

*green*  **BLAZE**

MOBILE UNIT  
FOR DISPOSAL,  
DECONTAMINATION  
AND RECYCLING  
OF HUMAN WASTE



SYDNEY



# greenBLAZE IS A UNIQUE MOBILE UNIT

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*Turn any trash into cash!*

The greenBLAZE unit is intended for the processing of organic and biological human waste into environmentally friendly fractions and obtaining highly liquid energy carriers at the output after processing.

greenBLAZE is unique and unparalleled worldwide. It is able to solve completely, on a turnkey basis, the eternal problem of mankind – how to produce low-cost energy resources such as fuel, heat and electricity from waste directly at the place of its formation and/or storage without any harm to the environment.



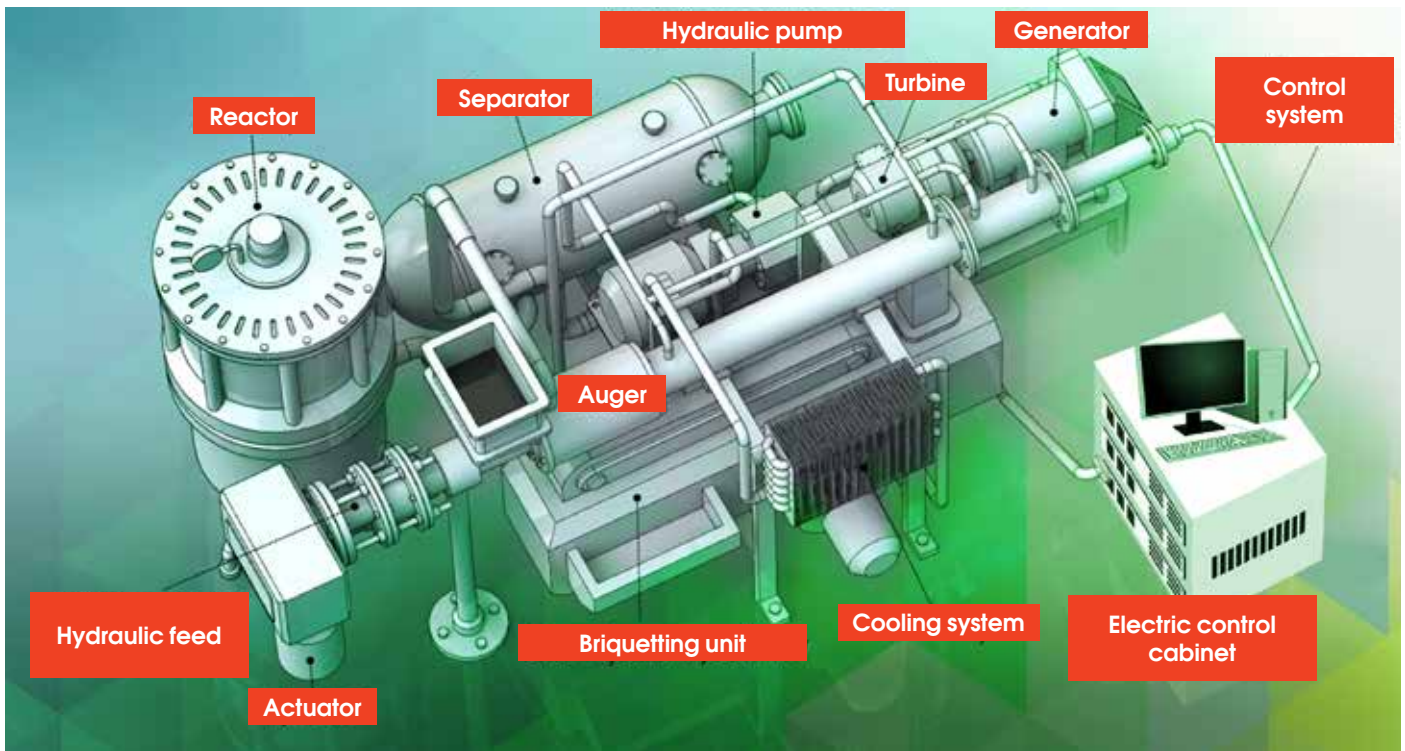
## greenBLAZE AREAS OF APPLICATION

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- Livestock and poultry farms, meat processing plants
- Landfills and waste processing plants
- Large industrial enterprises
- Maritime and river ports
- Communal facilities
- Waste water treatment systems
- Timber processing companies
- Coal mining industry
- Food manufacturers
- Retail complexes, hypermarkets and shops
- Railway stations, airports, seaports, and bus stations
- Other organic waste generators

