PLASTOENERGY

By

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Introduction

Plastics have become almost an integral part of societal use, but leading to serious concern for environmental problem. Plastics are comprised of network of molecular monomers and they are non-biodegradable. Over 300 million metric tons of plastic are produced annually in the world and 50% or more than that are discarded as waste.

This alarming amounts of plastic waste is forcing health hazards. Effective plastic waste management techniques are the needs of the day specially country like India which is progressing very fast. Keeping in mind the above, we have developed a project Called “Plasto Energy” converting of waste plastics into fuel

Scientific Principle Involved

Raw Material	Processing	End Products
Waste Plastic: 12,000kg (Post Consumer Plastic Waste, Industrial Plastic Waste, Laminates, Packaging Waste, Paper Mill Waste Plastic, Municipal Solid Waste Segregated Plastic)	**Pyrolysis Reaction** in presence of catalyst & in absence of oxygen at reaction temperature of 350 to 450°C. Hydrocarbon gas produced in processed is used to achieve reaction temperature.	**Pyrolysis Oil & Base Oil: 7,000 to 11,000kg** Oil is used as a fuel in industrial burners and electricity generators. Base oil is used for manufacturing lubricants. **Carbon Black:** (Used as replacement to Coal)

Materials used

Shredder

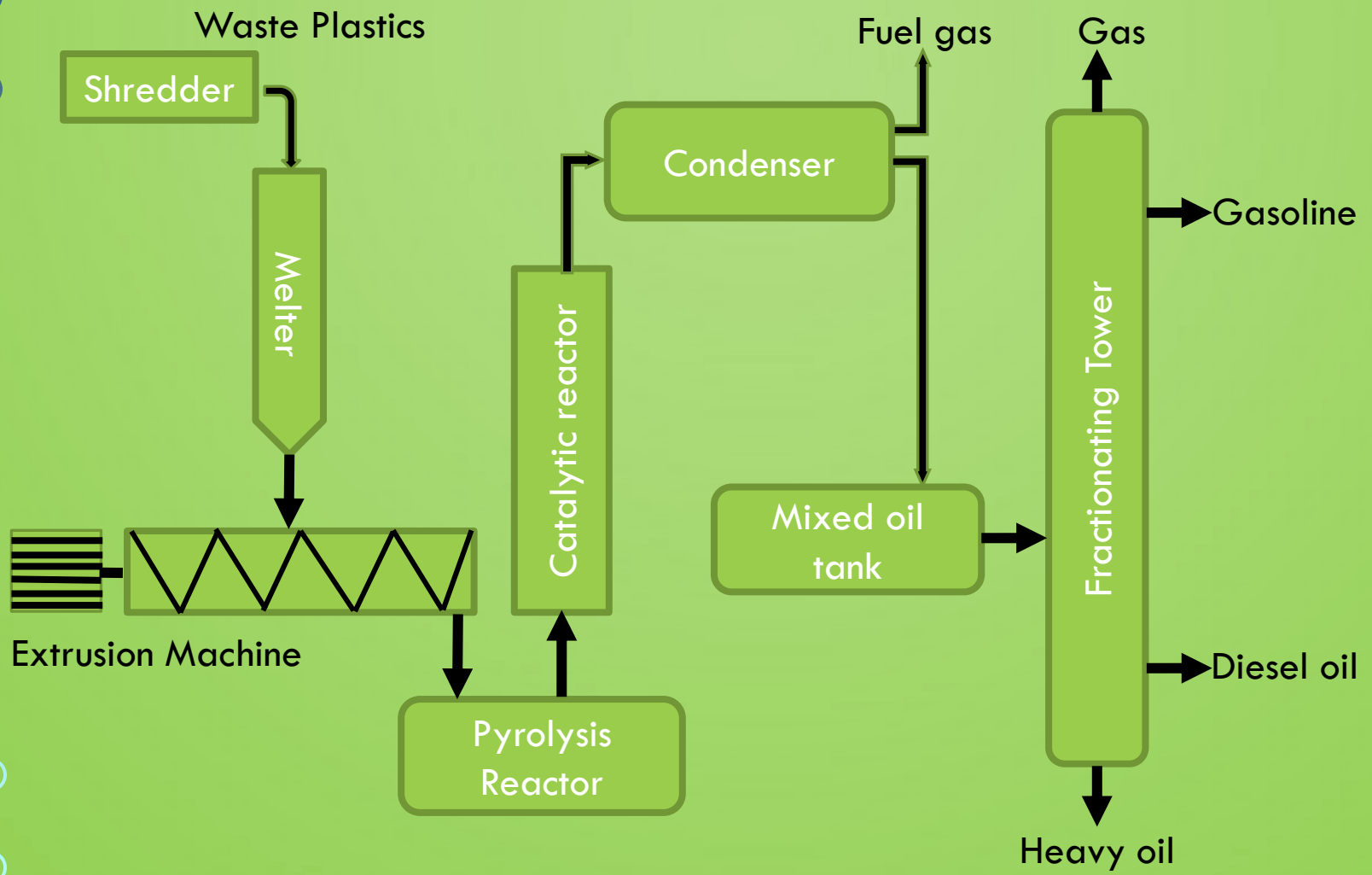
Boiler or Reactor

Condenser Pipes (for cooling)

zeolite

Steel container

Process Flow



Construction and Working

- To convert the waste plastics into a liquid fuel we have used catalytic pyrolysis process.
- This technique breaks down polyethylene with less energy and produces a high end product.
- First shredded plastics added with zeolite (zsm-5) a catalyst put into the boiler.
- In boiler, plastic will be melted (it will not bun) and started boiling and evaporates as vapour.
- Vapour passes through a cooling pipe and cooled in condenser .
- Vapour turns in to liquid and some of the vapours with shorter hydrocarbon lengths will remain as a gas.
