

KAASHYAP ENVERGY

WHERE INNOVATION FUELS A GREENER FUTURE



Kiran KK
 Managing Director

The bioenergy industry has emerged as a critical solution in the context of climate change, energy security, and the depletion of fossil fuels. With increasing demand for renewable energy, bioenergy leverages organic waste to produce sustainable fuels like Compressed Biogas (CBG). However, the industry faces significant challenges, including feedstock availability, scaling raw biogas production, efficient purification, and managing residual slurry. Additionally, India's municipal waste segregation remains inefficient, and agro-industrial waste supply is seasonal. Kaashyap Envergy Infrastructures Pvt. Ltd. bridges these gaps with over 30 years of expertise in biogas technology, implementing large-scale digesters and advanced purification systems in India and abroad. Kaashyap Envergy owns joint research patents with IIT Hyderabad and is the industry partner to CSIR-IICT, Ministry of Science & Technology, Government of India.

Cutting-Edge Innovations

Kaashyap Envergy has pioneered advanced bioenergy solutions through extensive research and development, addressing key industry challenges. The company developed the High-Rate Complete Mix (HRCM) reactor in collaboration with BITS Pilani Hyderabad, optimizing mixing in all three

phases across solids, liquids, and gases to enhance biogas production beyond conventional Continuous Stirred Tank Reactors (CSTR) and other technologies.

The company has innovated a breakthrough operational mechanism for Napier grass-based CBG projects in which raw Napier grass is divided into 2 separate feed streams, namely Napier Grass Juice and Napier Grass Fibre. The Liquid stream of Napier Grass juice is easily digested by the anaerobes in a dedicated digester for it whereas the Napier Grass fibres are processed in another separate digester based on Dry Digestion Technology. This method ensures highest realization and conversion of the BMP (Bio-methane Potential) available in the Napier Grass where by CBG generated per MT of Napier Grass is maximum. It leads to minimum downtimes for the plant resulting in highest revenue per annum to the CBG plant developers.

In order to tackle residual slurry management in CBG projects, Kaashyap Envergy in partnership with IIT Hyderabad under initiatives of the Government of India (SERB-Science and Engineering Research Board), UAY (Uchcharat Avishkar Yojana) and IMPRINT (Impacting Research Innovation and Technology), designed a NEW WATER PLANT that extracts fresh water from slurry and it is recycled and reused. It provides strategic long term water securitization for the industry for its operations without depending on external sources.

"We have specialized in capturing methane at large quantities from wastewaters generated in Agro based industries such as Sugar, Ethanol, Starch, Palm oil Mills, Olive oil, Marigold flower processing units etc and in using biogas as Industrial Fuel and/or power generation and /or production of CBG. We focus on understanding and

converting the cutting-edge research carried out at Research Institutes of National importance to solve the Industrial problems. For example, conventionally large-scale Industrial Air Blowers are required to aerate the wastewater to treat it. Power required to operate the Air Blowers was the major cost item due to which industries are not inclined to completely treat the wastewater before discharge most of the time", speaks Kiran KK, Managing Director, Kaashyap Envergy.



Innovation, sustainability, and technological excellence drive our mission to transform organic wastewater and solid waste into renewable energy, paving the way for a cleaner and self-reliant India

The firm has invented an alternative to do this by harnessing Diatom, which is a type of micro-algae to achieve the same objective without using Air Blowers and the power associated to operate them. "We have engineered a system in which we have established a symbiotic relationship between Diatom and aerobic bacteria. Diatom capture carbon dioxide from atmosphere and gives out Oxygen at Nano-scale which is picked up by the aerobic bacteria present in our engineered media and utilizes for its metabolism and treatment of wastewater. In this way, Air Blowers are avoided and large amounts of operational power are saved resulting in revenue savings for the owners and developers. Through research and technology, we remain committed to sustainability and energy conservation", signs off Kiran.