

PolyGen™

Plastic-to-Energy Anaerobic Gasification

“Turning Plastic Waste into Power.”

Technology

The invention relates to an energy-generating system that uses polyethylene plastics (which would normally cause environmental pollution) to produce synthesis gas (syngas). Unlike conventional gasification processes that rely on oxygen, this system ensures that the gasification of polyethylene to generate syngas occurs in an aerobic environment. A novel feature of this system is its ability to recover a portion of the latent heat of water, leading to a significant improvement in energy production compared to more conventional designs. This system converts non-recycled plastics into power, transforming harmful waste material into something useful.

Market need

Due to low production costs and flexible material properties, plastic finds applications in multiple areas. The disposal of plastics without landfilling remains an environmental concern; however, as plastic does not decompose, the expected improvement in standards of living is not expected to lead to a decrease in plastic production. Gasification can help with the management of plastic disposal processes while ensuring energy generation.



Features

- Anaerobic gasification
- Recovery of latent heat
- Polyethylene plastic feedstock



Benefits

- Higher energy production and a simplified gasification process
- Low energy costs
- Efficient method of plastic waste disposal



Industry

Energy

Potential Applications

- Conversion of plastic waste into synthesis gas (syngas) for electricity generation and industrial fuel.
- Waste-to-energy plants seeking to reduce landfill use and environmental pollution.
- Municipal solid waste management systems integrating plastic recovery and clean energy production.
- Industrial operations utilizing syngas for heating, power generation, or chemical synthesis.
- Sustainable energy projects promoting circular economy practices through plastic valorisation.

Creator

James Fox

Stage of Development

Prototype

Intellectual Property

Patent Protection

Desired Relationship

Co-development partner, Investors