



Frequently Asked Questions

1. Who is CMI?

CMI is an environmental engineering, manufacturing and technology firm launched in January of 2010 to combat the catastrophic effects that current waste management practices and fossil fuel dependencies are having on our health and the economy. After exhaustive research, development and refinement cycles, we are offering a groundbreaking, community-friendly technology platform that transforms municipal, industrial, forestry and agricultural waste into renewable energy. We call our solution the CMI Waste Transformation System and it's backed by an organization comprised of proven experts in the commercialization of new technologies as well as the deployment of alternative energy solutions. Simply put, our approach accepts that the generation of waste is a reality but treats it as a resource that can be repurposed rather than as a liability. And it's with this guiding principal that we can become socially responsible and take the steps necessary to restore our land, sea and air.

2. Why would anyone want to use waste to produce energy?

The recovery of energy from waste is already a well-established technology. As the prices of fossil fuels dramatically rise, waste has become a valuable resource that can no longer be ignored. For example, ton-for-ton, municipal solid waste contains 50% of the energy value of coal, while the average scrap tire yields about 7-gallons of oil. Many countries already consider waste a renewable energy resource with incentives in tipping fees and for energy recovery. Energy from waste not only reduces our reliance on fossil fuels such as coal, oil or natural gas, but also reduces the amount of land used for landfills. Waste can be economically transformed to electricity and other forms of usable energy for industrial and domestic use. The CMI Waste Transformation System efficiently converts waste into renewable energy using "best-in class" energy recovery and production technologies.

3. What is the CMI Waste Transformation System?

The CMI Waste Transformation System is a batch-mode, starved-air gasification platform that thermally transforms any waste stream into two primary products -syngas and ash. The syngas can be used to heat a boiler that produces hot water, heat or steam; create steam that powers a turbine to generate electricity; directly feed a power generator; or produce other gases, liquid fuels and chemicals through catalytic conversion. The ash, amounting to just 2% of original volume and 5% of original weight, is sterile, non toxic and can be recycled for use as a concrete aggregate or asphalt amendment.

4. Is the CMI Waste Transformation System really another form of incineration?

No. Incineration is really another method of disposal, where waste is burned at high temperatures to produce heat in basically the same manner as traditional coal-fired power plants. Fossil fuels are commonly required to power these “trash to steam” plants. Incineration is also a dirty, pollution-laden short-cut where waste can only be reduced to about 30% of its original volume in the form of toxic ash, slag, dross, and clinkers which still require landfill disposal. On the other hand, The CMI Waste Transformation System utilizes slow, moderate-temperature pyrolytic gasification technologies that convert waste into energy-rich fuels. Waste is reduced to about 2% of its original volume in the form of sterile ash that can be sold to asphalt or concrete companies. The System is entirely sustained on its own self-generated power and unlike incineration, all harmful air contaminants are rigorously managed before they become hazardous emissions.

5. Does the CMI Waste Transformation System qualify as a renewable energy solution?

Yes. For more than 20-years, the conversion of waste into energy has been recognized as a source of renewable energy under existing law and, according to the EPA, is a “clean, reliable and renewable source of energy.” The Federal Power Act, the Public Utility Regulatory Policies Act, the Federal Energy Regulatory Commission and the Biomass Research and Development Act of 2000, all recognize waste-to-energy -the technology category under which the CMI Transformation System is best classified- as renewable due to the biomass (biological material) content of the waste processed by these systems. As an example, the EPA estimates that typical garbage is approximately 60% biomass, while agricultural residues, food & beverage processing wastes and forest debris are all clearly 100% biomass.

6. What types of waste can be processed by the CMI Waste Transformation System?

Virtually any type of waste can be utilized by the System including municipal solid waste, industrial waste, plastic, scrap tires, textiles, construction and demolition waste, wood and paper waste, yard waste, forest residue, agricultural residue, food and beverage processing residue, animal waste and litter, wastewater sludge, oil sludge, liquid waste and medical waste.

7. Does the waste utilized by the CMI Waste Transformation System require sorting or pre-processing?

No. We designed our System to accept unsorted waste streams, as well as waste of any size, shape or moisture content, thus reducing operational impact and total cost of ownership. Though metal and glass need not be removed from waste, they cannot be transformed by the System. Instead, after processing all glass is crushed and mixed with the sterile ash by-product, then used for as an amendment in asphalt or an aggregate in concrete. In addition, all ferrous materials are recycled.

8. What amount of waste can the CMI Waste Transformation System process?

A typical System configuration handles 300 tons-per-day and is comprised of standard 50-ton-per-day processing modules that can always be customized to accommodate specific customer requirements. All modules are prefabricated, thus allowing customers to quickly and easily increase the capacity of the System for additional waste volume.

9. How much electricity can the CMI Waste Transformation System produce?

The amount of energy that can be recovered from waste depends upon its type, moisture content and caloric (BTU) value as well as the efficiency of the power train used to generate the electricity. For example, a System processing 200 tons of MSW each day is capable of producing 4 megawatts of surplus electricity via a steam turbine, while a System processing 200 tons of scrap automotive tires per day, which are drier and have a higher caloric value, is capable of producing 10 megawatts of surplus electricity via a syngas generator. No matter the type of waste or its condition, CMI utilizes technologies that maximize energy recovery and lead to the efficient production of clean electricity.

