filtration	:	Using Filter bag, Flue Gas Filter Medias, Oil trap together with Wet Scrubber
Pollution	:	Pollution Free
Environment	:	Environmentally Friendly
Segregation of Mixed Solid Waste	:	Minimum to Nil
Running Cost	:	Minimum to Nil power requirement for the Processing Unit
Nature of Mixed Solid Waste to dispose	:	PET Bottles, Plastic, Paper, Rubber, Tubes and Tyres, Mixed Waste
Processing Method	:	Negative Ion Effect Plasma Processing Technology
Geographic Demographics	:	Should be a solution to avoid Landfills
Segregation of Mixed Solid Waste	:	Minimum to Nil

Equipment Characteristics for Eco Waste Composter R810T

Self Powered Solid Waste Decomposition System using Thermal Heat Decomposition Method	2 tons capacity MSW Decomposition System
Running Cost	No Fuel, No Electricity, No Engine on Primary Equipment, Low Maintenance Cost
Environment Standards	Environmentally Friendly
Resource saving	Promoting effective use of resources
CO2 Emission	Emission below norms
Dioxin Generated	NIL
Biological	Bacteria Free

System Description and Functions:

Description	Functions	Characteristics
Processing Chamber	Ashing Unit (No Furnace)	No Fuel & No Electricity
Processing Method	Negative Ion Effect Plasma Processing Technology	Low Temperature (350°C – 1000 °C). With minimum requirement of Oxygen, Emissions of Dioxins and CO2 are suppressed.
Processing Method	Different Waste Material can be processed at the same time	Crushing the waste material and removal of moisture improves performance (reducing voids)
Running Cost	No Fuel, No Electricity, No Engine, Low Maintenance cost.	Requires only 1-2 operators and No Electricity for the EWC R810T

Do's and Don'ts

Do's

- Wastes to be stored in a defined place and should not be in open area.
- Ensure to remove glass, hard plastics, and metals before feeding.
- Ash door should be closed before opening the feed door.
- Ensure feeding inlet should be closed airtight and should not ingress atmospheric air enter into combustion chamber after the waste if charged.
- Ensure only camphor / coconut shell / wood / cardboards should be used for initial combustion.
- Ensure feeding of wastes should be continuous on hourly basis.
- Stack should be connected with the outlet emissions during operation.
- Always proper cleaning in the feeding and ash collection area.
- Ash to be collected and stored well defined place.
- Water from the scrubber tank should be filtered once a week.
- Ensure the external DC Fans should always be on during operation of the decomposition.
- Ensure Feeder and Ash doors should be closed airtight always during decomposition operation.
- Use Thick gloves, Mask, Long-sleeved Shirt, Plastic Apron, Trousers and Boot.

Don'ts

- Avoid watery waste feed into the decomposition chamber.
- Don't keep near to the electrical pole / Cable Chamber / Flammable products.
- Don't dump any explosives, crackers, petroleum products etc., into the machine.
- Don't open feeding inlet unless after turned off the DC Fans.
- Don't keep the system in the closed room / shed.
- Don't pour water into the chamber.
- Don't dump any Glass, Metals, Hard Plastics etc.

Guidelines On Operation

- Decompose all organic substances, but will slow down the process of decomposition if moisture content is more than 60%. To reduce the moisture content and effective performance, composter can be used for removal of moisture.

- Cannot decompose such inorganic substances as glasses, metals, sand, soil, rock, ceramics etc.

- For a smooth operation, SANDWITCH DRY AND WET WASTE PACKED INTO LAYERS

- All Blower Fans should be switch off before opening the loading door of the Eco Waste Composter to input the garbage for next cycle.

