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Kochi: PhD for novel way to tackle waste

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As part of the study, a pilot scale biodrying reactor for treating mixed municipal solid waste (MSW) with high moisture content was developed.



📷 Perspective view of the reactor and filled reactor

Kochi: Cochin University of Science and Technology has awarded PhD to a researcher who has come up with an innovative way to handle municipal solid waste.

The research paper titled 'Biodrying: A Sustainable Technology for Municipal Solid Waste Management' was put out by Asha P. Tom. Ms Tom conducted the study under the guidance of Dr Renu Pawels, professor, civil engineering department.

As part of the study, a pilot scale biodrying reactor for treating mixed municipal solid waste (MSW) with high moisture content was developed in collaboration with National Institute for Interdisciplinary Science and Technology (NIIST), CSIR, T-hiruvanathapuram, under the supervision of Dr Ajit Haridas.

The technology reduces the moisture content and increases the energy value of municipal solid waste by convective evaporation process, which utilises the controlled aerobic reactions and the resultant biological heat.

"Kerala is going through rapid urbanisation and is facing related solid waste management issues," Asha P. Tom said.

"Waste to energy conversion technologies are the need of the hour in view of fuel scarcity and solid waste management problems."

Dr Pawels said the major hindrance towards the use of energy producing applications of municipal solid waste is high moisture content and low calorific value. "The moisture content in waste is adding up septic conditions and hence triggers handling problems during collection, storage and transportation," she said. "Also, the use of auxiliary fuel is often necessary for the combustion of heavy moisture-laden substrate which increases the economics of the energy production processes."

The innovative biodrying reactor developed for mixed MSW with high moisture content was found efficient with a significant weight loss for the waste by 41 per cent in 11 days of reaction.

The average moisture reduction of 39 per cent and volume reduction of 38 per cent has been achieved in the designed system in the 11 days of process.

The highlights of the biodrying process are easy storage, sorting and easy transportation. Considerable reduction in odour and zero leachate are other positive features of this process.

The potential of biodried material is for use as biofuel in gasification plants for energy production. GJ Eco Power Pvt Ltd entrusted with waste to energy projet at Brahmapuram will adopt biodrying technology to tackle the waste.

"The processed waste can be used as a raw material, filler and additive in developing construction materials like solid bricks, hollow bricks and pavement blocks.

The biodried material can be used as raw material for incinerators for energy recovery and is a good alternative for fossil fuels," said Asha P. Tom.

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Tags: solid waste (/content/tags/solid-waste), biodrying (/content/tags/biodrying)

Location: India (/location/india), Kerala (/location/india/kerala), Cochin (Kochi) (/location/india/kerala/cochin-kochi)