10. What makes the CMI Waste Transformation System better than the conventional ways of producing electricity?

Aside from not creating mercury-laden flue gases or toxic fly-ash emissions, what sets our solution apart from the coal-fired plants that currently provide the majority of our electricity is that our Waste Transformation System is “distributed” in nature. Distributed generation systems are highly-efficient, require a minimal operational footprint and are agile enough to be located at the point of energy consumption with very little environmental impact. Conventional power plants lose a staggering 55% of the energy they generate due to the legacy technologies they have utilized since the 1950’s. And of the energy that does make it into the grid, another 10% is lost during transmission and distribution. Add to this equation the brownouts, blackouts, service interruptions and threat of terroristic activities that could endanger millions and you can easily understand why implementing a worldwide distributed energy strategy is pragmatic. The CMI Waste Transformation System eliminates the complexities, interdependencies and inefficiencies associated with centralized generation. And because we capture all residual heat emitted during the waste transformation process, our System is about 90% efficient and can provide

electricity directly to the community in which it is located and/or be utilized as a source for standby, emergency or peak power.

11. What is the operational availability of the CMI Waste Transformation System?

Our System can operate 24 hours per day, 7 days per week and 365 days per year.

12. Is the CMI Waste Transformation System expensive to operate and difficult to maintain?

No. We designed our System to exceed the industry-standard 20-year lifespan and to require a minimal need for replacement parts.

13. How many people are required to operate the CMI Waste Transformation System?

Thanks to our highly-automated design features and pre-programmed routines, a typical 300 ton-per-day System is fully-operational with just 8 employees per work shift.

14. How much space is required to install a CMI Waste Transformation System?

A typical 300 ton-per-day System utilizes about 60,000 square feet of dedicated space to operate and thus can easily be located at the source of the waste and the point of energy consumption. In fact, because of its small footprint, the System can easily be implemented at landfill sites, at existing waste transfer stations and in suitable vacant commercial buildings with a few minor modifications.

15. How long does it take to implement the CMI Waste Transformation System?

We have partnered with several prominent EPC (Engineering, Procurement and Construction) firms to assist with all necessary permits, impact studies, facility requirements, installation services and certifications. Once all approvals are in place and a proper building to house the System configuration is constructed, our System can be operational in as little as 120 days.

16. Are there any risks with the CMI Waste Transformation System operating in my community?

No. We designed our solution to be neighborhood-friendly and thus easily deployed in any community. Our System features stringent emissions sensing, monitoring and control technologies that allow us to easily comply with all Environmental Protection Agency (EPA) requirements, including Section 129 of the Clean Air Act, as well as all state and local air-quality standards.

17. What are the economic, social and environmental benefits of the CMI Waste Transformation System?

Our System creates high-value renewable energy components that can be used or sold by the very community in which it is located. It also combats global climate change by displacing fossil fuel use, reducing landfill disposal, minimizing waste transportation and decreasing greenhouse gases. In addition, our solution operates entirely on the electricity that it generates, thus freeing it from dependence on non-renewable resources. As a result, we provide a solution that facilitates sustainability, social responsibility, community stewardship and corporate citizenship.

18. Is this a new technology or are there other solutions in the marketplace?

Though CMI's technology, product output and business model is distinctive from those of traditional waste-to-energy solution providers, the company is closest in category placement within this marketplace. According to the US Department of Energy, there are currently 102 waste-to-energy plants operating in 31 states managing about 11-percent of the trash in the United States, or about 100,000 tons per day. The \$10 billion and growing waste-to-energy industry serves the trash disposal needs of 40 million people, generates about 2,750 megawatts of electricity that powers over 2.3 million homes and employs about 6,500 workers with annual wages in excess of \$150 million. Unfortunately, these figures lag well-behind those of Europe, where over 450 facilities convert into energy about 90 million tons of garbage each year. Denmark converts 54-percent of its solid waste to energy, while France and Belgium each convert 32-percent of their solid waste to energy. Japan leads the world with a waste conversion rate of 69-percent.

19. What are the purchase options for a CMI Waste Transformation System?

We currently have two programs for the purchase of a System. The first program is through a conventional licensing agreement where a customer pays initial System implementation charges and yearly support fees, as well as has the option to contract with CMI for operations and maintenance outsourcing. The second program is a joint-venture arrangement where the implementation of the System is co-financed, CMI provides all operations and maintenance services and realized annual profits are shared. In both cases, financing is reserved for qualified municipalities and corporations with established commercial credit ratings and usually requires a tipping fee and/or power purchase agreement for underwriting.

20. Are incentives available for purchasing a System?

Yes. Because the System qualifies as a renewable energy source, the United States Department of Energy is currently providing loan guarantees of up to 80% and the Department of the Treasury is offering either an investment tax credit or cash payment of up to 30% for the costs of renewable energy projects. Further information as well as application materials can be found at <http://www.treas.gov/recovery/docs/Application.pdf>, <http://www.treas.gov/recovery/docs/guidance.pdf> and <http://www.treas.gov/recovery/docs/energy-terms-and-conditions.pdf>. We also recommend that prospective customers consult with their own state and local government agencies to learn about available loan programs and tax credits, as well as premiums paid for the cogeneration of renewable power.

21. Do you have any special programs for municipalities?

With local governments searching for ways to reduce their waste disposal costs and better serve their communities, CMI will finance, construct, own and operates municipal sites. Taxpayers can reap the benefits of a System without any financial burden or an increase in taxes. The only requirements are a guaranteed waste stream, the guaranteed sale of electricity, a suitable location and attainable permits.

22. I am interested in learning more about the CMI Waste Transformation System. What are the next steps?

We guide prospective customers through a comprehensive Readiness Assessment to validate the business model, determine if our solution satisfies specific requirements, conduct testing and analysis of the waste to be processed by the System, determine preliminary configuration and initial pricing estimates, as well as address financing needs. This study is available to qualified prospects free of charge. If the outcome is favorable and a prospective customer wishes to proceed, we follow with a Functional and Technical Design Engagement to evaluate the suitability of the proposed site, understand engineering and construction requirements, as well as determine the final System configuration.