# greenBLAZE MODULAR DESIGN

greenBLAZE is a circuit processor without open combustion, It operates on the principle of high temperature vacuum decomposition of any carbon-containing materials and compounds to produce a marketable product: electricity, heat, synthetic fuel, distilled water, cinder residue.



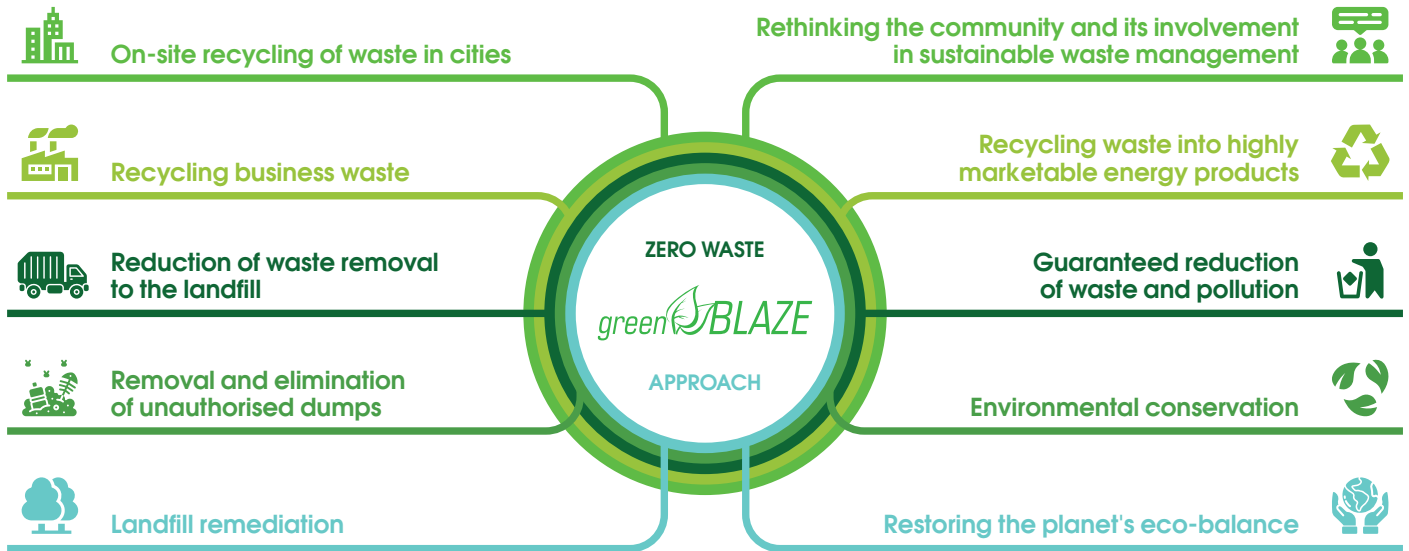
## NO HARMFUL EMISSIONS

greenBLAZE has an eco-friendly exhaust gas cleaning block, allowing to avoid Environmental pollution completely.

- A cyclone system removes suspended particles and dust.
- Post-combustion and distribution chamber reduces carbon monoxide (CO) emissions.
- To reduce the concentration of secondary hydrogen, hydrogen chloride, sulphur oxides, a we use a multistage purification column including Raschig rings and water vapour water vapour purification.
- Especially developed filters remove heavy metals from the gas phase.
- The formation of dioxins in the greenBLAZE unit is eliminated because temperatures in the local oxidation zone reach up to 1400°C. At a temperature of 1200°C dioxins decompose irreversibly.
- The formation of PCBs is prevented by the removal of chloride compounds through chemical processes inside the greenBLAZE plant, namely the production of nitromethane via chloroacetic acid.

