THE PYROCLAST CARBON®

Carbon production from waste

The Pyroclast® carbon unit is designed for final waste disposal and carbon production. This is its primary intent. Energy recovery can easily be added, in the form of an Organic Rankine Cycle power unit, although this is not a component in the standard package.

It is a stark fact that waste needs to be disposed of in ever increasing quantities. The ideal methods of disposal include recycling and energy production. However, recycling does not remove all of the waste and energy recovery is complex, often being not readily viable, and taking months, if not years to bring into action.

Where simple waste disposal is required, the Pyroclast® is a perfect solution. It may be immediately transported to site, being mounted into a standard ISO container, and put to work with the minimum of site works. It is capable of operating twenty-four hours a day, taking waste and producing a clean ash, subject to the feed-stock being traditional municipal solid waste. Where required, the product may be carbon char. Carbon char is a sought after soil conditioner, as well as means to reduce carbon (greenhouse gas) in the atmosphere.

The Pyroclast® is available in two capacities: 12 tonnes per day and 24 tonnes per day. Larger throughputs may be handled by the Pyroclast® by means of multiple modules. With a typical municipal solid waste this would convert to between 0.25 MW and 1 MW across the two sizes. A drier waste with a high plastic content would be close to the maximum with the larger unit. Each location is different and needs to be assessed individually.

The Pyroclast® employs patented technology to achieve clean emissions with typical municipal solid waste. Where a more toxic waste is to be disposed of, for example clinical waste, a separate emissions control module may be added.

KEY FEATURES

CLEAN WASTE DISPOSAL IN-SITU

SKID MOUNTED INSTALLATION FOR EASE OF USE AND RE-LOCATION

CLEAN EMISSIONS

PURE PYROLYTIC ATMOSPHERE FOR THERMAL REDUCTION

BASE-UNIT FOR MIXED WASTES MAY BE SET UP TO PRODUCE ENERGY VIA AN ORGANIC RANKINE CYCLE

ABILITY TO DISPOSE OF HAZARDOUS AND CLINICAL WASTE STREAMS TO VERY HIGH ENVIRONMENTAL STANDARDS

SUITABLE FOR MINED LANDFILL WASTE

AN ECONOMICAL INVESTMENT FOR WASTE TO ENERGY PROJECTS

ISO 9001 REGISTERED FIRM

SPECIFICATION DATA

Mass flow rates available:

Pyroclast I
6 to 20 tonnes (wet) per day
4 to 12 tonnes (dry) per day

Pyroclast II
6 to 40 tonnes (wet) per day
4 to 24 tonnes (dry) per day

Availability:
Normal operation: 85%
Preventative maintenance: 90%

Moisture content:
Moisture will reduce thermal energy available. The unit is designed for 20% moisture content (wet basis) but can take larger amounts.

Waste types:
- Biomass of many varieties
- Sorted municipal solid waste
- Clinical waste
- Thermally degradable hazardous waste

Thermal energy capacity
Using MSW with a 20% (wet basis) moisture content, thermal energy capacity is as follows:

6 w tonnes/day: 3 tpd
40 w tonnes/day: 20 tpd
100w tonnes/day: 50 tpd

Footprint
Modules are built into a single 40ft high-lift container.

TECHNOLOGY

The Pyroclast utilises the patented-protected Clean Pyrolysis Process for the introduction of high-heat loadings into the pyrolysis chamber by unique means. The technology involved is not comparable to incineration, where flames and burning zones need to be controlled. Pyrolysis occurs in the absence of air and, more specifically, oxygen. It is a thermal degradation process, equivalent to melting, where solid matter is converted into its gaseous form without the presence of flames. Taking water as a metaphorical example, the conversion is from ice (solid) to steam (gas) without the production of water (liquid).

A Pyroclast applied to raw municipal solid waste will require front-end sorting equipment to prepare the feedstock for the pyrolyser. This equipment normally involves rotary screens and other such machinery, to classify the waste stream according to its make-up and the requirements of the overall process. When applied to landfilled waste, the Pyroclast front-end can be much simpler, involving a fully mechanised process of one or two rotary screens.

Front-end drying is not an essential requirement. Drying will take place within the pyrolyser. However, a front-end dryer will increase the capacity of a single unit and may be added as an option.

Wet biomass feed-stocks are initially shredded down to an acceptable maximum size. They are then passed into the pyrolyser through a compacting-feed screw.

Pyrogas and syngas are immediately destroyed in a high-temperature thermal oxidiser, ensuring maximum environmental protection. Heat that is not used is dumped.

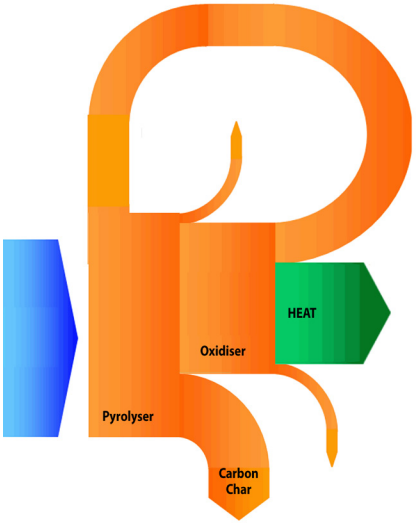
THE PYROCLAST RANGE

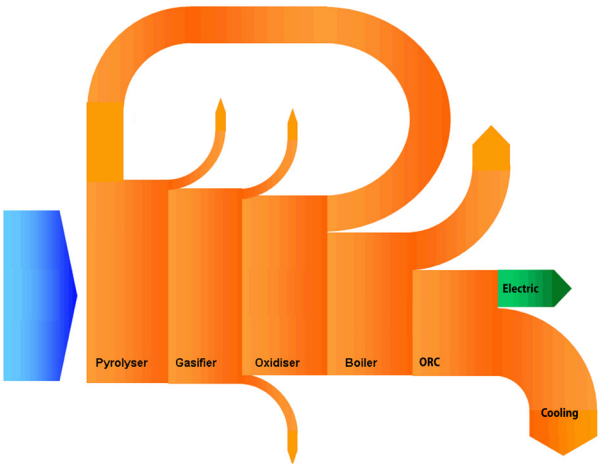
The Pyroclast Range is designed around equipment sizes that can be built into ISO containers for ease of shipping and deployment. The Pyroclast is, therefore, a highly mobile unit for waste disposal in an environmentally sound and thermally efficient manner.

The Pyroclast may also be installed into buildings for long-term applications, such as for use as the primary disposal method in small communities. It may be run in extended operation campaigns, operated on a continuous basis or simple as and when required.

The output from this unit is ash and heat. For most biomass and municipal solid waste applications, the ash is non-toxic and may be used in various industries as a bulking agent. Heat may be used or dumped. Ideally, it should be employed but this is not always commercially practical.

Where preferred, the gasification of carbon char may be omitted. This will result in the production of a carbon char which can be used to condition soil, as depicted in the Sankey Diagram below.





The Pyroclast is primarily designed to address waste disposal. However, it may also produce energy, as shown in the adjacent Sankey diagram.

Waste heat may be recovered and used within an Organic Rankine Cycle package to produce electricity.

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