



TURNING WASTE INTO ENERGY >>>

ABOUT US

Polymer Energy® LLC., a division of Northern Technologies International Corporation (NTIC), has developed an innovative, environmentally responsible system for processing nuisance plastic waste into energy, specifically hydrocarbons or crude oil.

The Polymer Energy System uses a process called catalytic pyrolysis to efficiently convert plastics to crude oil. The system provides an integrated plastic waste processing system that offers an alternative to landfill disposal, incineration and recycling.



The Polymer Energy System can turn this plastic waste into useable energy.

SYSTEM ADVANTAGES








- Environmentally responsible waste management solution
- Cost-effective
- Modular design, easily scalable plant capacity
- Self-cleaning unit minimizes offline maintenance
- Solution for nuisance and difficult to recycle plastic waste

TECHNOLOGY

Inputs

The Polymer Energy System will process polyolefins such as polyethylene and polypropylene with up to 15% of other plastic materials and contaminants such as paper, glass, sand and water.

The Polymer Energy™ System Plastic Input Guidelines

Resin Code	Type	Example	Guideline
 PET	PET	Plastic Bottles for Soda and Water, Microwave Food Trays, Textiles	Not Recommended
 HDPE	HDPE	Plastic Bags, Milk Jugs, Detergent Bottles, Cosmetic Bottles	Recommended
 PVC	PVC	Shrink Wrap, Pipe, Siding, Blister Packs, Laminate Flooring	Not Recommended
 LDPE LLDPE	LDPE LLDPE	Bags for Dry Cleaning and Produce, Stretch Wrap, Wire Coverings	Recommended
 PP	PP	Bottle Caps, Appliances, Automotive Parts, Computer Parts	Recommended
 PS	PS	Cutlery, Cups, CD Cases, Packing Peanuts, Food Containers, Styrofoam	Not Recommended
 OTHER	Other	Mixed or Layered Plastics	Varies Depending Upon Type of Plastic

Outputs

Polymers from plastic waste are converted to oil, vapor, water and solids. The output oil does not contain Cl, S, N or heavy metals and 1 kg. of plastic waste yields up to .78 kg. of final product. A single Polymer Energy Unit generates up to 300 liters of finished product per hour (assuming 15% moisture and other products mixed with the plastic waste).



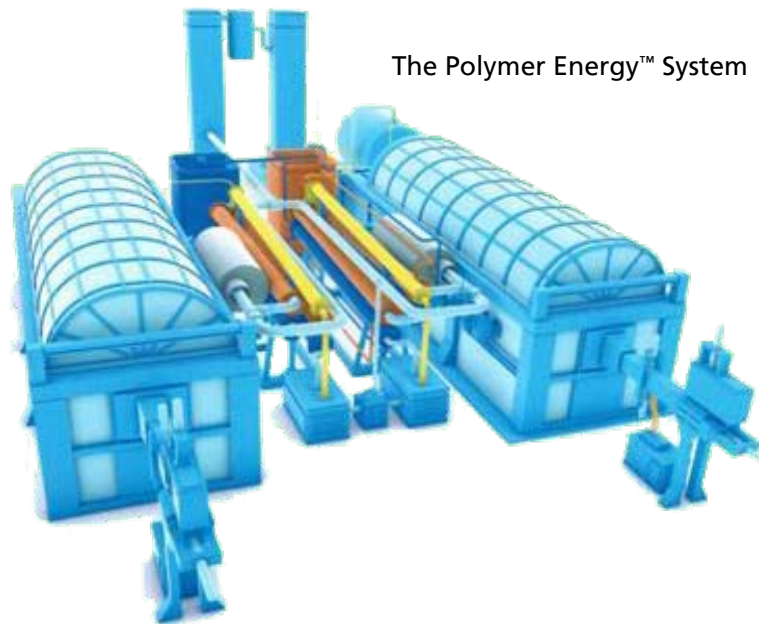


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SYSTEM DATA

Polymer Energy System							
Process	Random Depolymerization (selective breaking of carbon to carbon bonds)						
Input Materials	PP and PE plastic waste and catalytic additives						
Plastic Conversion Results	Liquid hydrocarbons, vapor and water						
Volume Produced	720 liters per ton of waste plastic processed*						
Energy Ratio	Up to 18 BTU (for every BTU input energy, 18 BTUs are produced)						
Operating Commercial Sites	<table border="1"> <thead> <tr> <th>Qty</th> <th>Size</th> <th>Location</th> </tr> </thead> <tbody> <tr> <td>11</td> <td>10 MT</td> <td>Poland, India, Thailand</td> </tr> </tbody> </table>	Qty	Size	Location	11	10 MT	Poland, India, Thailand
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11	10 MT	Poland, India, Thailand					
Feed System	Assorted packaging materials are fed directly into the reactor. Materials such as car bumpers, dash boards and battery casings require crushing prior to being fed into reactor.						

*Results will vary based on moisture of content, impurities and types of plastic in each ton of plastic. Calculations are based on 15% moisture and other waste products mixed with the plastic.



The Polymer Energy™ System



Part of the Polymer Energy System

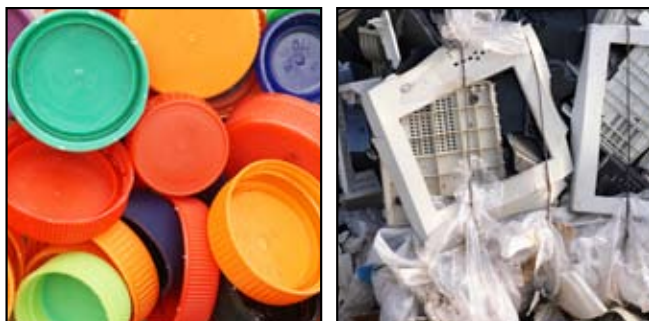
UNIT DIMENSIONS & WEIGHT

	Length Meters	Width Meters	Height Meters	Weight Tons
Reactor Box	7.8	1.8	2.3	15
Condensing Unit	6	1.1	2.2	5
Product Tank	6	2.6	2.6	7
Control Panel	1.6	0.6	2.2	0.5
Approximate unit weight and dimensions (Above numbers are subject to change)				

CANDIDATES FOR TECHNOLOGY

- Municipalities running out of landfill space
- Waste facilities with approximately eight tons of PE and PP plastics to process a day*
- Manufacturing sites with large levels of plastic waste
- Companies with plastic waste that cannot be sent to a landfill or recycled

* Amount allows for up to 15% contaminants



Difficult to recycle plastic items such as bottle caps and computer parts are ideal for the Polymer Energy process.

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