# TRANSITION TO A CLOSED-CYCLE ECONOMY *greenBLAZE*

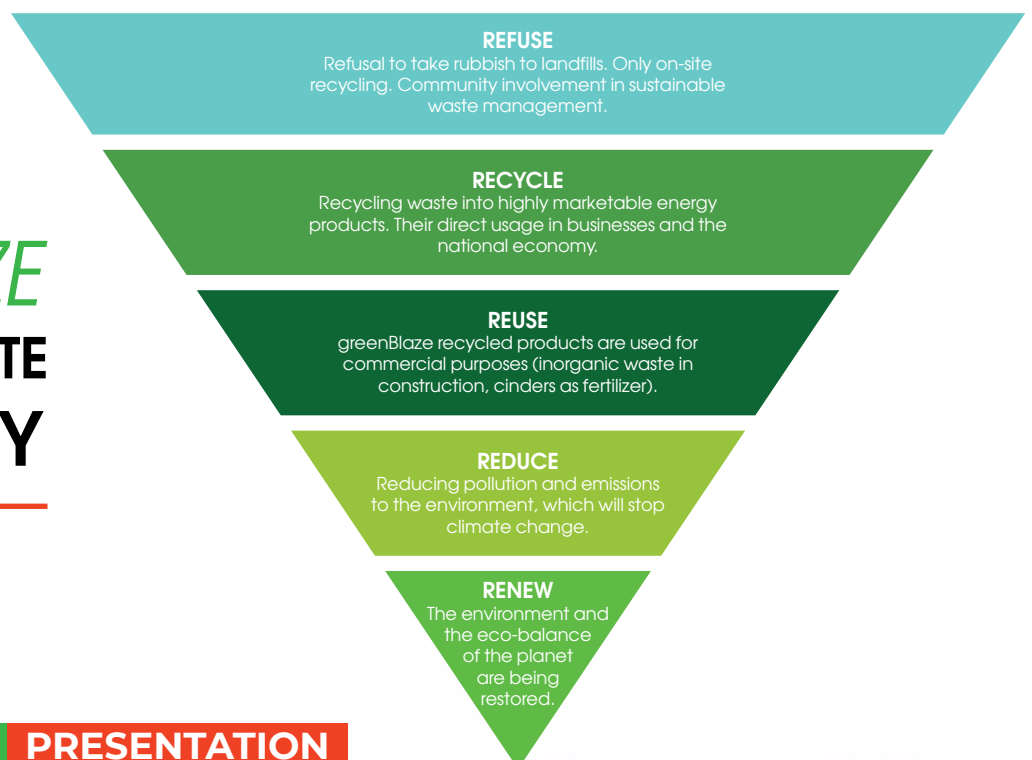
greenBLAZE is a realistic tool for transitioning to a closed-circuit economy, starting with individual companies and communities, individual city districts, moving on to corporations and cities, and ending with national governments and the United Nations.



## GREENBLAZE DECLARES TRANSITION TO ZERO WASTE

greenBLAZE creates a fundamentally new and sustainable approach in the waste management scheme. Waste is turned into raw material and a secondary resource for high-quality energy products. No need to take waste to landfill any more, no more harmful emissions! The environment and the eco-balance of the planet are being restored.

## *greenBLAZE* THE ZERO WASTE HIERARCHY



# A SUSTAINABLE FUTURE WITH *green*BLAZE

## INDUSTRY

Utilization of municipal solid waste

Oil refining industries

Manufacturing industries

Biotechnology industries

Housing and communal services

## TYPES OF WASTE

Municipal Solid Waste

Oil sludge | Petroleum coke | Fuel oil

Plastic and rubber waste | Wood waste | Coal coke

Medical waste | Waste of livestock farms and poultry farms

Industrial & Domestic wastewater

## OUTPUT PRODUCTS

Synthesis gas

Synthetic liquid fuel (High quality gasoline and diesel)

Electricity | Thermal energy

Distilled water

Cinder residue for construction purposes

## ECOLOGY & SOCIETY

No harmful emissions: furans, dioxins, etc.