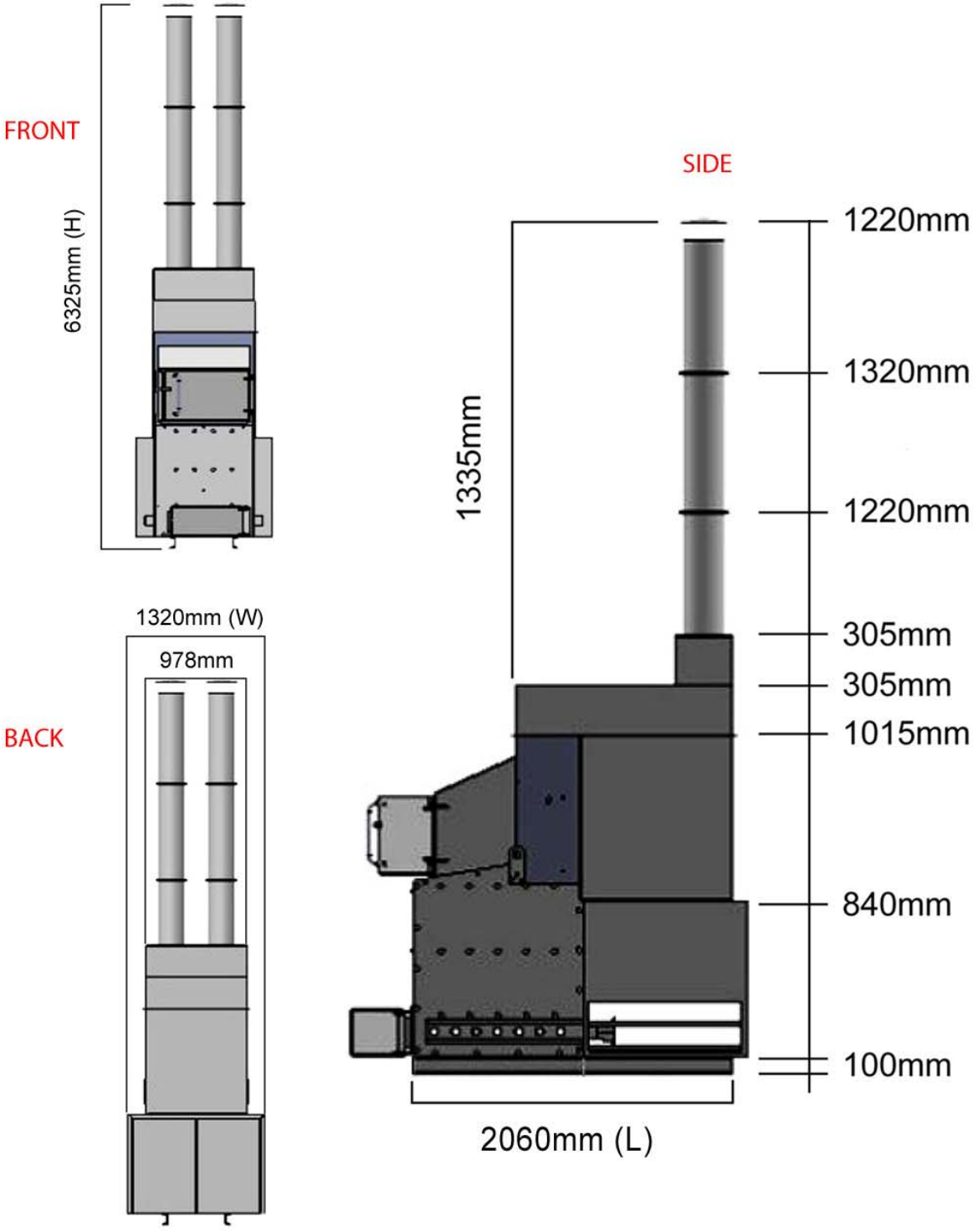
- The efficiency of the EWC depends on moisture content of the waste loaded into the EWC. If the average moisture level of the MSW is 20% and below, the performance of the system will go up to 120% level.

We strongly recommend ensuring the moisture level of MSW at less than 50% mark for optimum performance of the system.

STABILISATION PERIOD: Initially EWC requires minimum 1 day time to reach operational stability to obtain optimum output in performance.

Model No. : R810T

(H) 6325mm x (W) 1320mm x (L) 2060mm



The Benefits For The Community

1) No landfills near residential area.

2) No foul smell and trench of domestic waste near residential area, if the garbage trucks didn't come in time.

3) No accumulation of domestic waste at residential area or housing estates.

4) Every household can bring their own domestic waste to the Eco Waste Composter area to exchange foodstuff vouchers.

   - With every 30 kgs of domestic waste can exchange for one (1) voucher, and the voucher can be exchange for foodstuffs like rice, sugar or any food at shops or outlet approved by local municipal councils.

5) Air emissions are less than the combustion of natural gas and are easily within US EPA Std.

6) Created job for those unemployed citizens to collect domestic waste.

