

SAAnA Reactor (Waste to Wealth)

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Why in news?

Researchers at BITS Pilani's Hyderabad campus have developed an innovation in organic waste management reactor.

- The Sandwich Aerobic-Anaerobic-Aerobic (SAAnA) Reactor is an innovative reactor to **process organic waste**.
- It is a novel solution that provides a quicker and more effective substitute for traditional waste-to-energy systems.
- **Key Features** -
 - **Reduced Treatment time** - Unlike single-stage anaerobic digestion systems that take up to 60 days, the SAAnA reactor completes treatment in just 23 days.
 - **Diverse Waste Handling** - It is designed for treating diverse organic waste, including municipal solid waste, slaughterhouse waste, landfill leachate, and faecal sludge.
 - **Sustainable Biofertilizer** - It increases the biogas yield (up to 0.8 m³ /kg of volatile solids) and a bio fertilizer that meets quality standards without further processing.
 - **Scalable and Energy-Efficient** - Its gravity-based design minimizes operational costs and makes it suitable for **both urban and rural settings**.
 - **Patented Technology** - The SAAnA reactor is a patented innovation recognized under the **Kapila Scheme** for innovation.

The KAPILA (Kalam Program for IP Literacy and Awareness) Scheme was launched in 2020 to promote Intellectual Property (IP) literacy and awareness, especially among students and faculty in Higher Education Institutions (HEIs).

- **Three stages of working** - The reactor runs in three stages - anaerobic digestion, aerobic pre-treatment and aerobic post-treatment.
- **Benefits** -
 - It offers a promising solution for waste management challenges in urban and rural settings.
 - It is set to transform organic waste processing, delivering environmental benefits and economic value through improved energy generation and fertilizer production.
 - It provides a quicker and more effective substitute for traditional waste-to-energy

systems.

- **Future potential** - From municipal waste treatment plants to industrial organic waste processors, it has the potential to reshape the future of waste management, making cities cleaner, greener, and more sustainable.
- **Significance** - It is a key step towards establishing a sustainable, circular economy model for waste management.

Quick Facts:

Waste to Wealth Mission

- It is an initiative under the Prime Minister's Science, Technology, and Innovation Advisory Council (PM-STIAC).
- It aims to promote sustainable waste management by identifying, validating, and deploying innovative technologies for converting waste into valuable resources

References

1. [Deccan Herald | BITS Pilani's SAAAnA reactor](#)
2. [The Hindu | Innovation in organic waste management](#)