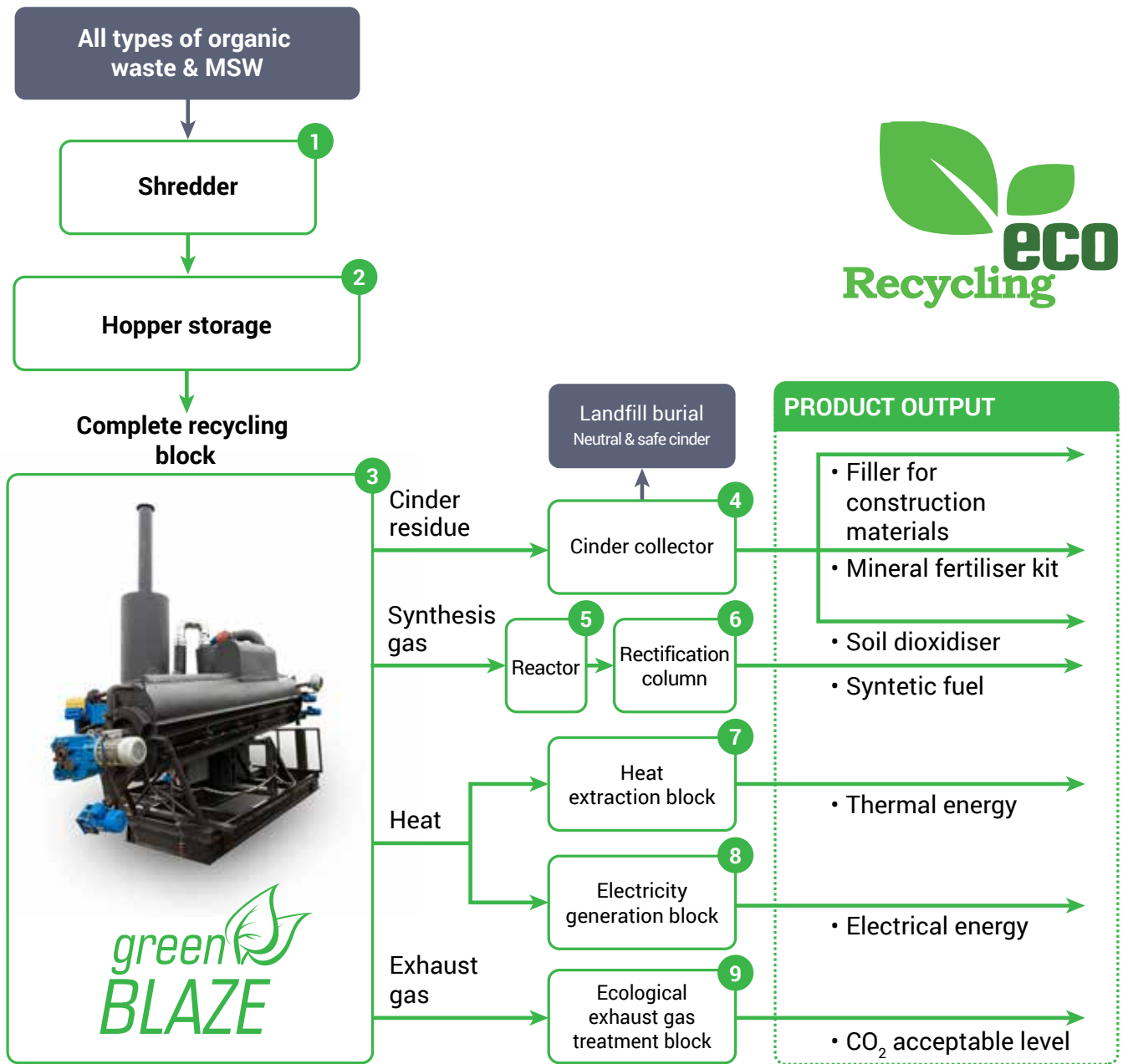
High safety level of the greenBLAZE Units

