pyrolysis-based energy and recycling systems

LightHouse
Making Brands & Businesses Better

Although wastes seem an insoluble problem for the world, they initiate great business opportunity!

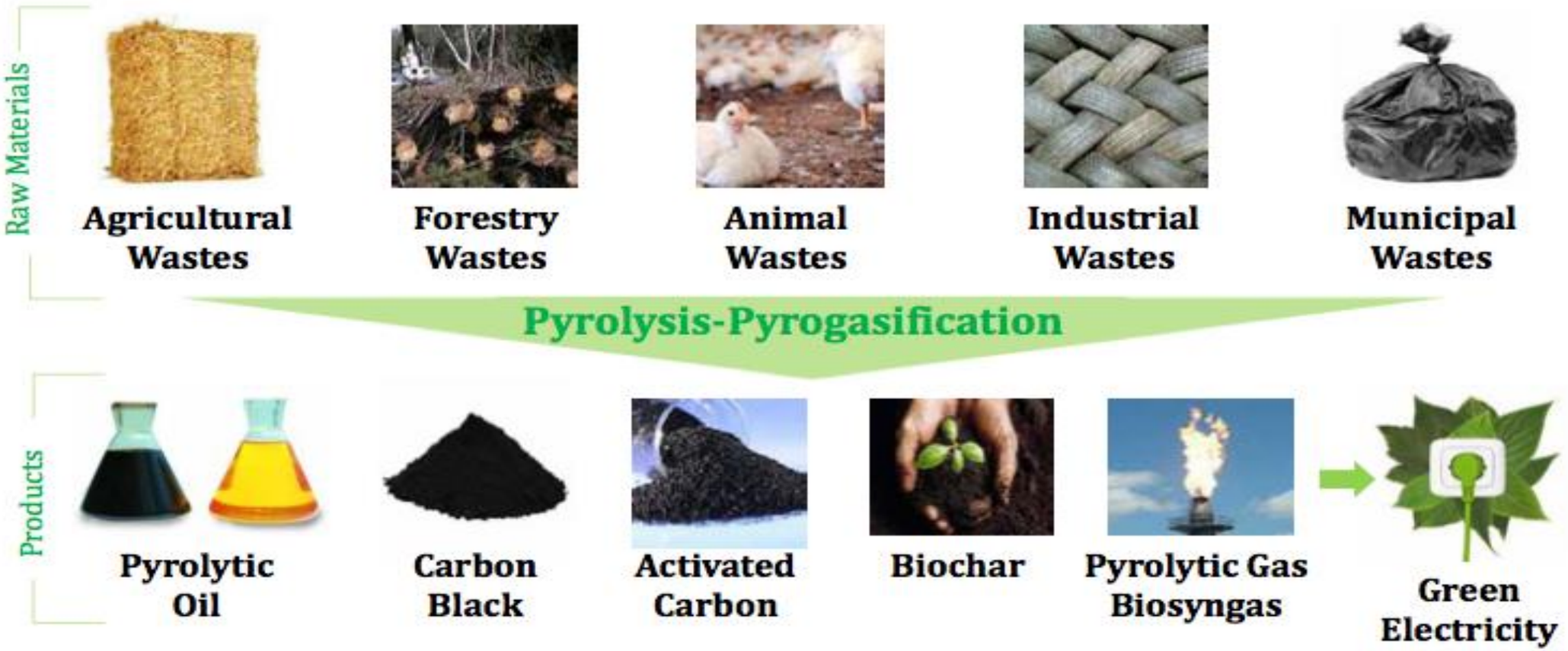
Annually 20 million tons of waste tires are disposed of by more than 800 million vehicles.

In developed countries, an annual 572 kg of municipal waste per person is generated.

Million tons of agricultural, animal, forestry and industrial waste yield valuable and low-priced raw material for energy generation.

