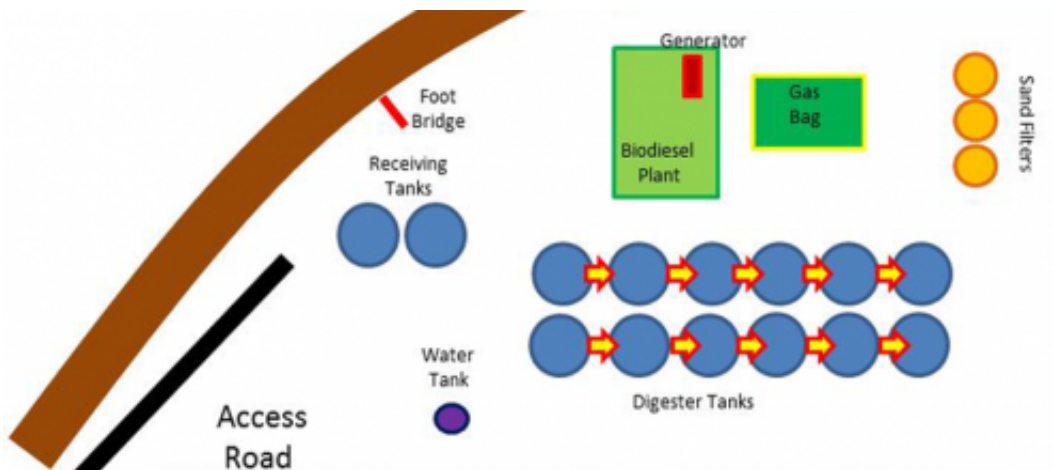


Pilot facility launched in Ghana to transform human waste into renewable biodiesel fuel

November 19 2012



This is a site plan of the pilot facility in Kumasi, Ghana, that was launched Nov. 19, 2012, to convert fecal sludge into biodiesel fuel. To celebrate World Toilet Day on Nov. 19, researchers at Columbia University's Engineering School, working in Ghana with Waste Enterprisers Ltd., the Kwame Nkrumah University of Science and Technology, and the Kumasi Metropolitan Assembly, have launched this pilot facility to convert fecal sludge into biodiesel fuel, thereby addressing a ubiquitous societal problem and concurrently producing renewable, cost-effective sustainable energy. The team is scaling up its research efforts initiated in a Columbia Engineering lab, and expects this working facility to become a revolutionary new model in sanitation. Credit: Columbia Engineering

To celebrate World Toilet Day on November 19, researchers at Columbia University's Engineering School, working in Ghana with Waste Enterprisers Ltd., the Kwame Nkrumah University of Science and

Technology (KNUST), and the Kumasi Metropolitan Assembly, are launching a pilot facility to convert fecal sludge into biodiesel fuel, thereby addressing a ubiquitous societal problem and concurrently producing renewable, cost-effective sustainable energy. The team is scaling up its research efforts initiated in a Columbia Engineering lab, and expects this working facility to become a revolutionary new model in sanitation.

"The FS to biodiesel [pilot project](#) could potentially address sustainable [sanitation](#) and introduce a new dimension into the sanitation value chain not only in Kumasi but globally, thus helping to 'kill two birds with one stone,'" states Anthony Mensah, [Waste Management](#) Director for the city of Kumasi. "The Kumasi Metropolitan Assembly is therefore delighted to be part of this novel partnership."

The launching of this pilot phase is a major milestone in the pioneering project now entering its second year. Funded through a \$1.5 million grant from the Bill & Melinda Gates Foundation, the project is led by Kartik Chandran, an associate professor of Earth and Environmental Engineering at Columbia University's school of engineering and applied science and Ashley Murray, Founder and CEO of Waste Enterprisers Ltd, a Ghanaian company that is working to reinvent the economics of sanitation in the developing world.

As part of this project, Chandran is developing an innovative technology to transform fecal sludge into biodiesel fuel and is working on converting a waste-processing facility into a biorefinery..



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"This is a very exciting project for us," says Chandran. "We are aiming to create a next-generation urban sanitation facility that will set new

standards and serve as a model around the world. With the capacity to receive and treat 10,000 liters, or 2500 gallons—a full sanitation truck carrying concentrated fecal matter from at least 5,000 people—of fecal sludge per day, this facility reaches way beyond the lab scale."

In the pilot phase, expected to last 12 months, the researchers will be testing Chandran's bioprocess technology for converting the organic compounds present in fecal sludge to biodiesel and methane, two potent sources of renewable energy.

"Our goal is to develop a revenue-generating fecal-sludge-to-biodiesel facility that can transform sanitation from an expensive burden into a profitable venture. If we figure out a way to make waste management profitable, governments and citizens that currently bear the financial, environmental, and public health costs will all be better off," notes Murray.

Chandran and Murray are working closely with researchers at KNUST along with a team of process engineers to improve the biodiesel yield from fecal sludge and explore the commercial viability of a business model based on creating biodiesel from human waste.

"This project is about more than a technology breakthrough, it's about creating economically sustainable approaches to waste management that can eliminate the sanitation crisis in developing cities," says Murray.

"We are very grateful to the Bill & Melinda Gates Foundation for their recognition of the critical importance of sustainable sanitation across the globe, especially in developing countries," adds Chandran. "We hope our model can be replicated and adapted around the world."

Provided by Columbia University

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