Elimination of landfills and burials of waste

Land reclamation and melioration of water bodies

Preservation of the ecological balance of the environment

Conservation of the planet's biological resources



All types of solid waste first pass the **Shredder (1)** for shredding. The shredder is followed by the **hopper storage (2)** which receives shredded solid waste and liquid waste, so that all waste can be collected together in one place and fed to the **greenBLAZE (3)** for processing at a uniform 24/7 speed. The greenBLAZE is a mobile closed-circuit recycling processor without open combustion processing organic waste completely using a multi-stage vacuum-thermal decomposition reaction of organic carbon-containing materials with heat release output, resulting in molecular synthesis gas and cinder residue.

The cinder residue is deposited in the **cinder collector (4)**. The cinder residue is finely dispersed and completely inert with respect to secondary reactions of lithified mass, is not hazardous and can be used for filling road surfaces, as a filler for building materials, and is an excellent mineral fertilizer and soil deoxidizer.

To obtain synthetic fuel, synthesis gas is sent to the **reactor (5)**, serving for production of hydrocarbon compounds. To separate hydrocarbon compounds by draw downing, the **distillation column (6)** is used, where the necessary fuel is obtained.

To obtain heat and electricity, synthesis gas is burned inside the greenBLAZE in an afterburner. The **heat extraction block (7)** is used for heat extraction as a commercial product. To receive electricity, generated heat is taken off and fed to the **electricity generation block (8)**. The electricity generation block consists of a hydro turbine, closed water circuit with a 33 m tower, and generators.

The exhaust gases from the combustion of the synthes gas are fed to the **ecological exhaust gas treatment block (9)**, where CO<sub>2</sub> is reduced to a fraction of the minimum permissible level.

# TYPES OF RECYCLED CARBON-CONTAINING WASTE AND POST-PROCESSED PRODUCTS

## TYPES OF WASTE RECYCLED BY *green*BLAZE



Poultry and livestock waste



Waste wood



Food waste



Agricultural waste



Sewage sludge deposits



Solid municipal waste



Organic waste from chemical industry



Waste from oil production and refining



All kinds of plastic



Technical rubber goods



Medical and biological waste



Used motor oil



Coal and coal waste



Associated gas

The greenBLAZE unit does not require rubbish/waste to be presorted at all. It also freely recycles modern composite materials and plastics without damaging the environment!



## OUTPUT PRODUCTS



Synthetic fuel



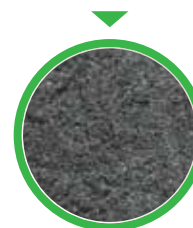
Electricity



Heat



Distilled water



Cinder residue

# greenBLAZE IS CREATING A SUSTAINABLE APPROACH TO WASTE MANAGEMENT

## WASTE MANAGEMENT AND DISPOSAL NOW

- High costs of accumulating waste and transporting it to landfills or recycling facilities.
- The problem of overflowing landfills and landfill sites near settlements.
- A huge list of non-recyclable and nondegradable types of waste that are simply dumped and accumulated in landfills.
- Different requirements for the disposal of waste with different hazard classes, and as consequence different disposal methods and additional costs for waste generating enterprises.
- When landfill sites are set up huge areas are contaminated for decades to come.
- There is a constant need to open up new landfills to replace the overflowing ones.
- Waste dumped and buried at the landfill is not used in any way in human life, and is not useful, decomposing, polluting and poisoning the environment.
- Today's incineration plants are usually powered by natural gas or liquid fuels. The cost of these resources is high and steadily rising.
- Other types of waste disposal and recycling, such as incineration in landfills or low-temperature pyrolysis, are very harmful to the environment. Existing technologies emit a number of toxic and harmful substances into the atmosphere, unfortunately, even the installation of additional treatment facilities does not guarantee 100% safety. This entails an increased burden on businesses in the form of fines for environmental damage.
- Alternative technology equipment is installed directly at the site of use, usually at a landfill site, and cannot be relocated at a later date. Dismantling the equipment is either impossible or extremely costly.

