Capture the Market of Flaring at Landfills

Create a new revenue stream with RTI's Microreformer™

Value Proposition

Economically competitive and efficient use of flared landfill gas

Small unit size allows for centralized or distributed right-in-time deployment

Low CAPEX and fast replacement times result in reduced business risk

Significantly reduced greenhouse gas emissions related to flaring

Syngas can be converted into various value added products:

- Methanol
- Ammonia
- Dimethyl Ether
- Fischer-Tropsch Liquids

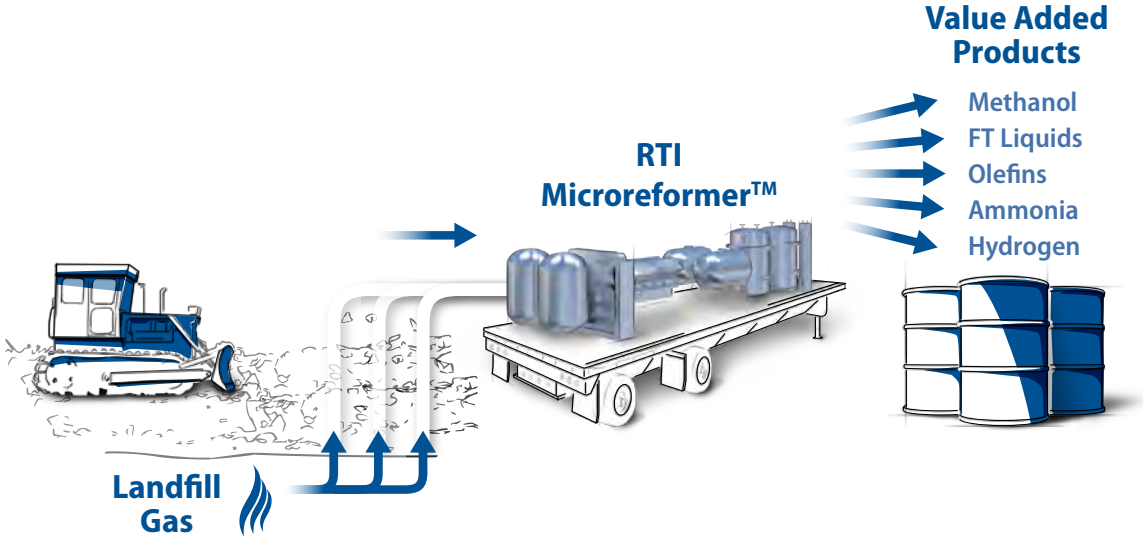
Fuels produced are likely to qualify for the renewable fuels standard and generate tradeable credits

The Problem

Municipal Solid Waste (MSW) landfills are the third largest source of methane (CH_4) emissions in the US, accounting for about 20% share in the total CH_4 emissions in 2014. Methane emissions from US MSW landfills are expected to be over 316,000 million cubic feet (MMCf) in 2017. Many sources are either too expensive for capture and delivery to market, requiring additional infrastructure, or too small to be used effectively. Viable small-scale gas conversion would have a beneficial economic and environmental impact by utilizing these stranded or wasted natural resources.

The Solution

RTI's Microreformer technology can enable an economically competitive, efficient use of flared gas at landfills. RTI has developed and is currently testing an internal combustion engine-based syngas generation system that can **convert 50,000 standard cubic feet per day of natural gas, to 10 barrels per day of over 99% methanol.**



The Technology

RTI's Microreformer is composed of a standard, mass manufactured 8.8L engine, run on natural gas, that has been coupled with a generator. The engine produces syngas for synthesis of value added products and power. In the current pilot system, the power is dissipated to an electrical load bank. In a commercial unit, that power will be integrated into the system operation.

One challenge in small-scale gas conversion is competing with the economics derived from the economies of scale in traditional chemicals processing. Utilizing mass manufactured internal combustion engines exemplifies substituting economies of scale with economies of mass production, advancing the concept of viable distributed fuel production.

The future of mini gas-to-liquids (GTL) plants will become more relevant as environmental regulations increase. Fuels produced at the mini-GTL plant are likely to qualify for the renewable fuels standard and generate tradeable credits in the form of renewable identification numbers.

Current pilot of RTI Microreformer located in Research Triangle Park, NC.

We are presently seeking co-development and partnership opportunities for the RTI Microreformer, the solution to small-scale modular gas conversion.

More Information

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Presentations and Conferences

Carpenter, J. (2017) "Compact Micro-Reformers for Distributed GTL." Presentation presented at Energy Frontiers International: Gas Flare Monetization Forum, Denver, Colorado.

Carpenter, J. (2015-2017) "Compact Micro-Reformers for Distributed GTL." Poster session presented at ARPA-E Technology Innovation Showcase, Washington, DC.

Carpenter, J. (2016) "Compact RTI MicroReformer™ for Distributed GTL." Presentation presented at Gasification Syngas Technologies Conference, Vancouver, Canada.

Carpenter, J., Lesemann, M. (2016) "Compact Inexpensive Reformers for Natural Gas." Paper presented at Industrial Energy Technologies Conference, New Orleans, Louisiana.

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