Pyrolysis-Based Energy and Recycling Systems

Pyrolysis process converts various types of waste material into the value-added products



Pyrolysis Technology

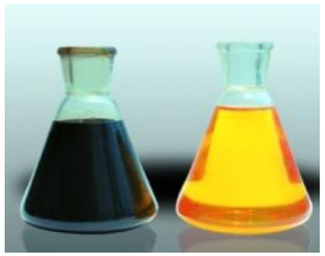
Pyrolysis can be defined as thermal decomposition that converts organic compounds into gas, liquid and solid products in the absence of oxygen.

Pyrolysis is based on the degredation of waste, with or without a catalyst, at inert, vacuum or hydrogen environment. During the degredation, bond rupture and ring fragmentation of waste occurs, which eventually generates liquid products together with non-condensable gases and solid chars.

Basic advantages of Pyrolysis :

- Waste is completely converted into products.
- It can be applied to all kinds of organic substances and waste materials.
- The heat, required by the system to operate, is supplied by the pyrolysis products.
  - Therefore, energy costs are extremely low.
- There is no usage of chemical additives during the process.
  - Thus, it is a nature-friendly technology.
- Product yields can be varied effectively by controlling process parameters.

Primary Products of Pyrolysis



Pyrolytic Oil

Pyrolytic oil is produced through the pyrolysis process. The yield and the calorific value of the pyrolytic oil is varied according to characteristics of waste material, *e.g*. the yield and the calorific value of pyrolytic oil from tires are >40% and >10,000 kcal, respectively. Oil from poultry waste has 8,000 kcal heating value. The oil can be directly burned in generators to produce electricity, moreover, it can be converted to diesel fuel through distillation.

Pyrolytic Gas

Pyrolytic gas is produced through the pyrolysis process. Gas washing and conditioning processes constitute gas mixture that contains high quantity of hydrogen as well as methane, butane and propane. Depending upon the characteristics of waste, the yield and the calorific value of this mixture are in the range of 10-50% and 8,000-13,500 kcal, respectively. This mixture can generate electricity directly in gas generator/turbine.

Carbon Black / Biochar / Activated Carbon

Pyrolysis process yields carbon derivatives. Although property of those products depend on waste structure, they all have a high market value. Carbon black is used in the rubber industry, used as pigment in textiles, powder coatings and printing inks as well as filler material in leather and plastic production. Activated carbon is used in gas masks, filters, dialysis instruments, and many other areas in which filtering process is important. Biochar is a type of unique fertilizer that aerates the soil and assisting plant root to move with more ease.

Steel Scrap

It is a product obtained from waste tires before the pyrolysis process.. It is a valuable raw material for steel factories.

Our Concentration is:

Waste tires…

From Waste Tires to Valuable Products…

The Plant

- Capacity:
  - Starting from 10 tons/Day
  - Up to 350 tons/Day waste tire process
- Input - Raw material:
  - Waste Tires (except OTR tires)
- Place of the Investment:
  - To be determined
  - Preferably in Industrial Zones

Proven Technology

Our technology proved itself as one of the best systems in the world

Plant Constitutes of:

- Shredding Building
- Factory Building
  - Reactors
  - Distillation Units
  - Mixer & Preparations Units
- Tank Areas
- Management Building
- Stock Areas

Factory in Biga / Çanakkale / Turkey

Process Outcomes

According to stated capacity (50 tonnes/day waste tire process) the waste tire recycling process generates the following major outcomes

- Tonnage of Outcomes :

  After Processing 50 tons waste tires daily, the approximate figures are :

  - Waste Steel – 8,8 tons/daily
  - Carbon Black – 9,3 tons / daily
  - Pyrolytic Oil – 14,9 tons / daily
  - Pyrolytic Gas - remaining volume

  These tonnages may differ to the structure of the waste tires.

- The factory uses Pyrolytic Gas for itself in order to generate heat energy.

- The factory sells the waste steel (steel scrap) directly to the melting, iron founding factories and the steel companies with induction processes.

Milestones & Timing

- Agreements
- Site Inspection
- L/C Opening & Machine Order
- Preparation of Machine Placement Plans (Layout)
- Machinery Shipment
- Factory Preparation (Floor, height, electrical infrastructure, etc.)
- Mounting & Installation
- Staff Recruitment
- Trial Productions
- Start of Plant

Approximately 6 – 7 months

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