

New Energy Solutions for Municipal Waste

Eliminate Landfills with a Waste-to-Electricity and Biomass Power Plant

New Commercial Energy (NCE) is an international developer of renewable and integrated energy. With over \$1 billion USD in developing projects in the fast growing waste-to-energy sector, our team brings extensive experience in renewables, waste management, electricity, project finance, and development.

We focus on a build, own, and operate model, but provide a variety of flexible options to serve our growing government and private sector clients. We start by listening and developing a turn-key solution to your needs. We bring the technology, funding, and operational expertise to solve your energy, environment, and economic challenges with immediate and long-term growth solutions.

Our complete waste-to-energy processing plant transforms your municipal solid waste (MSW) and many other refuses, including plastics, medical, and even sewage sludge, into valuable electricity and biofuels.



Our state-of-the-art systems do not burn the waste, but uses a patented heat process to quickly decompose waste into syngas.

This syngas is processed into a hydrogen-rich fuel to generate electricity with no air pollution.

With commercial operations worldwide for over a decade, our technologies convert almost any source of waste from a wide variety of feedstock sources.

The average municipal plant site is about five acres for operations, but we usually plan on additional space for expansion, waste stockpiling, and other integrated industrial or commercial uses. Existing landfill sites are often an excellent location. To reduce waste transportation distance, hauling costs, and hazardous pollution, a new strategic location can be selected closer to the municipality or waste source.

Our modular design enables a flexible approach to waste management and distributed power. We can build a scalable facility to fit your present waste-to-energy needs and local electric line capacity without expensive infrastructure upgrades. This provides local electric power to your city while allowing for modular plant expansion as your population and power needs grow.

A waste collection and management system can also be integrated with transfer stations. This can alleviate the headaches, hassles, and budget burdens for municipal managers and city councils.

World's Leading Solutions

Our premium waste-to-energy system has been called the best solution by officials at the World Bank. After years of research and evaluating 100 waste-to-energy technologies, Lockheed Martin selected this patented German technology as their leading choice.

In October 2014, Lockheed Martin became a manufacturing partner and launched a new engineering and fabrication facility near our Washington DC and Maryland offices. Power generation component providers include General Electric and AAA-rated EPC contractors. We offer additional manufacturing and facility options to meet the budget priorities and objectives of each project.

How our Premium Product Works

This patented process is called “steam thermolysis” and converts nearly any waste material into clean, renewable energy. Unlike other waste-to-energy processes, this unique method relies on heat transfer instead of incineration—efficiently producing the highest quality syngas with no flame and no pollution.

We use a closed-loop system sustained by the byproducts it creates, producing its own energy so that no additional fuel is needed once the process begins.

Because this technology allows the tower and waste inputs to be heated in an oxygen-starved environment, our facilities cannot produce toxic oxidized pollutants, such as dioxins and furans.

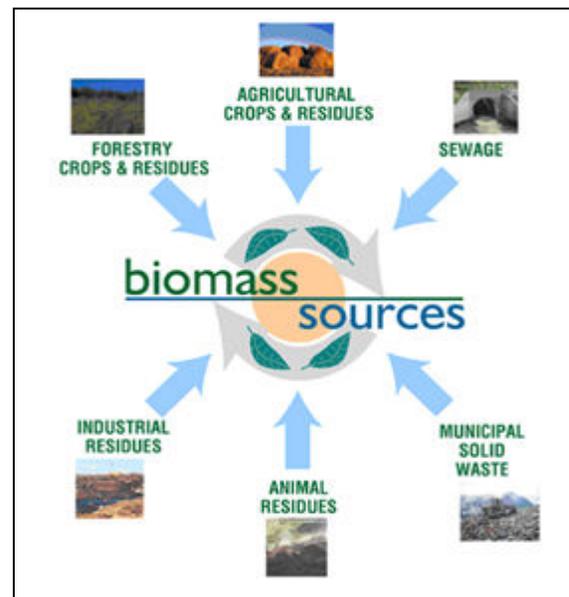
With no need for costly add-on scrubbers to clean emissions, our process is not only better for the environment, but also more efficient.