The Benefits For The Local Municipal Waste Management

1. Cutting down cost of transporting domestic wastes to landfills.

2. Cutting down cost for collecting domestic wastes to landfills by employing less workers to handle the job.

3. Cutting down cost of maintenance for garbage trucks.

4. Income for selling the incinerated domestic waste ashes as organic fertilizer.
   Using the income from selling the organic fertilizer to subsidize the wages for the workers and maintenances of the Eco Waste Composter.

Key Features

- Low Running and maintenance costs
- Simple to operate control panel
- Virtually smoke and odor free
- High temperature, refractory lining giving excellent heat retention
- Quick heat up time
- High burn rate of up to 65kg – 120kg per hour
- Easy installation and maintenance
- 12 months warranty
- Compliance with US EPA Air Emissions Regulation

Generated income from Eco Waste Composter

- For Every 2 tons of Domestic Waste Incinerated the leftover of ashes is approximately 80kgs (3% - 4%)
- Use the 80kgs ashes to mixed with 100kgs of sawdust and turn it into organic fertilizer

The Eco Waste Composter (EWC) Process

The Patented EWC process technology uses effect plasma processing technique enables to decrease and suppress the generation of dioxin.

First the waste is steamed and baked inside the EWC which is in the status of plasma magnetic field, which means the status of negative ion is generated, and then it is pyrolytically decomposed into ash and gas.

By advancing the ash further, the gas becomes non-toxic and the residue ash become solid in ceramic form.

Ashing in the plasma magnetic field make it possible those inseparable organic matters like dioxin, giving no reproduction.

The residue ash piled up in the bottom of the EWC contained Calcium, affects oxides composition.

So the toxic substance is completely decomposed.

Collection of valuable ash can be turn into organic fertilizer.

The Filtration of Air Emissions is by using Specially Formulated Flue Gas Carbon with Nano Silver and Nanogreen Liquid.

Effluent gas meet the external air of which plasma force process is applied, the dioxin and furan in the effluent is decreased or eliminated. Complying to US EPA Std.

Process Ability

i. 500 – 2,500 kgs a day. (Depend Moisture Content).
ii. 24/7 operation is possible.
iii. No need to heat up forcibly to high temperature by burners which is the common matter by traditional incinerator.
iv. Running cost is not required because no supplement of gas, fuel, diesel or electricity.

How the NSM-Enviro Eco Waste Composter works

1) Domestic Waste is places in the Eco Waste Composter chamber by layers.
   dry wastes
   semi-dry wastes
   dry wastes
   < 60% wet wastes
   dry wastes

2) Then light up a piece of paper or anything that can start up a fire and throw it into the Eco Waste Composter at the top opening (chamber door) or at the lower opening (ash chamber door) and closed both doors.

3) Switch on the Fans and Water Pump, the Eco Waste Composter of domestic wastes will works by itself.

4) The negative plasma ions, ultra fine air, which is magnetized in the plasma reactors penetrates into the ultra small hole of the domestic wastes.

5) This process by plasma effects will keep the dioxin and the others pollutants decomposed.

6) Residue ceramic ash inside the Eco Waste Composter becomes the source of heat.

7) In the course of changes from coarse ash to fine ash, the temperature of the ceramic ash become high (> 350 °C – 1100 °C) so that the ash can make the domestic wastes dry.

8) As the temperature of the ceramic ash become extremely high, dioxin in the ash vanishes away.

9) Thus by this process the ceramic ash becomes completely inorganic.

Recycle of Ash (How to Use)

1. The ceramic ash can be spread in the field, effects like plants growth promotion.

2. The ceramic ash can prevent a vermination, when used for cultivation of flowers and crops.

3. Compose can be made by mixing dried grass, soil or others.

4. When animals manure is mixed with ceramic ash, ammonia and phosphate are degraded and deodorization.

5. The ceramic ash can be also related to materials for building construction and others, etc.

Recycle of Plasma Ion Fluid (Nanogreen Solution)

1. Nanogreen which removes heavy metals in the Eco Waste Composter water tank (200 Liters) during incinerating of the domestic wastes, it brings down carbon by products to the bottom of the water tank. The Nanogreen will be dark in color, smelly and acidic with a pH 4.0 to 5.0.

2. This smelly and acidic waste water (Nanogreen) can be filter by connecting a special Alkaline Filtration System (Optional) to the water tank and switch it on for the filtration effects and recycling the waste water into the Eco Waste Composter water tank for 45 minutes and the Nanogreen solution will be clean and non-smelly and can be reused with a pH of 10.0 to 11.0.

