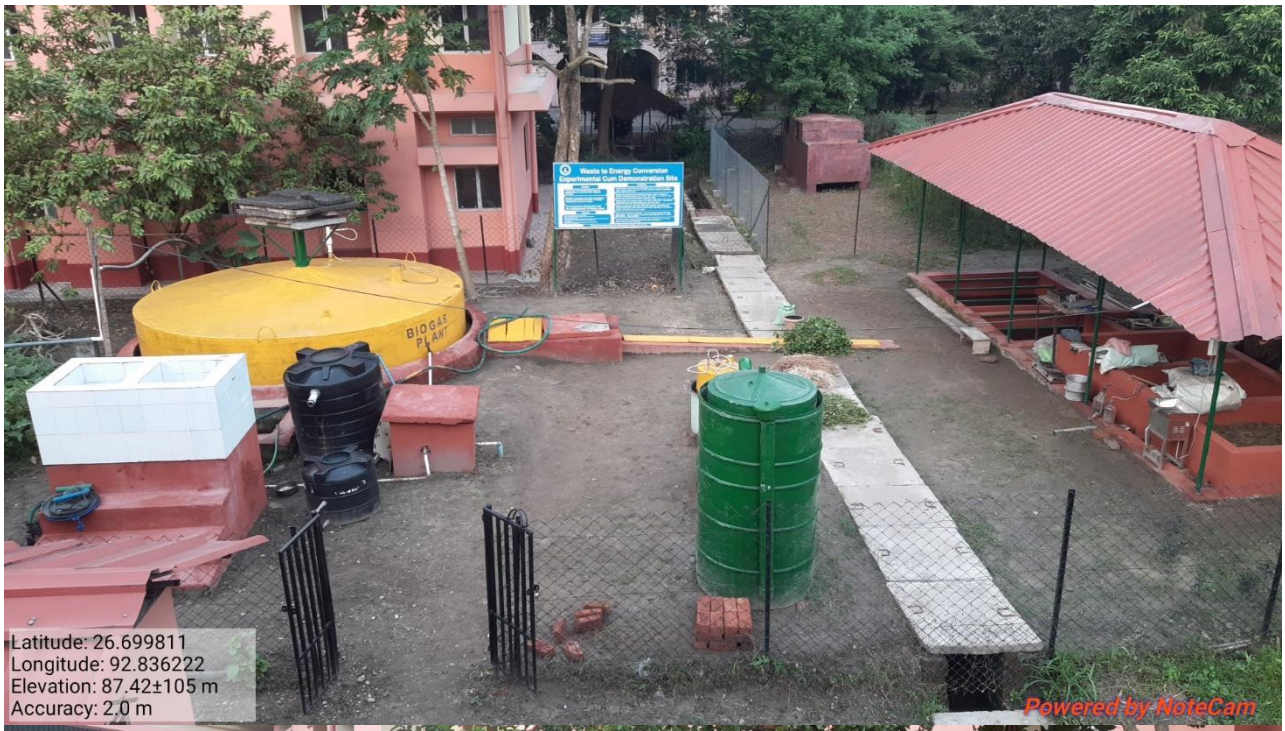
Waste to Energy Conversion

The conversion of bio-waste into energy and organic fertilizer is a proven practice. However, utilization of a variety of bio-waste materials, generated in the campus of an academic institute, through a suitable energy conversion device still has academic and entrepreneurial interests. As part of its initiative to utilize the bio-waste generated in the campus for energy, Tezpur University installed a 50 cubic meter per day capacity bio-methanation plant in one of the students Hostel.



The biogas plant (Model: Shakti Surabhi; Make: VK-NARDEP) was commissioned in 2014. Along with the 50 cubic meter plant, nutrients recovery facility is also created for recycling the nutrients available in the digestate. The solid part of the digestate is mixed with waste vegetative materials which are not used as biogas feedstock, in a separate vermicomposting chamber for preparing organic fertilizer. At full load, feeding with 250 kg of kitchen waste, the plant is potential to generate 20 kg LPG equivalent biogas per day. However, the output has been found varying between 5 and 12 kg LPG equivalent biogas per day depending on the ambient conditions, nature and quantity of feed materials. Besides using in Hostel, the biogas is also used in other places like, security canteen and eatery using balloon. Organic fertilizer generated by the system is applied in a vegetable garden in the vicinity of the biogas plant besides selling to customers. The plant has a capacity to generate about 300 kg of solid organic fertilizer per month. University plans to demonstrate the facility as a business model of circular economy taking the bio-waste stream. Therefore, the facility also supports R&D works and a learning platform for students.