Benefits of Biomass Energy

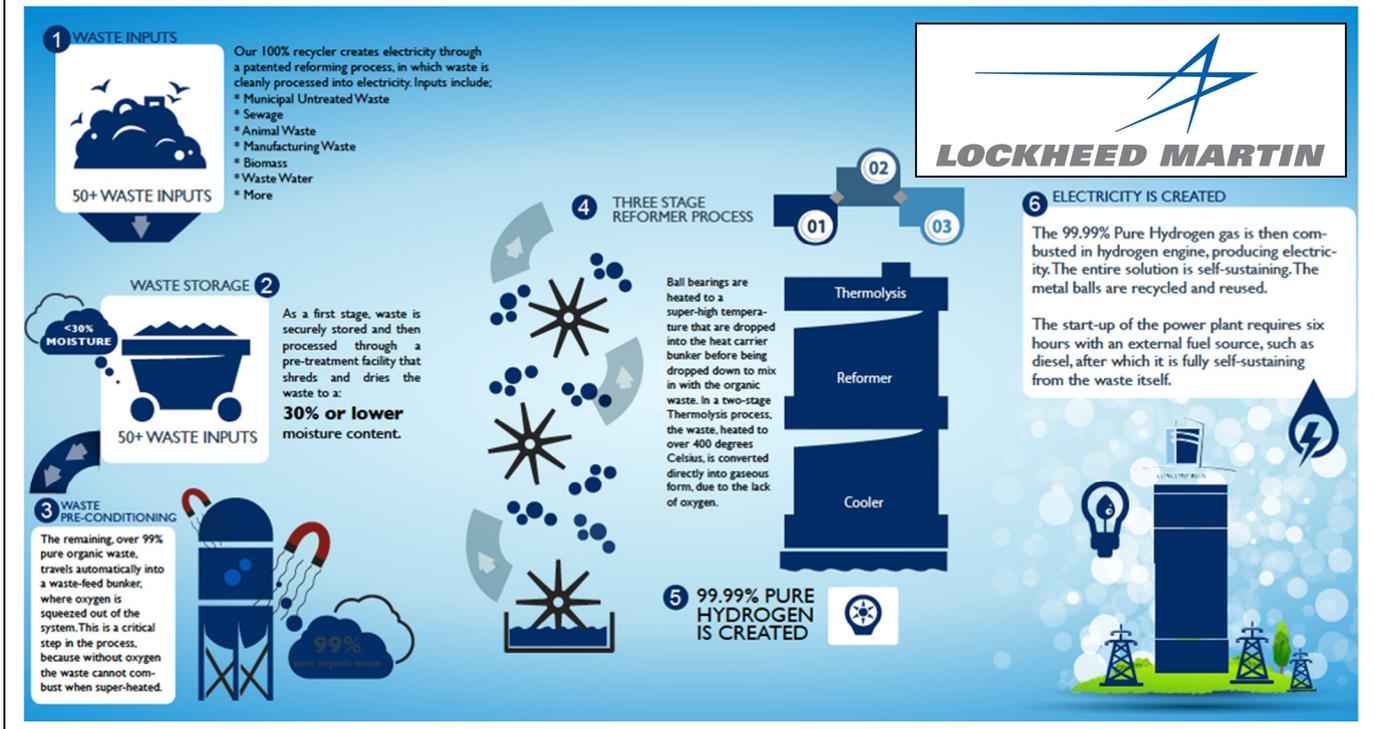
The technology meets the needs of nearly any business or community, offering flexibility in feedstock, end product, and scale. Waste streams can include municipal solid waste, biomass, sewage, manufacturing waste, plastic waste, hospital waste, and any other organic material.

Regardless of the input type, we offer a wide range of output choices, such as syngas, electricity, liquid fuels, biodiesel, and hydrogen. Byproducts include biochar, heat for conversion of energy, heat for producing hot water, and heat for cooling (water or air conditioning), and clean water.

No unused products remain. Residual ash is recycled and sold to concrete companies. Glass and metals are mechanically separated and recycled. Our facilities are either carbon neutral or carbon negative, and all meet or exceed local and global environmental and emissions standards.



Premium Process: Steam Thermolysis Waste-to-Energy



Economic and Political Impact of Energy Demands

Most regions have three key demands for our projects; massive growth in municipal waste and overflowing landfills; growing shortages of electricity and annual increasing power demands; and U.N. treaty mandates or national goals for renewable energy by 2020. We help your government and community solve all three demands and prepare for future growth.

Your municipality may also be experiencing load shedding or rolling blackouts due to insufficient power generation across the national grid. This creates major economic problems and political risks for instability. Our solutions provide local power to keep your community open for business and daily life.

We can provide immediate local distributed power solutions in addition to renewable energy project development. We provide emergency, backup, and reserve power solutions as well as rooftop solar applications for residential and commercial customers. Power switching can automatically route energy to priority facilities such as hospitals or key government facilities.

Affordable Solutions for Your Community

Every international market has its own economy, energy tariffs, and demands. While our systems

provide the latest technology and affordable structures, we realize one product doesn't fit all needs.

We can provide several levels of technology and financial models to meet your needs. Three different system options, manufacturers, construction, and energy outputs can be customized for your local plan.

Progressive Power and Community Development

Our objective as your partner is to provide comprehensive solutions. Our first priority is to tackle your municipal waste problem by turning it into an energy security solution. While our energy plants can be custom built from 1 Megawatt (MW) to 100 Megawatts (MW), our gasification units are built so we can add additional modules as your waste and energy needs grow.

