

Alliance Aims to Convert Waste into Chemicals

HOUSTON - Waste Management (NYSE: [WM](#) [1]) and Genomatica today announced a strategic joint development agreement to research and advance Genomatica's technology and manufacturing processes to enable production of intermediate and basic chemicals from syngas made from municipal solid waste.

Under the agreement, Genomatica will create proprietary, specially-designed organisms and complete manufacturing processes to efficiently and economically convert syngas into chemical products. Genomatica's patents, intellectual property and technology platform should facilitate further refinement of organisms and processes to allow chemical production from syngas produced from locally-available waste with varying characteristics. Biological production of chemicals would provide another potential use for any syngas produced by or for Waste Management through anaerobic digestion, gasification and landfill gas.

"Waste Management wants to maximize the value of the materials it manages", said Tim Cesarek, managing director of Organic Growth at Waste Management. "Genomatica's technology complements Waste Managements advancement of thermo-chemical conversion and fermentation technology platforms."

"Genomatica is already on a path to deliver sustainable, lower-cost, smaller-footprint chemicals made from renewable feedstocks, including various commercially-available sugars, rather than from oil or natural gas", said Christophe Schilling, chief executive officer of Genomatica. "This agreement accelerates our initiatives to provide greater feedstock flexibility, by enabling the use of syngas to produce a range of chemicals, and in particular, syngas derived from waste materials. Together with Waste Management we are seeking to create greater value from waste material, while adding to Genomatica's ability to deliver more sustainable, lower-cost manufacturing to the chemical industry."

Syngas is produced throughout the world from natural gas or liquid hydrocarbons, and through the gasification of coal, biomass, and waste materials. Syngas is a low-cost input material often used to generate electricity, and can also be converted into liquid fuels. Prior to Genomatica, converting syngas to chemicals was primarily done through chemical processing techniques, which were generally energy-intensive and limited in their ability to produce specific chemical products. Supported by the new joint development agreement, Genomatica is working to enable the conversion of syngas into desired, major-market intermediate and basic chemicals.

This announcement follows a successful move by Genomatica to advance the companys first commercial product, a green Bio-BDO (1,4-butanediol), made from renewable feedstocks rather than oil or natural gas. BDO, an intermediate chemical with a \$4 billion market worldwide, is used to make spandex, automotive plastics,

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Published on Chem.Info (<http://www.chem.info>)

running shoes and more. Genomatica's platform technology could be applied to create a range of high-volume intermediate and basic chemicals, from a range of renewable feedstocks.

The joint development agreement with Genomatica complements Waste Managements comprehensive waste services in the areas of recycling, landfill, waste-to-energy and landfill gas-to-energy. This agreement will also help move Waste Management toward meeting three of its sustainability goals: doubling its renewable energy production and tripling the amount of recyclables processed by 2020, and investing in emerging technologies for managing waste.

Source URL (retrieved on 10/01/2014 - 11:25am):

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