From Poop to Power: The Possibilities of Decentralized Sewage Treatment in India

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Source: *AFP PHOTO/Prakash SINGH*

The world has a poop problem. According to the World Health Organization, 2.6 billion people lack access to any sanitation. For those that do, sewage infrastructure is often underdeveloped or unreliable. Globally, this leads to more than 200 million tons of human waste goes untreated every year. In developing countries, most of this waste ends up in lakes, rivers and oceans, where it contaminates sources of drinking water. Untreated sewage and polluted water sources are serious issues for public health, estimated to kill 1.4 million children each year. New, cost-effective technologies for handling waste hope to combat these startling statistics.

Tackling Sewage Problems in India:

Due to its rapidly expanding population, weak infrastructure and poor education around environmental issues, India faces some of the greatest challenges of all developing countries struggling to address sewage management issues. On average, almost 80% of sewage water in India remains either untreated or isn't treated effectively enough before it is dumped into the vast Indian river system. An age old habit of leaving treatment to future technologies has led to rampant pollution of Indian rivers. The Ganges River for example is considered sacred and almost revered as a Goddess in the religion of Hinduism. Despite that, almost 3,636 million liters per day (MLD) of sewage is discharged into this sacred river and today it is considered one of the most polluted rivers in the world.

Despite government efforts to address this issue, viable solutions have yet to be adopted. A report by the Centre for Science and Environment (CSE), Delhi, surveyed the wastewater situation in 71 Indian cities and found that less than 30% of the country's sewage is being treated in proper facilities. This lack of infrastructure is frightening given estimates that by 2047, India's rapidly growing population will create the circumstances for waste generation in Indian cities to increase five-fold, reaching 260 million tonnes per year. Though some municipalities have been working hard to address the problem by pouring funds into building centralized treatment plants, most of their efforts have been ineffective. The systems needed to transport sewage to these plants has either not been properly developed or the electricity needed to the run the plant has been too expensive. As a result, most plants have fallen out of operation.

The Regreen Solution to Sewage Treatment:

Regreen technology makes sewage treatment much **more cost-effective and time efficient for large-scale facilities**. But more importantly, where the infrastructure is lacking for such operations, Regreen **also offers small-scale, decentralized solutions** for managing bio waste in places like residential complexes and office buildings. With Regreen technology, not only can sewage be processed more effectively and efficiently, but it can also be used to solve three other problems that plague the developing world:

1) Diminishing water resources

2) Need for greater electricity production

3) Environmental and health issues resulting from dumping sewage and overflowing landfills

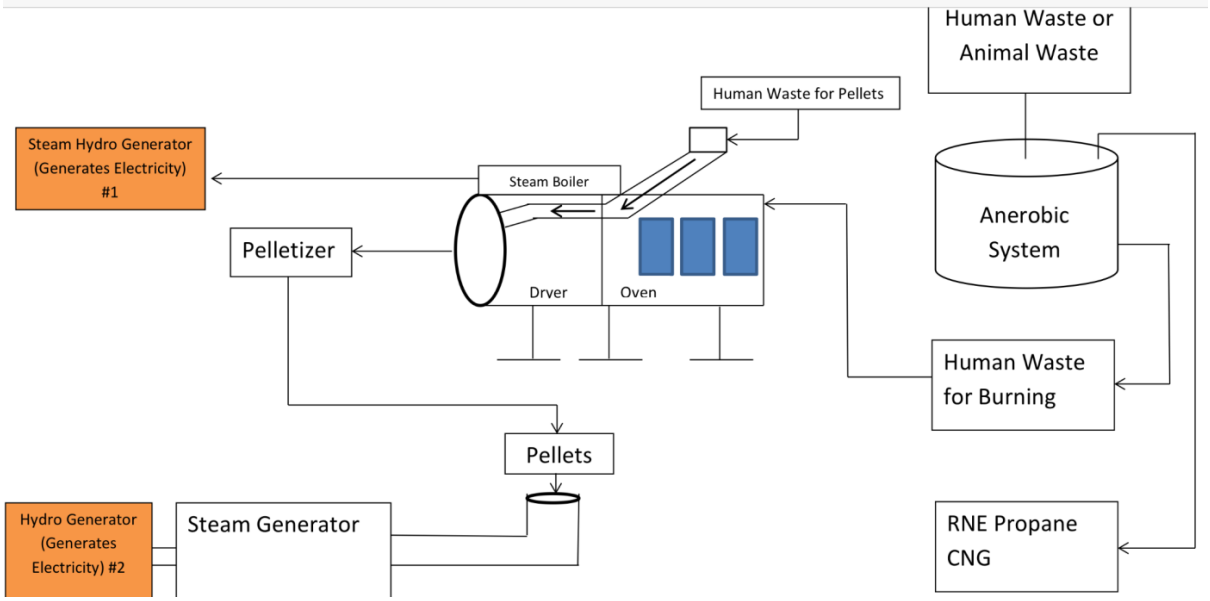
Recycling Water & Protecting the Environment:

Regreen sewage treatment processors are designed to create a closed-loop system, where all waste that comes in is converted into outputs which can be re-used on-site. When sewage comes into the system, it goes through a press that separates excess moisture from the material, reducing its humidity to 15% or less. The recycled water that emerges from this process is called grey water and can be used within a complex for landscaping, flushing toilets, washing floors and more. While city ordinances mandate that sewage be disposed of with as little liquid as possible, in reality, most treatment systems in these buildings are unable to effectively capture this water and it frequently gets discharged into drains that run into the country's lakes and rivers. In the instances where cities are able to collect this liquid sludge, it is often not dewatered thoroughly before being dumped in landfills. Regreen processors work to **recycle as much water as possible and keep both processed and unprocessed sludge from being disposed into rivers and landfills**.

After water is separated out in the processor, the sludge that remains is cooked using indirect dry stream in a process that kills ***all*** harmful bacteria and odors. This **unique process revolutionizes waste treatment because it doesn't require microbes or chemicals to get the job done**. Most sewage treatment plants in residential and commercial buildings around the world rely on bacteria to break down sewage over time, creating sludge. Water that is freed from this sludge must then be disinfected with chemicals to kill any disease-causing microorganisms. In India, these sewage treatment plants are often vulnerable to input fluctuations that lead to untreated sewage and other problems. Regreen processors provide a solution by turning a natural process that takes days into **an automated process that takes minutes**. After sewage in the Regreen processor goes through the cooking stage, it is dried. At this point, it can be used as compost for gardening or pelletized into charcoal-like fuel pellets for electricity production.

From Poop to Power:

This is where Regreen machines—with the help of boilers and generators—turn poop into power! **Residential and commercial complexes can close the waste loop by using their sewage to produce electricity, hot water, and even air conditioning.** Fuel pellets created from waste are burned to heat boilers. These boilers then produce steam that drives generators, creating power. Regreen machines are designed to be self-powered using the fuel pellets they produce, requiring no outside energy to operate!



International Coil Limited (ICL), a pioneer in energy-saving technologies, has partnered with Regreen to make waste-to-energy a reality for urban India. Up until now, no process has existed to completely eliminate the need to dispose of treated sludge. But today, ICL and Regreen are installing technologies that make it not only possible, but cost-effective to recover both water and energy from sewage. At the end of the day, this sustainable model of sewage treatment produces savings for residents and owners of urban complexes while preserving the environment and protecting public health. People, planet, and profit—that's the triple bottom line way to do business!

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About Regreen:

Regreen manufactures various machines to convert waste (food, organic, medical, and dirty municipal waste) into dry odorless and germ-free products. This can be further pelletized for fuel, or used for animal feed, compost or fertilizer. These patented and patent-pending machines are available for purchase or lease. The manufacturer is willing to place machines and share the tipping fees and revenue from pellets etc. Please contact robin@regreenus.com for details.

About International Coil Limited:

Based in Gurgaon, India, ICL develops and manages projects throughout Asia, North America and Europe. The company specializes in creating power-generation projects on a design-build/EPC basis. The company has expertise in Waste Heat Recovery and Gas Turbine Inlet Air Cooling (TIAC) projects with capabilities to design and build power plant systems globally. ICL is uniquely positioned within the power-generation industry and is one of the few firms offering clients a full spectrum of services, comprising power generation, heating and cooling design, engineering and construction. Please contact paramjeet@icl-tech.com for details.