Our systems enable a symbiotic relationship with other infrastructure needs in municipalities. We can integrate solar and waste water management for buildings as well as flexible community solutions.

Environmental and Economic Preservation

With more than 7 billion people on the planet, we have a pressing need to reduce our dependence on landfills and fossil fuels. For our environment and our global society to thrive, we must find clean, renewable solutions to our energy needs. We view waste as a resource, something we can and should use—not just throw away.

Our patented technology benefits the environment, diverting valuable waste material from landfills and converting it into clean energy that can replace polluting fossil fuels. And countries also benefit from domestic fuel production, which can relieve the burden of dependence on foreign oil. With an estimated 2 billion tons of municipal solid waste generated globally in 2011 alone, renewable energy makes sense for the planet and for our communities.

Environmental Impact

In 2011, the world generated an estimated 2 billion tons of municipal solid waste—a number expected to rise along with population growth, increased urbanization, and improved standards of living. Landfills are the primary method of municipal waste disposal used globally.

Because landfills emit methane, a highly potent greenhouse gas, we can help mitigate environmental pollution by limiting their use and finding sustainable waste disposal solutions.

One metric ton of methane has more than twice the global warming impact than the same amount of carbon dioxide, and so diverting waste from landfills can help in the fight against pollution.

Our system turns waste into a valuable resource by transforming it into clean, renewable energy using a patented process that creates virtually no pollutants.

Waste-to-Energy Plants in Operation

Below are a number of plants in operation using various feedstock with a variety of outputs.



Pune, India:

The Pune facility is the largest steam thermolysis waste-to-energy plant in the world. Operational since March 2012, it processes 700 – 1000 tons of untreated municipal solid waste per day, producing 25-30MWth (or 10MWel) of energy. It was awarded a municipal public tender. This project is designed in three modules; the first phase is approx. 3MWel and has been operational since March 2012, the second phase is the remaining two 3MWel modules and is currently under construction.



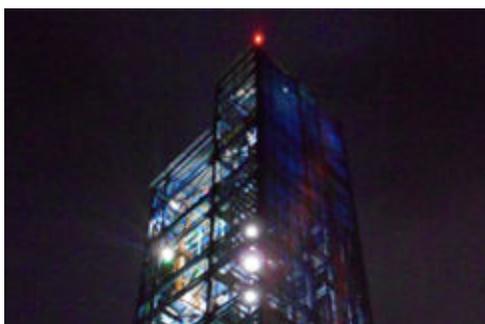
Izumo, Japan:

The Izumo facility has been in commercial operation since 2006. Processing 1 ton of woodchips per day, Izumo produces .25MW of electricity per hour. The Izumo facility is a model project of the Japanese Ministry of Environment.



Mumbai, India:

This facility has been in operation since 2009. Capable of processing multiple types of feedstock, the Mumbai facility takes in municipal solid waste and industrial waste, producing approximately 20kW for a local manufacturing facility. A third-generation technology, the Mumbai facility has operated successfully for more than 20,000 hours.



Mahad, India:

In commercial operation since September 2011, the Mahad facility produces 1,200 m³ of syngas per hour. The syngas produced by this facility is used for industrial purposes as a replacement for natural gas. Mahad converts toxic industrial effluents as feedstock into our clean syngas.



Omuta, Japan:

The Omuta facility has been in commercial operation since March of 2011. Omuta is the first biomass to hydrogen facility in the world, successfully converting 15 dry tons of sewage sludge into 7,200m³ of pure H₂ per day. Owned by IDEX and built by Hitachi.



Herten, Germany:

The Herten facility will deliver approximately 5MWe to the local energy grid. This project qualifies under the German renewable energy feed-in tariff, generating revenue for energy delivered to the grid. It will process 50,000 tons of raw biomass per year, reducing the need for landfill use of waste disposal.



Chennai, India:

The facility in Chennai will generate 15MWe of energy, which will be sold to the grid. The facility will treat 1,000 tons per day of fresh and untreated municipal solid waste, reducing the need for landfill use of waste disposal in the surrounding area.

Infrastructure Advancement

Our partners can integrate state-of-the-art waste water management solutions for single buildings as well as flexible community systems that expand as you grow while keeping upfront costs low. Sewage sludge is also an integrated feedstock for the power generation facility.

Agricultural and Economic Development

As additional feedstock sources, our waste-to-energy plant can accept biomass and organic materials. Selected non-food crop materials, agricultural waste, and natural grasses can provide good feedstock for

the creation of electricity or biodiesel fuels. We can develop expansion of the plant with waste and biomass to fuel with the addition of a refinery unit. This refines syngas into biofuels.

