

MagneGen™

A method and system for low-cost energy generation using repurposed magnetron magnets and magnetic relaxation effect.

“From Waste Heat to Clean Energy.”

Technology

MagneGen™ is a breakthrough low-cost energy generation system that converts thermal energy into electrical energy using the magnetic relaxation effect in repurposed magnetron magnets—commonly sourced from discarded microwave ovens and other household appliances.

The system harnesses the unique behaviour of ferrite magnetic domains, which revert to a lower-energy state when disturbed by thermal input or electromagnetic noise, producing an electrical output. This energy is captured and converted into usable electricity through strategically positioned induction coils and a thermal energy source (ambient or waste heat).

By combining upcycled components, innovative physics, and sustainable engineering, MagneGen™ offers a scalable, affordable, and eco-friendly alternative for small-scale and off-grid power generation, bridging the gap between waste reuse and renewable energy innovation.

Market need

With electricity costs rising worldwide and increasing demand for sustainable off-grid energy solutions, there is an urgent need for affordable renewable technologies. Many rural and underserved communities lack reliable access to grid electricity, while industries strive to reduce dependence on fossil fuels and enhance energy efficiency. Traditional renewable technologies, such as solar PV and wind turbines, often require substantial capital investment and ongoing maintenance. This invention offers a low-cost, scalable alternative that can operate continuously by utilising waste or ambient heat sources. Reusing e-waste (magnetron magnets) also promotes circular economy principles and supports green technology goals.



Features

- Uses the realignment of disturbed magnetic domains in ferrite magnets to generate electricity.
- Reduces e-waste and material costs by reusing components from discarded appliances.
- Enables electricity to power devices like LED lamps or charge storage units.
- Operates using ambient or waste heat



Benefits

- Converts thermal and electromagnetic energy into electricity
- Utilises repurposed magnetron magnets—reducing e-waste
- Low-cost, scalable, and environmentally sustainable design
- Operates without fossil fuels or moving parts
- Ideal for off-grid and low-resource energy applications



Industry

Energy

Potential Applications

- Off-grid and rural power generation systems
- Waste heat recovery from industrial or domestic sources
- Educational and research platforms for energy innovation
- Sustainable design and circular economy initiatives

Creator

Prof Snyman

Stage of development

Early stage

Intellectual property

Patent Protection

Desired relationship

Co-development, Investors