- At around 400 degree centigrade the plastic waste will be converted into a liquid fuel.
- By this way we can produce plastic fuel.
- To know the pressure and temperature inside the boiler, pressure and temperature gauges are used.

INTERACTION WITH IIT PROFESSOR

DR. INDUMATHI

&

RESOURCE STUDENT Ms. SIVAGAMI

Photograph of Prototype and Team

PlastoEnergy Team with IIT Professor

Prototype of the Project

Research on the Project

To learn about the process in depth, Plasto energy team visited IIT Madras and collected more information about the actual model.

IIT Madras had made a small-scale prototype which can be converted up to 10 kgs of shredded plastic into fuel, water and some non-condensable vapors which is again reused in the model.
The cost of making the model sums up to INR 4 lakhs.

Our visit to IIT Madras and Prototype Demo Video

Advantages

- Best way of recycling of plastic waste.
- Protects the environment
- Conserves the valuable petroleum resources.
- The main product of fuel from plastic, when refined properly, is a diesel with greatly reduced sulphur content.
- Plastics-to-fuel technologies are expected to be particularly helpful in nations like India where fuel prices are high and landfill options are limited.
- Communities now have the potential to create some of their own fuel locally, providing economic and environmental benefits.

AFTER IIT CHENNAI VISIT, MADE A PROTOTYPE MODEL FOR PLASTOENERGY.

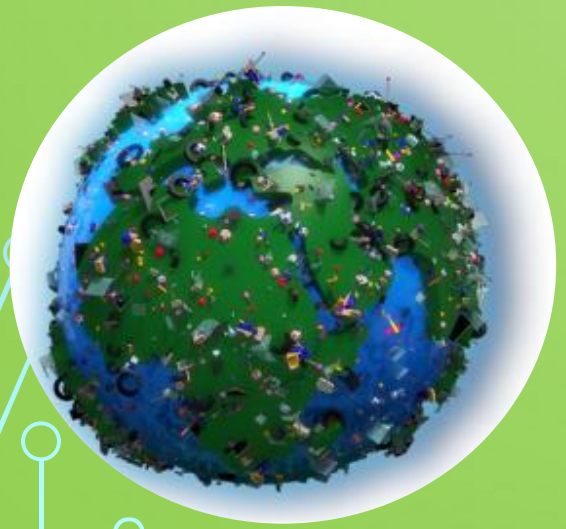
Conclusion

- Plastic waste management has assumed great significance in view of the urbanization activities.
- Various strategies are being devised to mitigate the impact of plastic waste in India and the world.
- Some significant challenges still exists from both technological and from economic or social behaviour issues relating to the relative collection of recyclable wastes ,and substitution for virgin material.
- We can make plastic fuel energy efficiently and we can burn plastic very cleanly

So, what are we waiting for?

PLASTOENERGY - ALTERNATIVE FUEL

“Lets go clean
To get
Our globe green”



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