3. The filters from the Alkaline Filtration System can be thrown into the Eco Waste Composter to be incinerated after the filtration.

4. So no discharge of waste water and contaminated filters into the drains, rivers of sewages lines.

Discard of Nanosilver Granular Activated Carbon

1. Nanosilver Granular Activated HLC Flue Gas Carbon that absorbed the acid gases, odor and smoke also purified the air and smoke by reducing the ash particles, odor before emitting into the environment and is pollution free.

2. Nanosilver Granular Activated HLC Flue Gas Carbon after it lifespan approximately 3 – 4 months (Depending on Domestic Wastes). Can be thrown back in to the Eco Waste Composter to be incinerated.

3. So no discarding of contaminated carbon into the environment.

Maintenance for Eco Waste Composter

Daily:

a) Take out the bottom ash tray twice daily. Clear the ashes in the tray.

b) Leave the ashes to cool down then sieve the ashes before mixing the ashes with sawdust and can be sold as organic fertilizer.

Every 2 days:

a) Take out the oil trap netting and change a set of cleaned oil trap netting into the filtration chamber.

b) Soak the oil contaminated oil trap into a drum of detergent solution to remove the oil from the oil trap, before cleaning it with clean water and let it dry, and is ready for use.

Every 7 days:

a) Connect the Hi Alkaline Filtration System (Optional) to the EWC Water tank outlet and inlet to filter the contaminated acidic water and recycle it through the Hi Alkaline Filtration System for 30 – 45 minutes of which it will filtered all the sediments in the acidic water and turn it into Hi Alkaline Water.

Remarks:

The Hi Alkaline Filtration System, Fiber Glass Sediment Filter and NanoAg Hi Alkaline Carbon Block can be taken out and clean with clean water after each filtration.

After changes of new Fiber Glass Sediment Filter and the Hi Alkaline Carbon Block. Throw the used Fiber Glass Sediment Filter and Hi Alkaline Carbon Block into the EWC chamber to be incinerated.

Every 3 months : Change the Filtration Media.

a) Tray 1 = 15kgs HLC 4080 Flue Gas Carbon
b) Tray 2 = 15kgs HLC 5050 Flue Gas Carbon
c) Tray 3 = 15kgs HLC 2080 Flue Gas Carbon
d) Chamber Water Tank 1&2 = 2 drums Nanogreen Concentration Solution dilute with 230 Litres of water.

Remarks:

The already contaminated Flue Gas Carbon can be thrown into the EWC chamber to be incinerated.

Health and safety practices for Eco Waste Composter waste handling workers

Principles

Health-care waste management policies or plans should include provision for the continuous monitoring of workers' health and safety to ensure that correct handling, treatment, storage, and disposal procedures are being followed. Essential occupational health and safety measures include the following:#

- proper training of workers;#
- provision of equipment and clothing for personal protection;#
- establishment of an effective occupational health programme that includes immunization, post-exposure prophylactic treatment, and medical surveillance.#

Training in health and safety should ensure that workers know of and understand the potential risks associated with health-care waste, the value of immunization against viral hepatitis B, and the importance of consistent use of personal protection equipment.

Workers at risk include health-care providers, hospital cleaners, maintenance workers, operators of waste treatment equipment, and all operators involved in waste handling and disposal within and outside health-care establishments.#

Workers' protection

The production, segregation, transportation, treatment, and disposal of health-care waste involve the handling of potentially hazardous material. Protection against personal injury is therefore essential for all workers who are at risk. The individuals responsible for management of health-care waste should ensure that all risks are identified and that suitable protection from those risks is provided.#

A comprehensive risk assessment of all activities involved in health-care waste management, carried out during preparation of the waste management plan, will allow the identification of necessary protection measures. These measures should be designed to prevent exposure to hazardous materials or other risks, or at least to keep exposure within safe limits. Once the assessment is completed, personnel should receive suitable training (see Chapter 13).