## WASTE MANAGEMENT AND DISPOSAL USING greenBLAZE

- + A reduction of waste volume by the factor of 10, and a reduction in waste management costs of waste management by more than 50%.
- + With greenBLAZE, there is no need for appearance of unauthorised landfill sites and new landfills are not necessary.
- + The greenBLAZE unit recycles all known types of organic and human waste without polluting the environment.
- + The greenBLAZE unit outcome product after organic waste treatment is a neutral and safe cinder residue, irrespective of the type and class of waste originally disposed.
- + With the greenBLAZE unit, it is possible to reclaim existing landfill sites without opening new ones, recycling the newly produced waste directly on site.
- + The greenBLAZE unit uses rubbish as fuel, generating large quantities of synthetic fuels, electricity, and heat that can be used at home and in industry.
- + The greenBLAZE unit operates on the principle of partial oxidation with heat release and does not require additional fuel to enrich the waste oxidation process. This lowers the cost of recycling.
- + The greenBLAZE unit includes an environmental block for purification exhaust gases into the atmosphere. The operation of greenBLAZE is pollution-free. The emission control performance of the greenBLAZE exceeds the European 'Euro-5' standard.
- + The greenBLAZE units are mobile. They can be easily transported to waste storage sites, require no infrastructure connection, can be set up on site and are ready for operation in 12 hours. By adding units, a rapid increase in capacity is possible.





### ANY WASTE RECYCLING LOCATION

greenBLAZE units installations can be used at any waste sites and landfills with a complete lack of infrastructure: landfills, waste generating sites, cities and industries, agricultural land, etc.



### RECYCLING OF ALL KINDS OF WASTE

The greenBLAZE unit is adapted to handle any composition of organic (carbon-containing) waste fed into it. From now on, there is no need to pre-separate and sort the waste.



### SHORT PAYBACK PERIOD

greenBLAZE units have low capital costs and operating expenditures. The fuel for the operation of the greenBLAZE units is the organic waste itself. Output energy products after waste processing have a low prime cost, but at the same time a high market price.



### ENVIRONMENTAL FRIENDLINESS

The emissions and output products (carbon dioxide, cinder residue, water) from the greenBLAZE unit are completely environmentally friendly. The disposal of hazardous and contaminated waste results in the complete elimination of dangerous pathogens.

# 7 REASONS WHY YOU SHOULD USE



### MOBILITY & MODULARITY

The cassette-modular approach allows controlling the volume of waste recycling directly on site by quickly increasing or decreasing of greenBLAZE units' installations at no extra cost. greenBLAZE units can be delivered by all modes of transport.



### EASY OPERATION & RELIABILITY

The greenBLAZE unit is absolutely safe: low noise, non-explosive, no open combustion. The greenBLAZE unit has low power consumption, quickly enters the mode and is easy to operate & maintain. Service maintenance does not interrupt the recycling process.



### PROFITABLE BUSINESS THROUGH NATURE REGENERATION

greenBLAZE is a cutting-edge and lucrative solution, capable of converting wastes into green alternative energy sources, preserving natural resources of the Planet. Return of reclaimed lands of landfills to economic circulation.

# greenBLAZE APPLICATIONS IN WASTE MANAGEMENT SYSTEM



## REDUCING THE VOLUME OF WASTE BEFORE GOING TO LANDFILL

The greenBLAZE unit is adaptable and can handle any composition of organic (carbon-based) waste fed into it. The waste does not need to be separated and sorted beforehand.

## DISPOSAL OF CHICKEN AND PIG MANURE

The greenBLAZE units completely process chicken and pig manure without the use of any additional enrichment fuel. The pathogenic microflora of manure is completely destroyed in greenBLAZE units due to molecular chain breakdown.



## LIQUIDATION OF UNAUTHORIZED LANDFILLS

The mobile greenBLAZE units will recycle unauthorized landfills cost-effectively and environmentally friendly. This eliminates the need to move them to legal landfill sites for reburial.

