

Special Session 3: March 16, 16:30–18:00 (JST)

Decentralized Technologies, Equipment and Its Techno-economic Assessment for MSW Treatment

Organized by Special Committee on Rural Waste Management (SCRWM), China
Association of Urban Environmental Sanitation (CAUES)

Economic growth and social development are leading to the generation of large amounts of solid waste, especially in counties and rural areas where less attention is paid on. Improper waste management such as open-dumping or open-burning for unclassified solid wastes, as well as industrial-scale incineration with a high cost of waste collection and transportation in these regions have been considered not to be satisfied with sustainable development goals (SDGs 7: Affordable and Clean Energy; SDGs 12: Responsible Consumption and Production). Therefore, decentralized technologies and equipment for solid waste treatment in these regions are increasingly required.

Currently, approaches such as on-site composting or bioconversion via insect (housefly larvae and black soldier fly) for biogenic waste, as well as small-scale waste incineration for unclassified solid waste, are being applied in some remote or rural regions. However, the treatment capacity of the decentralized systems is usually small, which will lead to more challenges in the process stability, economic efficiency, pollution control and process operation. In addition, under the goal of global carbon neutrality, a holistic environmental assessment of carbon release for current technologies and existed practical cases and the balance with long-distance transportation is also considerably necessary. Therefore, this special session will discuss and introduce the viable technologies for decentralized treatment, as well as the relating equipment, case practice, and techno-economic assessment when compared with the centralized mode.

This special session would like to invite several researchers and entrepreneurs in the field from India, Japan and China, to present up-to-date progress regarding technologies and equipment for decentralized treatment of solid waste. We highly expect that there are the enhanced communications between researchers/entrepreneurs and participants through the special session.

Programme

Moderator: Professor/Dr Pinjing He, Tongji University, China; Head, SCRWM-CAUES, China

16:30-16:35 **Opening Remarks**

Professor/Dr Pinjing He, Tongji University, China; Head, SCRWM-CAUES, China

Presentations

16:35-16:50 Equipment of intelligent bioconversion of perishable waste via insect (Housefly Larvae) and valorization technologies

Dr. Fan Lü, Professor, Institute of Waste Treatment and Reclamation, Tongji University, China

Dr. Guangyu Cui, Postdoc, Institute of Waste Treatment and Reclamation, Tongji University, China

Mr. Honghui Chai, President, Ningbo Qihe Gabriel Agricultural Technology Co., Ltd., Ningbo, China

With the continuous implementation of waste sorting in China, a large amount of kitchen waste has been generated. How to manage these wastes in an economical, efficient and eco-friendly way is a problem that must be faced to achieve the sustainable development goals. The use of small animals such as housefly larvae to treat the waste has distinct advantages in reduction and resource utilization. In this report, an industrial-scale vermicomposting with housefly larvae in Jiangsu province, China, is used as a case to introduce its operation process, core technology, key equipment, and product resource utilization. Additionally, the technical characteristics of the case are summarized, and the future development prospects of bio-treatment of kitchen waste via housefly larvae are prospected.

16:50-17:05 Typical of China's rural domestic waste terminal treatment technology and equipment—Technical achievement report of complementary gas-carbon coupled combustion

Mr. Qingping She, Shenzhen Xuying Environmental Technology Co., Ltd., Shenzhen, China

In China, domestic waste incineration power generation technology has a development history of more than 30 years. At present, the harmless

treatment rate of urban domestic waste in China has reached more than 99%. China's rural areas have vast land and scattered population. The treatment mode and technology of urban domestic waste are difficult to apply to rural domestic waste. The complementary gas carbon combustion technology jointly developed by Shenzhen Xuying Environmental Protection Technology Co., Ltd. and the Institute of thermal and environmental engineering of Tongji University has entered the stage of mass production. The project that has been put into operation runs well, which proves that the technology is fully suitable for the treatment of rural domestic waste.

- 17:05-17:20 Life-cycle assessment of municipal solid-waste management strategies in Tricity region of India
Dr. Rishi Rana, Assistant Professor in the department of Civil Engineering at Jaypee University of Information Technology (JUIT), India
- 17:20-17:35 Mechanical and Biological Treatment of Urban Waste in Asia
Dr. Tomonori Ishigaki, Chief Senior Researcher, Material Cycles Division, National Institute for Environmental Studies
Feasibility of MBT for urban waste in Asian city will be reported
- 17:35-18:00 **Q & A and Closing Remarks**