

Next Generation Landfill Technology



Next Generation Landfill Technology facilities employ both vertical and horizontal wells to inject the oxygen necessary to sustain the oxygen-metabolizing microorganisms that rapidly decompose organic waste matter.

HOW THE PROCESS WORKS

In a Next Generation Landfill Technology facility, liquids are introduced to hydrate the landfill mass. Under these optimized growth conditions, naturally occurring micro-organisms rapidly break down organic waste, producing methane gas as a byproduct. This accelerated decomposition increases the amount of available airspace, while the methane gas can be collected and used as an alternative fuel.

Presently, Waste Management is operating three kinds of Next Generation Landfills:

- The Anaerobic Bioreactor. This type of bioreactor uses anaerobic microorganisms, bacteria that do not metabolize oxygen, to decompose organic waste.
- Aerobic-Anaerobic Bioreactor*. This hybrid bioreactor landfill accelerates waste degradation by employing a sequential aerobic-anaerobic treatment to rapidly degrade organic wastes, producing valuable methane in the process.
- Facultative Bioreactor.** In this system, the ammonia present in the leachate is biologically converted to nitrate in a reactor that is external to the landfill. The treated leachate is returned to the landfill where facultative bacteria convert the nitrate to nitrogen gas in a process known as denitrification.

* U.S. Patent #6,283,676 B1 ** U.S. Patent #6,398,958 B1

A COMMUNITY ASSET

In addition to providing the industry with a new low-cost liquid waste disposal alternative, Waste Management's Next Generation Landfill Technology offers numerous benefits to their local communities. These benefits include:

- Greenhouse gas reduction
- Alternative energy from a clean, renewable resource
- Extended landfill life
- Faster conversion of closed landfills to parks, golf courses and other community assets

Next Generation Landfill Technology represents just one more way Waste Management is looking ahead to meet the waste challenges of the 21st Century. For more information on Next Generation Landfill Technology projects currently underway, contact your Waste Management Landfill & Industrial Services sales representative, or log onto www.wmdisposal.com.



From everyday collection to environmental protection, Think Green. Think Waste Management.



LANDFILL & INDUSTRIAL SERVICES



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NEXT GENERATION LANDFILL TECHNOLOGY

For Next Generation Concepts in Landfill Technology

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Waste Management's recycling programs have helped to boost community diversion rates throughout North America. Still, a significant amount of organic material inevitably ends up in local landfills. Now, Waste Management is leading the development of Next Generation Technology to not only extend the life of its landfills, but to put organic wastes to work by harnessing the by-products of their decomposition to produce valuable alternative power.

Since 1999, Waste Management has worked closely with the U.S. Environmental Protection Agency (USEPA) through a unique Cooperative Research and Development Agreement (CRADA) to design, build and operate a number of Next Generation Technology landfills in the United States. As a result of this cooperative venture, many liquid wastes can now be accepted at landfills and put to beneficial use.

BENEFITS TO INDUSTRY

Next Generation Landfill Technology needs large amounts of water to promote accelerated decomposition, these landfills represent the perfect low-cost solution for liquid waste generators. Companies that choose Waste Management's Next Generation Landfill Technology to process their liquid wastes can look forward to enjoying:

- Cost-savings over alternative treatment and disposal solutions
- Compliance with all local, state and federal environmental regulations
- Long-term indemnification
- Being part of an environmentally conscious and sustainable alternative energy generating program

The list of liquid wastes that can currently be accepted at most Waste Management Next Generation Landfill Technology facilities includes, but is not limited to:

- Wastewater treatment sludges
- Truck & wheel wash
- Tank farm water
- Tank cleanouts
- Process sludges
- Pond cleanouts
- Pollution control sludges
- Pigment sludges
- Paint sludges
- Paint booth spray
- Off-spec products
- Leachate
- Ink water
- High moisture sludges (bio-solids)
- Ground water
- Engine block dye water
- Car wash cleanout
- Beverage waste