Protective clothing

The type of protective clothing used will depend to an extent upon the risk associated with the health-care waste, but the following should be made available to all personnel who collect or handle health-care waste:

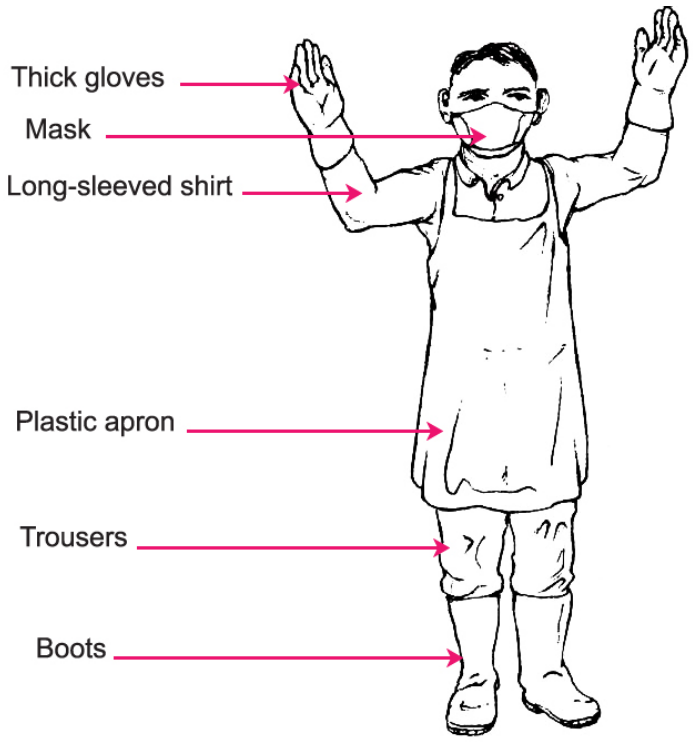
- Helmets, with or without visors—depending on the operation.
- Face masks—depending on operation.

- Eye protectors (safety goggles)—depending on operation.
- Overalls (coveralls)—obligatory.
- Industrial aprons—obligatory.
- Leg protectors and/or industrial boots—obligatory.
- Heavy-duty gloves (waste workers)—obligatory.

Industrial boots and heavy-duty gloves are particularly important for waste workers. The thick soles of the boots offer protection in the storage area, as a precaution from spilled sharps, and where floors are slippery. If segregation is inadequate, needles or other sharp items may have been placed in plastic bags; such items may also pierce thin-walled or weak plastic containers.

Operators of manually loaded Eco Waste Composter should wear protective face visors and helmets. During ash and slag removal and other operations that create dust, dust masks should be provided for operators.

Recommended protective clothing for Eco Waste Composter Waste Handler.



How Eco Waste Composter (EWC) Generate Plasma Negative Ion Compare to Traditional Plasma Incinerator

1) Traditional Plasma Incinerator need high temperature, at least 1000°C to generate negative ions. By using fuel like LPG Gas, Diesel Oil or Natural Gas M3 etc. To generate negative ions, thus need to forcibly heat up the incinerator.

2) Eco Waste Composter only using 19 sets of Plasma Reactors to generate the negative ions, even the temperature in the EWC is low, at the beginning around 100°C - 200°C within 30 minutes it will increase to 300°C - 500°C within 60 minutes. Subsequent burning of wastes in the chamber will increase temperature to more than 900°C - 1000°C.

   By using 2 blower fans to blow air through the Plasma Reactors that will bounce around in the EWC chamber, the magnetic fields created by the Plasma Reactors will impact all average motion in the chamber that will create a direction of rotation.

   This simple model of particle motion bodes well for the Plasma Reactors Concept.

   Left to itself, a plasma is like a gas that will occupy all the geometrical space available, because of the collisions between the particles. The Magnetic Fields created by the Plasma Reactors can confined the plasma ion and the neutral atoms are ionized. With the collisions that redistribute the energy, the temperature of the plasma increases.

Troubleshooting of Eco Waste Composter

Issue:

Fire put out once all doors are closed.

Possible cause:

1. High content of unincineratable waste inside
2. Air passage not secured.

Solution for item 1:

Please use incineratable waste

Solution for item2:

1. Check both the air intake fans (2 fans located within the battery chamber) and the exhaust fans (2 fans located within the exhaust ducts) are working properly.

2. Clean all filter medias to make sure there is no blockage

3. Make sure all ashes are cleared and the incineration chamber is cleared from any blockage, especially the bottom of the chamber before operation begins. It is recommended to wash the chamber to clear possible blockage.

4. Use enough fire starter, such as old newspaper and light it from both incinerator chamber and ash collection chamber.

5. Make sure the passage is not obstructed by previous waste residues (ashes) at the bottom of the incinerator chamber as well as filter medias.
   As long as there is enough air supply to the incinerator chamber, it should burn the domestic waste.