Waste Management

The waste-to-energy facility will reduce and eventually eliminate the need, expense, and environmental impact of landfills and waste dumps. This enables the government and municipalities to streamline waste management into a new efficient commercial system.

Electricity generation is the highest and best use of waste and recyclables. There is no need for the governments or agencies to institute recycling mandates, sorting operations, and special handling systems or additional expenses for waste stream management.

We can also provide full integrated waste collection and waste management services. This eliminates the headache and trouble of municipalities spending valuable time and resources on waste. We can provide complete curb collection, trucking to the facility, and waste conversion to electricity. We can utilize our multi-national waste collection partner or create and manage local employment.

System Capacity

Every dry ton of waste (15% moisture content) produces 1.2 to 1.4 MW of electricity. This is an average based on a waste energy content of 15 to 16 gigajoules. Our automated processor removes inert materials (rocks, glass, etc.) which can be 10% to 15% of weight, then dries the waste removing another 35% of water weight. Engineers will perform waste analysis for actual calculation and system scaling.

Distributed Power Concept

Our modular design allows smaller systems to be deployed near waste sources and within the capacity of local 10MW to 30MW high tension electricity lines. Many local municipality high tension lines can accommodate up to 30MW. Larger central systems can also tie into the national grid.

Deployment Steps

New Commercial Energy (NCE) requests the following to commence the project:

1. Monthly waste stream reports showing daily tonnage from all landfills to be included.
2. MOU or 25-Year Feedstock Agreements for the Municipal Solid Waste (MSW) and biomass.
3. MOU or 25-Year Power Purchase Agreement from the electric utility or off-taker for electricity.
4. Arrangement or facilitation of Feasibility Study and Engineering costs.
5. Designated facility site to be provided, leased, or an acquisition plan typically at landfill(s).
6. Financing plan established. Timeline for Construction to Operation is 12 to 18 months.
7. NCE will provide full-service waste management and electricity generation.

NCE can design, construct, finance, operate, and own the system or do the same for our client.

Experienced Professionals

Our project partners include technology patent holders, the largest government contractor in the world, international energy EPC's, major banks and bond funds, world development banks, and experienced technicians, development, and operations professionals to get the job done.

New Commercial Energy team members below are industry professionals with the expertise to develop a facility in your location with our co-developers, engineering, manufacturing, construction, operation, and financial partners. One call does it all.

Derrick M. Comfort, Managing Director

30-year development executive, over \$1 billion USD in international projects, former energy broker for Reliant Energy, managing director, New Commercial Capital, former regional vice president for Citigroup securities, U.S. Army air assault and infantry commander and distinguished military honor graduate.

Dr. Michael Oldham, MBA, Master Civil Engineer

Former Chief Operating Officer (COO) of the U.S. Department of Energy, \$7 billion in international projects, nuclear power plants, waste-to-energy, and solar power installations, Division Commander, U.S. Army Corps of Engineers, Global corporations CEO, Vietnamese Honor and Medal of Valor, Legion of Merit (2), Bronze Star, Meritorious Service, deFleury Medal, U.S. Army Infantry Officer Hall of Fame.

Robert Bucher, MBA, Systems & Design Engineer

Former Global COO, Honeywell Industrial Control Systems, cogeneration expert, thermal power plant development, solar and renewable energy expert, and industrial systems commercialization. CEO of 4 public companies including solar technology, satellite, and precision robotics. B.Sc. in engineering physics and biomedical engineering from the University of Guelph, Canada. MBA, Stanford University.

Ron Deel, Senior Project Manager

Senior quality engineer and systems manager for Northrop Grumman Corporation over two decades including the International Space Station and Patriot Missile Systems. Highly-decorated U.S. Army special forces sniper during the Vietnam conflict.

Gary A. Cooper, Senior Electrical Engineer

20-year senior electrical engineer for Southern Maryland Power Company with major infrastructure development, substation construction, engineering, and power line deployment. International projects in Central America, Africa, and Middle East. U.S. Army 175th Ranger Battalion, Captain, Iraq veteran.

Larry Kendrick, O&M Management

Experienced biomass expert, former general manager and operations officer for U.S. Bioenergy plant, managed all aspects of waste-to-energy production facilities, chief executive for private capital firm and facilitator for international private equity energy fund.

Custom Plan and Process for Your Needs

Energy cost structure and regional plant design will be created in consultation with officials. By evaluating rate tariffs plans, local conditions, and desired facilities during our initial feasibility study a mutually beneficial financial model will be developed.

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We look forward to providing state of the art solutions for economic and energy independence.

Sincerely,

A handwritten signature in dark ink, appearing to read 'Noubikko P. Ulanday'.

Noubikko P. Ulanday
CEO