



Zero Waste Energy, LLC

Blue Line Transfer, Inc.
San Francisco, CA

BioCNG, LLC, is part of a team that is assisting with the development of a BioCNG system for Zero Waste Energy, LLC for a BioCNG™ biogas to compressed natural gas for Blue Line Transfer, Inc., located in San Francisco, CA.

BioCNG provided design assistance, permit assistance, fabrication of equipment, materials, and startup of a BioCNG 100 system. The patented BioCNG system will use up to 100 scfm of gas from food and green waste, which will yield up to 600-GGE/day in fuel. The BioCNG will be used to fuel the South San Francisco Scavenger Company's fleet of collection trucks. The Company is converting their entire fleet to CNG with the current trucks equipped with Cummins Westport CNG engines

BioCNG worked with the owner to procure and integrate a custom burner/boiler to combust the site's lean digester gas, the BioCNG waste gas, and natural gas as required. The boiler will generate approximately 0.75 MMBTU/Hr. If the site's thermal load has been met, the burner will continue to combust the waste gases and by-pass the heat exchanger.

Project Manager:

Steve Wittmann

Client Contact:

Jeff Bogg

Tel # 925.297.0600

Start/End Date:

June 2014 - February 2015

Key Project Activities

- Development of small scale biogas-based fuel process to power CNG vehicles
- Site design
- Integration assistance
- Design for heating distribution system
- System start up



For more information:

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Specifications

Biogas Source

Food and Green Waste Digester

Size (average tons per day)

30

Gas Collected

<100 scfm

Gas Quality

Methane (CH₄) – 60%

Flare

Waste gas and BioCNG unit downtime

Other Gas Use

Lean gas and waste gas powered boiler unit to provide heat

for plant

Available Gas for CNG

<100 scfm

Size of BioCNG Unit

BioCNG 100

Components

H₂S removal, chilling, VOC/Siloxane removal, CO₂ removal; connection to natural gas fueling station for additional capacity

Fueling Unit

Clean Energy fueling station

Fuel Production (GGE)

Up to 600 GGE/day

Waste Gases

Tail-gas heat recovery system

Back up for CNG Fueling

Natural gas

Fleet Size/Type

South San Francisco's Blue Line CNG-fueled collection vehicles

BioCNG Sizing and Cost Information

System Size	Biogas Inlet Flow (scfm)	Typical Fuel Production (GGE/day)	Budget Price (\$million)	O&M Estimate (\$/GGE)		Estimated Fuel Production Cost without RINS	
				Fueling Station	Without Fueling Station	Fueling Station	Without Fueling Station
BioCNG 50	50	200-300	1.2	0.74	0.61	2.16	1.42
BioCNG 100	100	375-600	1.5	0.59	0.44	1.40	0.92
BioCNG 200	200	775-1200	2	0.96	0.31	0.98	0.60

- 1 Fueling station options available from BioCNG at additional cost.
- 2 Grants, subsidies, tax credits not included
- 3 Assumes 10 year depreciation
- 4 BioCNG is qualified to receive D3 and D5 Renewable Fuel Standard Credits. Financial impact will depend on the project-specific operating scenario, and can be up to \$1.20 per/GGE
- 5 Does not include road tax
- 6 Assume 60% methane