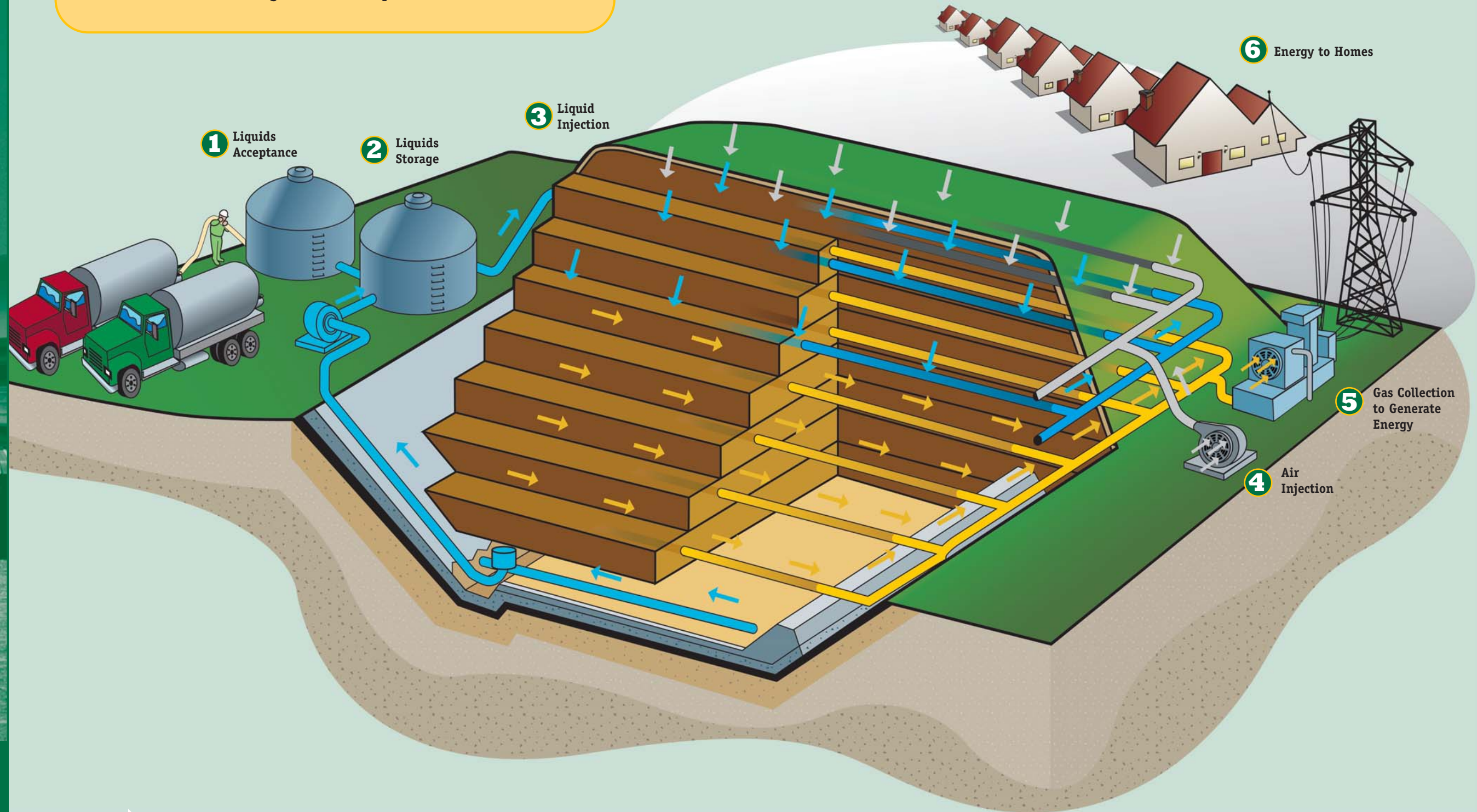
Next Generation Landfill Technology systems are carefully monitored to see that air and moisture levels are strictly controlled.

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AEROBIC-ANAEROBIC BIOREACTOR

Aerobic-Anaerobic Bioreactors use both aerobic and non-aerobic bacteria to accelerate the degradation of organic wastes, thus reducing landfill mass and extending the life of disposal facilities.



- Leachate/Liquids Addition
- Gas Collection
- Air Injection