## DISPOSAL OF SILT DEPOSITS & SLUDGE OF PURIFICATION FACILITIES

The greenBLAZE units can be easily integrated into existing wastewater treatment systems and can dispose of silt deposits and organic sludge directly at the point of their accumulation and formation.



## DISPOSAL OF EXPIRED FOODSTUFFS

The mobile greenBLAZE units process all kinds of foodstuffs, fats and meat and bone scraps. The output is neutral cinder, which can be used as a mineral fertilizer complex.

# USAGE OF INSTALLATIONS *green*BLAZE IN THE ELIMINATION OF ENVIRONMENTAL DAMAGE



## RESTORING THE ECOLOGICAL BALANCE IN CONTAMINATED AREAS

The greenBLAZE units can be used for the remediation of contaminated land and for the clean-up of man-made accidents and disasters (oil and oil product spills).

## ELIMINATION OF MOTHBALLED WASTE SITES AND LANDFILLS

The greenBLAZE units can be used for the destruction of mothballed and open landfill sites. greenBLAZE also processes organic waste that is in a deep decomposition stage.



## *green*BLAZE APPLICATIONS IN THE FUEL-ENERGY CLUSTER



### MOBILE POWER STATION

One greenBLAZE unit can produce 1 MWh of green electricity in a mobile or stationary version, by reclaiming and recycling 1 ton of low-grade coal directly at the coal storage site (including temporary storage) and other carbon-containing waste, such as wood, waste tires and other high energy waste.



### HEAT SUPPLY MANAGEMENT

One greenBLAZE unit can produce up to 1.5 Gcal of thermal energy per hour from organic waste, both in the mobile and stationary version. The design of the greenBLAZE unit initially includes a heat recovery unit (including a mains unit), which makes it possible to connect the greenBLAZE unit to the existing heating network of residential and industrial premises.

### Volume of waste recycled per hour:

(examples of different types of recyclable waste are given, with quantities varying according to their energy and humidity levels)

- MSW – 1.5 to 2.5 m<sup>3</sup>/hour
- Wood – 950 to 1 200 kg/hour
- Coal – 480 to 640 kg/hour
- Peat – 560 to 800 kg/hour
- Palm seed cake – about 900 kg/hour
- Chicken manure – 2 to 3 tons/hour

### Production of commercial output products per hour:

#### Option 1

- Electrical energy: 1 000 kW
- Heat: 0.5 Gcal

#### Option 2

- Synthetic fuel: 200 liters
- Heat: 0.5 Gcal

### Placement of the unit and its mobility:

- All equipment is housed in two 40ft containers
- Set-up time of the unit: 12 hours
- The cassette-module approach: allows the waste treatment capacity to be increased by attaching additional units (modules), and the units/s can be easily and quickly relocated to a new location

### Products after processing organic waste:

- Neutral and safe ash residue in the amount of 1-1.5% (depending on the morphology of the waste to be processed)

### Service staff per shift:

- Operator – 1 employee (engineering degree)
- Handyman – 1 employee (unskilled)

### Unit operating mode:

(Customer's choice)

- Continuous: 24/7/365
- Intermittent: up to 8500 motor-hours per year

### greenBLAZE unit warranty:

- 3 years

### Lifetime of greenBLAZE unit:

- At least 15 years

### Service maintenance for the greenBLAZE unit:

- Once a year (duration of service 14-20 days)
- Service charges: no more 5% of the unit' price

### Climatic operating conditions of the unit:

- -50°C ÷ +60°C

### Harmful emissions and discharges:

- Are kept to a minimum

### Sanitary protection zone:

- Is reduced as much as possible (up to exclusion)

## CUSTOMER INFORMATION

### Final cost of greenBLAZE unit:

- Depends on individual requirements of Customer, the specification of waste and the volume of waste processing, the need to use additional equipment and the type of required output energy products after processing

### Price of the greenBLAZE unit includes:

- Customer's personnel training (held during pre-commissioning);
- Installation & Commissioning

### Production time:

- 4 - 7 months (depending on configuration of the greenBLAZE unit)

## We are always in touch



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